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TARIFF PHASE-OUTS: THEORY AND
EVIDENCE FROM GATT AND NAFTA

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ABSTRACT

This paper considers tariff phase-outs in multilateral and preferential agreements. The paper finds that early GATT rounds primarily were over bindings of existing rates and that it was not until the 1962-67 Kennedy Round's 50% reduction in manufactured goods tariffs that time paths of tariff reductions became a substantive part of GATT agreements. Existing empirical work has demonstrated that U.S. industries with high initial tariffs tended to receive long periods for tariff adjustment or tended to be exempted from agreed reductions in both the Kennedy and Tokyo Rounds. This paper demonstrates that high U.S. tariffs and little intra-industry trade are associated with long NAFTA phase-out periods for U.S. imports from Mexico. Mexico's phase-outs are correlated, on the other hand, with those of the United States but not generally with Mexico's tariffs.

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1. Introduction

Regionalization is now so widespread that the World Trade Organization, in one of its first studies since its creation, can claim that "when the WTO was established on 1 January 1995, nearly all its members were parties to at least one agreement notified to GATT."[1] According to the same study this process has picked up speed in recent years with almost a third of the 109 agreements brought to GATT between 1948 and 1994 having been notified since 1990. Clearly nations perceive the process of regionalization to be one from which they cannot afford to be left out.[2]

The question of whether the process of "regionalization" is desirable or not is an important one. A related question is whether the form in which the world trading system permits preferential arrangements is beneficial, and if not, which type of arrangement would be. It is particularly interesting, and this is the topic of the present paper, that results from economic theory offers only mixed support for Article XXIV, the condition under which about 90 percent of all notifications of preferential agreements have been presented to GATT.

Article XXIV deems admissible customs unions and free trade areas that eliminate duties on "substantially all the trade" between the partners and puts into place extra-club duties that are "not on the whole [...] higher or more restrictive" than the initial duties.[3] The latter of these conditions aims at preventing clubs from forming for the purpose of extracting better terms of trade from outsiders through the use of higher external tariffs by club members, a concern that has received

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[1] WTO (1995), p. 27. By "regionalization" we mean the creation or expansion of preferential trading areas. Whether world trade has become regionalized has been the subject of several studies, including Anderson and Norheim (1993), and Frankel (1993).

[2] Indeed, and as pointed out in the WTO study, should current talks toward establishing preferential trade across the Pacific (and the Atlantic) lead to agreements, then every current WTO member would participate in at least one trading bloc and be the outsider relative to at least one. To complete the picture it should be pointed out that the number of GATT contracting parties has increased substantially over the same period of time suggesting that a simultaneous process of "globalization" is unfolding.

[3] See for example Jackson, Davey, and Sykes, Jr. (1995) for the full text.

some support in economic analysis. The former of the two conditions in Article XXIV was intended as a price to be paid by the participants in a preferential arrangement for the exemption from the Most-Favored-Nation Principle. However, received wisdom, which derives from Richard Lipsey and Kelvin Lancaster's (1956) work on the second best, supports the optimality of intra-club free trade only under quite restrictive assumptions.

It could be argued that actual trade arrangements reflect this ambiguity. The restriction on extra-club duties does seem to have been relatively effective as GATT reports no major increases in between-club tariffs even for clubs of substantial size in world markets.[4] The implementation of the condition that tariffs be eliminated on substantially all intra-club trade has been less effective. This is in part due to the inherent vagueness of the language, in part due to the sizable loophole offered by paragraph 5(c) of Article XXIV, which states that "any interim agreement [necessary for the formation of a customs union or a free trade area] shall include a plan and schedule for the formation of such ... within a reasonable length of time."[5] Agreements on customs unions and free trade areas presented to GATT have often left out important sectors, and tariff reductions have sometimes been at a leisurely pace.

Recent theoretical work on customs unions and free trade areas has primarily been concerned with their effect on inter-club protection, and has taken the intra-club liberalization as given comparing, most frequently, the initial situation with one of internal free trade. Instead, this paper takes a closer look at intra-club reform. Even after the completion of the internal market, expansion of the European Union, and the passage of NAFTA, the issue remains important as major undertakings are under consideration or negotiation, including the integration of the East European nations into the European Union, and the formation of an Asian-Pacific trading bloc. The WTO even points to the consequences of intra-club reform for globalism by stressing how EC expansions or deepenings induced the Dillon, Kennedy, and Tokyo Rounds.[6]

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[4] Of course, increased protection can take other forms such as increased use of anti-dumping duties or of various quantitative measures.

[5] Jackson et al. (1995), p. 49.

[6] WTO (1995), pp. 53-54.

This paper discusses global and preferential tariff phase-outs both from a theoretical and empirical perspective. In particular, the paper presents an analysis of the agreed U.S. and Mexican NAFTA phase-outs and discusses how they might be explained from the perspective of bargaining between two governments responding to different domestic pressures and environments.

Section 2 reviews briefly the theoretical literature with particular emphasis on results on world welfare. Section 3 presents an historical discussion of phase-outs both in the context of global trade negotiation rounds and with respect to Article XXIV. Section 4 summarizes results from the empirical literature on tariff reductions. Section 5 considers U.S. and Mexican phase-outs in NAFTA. Section 6 concludes.

2. A Review of the Theoretical Literature

Theoretical work on reform of trade policy, including preferential arrangements such as customs unions and free trade areas, can usefully be separated into two, sometimes overlapping, literatures: one considering the welfare consequences from such reforms, and another investigating which coalition equilibria will emerge when individual nations strive to maximize some criterion function, usually national income. The majority of this work has assumed that national governments are the decision makers and that each government's objective is to maximize national income.

Few general results have been established for tariff reforms that encompass all nations. Early work by Jaroslev Vanek (1964), later generalized to more than three countries by Tatsuo Hatta and Takashi Fukushima (1979), demonstrate that a reduction of the highest tariff rate to the next highest level raises global welfare when initial trade taxes are either positive or zero and the high-tariff good is a net substitute to all others.[7] Hatta and Fukushima (op. cit.) show also that an equi-proportionate reduction of all tariffs raises global income. Kowalczyk (1989) demonstrates that if there are trade subsidies in addition to tariffs then an equi-proportionate rate reduction has

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[7] This literature assumes that international income transfers are feasible and hence applies the potential Pareto criterion as its world welfare indicator.

ambiguous effect on world welfare when rates are *ad valorem*, while Fukushima and Namdoo Kim (1989) show that no such ambiguity exists if rates are specific.[8]

Work on selective reduction of non-extreme tariffs leads directly to the literature on trading clubs. Drawing on earlier work by James Meade (1955) and S. A. Ozga (1955), Vanek (1964) shows that the reduction of a single tariff, which is not extreme, has ambiguous effect on world income. If the tariff under consideration is between partners, and if the reform constitutes a complete elimination, this result exemplifies Jacob Viner's (1950) earlier proposition that a customs union has the potential to lower world welfare.

The theme that trading blocs may lead to sub-optimally large trade between bloc members due to re-direction of trade-flows re-appears in Paul Krugman's (1991a) demonstration that symmetric bloc enlargements may lower world welfare until three blocs exist in a world with strong preferences for variety in consumption.[9] In a comment on this work, T. N. Srinivasan (1993) generates an example where world welfare may decrease or increase from bloc enlargement due to the possibility of changing composition of blocs of different size. Alan Deardorff and Robert Stern (1994), in a related vein, argue that if trade is due to comparative advantage rather than taste for varieties then enlargement of even symmetric blocs may raise expected world welfare.[10] [11]

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[8] For a small country, Lopez and Panagariya (1992) show that reducing the highest tariff can lower welfare if intermediate goods are imported.

[9] The effect of country size on bloc formation is analyzed in Kennan and Riezman (1990). Stein (1994) considers asymmetric blocs in the Krugman model.

[10] Deardorff and Stern assume that blocs set prohibitive tariffs on trade with each other and that blocs are formed by random drawings of members and combinations of blocs. Haveman (1992) shows that if extra-club tariffs are not assumed to be prohibitive then Deardorff and Stern's model also generates Krugman's U-shaped world welfare curve.

[11] Bond and Syropoulos (1992) suggest that a symmetric bloc equilibrium like Krugman's may be unstable since a country will have an incentive to switch blocs to join a (thereby) larger club. They show also that if inter-bloc trade becomes relatively unimportant compared to intra-bloc trade then non-cooperative Nash external tariffs will tend to fall, and welfare tend to rise, as symmetric blocs are enlarged. However, Krugman (1993) demonstrates that it is not the increase in optimal extra-club tariffs that drives the results in his first paper; rather it is the mis-allocation of goods across blocs.

Krugman (1991b, 1993) finds that introducing transport costs into his varieties model may reverse his initial negative finding, and that formation of "natural blocs," that is blocs between countries that can trade at low transport costs, will tend to raise global welfare. Jeffrey Frankel, Ernesto Stein, and Shang-Jin Wei (1995) demonstrate that a comparison of transport costs between bloc members and non-bloc countries is needed for a full assessment of whether such blocs are welfare improving or not. If the latter are relatively low then it is possible that natural blocs will lower world welfare.[12] [13]

Viner's result has also spurred research on the optimality properties of Article XXIV's intra-club free-trade requirement. Murray Kemp (1969) argues that free internal trade maximizes members' welfare if their external tariff is optimal, and Takashi Negishi (1972) shows that if there are positive tariffs on extra-union trade then world welfare maximization requires a positive intra-union tariff in a two-good world.[14] For the special case of a small union John McMillan and Even McCann (1981) show that tariff elimination is optimal if the goods traded between club members are separable from those traded with the non-member.[15] Michihiro Ohyama (1972) and Kemp and Henry Wan (1976) demonstrate that a customs union setting its "compensating external tariff", i.e. the external tariff that leaves trade with non-members unaffected, raises world welfare.[16]

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[12] Frankel (1992) labels the latter type of bloc as "super-natural." Frankel, Stein, and Wei argue that theirs is more than a theoretical anomaly: their preferred estimate of intercontinental transport costs is relatively low.

[13] Frankel, Stein, and Wei (1995) also revisit the optimal static intra-club tariff. They find that for all transport costs, maximal world welfare requires positive intra-club protection in a world of varieties trade. Stein (1994) presents similar results for a world where asymmetric blocs can form.

[14] Frankel, Stein, and Wei (1995), and Stein (1994) present similar results for a world where asymmetric blocs can form and find that a positive intra-club tariff maximizes world welfare for all transport costs in the Krugman model.

[15] Kemp (1969) argues that free internal trade maximizes the collective welfare of union members only if their external tariff is optimal.

[16] McMillan (1993) proposes that Article XXIV be revised to deem all blocs that do not lower trade with non-members as GATT-admissible. Roessler (1993) discusses some difficulties associated with such a proposal. He suggests that it would make the international trading system results- rather than rules-oriented and require that negotiators were able to agree on a methodology for estimating the expected effects on trade flows from various proposals.

With few exceptions this work generally does not consider the individual nation's incentive to participate in the proposed reform, whether it is global or preferential. John Kennan and Raymond Riezman (1990) show that large countries and customs unions seeking improved terms of trade through tariffs may refuse to agree to global free trade. Kowalczyk (1990) argues that a similar result can hold for a small country which has the option of membership of multiple free trade areas. Kowalczyk and Tomas Sjöström (1994) show how sidepayments must go from those with much to gain from cooperation to those with little to gain to eliminate all participants' objections to a global agreement whether nations act alone or as members of trading blocs.

Little work considers the dynamics of current rules for preferential trading agreements and their impact on global welfare. Martin Richardson (1994) shows that members of a free trade area may compete their external tariffs down to zero due to competition for tariff revenue. Support for the opposite and conventional view that customs unions are preferable is implied by Kyle Bagwell and Robert Staiger's (1993a, 1993b) work which demonstrates that free trade areas will tend to increase between-club tariffs during pre-and negotiation phases while customs unions have the opposite effect. Contrary to Richardson's work, which has implications for long-run equilibrium tariffs, their model has the special property that extra-club tariffs, once clubs have been fully implemented, return to their initial level.[17]

This focus on the dynamics of internal tariff reform is very apropos. As we will see shortly, actual trade liberalization, at both global and regional levels, has often been extended in time. We would like to know what determines these time paths, which industries will be liberalized more or less rapidly, and the welfare consequences of these paths.[18] These are the questions discussed in the remainder of the paper.

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[17] Ludema (1994) finds that the ability to propose and establish preferential trading areas can affect the distribution of income in a global agreement when bargaining is costly.

[18] Bhagwati (1993) has stressed the importance of looking at the dynamics of the problem. Grossman and Helpman (1993) suggest that offering different rates of tariff adjustment or even exemptions may be necessary for gaining political support for a free trade area. Levy (1994) also presents a political-economy model of preferential trading arrangements.

3. Gradualism in the World Trading System

The notion that agreed tariff reductions should happen over several years rather than precipitously is seen both in recent global negotiation results and in Article XXIV agreements. However, while preferential trade and phase-outs have the same origin in the negotiations of the International Trade Organization, GATT policy and practice towards phase-outs in multilateral agreements have developed differently from those toward preferential phase-outs: global round phase-outs are a relatively recent phenomenon and the lengths of phase-out periods have only shown limited variation; in contrast, phase-outs were included in the original Article XXIV of GATT and actual periods have varied greatly and been cause for controversy.

At the outset, the United States argued for lower tariffs and proposed, in particular, the elimination of all forms of discriminatory treatment -- including a three-year freeze and a ten year phase-out of Britain's Imperial Tariff Preferences. This was opposed by Britain, whereupon the United States modified its position to favor customs unions and, when Article XXIV was under negotiation, free trade areas.[19]

Following this attempt by the United States, the length of a substantive tariff-reduction period was not stated explicitly again until the Kennedy Round. Rather, early GATT agreements tended to take force almost immediately upon a contracting party's signing of an agreement. Agreed tariffs from the 1947 Geneva Round thus went into effect the following year; the Annecy Round results, completed in 1949, would enter into force by late April 1950; the Torquay Round tariffs, agreed to in 1950, would be put in place by the end of 1951; and the Dillon Round reductions, negotiated by 1961, were implemented by July 1962.[20]

These early negotiation rounds were mostly over bindings of existing rates rather than over actual rate reductions.[21] With the 1962-1967 Kennedy Round the focus shifted to negotiating

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[19] Wilcox (1949), p. 71.

[20] Hudec (1990), p. 50; GATT (1949); GATT (1951); and GATT (1962).

[21] Finger and Holmes (1987) present evidence to this effect.

reductions with the parties agreeing to a general 50 percent cut in tariffs on non-primary manufactured products.[22] The parties agreed also to permit members to choose between an immediate rate reduction and a five-year transition period of equal-sized cuts.[23] The latter period originated with the negotiating mandate in the United States Trade Expansion Act of 1962, and was relatively uncontroversial as a point of reference for the Round.[24] Negotiations were then over exemptions to these two principles.

Participants in the Tokyo Round of 1973-1979 agreed to implement cuts, effectively amounting to an average one-third tariff reduction with larger relative cuts of higher rates, in eight equal-sized annual installments beginning on January 1, 1980.[25] The eight year period was favored by the United States and the European Community, and was later accepted by other participants.[26]

Finally, the 1986-1994 Uruguay Round led to an agreement to implement most tariff reductions fully with five equal annual rate reductions beginning on January 1, 1995. The five-year period was put forward by a group of developing countries following an earlier European Union proposal of eight years.[27] [28]

While early global rounds implemented resulting reductions relatively rapidly, there was never such a presumption for the implementation of customs unions and free trade areas. Part of the rationale for the lack of discipline implied by Article XXIV's vagueness on standards for interim agreements (as quoted in the introduction to this paper) could be that the alternative --

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[22] Jackson (1989), p. 53, reports that, including exceptions, the effective average tariff reduction has been estimated to be about 35 percent.

[23] GATT (1967).

[24] Preeg (1970), pp. 199-200.

[25] GATT (1979).

[26] Winham (1986), p. 201.

[27] Stewart (1994), p. 428.

[28] GATT (1994) offers a discussion of the tariff concessions of the Uruguay Round (pp. 8-15). Schott (1994) estimates them to be about 40 percent on average with reductions by the United States and the European Union of about 33 and 37 percent, and reductions by Japan of about 56 percent (pp. 11 and 61).

specifying a maximum phase-out period -- effectively would have prevented countries with particularly high initial tariffs or high adjustment costs from joining customs unions or free trade areas. In any event, actual agreements have differed greatly in their interpretation of what constituted a "reasonable length of time." Some relatively recent agreements have incorporated periods of adjustment of 22 years or even indefinite length while other agreements, including the 1960 agreement establishing EFTA and the 1965 free trade agreement between Australia and New Zealand, provided for a maximum ten year phase-out.[29] As a consequence it has been a widely held view that Article XXIV imposed little discipline on the formation of preferential trading areas.[30]

These difficulties led Japan and India to present proposals to the parties of the Uruguay Round to revisit Article XXIV with particular concern for the effects of customs unions and free trade areas on non-members and, in Japan's case, to address "the lack of discipline on interim agreements." A Draft Proposal, supported by the United States and Japan but opposed by the European Community, was presented by the Chairman of the negotiation group in October 1990. It was included in the Dunkel Draft in 1991, and was adopted in the final agreement.[31] The resulting "Understanding on the Interpretation of Article XXIV of the General Agreement on Tariffs and Trade 1994" specifies that "any interim agreement ... shall include a plan and schedule [that] should exceed 10 years only in exceptional cases."[32]

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[29] Stewart (1994), p. 1837. He also quotes the LAFTA Agreement as stating that "it was impossible to indicate at present the products in respect of which customs duties would not have been abolished at the end of the transitional period."

[30] The early test was the two-product European Coal and Steel Community which obtained an Article XXV waiver by GATT (Dam (1970), p. 290). The WTO (1995) reports that 98 Article XXIV arrangements had been notified to GATT by January 1995; six agreements had been stated as conforming with Article XXIV, while for the remaining cases "the working parties have ... never reached the conclusion that the legal requirements had *not* been met. [...] *making no pronouncement on the key matters they were charged to examine has been the rule for Article XXIV working parties.*" (pp. 16-17, their emphasis.)

[31] Stewart (1994), pp. 1841-1842.

[32] The Understanding provides also that "general incidence shall ... be based upon ... weighted tariff rates." See Jackson et al. (1995).

The Canadian negotiator Michael Hart reports that both the 1960 EFTA agreement and the 1965 agreement between Australia and New Zealand were among the precedents and reasons presented in the Canada-U.S. free trade negotiations for a ten year maximum phase-out. While ten years was eventually incorporated into the 1988 Agreement, it did not happen without prior consideration of alternative proposals for more rapid reductions.[33] (The Canada-U.S. agreement provides also for immediate or five year phase-out periods, as well as exceptional categories; the assignment of industries to phase-out categories was determined through consultation with industry and other potentially affected parties.[34]) It was on this background that negotiations of NAFTA -- to which we turn in section 5 -- began two years later.

4. Some Empirical Results on Tariff Reform

Like theoretical work on tariff reductions, empirical work on the subject is scant. This literature has assumed that the evolution of tariffs responds primarily to distributive considerations and political influence, and it has sought proxies such as labor adjustment and firm concentration within industries to gauge the willingness to accept reform and ability to oppose it.

An early contribution is John Cheh's (1974) study of United States duty reductions in the Kennedy Round. Participants agreed at the outset of the round that manufacturing tariffs would be cut by 50% across the board with subsequent bargaining over which sectors should be exempted from this cut and receive less or no reduction. Restricting the sample to the industries receiving exemptions, his dependent variable is industry percentage tariff reduction. Cheh finds that an industry's original level of protection, its growth rate, and its relative use of unskilled and relatively high-age labor significantly affect the size of its Kennedy Round tariff cut. He concludes that the rate reductions were aimed at reducing short-run labor adjustment.

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[33] Hart (1994), p. 216, mentions how, at the outset, Canada suggested that the United States phase out tariffs immediately while permitting Canada a transition period. This proposal was turned down. Canada then argued that an adjustment period of seven years was "in line" with various precedents; the Tokyo Round cuts had, for example, been implemented over this period.

[34] Bello and Holmer (1992), pp. 425-426.

Malcolm Bale (1977) presents further evidence for Cheh's explanation. Defining adjustment costs as lost wages during unemployment plus any wage cut from accepting a new job within one year, he considers 477 legally displaced U.S. workers in six industries and finds that the simple correlation between such costs and the size of the industry's Kennedy tariff reduction is negative 0.88.

Expanding on a study by Richard Caves (1976), G. K. Helleiner (1977) studies tariffs for 87 Canadian manufacturing industries for 1961 and 1970 as well as their changes. He finds that his variables seem to explain nominal rather than effective levels, but effective rather than nominal changes. (The latter is in contrast to Cheh (op. cit.) who finds nominal rates and changes in them to be better explained than effective rates.) Helleiner finds further that market concentration (market share of largest four firms) explains reduction (higher concentration implies less reduction), and that the higher the percentage of small firms in an industry the larger is reduction in protection over the period considered. He finds that unskilled labor intensity does not explain changes.[35]

In a study of U.S. Tokyo Round tariff cut offers, Robert Baldwin (1985) finds weak evidence that low tariff cuts tend to be in industries where import penetration (imports divided by the sum of production and net imports) is high (conditional on being a net import industry), and where workers are unskilled and hence earn low wages (share of labor costs to unskilled workers as a fraction of total labor costs); somewhat surprisingly, U.S. tariff levels are not significant. An alternative approach treating the difference between the original U.S. offers of duty cuts and the cuts implied by the Round's agreed Swiss formula (which implied larger reductions of higher tariffs) does considerably better. For this specification Baldwin finds that tariff levels and average wage levels are significant as are such changes in industry conditions as employment growth and import penetration.

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[35] A study by Lee and Swagel (1994) considers industrial protection (tariffs and non-tariff barriers) across 41 countries. They find that value-added and share of industry output that is exported help explain protection, and that less protection goes to labor-intensive industries and more to capital- and skill-intensive ones.

Some of these authors stress that trade negotiations involve reciprocity and that rate reductions therefore are an outcome of bargaining between nations.[36] Yet no study conditions one nation's concessions on those of its trading partners'. Due to the vast complexity of global rounds, including the tying of seemingly unrelated issues, it could be quite difficult to establish reciprocity between individual nations for such negotiations. Michael Finger (1974), rather than focusing on individual nations, analyzes the results of the Dillon Round as the outcome of a bargain between two groups of countries, developed and developing. He argues that tariff cuts were not as deep for manufactured products in which developing countries might have potential for exporting as in other products since these countries did not have much market access to offer in return.

It seems that preferential trade agreements constitute a promising area for detecting reciprocity, at least at a first pass. The next section considers the recent NAFTA Agreement to investigate whether there is reciprocity in the sense that phase-out periods for products in one country can help explain the phase-out periods in the partner country. Admittedly, this takes a narrow view of what were in fact very broad negotiations involving a substantially wider set of issues including tariff snapbacks, domestic content rules, as well as the inclusion of new sectors such as services. Yet, the analysis can still be useful, we hope, by casting some light on what may influence the outcome in a bilateral bargain between nations.

5. A Preliminary Investigation of NAFTA Phase-Outs in the U.S. and Mexico

Negotiations towards establishing NAFTA began in June 1990 with a meeting of the trade ministers of Canada, Mexico, and the United States. The negotiating parties adopted the general principle of a ten-year maximum for tariff phase-outs, recognizing the ten year rule in the Canada-U.S. agreement and the existence of a Uruguay Round proposal recommending a maximum phase-out period of ten years for Article XXIV Agreements. The countries also agreed to a fifteen year phase-out period for exceptional cases.

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[36] See for example Baldwin (1985), p. 145.

An accord was signed in December of 1992, and the agreement went into effect on January 1, 1994. It consists of eight parts covering, among other issues, trade in goods and services, technical barriers to trade, and government procurement. It specifies rules of origin, and has supplemental agreements on environmental and labor cooperation. Notwithstanding that Canada is a founding member of NAFTA, the following discussion of NAFTA tariff phase-outs focuses on Mexico and the United States. Their mutual trade is large and significant to both parties, while trade between Canada and Mexico is small.[37]

Some aspects of NAFTA, such as tightened content rules as compared to the Canada-U.S. agreement, constitute a set-back for the world trading system. However, the NAFTA agreement also introduces discipline for new issues, including agriculture, textiles, and trade in services, that even GATT did not cover effectively at the time NAFTA was negotiated. The agreement also implies free trade of maquiladoras production into Mexico after a seven year phase-out of the current 50% limit on the share of such production that can be sold in Mexico.[38] Finally, NAFTA constitutes itself as an open club with an Accession Clause stating that NAFTA can be acceded to by all countries in the Western Hemisphere.[39]

Article XXIV issues are addressed in Annex 302.2 of the Agreement and the associated Tariff Schedules. The Annex identifies five general tariff phase-out categories specifying the number of equal-sized annual cuts to free trade (A: immediately, B: five stages, C: ten stages, C+: 15 stages, D: continued duty free) and some exceptional categories (B+: seven stages, B6 and B1: five stages with small initial reductions versus large initial reductions, C10: nine stages).[40] The tariff schedules list products according to the Harmonized System and associate

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[37] In 1991 about 2% of Canada's imports came from Mexico while only 0.3% of its exports went to Mexico. For the same year, about 2% of Mexico's imports and exports originated in or went to Canada. (Calculations based on IMF (1995).)

[38] Hufbauer and Schott (1993), p. 152.

[39] Bhagwati (1991) has argued in favor of incorporating such a stipulation into the WTO rules. However, given the findings of Frankel, Stein and Wei (op. cit.) this apparently attractive requirement could be welfare reducing even -- or in particular -- if customs unions or free trade areas are regional.

[40] North American Free Trade Agreement, Annex 302.2, Paragraph 2, and 1993 North American Trade Guide, p. I-

with each product a phase-out category and its 1991 base tariff. Both for the United States and Mexico the base tariff most often quoted is an ad valorem rate; in particular there are only few quotas listed for Mexico. This bears evidence to the extent of the tariffication program Mexico undertook in part associated with the 1986 accession to GATT.

Inspection of the Schedules does not reveal any exception to the requirement that final tariffs be zero. The majority of tariffs are to be eliminated within ten years, and most fall within categories specifying equal-sized annual reductions of either five, seven, or ten years. Citing a 1993 study by the U.S. International Trade Commission, Frederick Abbott (1995) reports that products accounting for less than 1% of 1990 U.S. imports from Mexico and about 1.5% of Mexican commodity imports from the United States obtained the 15 year phase-out. For U.S. imports from Mexico, the study anticipates that about 54% would be free on implementation (category A), 8.5% within 5 years (category B), 23% within 10 years (category C), with about 14% of imports already being duty free at the time of the study. For Mexican imports the corresponding estimates in the study are 31% in category A, 17% in B, 32% in C and 18% initially free. The same study estimates that the agreement covers all U.S. imports from Mexico while leaving less than two percent of Mexico's imports from the U.S. uncovered.[41]

We are interested in identifying some of the determinants of how products are assigned to different tariff phase-out categories. For that purpose we sample commodities for Mexico and the United States at the 5-digit SITC level, which is the most disaggregate level of trade flows presented in the United Nations Commodity Trade Statistics. We first sample the products that account for relatively large shares of total trade within 2-digit categories based on 1991 export and import data for Mexico and the United States.[42] Then, to correct for problems caused by the possibility that small initial trade flows might be due to trade barriers or the threat of such, we sample 5-digit commodities randomly within the 2-digit categories that are not represented among

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[41] Abbott (1995), p. 62.

[42] 1991, rather than a later year, was chosen to minimize any effects on trade flows from expectations of the free trade agreement.

the first set of products.[43] Using the United Nations (1986) concordance between SITC and the Harmonized System, we record the implied tariff and staging category -- the former as an ad valorem tariff rate, the latter as the number of years equal to the number of tariff reductions.[44] For most categories several tariff items correspond to the given Harmonized code making it necessary to go to six or eight digit Harmonized code to obtain duty level and phase-out. In these cases 5-digit values of base rates and phase-outs are found by unweighted averaging across all relevant 6- and 8-digit duties and phase-outs.[45] The procedure results in 148 5-digit product lines for the United States and 685 lines for Mexico, with 56 common product categories. These commodities account for 34.6 percent of U.S. imports from Mexico and 15.4 percent of its imports from the world, and 38.5 and 40.1 percent of Mexico's imports from the U.S. and the world, respectively.

Table 1 summarizes the data by presenting overall and 1-digit averages for Mexican and U.S. tariffs, MET and UST, and for phase-outs, MEPOUT and USPOUT. While Mexico undertook major trade reform in the eighties it remains a relatively protected economy with its 18.59% average import duty. The 5.91% U.S. average overestimates of U.S. protection on imports from Mexico for two reasons: imports from the maquiladoras are not taxed on full value but only on value-added, and much of Mexico's trade already qualified for duty free entry under the Generalized System of Preferences.[46] In both countries, categories 0 and 1, agriculture, and beverages and tobacco, receive high protection. High tariff categories are also Mexico's category

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[43] Trefler (1993) demonstrates how accounting for endogeneity of 1983 U.S. manufacturing quotas raises the estimate of impeded imports by a factor of 10 compared to when barriers are considered exogenous.

[44] Since the first NAFTA tariff reduction occurred when the agreement went into effect on January 1, 1994, this approach implies that the number of years of phase-outs are counted from January 1, 1993.

[45] For Mexico, both imports and exports are stated f.o.b., for the United States exports are f.o.b. but imports c.i.f. A more significant difference between the two countries is that Mexico, until 1992, excluded maquiladoras trade from its merchandise trade and instead tabulated it as services trade, while U.S. exports and imports with Mexico include trade with the maquiladoras. The difference is marked: for example, Mexico listed 1991 merchandise imports from the U.S. to be $25 billion while the U.S. listed 1991 merchandise exports to Mexico as $32 billion.

[46] On the other hand, since NAFTA invalidates Mexico's GSP-status in the United States, some Mexican products do face higher U.S. import duties during the NAFTA-transition period than they did before NAFTA went into effect.

4, oils, and U.S. category 8, miscellaneous manufacturing (which includes clothing and footwear). The table reveals further that, on average, Mexico takes 5.64 years to phase out protection compared to the United States' 1.38 years. At this very aggregate level there is also a tendency for high-duty sectors to receive longer phase-outs than low-duty ones in both countries.

As is the case for empirical work on protection, it would be difficult to distinguish between competing models of tariff phase-outs. The objective of the following analysis is, instead, to identify variables that can provide some explanation of variation in phase-outs across product categories. Even though commodities at the 8-digit level fall neatly into pre-determined phase-out categories averaging to a lower-digit level usually leads to numbers of years of phase-out that do not correspond exactly to any category. Accordingly, the endogenous variables USPOUT and MEPOUT can take non-integer values.

It is helpful to distinguish between political economy variables generated by domestic pressures and variables implied by the fact that phase-outs are determined in a bargain with a foreign government. We begin by considering, for each country, whether phase-out variation across product categories can be explained by variables that do not explicitly refer to trade partner policy.

Various consumer, producer, import and export interests affect a government's bargaining stance, as do any preferences held by, in particular, the executive branch of government which may not be reflected in those of any private group. From the earlier discussion of existing work on tariff phase-outs we know that analysis of such effects would require industry level data for, among other variables, labor-adjustment cost, unskilled-labor intensity, and industry concentration ratios. At this first pass we consider only exogenous variables that are directly implied by the tariff and trade data described earlier in this section. This is a serious limitation of the analysis. On the other hand, it does permit us to take full advantage of the highly disaggregate nature of the data at hand. We take, therefore, the approach of summarizing domestic import-competing and other pro-protection pressures by the initial tariff level and hypothesize that, for any level of commodity aggregation, higher values of UST are associated with higher values of USPOUT (similarly for

MET and MEPOUT) as groups that have been successful at obtaining protection would like to see it extended.[47]

As stated in Table 2, which lists the variables used in the empirical analysis, we define also (imperfect) measures of import and export interests, USML(ME) and USXL(ME), given by U.S. imports from or exports to Mexico as a share of total U.S. trade, with MEML(US) and MEXL(US) being similar variables for Mexico. Our hypothesis is that a large import share may lead to resistance to rapid liberalization, while a large export share induces export interests to lobby their government for rapid opening of a foreign market.[48]

We calculate Grubel-Lloyd indices of intra-industry trade between Mexico and the U.S., USIIT(ME) and MEIIT(US), and for each country's trade relative to the rest of the world, USIIT(ROW) and MEIIT(ROW). The hypothesis for the former is that larger intra-industry trade between Mexico and the United States will lead to faster market opening in both countries as opportunities due to access to partner markets offer some compensation for import-competing firms. Regarding the latter variables, a member's large intra-industry trade relative to the rest of the world may be a sign of a strong industry which would lobby for rapid access to partner markets. The free trade partner may, on the other hand, perceive this as a threat and try to extend the product's phase-out period. The net effect depends on the relative strength of these forces.

Table 3 presents results for the United States for all 5-digit product categories combined, and for categories 5, 6, 7, and 8 separately. The coefficient on the initial tariff rate (UST) is positive and significant when all products are considered jointly and when they are considered separately, implying that commodities with higher duties, as hypothesized, tend to get longer periods of adjustment. Intra-industry trade with Mexico (USIIT(ME)) and with the rest of the world (USIIT(ROW)) enter significantly and are negative when all U.S. products are considered; however, eliminating them does not have much effect on R-squared except for category 8

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[47] Baldwin (1985) finds that R-squared consistently falls below 0.10 when the U.S. tariff level is excluded from equations explaining the U.S. Tokyo Round proposal.

[48] More satisfactory measures of import penetration and export stance would divide imports from and exports to Mexico with U.S. domestic sales or U.S. production of the good.

(miscellaneous manufacturing) where intra-industry trade with Mexico becomes significant and the duty level does not when the two variables are considered jointly. (When USIIT(ROW) is dropped from the equation the tariff level regains significance at the 1% level.) USML(ME) and USXL(ME), both of which are correlated with the Grubel-Lloyd index, are never significant, and sometimes have the wrong sign.

Given our data, we are unfortunately not able to distinguish between the several political-economy models that might cause such results. Rather, our finding is the very limited one that some of the underlying forces explaining U.S. levels of protection and phase-outs in global negotiations also seem to be at work in preferential negotiations.[49] (The important exception is the large product category "miscellaneous manufacturing" where tariff levels, somewhat surprisingly, do not explain phase-outs.) Recalling the theoretical results on reform, we also note that permitting high-duty industries long phase-outs might reduce or even disallow the welfare gains that could otherwise be accrued from harmonizing tariffs through, for example, cutting extreme rates the most. (It should be stressed that it need not -- rate cutting rules that raise world welfare when implemented across all the world's trading nations need not raise world welfare when implemented only across a subset of the world's countries.)

A different picture emerges for Mexico where the data do not, at the 5-digit level, account for the variation in phase-outs whether across all product categories or within categories 5, 6, and 7. (As will be discussed below, category 8 is different.) The correlation between phase-outs and tariffs across all products is only 0.03, and it is 0.06 between phase-outs and intra-industry trade with the United States; the correlation between the same variables for categories 5, 6, and 7 are also zero.[50] The variable most strongly correlated with Mexico's phase-outs is Mexico's exports to the United States as a fraction of Mexico's total trade (MEXL(US)). It does not, however, enter significantly in regressions whether across or within categories.

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[49] Such forces could stem from pressure from lobbying groups, or they could reflect social preferences over the distribution of income.

[50] The correlation between phase-outs and tariffs for the United States is 0.46.

It is remarkable that Mexico's tariffs do not help explain Mexico's phase-outs at the 5-digit level. After all, our results for U.S. phase-outs, as well as the work summarized earlier in this paper on the Kennedy and Tokyo Rounds, consistently establish a role for the initial duty level in explaining tariff reductions, at least for the U.S. In the remainder of the paper we will investigate this finding for Mexico's 5-digit duties and phase-outs further. We will focus on two candidate explanations: One is that the Mexico-U.S. negotiations may have favored U.S. concerns regarding phase-outs either because of strong U.S. pressure or because phase-outs were not critical to Mexico's NAFTA strategy because of other objectives including ensuring access to the U.S. market and establishing credibility of policy reform through international commitment.[51] Another possibility is that the averaging of 8-digit rates and phase-outs required for 5-digit values may obscure a correlation at the 8-digit level. These are not mutually exclusive explanations.

Concessions, and hence reciprocity, could be broad-based and could involve comparing overall duty reductions (Mexico's 18.59% versus U.S. 5.91%), imports covered ($24 billion for Mexico versus $31 billion for the United States), or tariff revenues ($5 billion for Mexico versus $1.8 billion for the United States). At the other extreme, reciprocity could be narrow. The tariff negotiations between Mexico and the United States were often conducted at the 8-digit level, and it was presumed at that level that identical products in the two countries would receive identical phase-outs.

Table 4 hints at the possibility that U.S. preferences may have affected Mexican phase-outs in a negotiation with narrow reciprocity. Category 8 is the only one where Mexican tariffs hold some explanation for phase-outs, and they do so significantly, at the 1% level. Intra-industry trade with the United States is not significant (MEIIT(US)); however, intra-industry trade with the rest of the world (MEIIT(ROW)) is, sometimes at the 1% level. The positive sign of this coefficient implies that larger Mexican intra-industry trade with the rest of the world is associated with slower

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[51] Associated with this explanation is that Mexican tariffs may not be as strong indicators of strength of import-competing interests as are U.S. tariffs. Mexico undertook extensive reforms in the 1980's, and traditional import-competing interests may have lost influence in the process of implementing the associated novel tariff structure.

Mexican NAFTA phase-outs. One explanation for this could be that Mexico wanted to soften the impact from free trade with the United States for industries involved in these products. An alternative, and more plausible, explanation is that the United States may have desired slower U.S. phase-outs for products that Mexico trades extensively with the rest of the world. The United States would thereby delay that Mexican producers shift sales from Mexico or from third markets to the United States. If narrow reciprocity were assumed, this would in turn imply slower Mexican phase-outs for these products.

To investigate further whether U.S. stance influences Mexico's phase-outs we consider the 56 5-digit categories that are common for the two countries in the data. Since U.S. and Mexican phase-outs are jointly determined in the NAFTA bargain, we approach the problem by two-stage least squares. Table 5 reports results from regressing Mexican phase-outs on a number of variables including the predicted value of U.S. phase-outs (USPOUTF) from stage 1 of the procedure. The table reveals that U.S. phase-outs enter significantly and with the expected sign.

Table 6 reports analogous results for U.S. phase-outs for the same 56 categories using Mexico's phase-out as instrument. The coefficient on the predicted value of Mexico's phase-out (MEPOUTF) is only significant in one specification. Also, the coefficient estimate is smaller than the coefficient estimate for the predicted value of the United States' phase-out (USPOUTF).

Viewed together, these results suggest that Mexican phase-outs have less bearing on U.S. phase-outs than vice versa. They suggest also that reciprocity with respect to tariff phase-outs is at work. This, in turn, breaks the expected positive link between product tariff level and length of phase-out period for one of the participants unless the countries' initial duty levels happen to co-vary positively in a very particular pattern.

We investigate, finally, the 56 common 5-digit categories for reciprocity at the 8-digit level, and follow two procedures: an exclusive one where we record a product as a concordance only if both countries' tariff schedules list identical 8-digit codes for the product; and an inclusive one where we add to this list products where we can assign one country's 6-digit duty and phase-out to the other country's corresponding 8-digit categories. The exclusive approach yields correlation

between MEPOUT and MET and between MEPOUT and USPOUT of 0.43 and 0.41 respectively. The inclusive approach implies correlation coefficients for the same pairs of variables of 0.35 and 0.27. For either approach, the correlation between MET and UST is only 0.16.

These findings lend some support to the view that there was an attempt at establishing narrow, i.e. within 8-digit category, reciprocity in the negotiations. They also suggest that averaging can make it difficult to detect political economy effects from tariff levels to phase-outs as well as signs of narrow reciprocity.

6. Conclusion

This paper has discussed tariff phase-outs in both a multilateral and preferential context. The theoretical literature demonstrates that reducing the dispersion of tariffs tends to be welfare-improving. Empirical work on U.S. tariff reductions shows, on the other hand, a tendency towards reducing high tariff rates by less, or more slowly, than would be implied from theory.

In a very preliminary investigation of the agreed tariff phase-outs between the United States and Mexico in NAFTA we find further evidence that U.S. phase-outs tend to be long for high-duty product categories. We find also that intra-industry trade between partners may induce shorter phase-outs, while a member's intra-industry trade with outside countries could slow tariff elimination.

Mexican tariff phase-outs do not seem to be explained by Mexican protection at least at the five-digit SITC level. For a subset of product categories we find, instead, that they are correlated with U.S. phase-outs. This may suggest some product level reciprocity and that, from the perspective of Mexican negotiators, many other issues, including the overriding one of obtaining free trade in the near future with its Northern neighbors, were given higher priority than the question of how to phase duties out.

As a final note, we stress again that this paper is only a first pass at starting to investigate empirical features of tariff bargaining. The analysis, as presented, has many serious limitations including that we have focused exclusively on trade data and not included industry data that earlier

contributions on political economy, both theoretical and empirical, have found to be potentially helpful in explaining protection.

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Table 1

Average Tariffs and Phase-Outs: Overall, and for 1-Digit SITC Codes

	MET	MEPOUT	UST	USPOUT
All imports	18.59	5.64	5.91	1.38
0 Food and Live Animals	20.78	7.00	10.65	0.82
1 Beverages and Tobacco	34.91	8.44	14.40	5.00
2 Crude Materials, Inedibles	5.48	3.38	0.60	0.26
3 Fuels, Lubricants, Etc.	7.45	2.00	0.00	0.00
4 Animal, Veg. Oils, Fats	43.00	10.00	3.72	0.00
5 Chemicals, Related Prod.	11.12	4.83	4.89	0.92
6 Manufactured Goods	13.22	6.73	5.42	1.87
7 Machines, Transport Equipm.	14.10	3.28	3.17	0.62
8 Misc. Manufacturing Articles	17.25	5.11	10.32	2.92

Source: Calculations based on *North American Free Trade Agreement* and United Nations (1992).

Table 2

List of Variables

(In the empirical work, all variables are at the 5-digit SITC code.)

USPOUT: number of years before free trade is reached in the U.S.

UST: initial ad valorem tariff rate in the U.S.

For j = Mexico, Rest of World, or World:

USX(j), USX(j), USX(j): U.S. exports to region j.

USM(j), USM(j), USM(j): U.S. imports from region j.

USIIT(j):   Grubel-Lloyd measure for U.S. intra-industry trade with region j

$$= \{USX(j) + USM(j) - |USX(j) - USM(j)|\}/[USX(j) + USM(j)].$$

USXL(ME):   U.S. exports to Mexico relative to total U.S. trade

$$= USX(ME) / [USX(W) + USM(W)].$$

USML(ME):   U.S. imports from Mexico relative to total U.S. trade

$$= USM(ME) / [USX(W) + USM(W)].$$

Exchanging ME for US throughout defines the similar variables for Mexico.

Table 3

Effects of U.S. Tariffs and Intra-Industry Trade on U.S. Phase-Outs Across 5-Digit Product Categories

	C	UST	USIITME	USIITROW
Endogenous variable: USPOUT all categories				
Number of observations: 148				
Coefficient	1.91**	17.26**	-1.42*	-1.49*
Standard error	(0.61)	(2.92)	(0.65)	(0.74)
t-statistic	3.11	5.89	-2.16	-1.99

$R^2 = 0.26$; Adjusted $R^2 = 0.24$.

Coefficient	0.28	18.6**		
Standard error	(0.29)	(2.94)		
t-statistic	0.96	6.31		

$R^2 = 0.21$; Adjusted $R^2 = 0.20$.

Endogenous variable: USPOUT in category 5				
Number of observations: 31				
Coefficient	-0.67	40.96**	-0.29	-0.83
Standard error	(1.78)	(11.95)	(1.51)	(1.90)
t-statistic	-0.38	3.42	-0.19	-0.44

$R^2 = 0.34$; Adjusted $R^2 = 0.27$.

Coefficient	-1.38	42.41**		
Standard error	(0.83)	(10.94)		
t-statistic	-1.66	3.87		

$R^2 = 0.34$; Adjusted $R^2 = 0.31$.

Endogenous variable: USPOUT in category 6

Number of observations: 37

Coefficient	0.93	43.37**	-0.19	1.96
Standard error	(1.75)	(16.84)	(1.57)	(1.74)
t-statistic	0.53	2.57	-0.12	-1.13

$R^2 = 0.29$; Adjusted $R^2 = 0.23$.

Coefficient	-0.77	52.05**
Standard error	(0.94)	(14.74)
t-statistic	-0.82	3.53

$R^2 = 0.26$; Adjusted $R^2 = 0.24$.

Endogenous variable: USPOUT in category 7

Number of observations: 31

Coefficient	-0.71	33.53**	-0.28	0.50
Standard error	(0.68)	(6.79)	(0.70)	(0.67)
t-statistic	-1.03	4.93	-0.39	0.75

$R^2 = 0.48$; Adjusted $R^2 = 0.43$.

Coefficient	-0.50	33.34**
Standard error	(0.28)	(6.51)
t-statistic	-1.77	5.11

$R^2 = 0.47$; Adjusted $R^2 = 0.45$.

Endogenous variable: USPOUT in category 8

Number of observations: 26

Coefficient	4.46*	16.16	-6.21**	-1.65
Standard error	(2.13)	(8.56)	(2.31)	(2.45)
t-statistic	2.08	1.88	-2.68	-0.67

$R^2 = 0.46$; Adjusted $R^2 = 0.38$.

Coefficient	0.10	24.68**
Standard error	(0.96)	(8.28)
t-statistic	0.10	2.98

$R^2 = 0.27$; Adjusted $R^2 = 0.23$.

Note: * denotes significance at 5% level; ** denotes significance at 1% level.

Table 4

Effects of Mexico's Tariffs and Intra-Industry Trade on Mexico's Phase-Outs for 5-Digit Products in Category 8

Endogenous variable: MEPOUT in category 8

C	-5.53**	-3.19**	-3.03**	-2.92**
	(2.24)	(1.35)	(1.37)	(1.36)
	-2.46	-2.35	-2.20	-2.14
MET	44.79**	41.28**	42.89**	43.80**
	(9.06)	(8.69)	(8.77)	(8.65)
	4.94	4.75	4.88	5.06
MEIIT(US)	0.68	-0.10	1.05	
	(1.73)	(1.62)	(1.54)	
	0.39	-0.06	0.68	
MEIIT(ROW)	4.24**	4.23**		
	(2.08)	(2.09)		
	2.03	2.02		
MEML(US)	2.83			
	(2.19)			
	1.39			
R^2	0.23	0.22	0.19	0.19
Adjusted R^2	0.20	0.20	0.18	0.18

Number of observations: 110

Note: Numbers in parentheses are standard errors; t-statistics are listed below.

* denotes significance at 5% level; ** denotes significance at 1% level.

Table 5

Two-Stage Regressions of Mexico's Phase-Outs with the United States' Phase-Outs as Instrument

Endogenous variable: MEPOUT for common categories

C	2.84	3.63*	2.69	3.70*
	(2.25)	(2.11)	(2.22)	(2.18)
	1.25	1.71	1.21	1.69
MET	2.93	6.03	2.88	6.16
	(13.76)	(13.54)	(13.67)	(13.69)
	0.21	0.44	0.21	0.45
MEIIT(US)	1.99	1.59	1.81	1.63
	(1.77)	(1.74)	(1.73)	(1.77)
	1.12	0.91	1.04	0.92
USPOUTF	0.68**	0.69**	0.74**	0.67**
	(0.26)	(0.24)	(0.24)	(0.26)
	2.58	2.88	3.06	2.53
MEML(US)	3.06		2.65	
	(2.19)		(2.06)	
	1.39		1.28	
USXL(ME)	-6.13			-1.51
	(10.43)			(9.98)
	-0.58			-0.15
R^2	0.24	0.21	0.24	0.21
Adjusted R^2	0.17	0.17	0.18	0.15

Number of observations: 56

Note: Numbers in parentheses are standard errors; t-statistics are listed below.

* denotes significance at 5% level; ** denotes significance at 1% level.

Table 6

Two-Stage Regressions of the United States' Phase-Outs with Mexico's Phase-Outs as Instrument

Endogenous variable: USPOUT for common categories

C	- 0.91	-0.64	0.15	-1.36
	(2.04)	(1.75)	(1.80)	(2.07)
	-0.44	-0.37	0.08	-0.65
UST	8.23	11.88**	9.99*	11.05*
	(5.30)	(4.99)	(5.07)	(5.18)
	1.55	2.37	1.97	2.13
USIIT(ME)	-2.40*	-1.93*	-2.55*	-1.77
	(1.19)	(1.14)	(1.19)	(1.17)
	-2.00	-1.69	-2.13	-1.51
MEPOUTF	0.52*	0.37	0.39	0.44
	(0.29)	(0.27)	(0.26)	(0.29)
	1.80	1.38	1.48	1.52
USML(ME)	-5.20*		-4.39	
	(2.88)		(2.79)	
	-1.80		-1.57	
MEXL(US)	1.41			0.82
	(1.27)			(1.25)
	1.10			0.65
R^2	0.47	0.44	0.46	0.44
Adjusted R^2	0.42	0.40	0.42	0.40

Number of observations: 56

Note: Numbers in parentheses are standard errors; t-statistics are listed below.

* denotes significance at 5% level; ** denotes significance at 1% level.