The Political Economy of Used Automobile Protection in Latin America

Danilo Pelletiere and Kenneth A. Reinert

1. INTRODUCTION

In the wake of the debt crises of the early 1980s, Latin America embarked upon a process of trade liberalisation. The levels of both average tariffs and tariff dispersions fell throughout the region, as did the coverage of non-tariff barriers.[1] In the case of used automobiles, however, this liberalisation has not, in general, taken place. Many Latin American countries retain significant restrictions on the imports of used automobiles even as liberalisation has occurred in the new automobile sector. From a factor proportions standpoint, these restrictions are difficult to justify. For a number of reasons elucidated by Sen (1962), used machinery should be imported relatively intensively into labour-abundant countries such as those of Latin America. Further, this insight was specifically applied to the case of used automobiles by Grubel (1980). The key factor identified by Grubel is the lower repair costs of used automobiles in developing countries. Importantly, Grubel's analysis suggests that the bulk of the gains from trade in used automobiles would accrue to the developing countries.[2]

Explaining Latin American protection against imports of used automobiles requires an exploration of the political economy of the protective measures. In this paper, we make a preliminary attempt at this exploration. We begin in the following section by presenting the degree of used passenger automobile protection in 24 Latin American and Caribbean countries. This is followed by a

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[1] See Edwards (1998), Chapter 8 of Franko (1999) and Devlin and Ffrench-Davis (1999).

[2] To our knowledge, there has been no analysis of trade policies affecting used automobiles since Grubel's 1980 paper. On the case of used machinery, see Navaretti, Soloaga and Takacs (2000).

closer examination of the political economy of used automobile imports in the region. We then specify an ordered probit model that we use to explain the degree of protection. This model embeds the Latin American sample within a larger sample of developing, transitional and newly industrialised economies. Finally, we review the results of this econometric analysis and offer a set of preliminary conclusions.

In our econometric analysis, we cast our explanatory net fairly widely. However, the ordered probit results suggest a fairly *narrow* explanation of used automobile protection in Latin America and beyond. The most significant factor is the presence of domestic production of new automobiles, and the resulting pressure for protection is best transmitted to actual policy in 'coherent' democratic regimes. 'Incoherent' political regimes, in contrast, appear to respond to 'street' pressure for liberalised used automobile imports. Anecdotal evidence from Latin America, presented below, supports these results.

2. RESTRICTIONS ON USED AUTOMOBILE IMPORTS

Used automobile protection in Latin America comes in a number of varieties. These are summarised in Table 1 along with an ordinal measure of the degree of restriction for 24 Latin American countries in 1999.[3] Our ordinal measure of protection ranges from 0 to 3. A value of 0 indicates that there are minimal restrictions on imports of used automobiles with little differentiation between new and used protection. This is the case for seven relatively small countries in the region: Bahamas, Barbados, Belize, Bolivia, El Salvador, Guatemala and Panama.

Barbados and the Bahamas appear to have no additional restrictions on used automobiles. Bolivia requires a pre-shipment inspection for both used and new automobiles, and duties and fees are the same for both. The US Department of Commerce reports that the Asociación Boliviana Automotriz has pressured the government for a formal ban on used automobiles, but there is no indication that this pressure has been successful to date. Countries such as Belize, Panama, Guatemala and El Salvador use reference prices in the valuation of some used automobiles, using either domestically-generated and published market prices or the US 'Blue Book' values. However, no additional restrictions apply, and the extent of depreciation is not capped.[4]

[3] It should be noted that we treat only formal restrictions and barriers to trade here, not informal friction that may also complement the formal regime.

[4] While the use of reference prices is less than optimal from the perspective of trade theory, given the informal origins of many of the automobiles brought by migrants from the United States, such a system is often necessary. Also, such valuation techniques may not be discriminating against used automobiles – an automobile in poor shape might be overvalued, but a 'creampuff' is likely to be

TABLE 1
Used Automobile Protection in Latin America, 1999

Country	*Degree of Protection*[a]	*Comments*
Argentina	3	Imports prohibited (Mercosur)
Bahamas	0	No additional restrictions on imports
Barbados	0	No additional restrictions on imports
Belize	0	'Blue Book' valuation
Bolivia	0	No additional restrictions on imports
Brazil	3	Imports prohibited (Mercosur)
Chile	3	Imports prohibited
Colombia	3	Required import licences not being approved
Costa Rica	1	Taxes escalate with the age of the vehicle
Dominican Republic	1	Capped depreciation
Ecuador	3	Imports prohibited
El Salvador	0	'Blue Book' valuation
Guatemala	0	'Blue Book' valuation
Haiti	1	Additional 10 per cent import tariff
Honduras	1	Capped depreciation
Jamaica	2	Age limits applied
Mexico	3	Complete ban with some exceptions
Nicaragua	1	Capped depreciation
Panama	0	Domestic market or 'Blue Book' valuation
Paraguay	3	Imports prohibited (Mercosur)
Peru	2	Higher tariffs and age-related bans
Trinidad and Tobago	2	Cannot be fully assembled
Uruguay	3	Imports prohibited (Mercosur)
Venezuela	3	Imports prohibited

Notes:
[a] The discrimination index is as follows: 0 = no significant discrimination against used automobiles, 1 = prohibited if greater than 6 years old (or more), small additional duty or fee, duty depreciation cap, 2 = prohibited if great than (up to) 5 years old, substantial additional duty or fee, 3 = prohibited with no or few exceptions (e.g. only returning individuals).
Sources: US Department of Commerce Trade Information Center, US Department of State Country Commercial Guides, and World Trade Organisation Trade Policy Review reports.

A value of 1 in Table 1 indicates the existence of a clear and discriminatory restriction, however slight, to the import of used automobiles *vis-à-vis* new automobiles, and this is the case for five relatively small countries in the region: Costa Rica, Dominican Republic, Haiti, Honduras and Nicaragua. A few comments on these protective regimes are in order.

For its part, Haiti simply applies an additional 10 per cent tariff on automobiles older than the current model year. A more popular measure in this category, however, is capped depreciation. While some observers treat this as a general import *incentive* (e.g., Echeverria et al., 2000), to our minds, it is clearly a *restriction over the lifetime* of an automobile. The Dominican Republic (DR)

undervalued. By providing a transparent and easily understood valuation method, based on what are ultimately market-determined values, these regimes rank among the least restrictive in the region.

provides an excellent example of this. The DR assesses all imported new and used passenger vehicles (except pick-ups) with a flat 30 per cent tariff. Automobiles are assessed a further selective consumption tax based on the price of the automobile in US dollars. Used automobiles, therefore, do not face discrimination in the assessment of duties or import taxes. There is, however, discrimination in how the value basis for duties and taxes is calculated. While the invoice is accepted as the basis for new automobiles, the value of a used automobile is calculated using a depreciation schedule based on the price of a new automobile in the current year. The price is depreciated 5 per cent one year after the model year, and a further 5 per cent for each year up to four years. In years five, six and seven, an additional 10 per cent depreciation is calculated for each year. The customs value is therefore 50 per cent of the new automobile price in year seven. Importantly, no further depreciation is provided for past year seven.

There are a number of problems with this. First, more than with the reference prices discussed above, from a purely theoretical perspective, capped depreciation clearly obscures the true relationship between an individual automobile and its value, hindering the efficient working of the market. Second, the assessment is complicated by model changes and other factors over time, and together these factors are likely to create considerable friction at the border to make assessments and resolve disputes. More importantly, however, automobiles continue to depreciate after seven years of use. Thus, in the first seven years, depending on the individual characteristics of the automobile in question, it may be either overvalued or undervalued. Past year seven, however, it is increasingly the case that the value of the automobile will be *overstated* for customs purposes, and the importer will have to pay an increasingly high import tax and duty burden relative to the automobile's actual purchase price or market value. This is the rationale for the higher discrimination scores in Table 1.[5]

Among the other countries in the region that use this sort of restriction, the depreciation is often steeper in the first few years. In Costa Rica, it is capped at 70 per cent in year five.[6] In Honduras, it is 75 per cent in year five, while in Nicaragua the cap is set at 75 per cent in year six. Over the lifecycle of an

[5] In the DR, this system actually represents a liberalisation that occurred in 1994. Previously, duties and import taxes for used automobiles were calculated using new automobile values without depreciation. Between liberalisation in 1994 and 1999, the import of used automobiles into the DR increased over 200 per cent.

[6] Over the years, Costa Rica has alternated between using reference 'Blue Book' prices and depreciation schedules for calculating import duties and taxes, causing some confusion. In 1999, the temporal focus of the data in this study, depreciation schedules were being used according to authors who studied Costa Rica's regime explicitly (Echeverria et al., 2000). According to the Costa Rican consulate, the current policy is based on 'Blue Book' values and duty rates that *increase* from 59.33 per cent to 85.32 per cent over six years with the higher rate applying to all automobiles over six years.

automobile, capped depreciation discriminates against it for being older, but not necessarily simply for being used.

A value of 2 in Table 1 indicates a relatively high degree of protection against imports of used automobiles, and this measure characterises Jamaica, Peru and Trinidad and Tobago. Trinidad and Tobago requires that used automobiles be disassembled before importation. Engines are often removed from used vehicles before importation and shipped separately. Peru and Jamaica both have age delimited bans. Since 1996, Peru has banned automobiles over five years old and commercial vehicles over eight years old. Furthermore, imported used automobiles with fewer than 24 seats face a 'selective consumption tax' of 45 per cent, while similar new automobiles face a rate of only 20 per cent.[7] In 1998, Jamaica's motor vehicle policy was tightened to allow only licensed used automobile dealers to import automobiles no more than four years old and light commercial vehicles no more than five years old.

Finally, a value of 3 in Table 1 indicates that imports of used automobiles are prohibited. This measure characterises nine relatively large Latin American countries: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Uruguay and Venezuela. In the cases of Argentina, Brazil, Paraguay and Uruguay, this complete ban is also part of the Mercosur regional trade agreement.[8] In these countries, formal exceptions are often made for speciality equipment but rarely for automobiles. Chile, for example, allows the import of used ambulances, funeral, fire fighting, street cleaning, irrigation, towing, television, armoured and other used special-purpose vehicles but makes no explicit exception for automobiles of any kind. Uruguay explicitly allows sports or classic vehicles 20 years of age or older to be used for display or competition. In Mexico, import licences allow the import of used vehicles only so long as they are used to fulfil a business contract in the country. Also, those living within the border and free trade zones of Baja California, partial zones of Sonora, the state of Baja California del Sur and the border city of Cananea in Sonora are able to own imported used automobiles that are 4 to 15 years older than the current model year.[9]

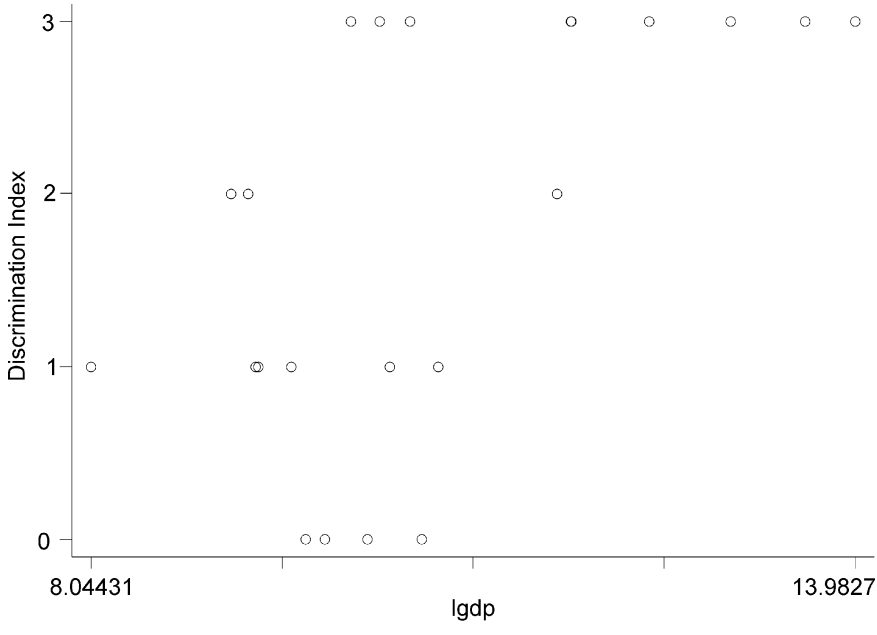
The picture presented in Table 1 is one in which the most significant economies in Latin America maintain outright prohibitions on imports of used automobiles even when characterised by 'free trade' or 'neoliberal' credentials

[7] Interestingly, if new or used automobiles are 'reconditioned' (converted from right to left-hand drive) in Peru's southern region, they are exempted from the selective consumption tax all together. This gives a clear advantage to Japanese makes, both used and new, and also is clearly intended to create or support a domestic conversion industry.

[8] Interestingly, the Andean Group (Bolivia, Colombia, Ecuador, Peru and Venezuela) has a similar provision, but there is greater policy diversity at the individual country level, an indication perhaps of the greater effectiveness of Mercosur (Foroutan, 1998).

[9] Formally they are not allowed to sell them outside these regions, though in reality many of these do get 'left' further south.

FIGURE 1
Use Automobile Protection and Size of Economy in Latin America



(e.g., Chile). In all of these cases, the restrictions on used automobiles are more severe than on new automobiles. As a preliminary matter, size of the economy appears to make a difference. Figure 1 plots the discrimination measure from Table 1 against the log of 1999 GDP. The positive relationship visible in this plot is present for a larger sample of 99 developing, transitional and newly industrialised countries as well, where the correlation coefficient between our ordinal protection measure and the log of 1999 GDP is approximately 0.60. That said, however, our view is that country size is just a proxy for more fundamental explanatory variables related to the domestic automobile market and the likelihood of production of new automobiles. We explore this and other possible explanations of used automobile protection in the following sections.

3. POLITICAL ECONOMY

This section examines the potential domestic and external motivations and rationales given for the existence of used automobile protection as expressed by Latin American governments. In Section 4, we specify a more formal model relying on this discussion as well as on the international economics and political economy literatures.

The rationales given by Latin American governments for discrimination against used automobile imports most often fall into two categories: (1) problems with valuation and protection against fraud and corruption, and (2) safety and environmental concern. In most cases, a combination of these arguments is used. For example, Brazil's representative to the World Trade Organisation (WTO) cited customs valuation concerns and the potential for fraud as well as 'negative impacts for the environment and public safety arising from the commercialization of used consumer goods in the domestic market' to explain his country's protections.[10] Brazil also pointed out that such policies were 'common to many Members'. Colombia is more specific, citing Article XX of GATT 1994, which allows general exceptions for nations to achieve 'non-economic' objectives including the health and safety of human, plant and animal life. During its accession process to the WTO, Ecuador stated repeatedly that it was in the process of reforming its policy toward used automobiles, establishing 'compatible criteria for the importation of used vehicles, based on the need to protect human health and safety and the environment'. It also, however, justified the existence of its current ban on these grounds.[11] As with Brazil, they argued that their own survey of WTO members found many similar measures in place.[12] Similarly, Honduras's representative stated before the WTO Committee on Customs Valuation that 'the import of used vehicles and used tires led to traffic accidents plus damage to the environment'.[13] In its communication with the WTO Committee on Customs Valuation, Jamaica cites among its reasons 'the use of fraudulent invoices', 'the creation of traffic jams', 'health problems due to pollution' and 'greater wear and tear on the roads'.[14]

It is not health and safety concerns but domestic industry interests that most international economists turn to when seeking a motivation for used automobile protection, and this is the perspective that we take up in the following sections of the paper. This possibility was recognised by Grubel (1980) who noted that imports of used automobiles used only for a short period of time can quickly undercut the sales of new automobiles in developing country markets.[15] Elsewhere, in the used equipment literature, similar motivations are given but

[10] WTO WT/TPR/m/21/add.1. This and all other WTO documents are referred to using their document dissemination codes.
[11] WTO WT/ACC/ECU/8.
[12] Furthermore, Ecuador makes the claim that, due to domestic consumer preferences, there is little demand for used automobiles in Ecuador, and therefore the current ban should not be considered trade distorting. The notion that trade in used automobiles is insignificant would seem to be an argument against restrictions not for them, and in any case the empirical evidence – from the millions of smuggled automobiles in Mexico to the increase in used automobile imports to the DR of over 215 per cent after only a partial liberalisation – suggests otherwise.
[13] WTO G/VAL/M/12.
[14] WTO G/VAL/W/60/add.1.
[15] It is not necessarily the case, however, that 'if a country wishes to have production for its new-automobile industry it cannot have free trade in used automobiles' (Grubel, 1980, p. 784), since the new automobiles could be exported.

TABLE 2
Number of Countries and Percentage by Restriction Score, Industry Presence and Emissions Standards for Latin American and Broader Samples

Country Type	*Restriction Index*									
	0		*1*		*2*		*3*		*Totals*	
	LA	*World*	*LA*	*World*	*LA*	*World*	*LA*	*World*	*LA*	*World*
Auto Producers	**0**	**2 (5%)**	**0**	**9 (21%)**	**1 (10%)**	**12 (28%)**	**9 (90%)**	**20 (47%)**	**10**	**43**
Standards	0	2 (9%)	0	5 (22%)	0	3 (13%)	5 (100%)	13 (57%)	5	23
No Standards	0	0	0	4 (20%)	1 (20%)	9 (45%)	4 (80%)	7 (35%)	5	20
Non-Producers	**4 (33%)**	**31 (55%)**	**6 (50%)**	**12 (21%)**	**2 (17%)**	**13 (23%)**	**0**	**0**	**12**	**56**
Standards	1 (50%)	1 (25%)	1 (50%)	1 (25%)	0	2 (50%)	0	0	2	4
No Standards	3 (30%)	30 (58%)	5 (50%)	11 (21%)	2 (20%)	11 (21%)	0	0	10	52
Total	**4 (18%)**	**36 (36%)**	**6 (27%)**	**21 (21%)**	**3 (14%)**	**22 (22%)**	**9 (41%)**	**20 (20%)**	**22**	**99**

Notes:
For comparisons to Table 1, please note the Bahamas and Barbados are not included here. The remaining 22 (out of 24) Latin American and Caribbean nations are also included in the worldwide sample of 99 countries. Percentages are row-percentages for Latin America and the worldwide sample respectively (i.e. the percentage of row totals listed in last two columns) and may not add to 100 per cent due to rounding. Emissions standards data are from Automotive Industry Online (http://www.ai-online.com/stats/emissions2001/index.asp) and personal communication with Michael P. Walsh.

not tested (e.g., Navaretti, Soloaga and Takacs, 2000). In Table 2, we can see that those countries with the capacity to produce automobiles appear to have higher restrictions, and that the percentage of Latin American producers with complete prohibitions (90 per cent) is quite a bit higher than in the entire sample of developing, transitional and emerging economies (47 per cent).

A simple industry protection hypothesis, however, might not be sufficient to completely explain the variation among countries in used automobile protection levels among Latin American countries. First, it is necessary to explain the discrimination against used automobiles in the trade regimes of these countries, not the import of automobiles in general. If the objective is to protect and encourage local industry, we would expect all competing automobile imports to face similar restrictions. While some countries in the region continue to have significant tariffs and restrictions on the import of new automobiles, every country in the region, with the apparent exception of Bolivia, Barbados and the Bahamas, had a more liberal import regime for new automobiles than used automobiles in 1999. Second, many countries that have never had the capacity to produce or assemble automobiles still discriminated against used automobile imports. Of the 24 countries in Table 1, only seven were producing automobiles in 1999, and only 10 even had the capacity to produce automobiles in that year, yet 16 countries had discriminatory restrictions on used automobile imports.

Environment, safety and fraud concerns might provide an explanation for the widespread discrimination against used automobiles. For example, it is clearly conceivable that environmental considerations such as emissions standards affect levels of protection against used automobiles. The direction of causation, however, is not clear. A country with few resources to pursue domestic environmental objectives could utilise a restriction on imports of used automobiles as a ‘poor man’s’ emissions standard. Alternatively, however, restrictions on imports of used automobiles could be complementary to domestic emissions standards, indicating general concern in a country for the environment. We had hoped to test if either of these possibilities is significant, but as indicated by Table 2, an explanatory variable for emissions standards proves to be highly collinear with automobile production and assembly capacity (and to a much lesser degree with GDP per capita). Only two nations without automobile production capacity in the Latin America sample, El Salvador and Costa Rica, and another two elsewhere, Singapore and Israel, have emissions standards of any type. Based on Table 2, it would seem that, even among producers, the presence of emissions standards does not appear to give any further insight into whether a country is likely to restrict used automobile imports. Therefore, it is difficult to discern any independent relationship between emissions standards and used automobile protection.

In general, however, there is cause for scepticism toward the idea that safety, environmental and similar concerns drive the restrictions on used goods. First,

the average age of the fleet in many of these countries is far below that of the age of imports, and a number of authors have argued that in Latin America (Kahn, 1994) and elsewhere (Agarwal, 2000; and Panagariya, 2000) allowing used automobiles is likely to *improve* the environmental and safety standards of the automobile fleets in these countries. Often the safety and environmental standards of new automobiles produced in countries such as India, Mexico and Brazil are below those of secondhand products from Japan, Europe or the United States.[16] Second, from a strictly regulatory perspective, environmental or safety regulations would seem a more efficient way to achieve these ends than import restrictions on used automobiles, at the same time that such restrictions would serve as a barrier to older automobiles without emissions technology (Agarwal, 2000).

There is another rationale that might be given for the pattern of restrictions based on two observations. First, domestically the automobile industry is represented by distributors as well as producers. Second, the automobile production that is occurring in developing and transitional countries is increasingly dominated by foreign direct investment (FDI) interests. The first of these factors might explain the wider distribution of discrimination and perhaps the more general relationship to market size, while both might explain why the liberalisation of used automobiles has not proceeded with that for new automobiles.[17] Used automobile protection is seen as something that both domestic and foreign automobile interests (including multinational firms, unions, domestic investors, intermediate parts suppliers and new automobile distributors) can agree upon, while protection from new automobile imports is not. For the new automobile production industry, with its multinational pursuit of production and distribution strategies, such a mixed approach to new and used automobiles is likely to be preferred to a free trade regime. For example, though Jamaica does not have the capacity to produce automobiles, in its communications with the WTO, it cites the injury done to new automobile 'sales' as a reason for requesting an exemption in its valuation agreement.[18]

This argument has been raised particularly within the context of the North American Free Trade Agreement (NAFTA) where trade in used automobiles between Mexico and its partner countries will not begin to be liberalised until 2009 and will not be fully liberalised until 2019, a full 25 years after the agreement was

[16] See also *The Economist* (2002) on this and the associated air pollution effects in Latin America.
[17] In theory, distributors should not *a priori* prefer new over used automobiles if they can make a profit from both. In practice, however, dealers that sell new automobiles are most often part of the distribution network of the multinational automobile producers and members of the lobbying organisations that these firms dominate. In many of the countries in the sample such as Mexico there are also 'independent' dealer associations, but with many small-business participants, they lack the financial and organisational resources of a few large players. Collective action is a problem, and they are generally politically weak.
[18] WTO G/VAL/W/W/60/add.1.

implemented.[19] In the same agreement, all duties and non-tariff barriers for new automobiles and other vehicles are due to be phased out by 2004, beginning immediately upon implementation of the agreement in 1994. One thing that makes this argument interesting is that the proportion of FDI in the South American automobile industry appears to be significantly higher than elsewhere in the world. The mean among the seven South American countries producing or assembling automobiles in 1999 was 77 per cent compared to 51 per cent for the remaining 27 producers in our larger sample outside of the Americas.[20] Among the significant regional producers (Mexico, Brazil and Argentina), the FDI proportion in the automobile assembly was 100, 91 and 79 per cent, respectively, in 1999.

There is a final element of the political economy of used automobile imports that should be noted. It is one of the few areas where popular protest in favour of liberalisation can be well documented. Indeed, in Latin America and worldwide, there appears to be significant popular pressure to liberalise the market for used automobiles. In Latin America, this is best illustrated in the case of Mexico, where the proximity of the US used automobile market makes used automobiles particularly attractive.

Mexican politicians have a long history of 'regularising' (granting amnesty to) smuggled, used automobiles before elections. In the most recent election cycle, however, the issue took a prominent position. The issue drew to a head in 1999 in a conflict between the Mexican government and the Peasant Democratic Union over regularising smuggled vehicles (*Financial Times*, 1999). Then Minister of Trade and Industrial Development, Herminio Blanco, is reported to have declared, 'The position of the government is clear: We will not regularise illegal vehicles'. However, protests outside of the finance ministry grew, even as exemptions were introduced for pick-up trucks at least 10 years old. The issue grew throughout 2000 and became a debating point in the presidential campaign. While the elected Fox administration and the Mexican motor industry opposed regularisation of smuggled used automobiles, they were defeated by the opposition-dominated legislature when it passed a bill allowing such regularisation. Popular opinion in Latin America appears to support the free import of used automobiles.

[19] See for example Vanderbush (1998, n. 8). In a US National Public Radio report on changes in policy in Mexico, Isabela Studer, then a NAFTA automobile industry expert, is quoted as saying, 'It was the companies, paradoxically, especially the US companies, who wanted to see protected the Mexican market because they had made huge investments in the Mexican auto industries in the mid-1990s and they wanted to see their profits protected' (NPR Morning Edition, 15 November, 2000).

[20] 1999 FDI percentages calculated by the authors based on firm-level FDI and weighted by firm-level production in that year. 1999 foreign investment data from *World Automotive Industry Trends Yearbook* and Automotive Industries Online.

4. AN ORDERED PROBIT ANALYSIS

To further investigate the political economy of used automobile protection in Latin America, we examine the degree of import protection for the larger sample of 99 developing and newly-industrialised countries. We do this using an ordered probit analysis.[21] In this section, we consider our choice of right-hand-side variables used to explain the degree of used automobile protection based on the discussion above and the relevant literature, given the existence of data and methodological constraints.

As suggested by Grubel (1980) and discussed above, political pressure to restrict imports of used automobiles can arise from the presence of *new* automobile production or assembly within the country in question. For this reason, our first explanatory variable is an indicator of the presence of new automobile production. Approximately two thirds of our larger sample consists of countries with no production of new automobiles, and 17 of the 24 Latin American countries reported in Table 1 also have no new automobile production. Therefore, we choose to capture the presence or absence of new automobile production and assembly in 1999 using a dummy variable.[22] Our hypothesis here is that this dummy variable will be positively associated with the ordinal protection measure. We employ two alternatives of the domestic production dummy variable to ensure some degree of robustness to the econometric results. First, we consider a dummy indicating *actual* production in 1999. Second, we consider a dummy indicating the installed *capacity* for production, irrespective of whether it was actually used for production in that year.[23]

The extent to which pressures for protection can be translated into actual protective policy appears to depend on the political regime, and these regimes vary widely in their characteristics across our large sample of developing, transitional and newly-industrialised countries. For this reason, we follow the approach of Mansfield, Milner and Rosendorff (2000) in their use of the Marshall and Jaggers (2001) 'Polity' data to explore the link between political regime and

[21] See McKelvey and Zavoina (1975) and Chapter 5 of Long and Freese (2001). Our sample size is indistinguishable from that considered to be sufficient for meaningful ordered probit analysis, namely 100.

[22] In future research, we intend to test the relative roles of domestically-owned versus foreign-owned new automobile production. As with emissions standards, multicollinearity concerns discourage such an attempt here. For one such investigation in the Latin American context, see Grether, de Melo and Olarreaga (2001).

[23] In the first instance, we utilise data from the Paris-based Organisation Internationale des Constructeurs d'Automobiles (OICA). In the second instance, we utilise data from the *World Automobile Industry Trends Yearbook*. Both production and capacity levels are highly collinear with country size, so country size itself cannot be entered into the probit analysis.

trade policy.[24] As discussed further in the following section, we consider the impact of three regime types: coherent democracy, coherent autocracy and a mixed or incoherent regime. Each of these is indicated as a dummy variable. Consistent with the assumptions of Mansfield, Milner and Rosendorf (2000), our hypothesis is that coherent democracies better channel pressures for protection into policy. This is based on the capacity of the popularly elected legislature to constrain a country's chief executive (an explicit element of the Polity data) and on the further consideration that economic interests will be able to exploit every legislator's desire to enact the level of trade barriers that will maximise his or her own political support.

Next, we consider the possibility that average income levels might also help determine the level of used automobile protection. At lower income levels, the politically-important upper-middle class might be dependent on used automobiles, whereas at higher income levels, this class might be in a position to afford new automobiles.[25] For this reason, we include the log of PPP-adjusted 1999 GDP per capita as a third explanatory variable. Our hypothesis here is that this variable will be positively associated with the ordinal protection measure.

Membership in the WTO subjects countries to scrutiny through the trade policy review mechanism and dispute settlement procedures. Further, used automobile protection is a subject in a number of WTO trade policy review reports and questioning by other members. For this reason, it is conceivable that WTO membership acts as a deterrent to used automobile protection or may encourage liberalisation of existing restrictions. We test for this possibility.

Lastly, we include a consideration of exchange rate regime. As suggested by Corden (1991), there is some tendency for countries pursuing a fixed exchange rate regime to increase protection levels to support an overvalued currency. For example, Yatawara and Ajona (2001) use pooled data to demonstrate that 'a fixed exchange rate regime increases the likelihood of tightening commercial policy, and reduces the likelihood of liberalisation' (pp. 3 and 16). In a number of cases, though not necessarily in Latin America at this time, balance of payments concerns are raised in justifying restrictions

[24] More information on this dataset can be found at www.bsos.umd.edu/cidcm/inscr/polity/. As described in Mansfield, Milner and Rosendorf (2000), a polity score of 6 or greater was used to denote a coherent democracy, while a score of −6 or less was used to indicate a coherent autocracy. Intermediate values characterise incoherent regimes. In Polity IV, used here, the polity score is based on five indications of the competitiveness of executive recruitment, constraints on the chief executive and openness of participation.

[25] As an example outside of Latin America, Nigerian civil servants have expressed dissatisfaction with restrictions on used automobile imports. In reacting to a proposed ban on used automobiles, one such individual stated that the government does not 'know what survival has become for many of us. If they have their ears to the ground, they can appreciate the huge loads of burden Nigerians are carrying' (*Tempo*, 2001).

on used automobile restrictions.[26] Given these considerations, we use a dummy variable to indicate the presence of a fixed exchange rate regime during any of the years 1995 to 1998.[27]

The above considerations constitute a preliminary analysis of the determinants of ordinal protection levels for used automobile imports. These variables are used as explanatory variables for ordinal protection measures such as those presented in Table 1 for our sample of 99 developing, transitional and newly-industrialised countries.[28] We next turn to the results of this ordered probit estimation.

5. RESULTS

Our ordered probit results for used automobile protection are presented in Table 3. Model 1 includes six explanatory variables: a dummy variable for new automobile production in 1999, dummy variables for both coherent democracy and coherent autocracy, log of PPP GDP per capita in 1999, a dummy for WTO membership in 1999 and a dummy for a fixed exchange rate regime in any of the years 1995 to 1998. The dependent variable is the level of protection against used automobile imports as described by the ordinal variable discussed in Section 2.

Looking at Table 3, we can see that all the coefficients with the exception of the exchange rate variable have the expected signs. As is also evident from this table, however, only two of the six explanatory variables are statistically significant, albeit quite highly so (one per cent level). These are new automobile production and coherent democracy. Autocratic regime, income per capita, WTO membership and exchange rate regime do not appear to be significant in explaining the presence of used automobile protection in developing, transitional and newly industrialised countries.

Our two statistically-significant variables, however, do provide an interesting insight into used automobile protection as first suggested by Grubel (1980). Restrictions on imports of used automobiles appear to be driven by political pressure from new automobile production interests (both domestically-owned and foreign-owned). Further, these interests find more effective expression in coherent democracies, but *not* in coherent autocracies. Mansfield, Milner and Rosendorf (2000) point out that because an autocracy has a limited number of political actors and there is no need to form a significant voting block in the legislature or run for re-election, an autocrat is assumed to have more leeway in how trade policy is formed.

[26] Ghana is a recent example. See *Africa News Service* (2000) and *Accra Mail* (2000).

[27] In terms of International Monetary Fund nomenclature, we consider a 'fixed' exchange rate as one pegged to the US dollar, the pound sterling, the French franc, other currencies, or currency baskets.

[28] Of the countries presented in Table 1, Barbados and Bermuda are excluded in this analysis due to data limitations.

TABLE 3
Ordered Probit Estimation Results for Used Automobile Protection

Explanatory Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
New automobile production, 1999	0.47**			
	(4.99)			
Capacity for new automobile production, 1999		0.57**	0.58**	0.59**
		(6.31)	(6.35)	(6.55)
Coherent democratic regime, 1999	0.30**	0.31**		
	(2.66)	(2.97)		
Coherent autocratic regime, 1999	0.10	0.11		
	(0.90)	(1.77)		
Mixed or incoherent regime, 1999			−0.24**	−0.19*
			(2.65)	(2.12)
Log of PPP GDP per capita, 1999	0.07	0.04	0.04	0.04
	(0.70)	(0.42)	(0.38)	(0.427)
WTO membership, 1999	−0.13	−0.08	−0.05	−0.12
	(0.42)	(0.98)	(0.62)	(1.29)
Fixed exchange rate, 1995 to 1998	−0.16	−0.14	−0.15	−0.10
	(0.71)	(1.61)	(1.70)	(1.154)
Latin America				0.20*
				(2.286)
Observations	99	99	99	99
Probability > Chi Square	0.0000	0.0000	0.0000	0.0000

Notes:
Fully standardised coefficients. Absolute value of *z* statistic in parentheses.
** Significant at the 0.01 level.
* Significant at the 0.05 level.

While it is sometimes hypothesised that this allows an autocrat to pursue freer trade as he is likely to benefit most politically and economically from the hypothesised benefits across the entire economy, an autocrat is also likely to depend on the support of a small group of powerful interests. Therefore, it is probable that the views and interests of this group will determine whether freer trade or protection is preferred generally and in any specific sector. In other words, *a priori*, there is no clear reason an autocrat would choose protection over free trade in the case of used automobiles.

Model 2 explores the robustness of the domestic production effect by substituting a domestic productive capacity variable for the actual 1999 production dummy. This is a worthwhile change of specification, since in a number of countries (e.g., Peru), productive capacity exists even though production in 1999 was zero. In other words, this may be a measure of the 'perception' of an automobile industry worthy of past or future protection by politicians. As is evident from Table 3, the production interest explanation and the role of democratic regime in supporting these interests remain valid and are even more highly significant. The lack of significance of the other explanatory variables remains.

One interesting result from the first two models is that the coefficient of the autocratic regime dummy is positive, as is the coefficient for democratic regime. Our next step is to maintain the capacity dummy, while replacing the democracy and autocracy dummies with a dummy for incoherent regimes. These regimes are considered to be less stable than coherent autocracies or democracies (Gurr, 1974; and Marshall and Jaggers, 2001). In Model 3, the capacity dummy remains statistically significant, and the incoherent regime variable is negative and statistically significant, thus suggesting that mixed or incoherent political regimes appear to be less likely to restrict the imports of used automobiles than are coherent regimes. This result has two interpretations. One interpretation is that new automobile producer interests find fewer means to convey their concerns in incoherent regimes. A second interpretation, however, is that these interests have the means, but the incoherent regimes respond more positively to 'street' pressure for the unrestricted imports of used automobiles. Anecdotally, news reports from many of these countries such as Russia, Albania, Ghana and Peru suggest there may be a basis for this second argument as the policy in these countries tends to sway with overt and recognised pressure from both sides.[29] As we saw in Section 3, however, the popular pressure for reforms in Mexico (a coherent democracy by the Polity measure) has also been intense, though the government has yet to completely capitulate. Thus, the coherence of the regime may be as important as whether it is democratic or autocratic.

A regional dummy for location in the Americas was added in the final model in Table 3 to see if there were any independent regional effects as suggested by the discussion in Section 3. The coefficient in Model 4 is both significant (at the five per cent level) and positive, while the other variables largely maintain their sign and significance. According to our results, being located in Latin America makes it more likely that a country will restrict used automobile imports as suggested earlier by Table 2.

The lack of significance for income, WTO membership and the exchange rate regime are perhaps in themselves interesting. The lack of significance for income is interesting because high-income countries are normally associated with different trade policies and approaches to international markets than low-income countries. This model provides no evidence of such an income effect. More interestingly, it does not appear that WTO membership has any significant influence on the policies of countries toward used automobiles. Since the stricter restrictions are clearly understood not to be GATT 1994 compliant, and have been the subject of trade policy reviews and accession agreements, the fact that there is no negative and significant association suggests that there is not significant opposition to these policies within the WTO. Indeed, there have been

[29] See Ochoa (1996), US Embassy in Belarus (1998), Interfax News Agency (2001) and ITAR/TASS News Agency (2002).

no enforcement actions on the subject to date, explained perhaps by Brazil's and Ecuador's suggestion that their restrictions were well within the norm of WTO members. The interpretation of the insignificance of the exchange rate is perhaps less straightforward. In Models 1 and 3, the exchange rate is nominally significant at the ten per cent level, but considerably less significant when the regional variable is included. This may suggest that the issue of balance of payments and the influence of exchange rate policy deserves further attention in the literature.

6. CONCLUSIONS

The free import of used automobiles has a number of potentially positive impacts. First, it offers low-income households access to automobile ownership that can be significantly less expensive than new automobile ownership. This has obvious welfare benefits. Second, lengthening the lifetimes of durable goods, and thereby postponing scrapping, international trade in used automobiles contributes to industrial ecology objectives (Van Wee, Moll and Dirks, 2000). Despite these considerations, however, imports of used automobiles are restricted or banned by many developing, transitional and newly-industrialised countries, including most large, Latin American economies. Indeed, it largely appears that used automobiles are an overlooked exception to the trend towards more liberalised trade in Latin America. As the econometric evidence presented in this paper makes clear, the explanation for these restrictive measures lies in the pressure brought to bear by new automobile manufacturers. Anecdotal evidence supports this result. Further, coherent democratic regimes contribute to this protective pressure. Finally, incoherent or mixed political regimes tend to contribute to free trade in used automobiles, perhaps because they cannot afford to offend 'street' pressure for access to used automobiles.

Further policy research on used automobile trade, as well as used goods trade in general, is warranted. One interesting question in the Latin American case is the posture of the forthcoming Free Trade Area of the Americas (FTAA) towards used automobile trade. If the NAFTA agreement is any guide, the FTAA might well cement protectionist traditions in the region. A second issue is the potential role of technical assistance in the areas of customs valuation, environmental standards and safety standards in making the liberalisation of used automobile trade possible in the Americas. From a broad welfare standpoint, it would be beneficial for FTAA and WTO deliberations to address this issue.

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