Trade in International Maritime Services: How Much Does Policy Matter?

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Abstract: Maritime transport costs significantly impede international trade. This paper examines why these costs are so high in some countries, and quantifies the importance of two explanations: restrictive trade policies and private anti-competitive practices. We find that both matter but the latter have a greater impact. Trade liberalization and the breakup of private carrier agreements would lead to an average reduction in liner transport prices by one-third and to cost savings of up to $3 billion on goods carried to the US alone. The policy implications are clear: not only is there a need for further liberalization of government policy, but also for strengthened international disciplines on restrictive business practices. We propose an approach to developing such disciplines in the current round of services negotiations at the WTO.

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Non-technical Summary

Maritime transport costs significantly impede international trade, and influence geographical patterns of production and income. Even though improvements in technology (notably containerization) have led to a significant decline in unit costs, there has not been a commensurate decline in maritime transport costs. We focus on two explanatory factors: restrictive trade policies of governments and private anti-competitive practices. The former include a variety of cargo reservation schemes, as well as the monopoly rights granted to providers of port and auxiliary services, such as cargo handling. The latter include primarily, but not exclusively, the rate fixing practices of maritime conferences, which enjoy an exemption from competition rules in major traders, like the United States and European Union.

Until recently, paucity of data has precluded a rigorous empirical examination of the role of these factors. An even greater barrier to empirical research has been the absence of comprehensive information on public policies and private practices. Both constraints were relaxed recently. We use a new database, created as part of the World Bank's Trade in Services Project, which contains information on both policy and private rate-fixing arrangements affecting maritime trade with the United States. The US Department of Transportation recently published data on waterborne transport charges, broken down for the first time by type of service—liner, bulk and tanker.

The econometric analysis presented in this paper confirms, first of all, the importance of all the standard determinants of transport prices, ranging from distance to technology. More interestingly, we find that both public policy and private practices exercise a significant influence on maritime transport prices. Of public restrictions, the cargo reservation policies which proliferated in the 1970s and 1980s seem to be largely ineffectual, but the restrictions on the provision of port services significantly raise prices. Most striking is the even more powerful effect that private anti-competitive practices have in keeping prices high. While trade liberalization would lead to an average reduction in transport prices by 9 percent and cost savings of up to $850 million, the breakup of private carrier agreements would cause prices to decline further by 25 percent and additional cost savings of up to $2 billion on goods carried to the US alone. The indirect benefits from the reduction in impediments to trade are also likely to be substantial.

This paper has clear implications for policy. The current round of WTO negotiations on maritime transport, under the General Agreement on Trade in Services (GATS), offers an opportunity not only to negotiate away trade restrictions, but also to develop pro-competitive rules. We propose that the weak GATS provision dealing with business practices be strengthened through the creation of two obligations. The first would require an end to the exemption of collusive agreements in the maritime sector from national competition law. The second would create a right for foreign consumers to challenge anti-competitive practices by shipping lines in the national courts of countries whose citizens own or control these shipping lines. The second obligation is necessary to deal with the possibility of inadequate enforcement by public agencies, and already has a precedent in the WTO rules on intellectual property and government procurement.

It may not be easy to create such rules. The previous GATS negotiations saw attempts to strengthen the relevant GATS provision thwarted by some of the countries that currently exempt maritime conferences from their anti-trust laws. However, the reluctance of many countries to make liberalization commitments under the GATS weakened the negotiating momentum. One way forward in the current round of services negotiations is for a coalition of countries to offer substantial trade liberalization conditional on the strengthening of competition rules. By targeting the twin maladies of maritime trade, this strategy could deliver considerable global benefits.

I. Introduction

Maritime transport costs have a profound influence on international trade. In some cases, their trade-inhibiting effect dwarfs that of customs duties.[1] More generally, economic research has highlighted the role of transport costs in determining geographical patterns of trade, production, industrial structure, and income.[2] Interesting new work even suggests that transport costs (as an element of trade costs) help explain a variety of puzzles in the field of international macroeconomics, such as the well-known home biases in consumption and investment, and the excessive volatility of exchange rates.[3] These observations are interesting from a policy point of view, however, only if something can be done about these costs. Are transport costs exogenously determined by technological developments or can they be influenced by policy?

It has been argued that maritime transport costs are kept high by restrictive trade policies, notably the cargo reservation schemes and monopoly rights granted to providers of port and auxiliary services.[4] It has also been argued that private anti-competitive practices, primarily but not exclusively of the maritime conferences, are responsible for keeping costs high.[5] However, most observers also argue that both public and private trade-restrictive policies are becoming less and less important.[6] Yet the available evidence suggests that transport costs, especially for liner trade, are not falling—despite dramatic improvements in technology, especially in the form of containerization (Hummel, 1999). Could it be that the disappearance of restrictions, like the demise of Mark Twain, has been prematurely announced?

This paper seeks to assess the relative importance of public and private trade-restrictive actions in explaining the price of maritime transport services. To measure these prices, we used newly published data on US waterborne transport from the United States Department of Transportation. A major advantage with this data was that it is broken down by type of service—liner, bulk and

[1] This has been demonstrated in several studies over the years. See Waters (1970), Finger and Yeats (1976), Sampson and Yeats (1977), Conlon (1982), and Amjadi and Yeats (1995).

[2] See, for instance, Venables and Limao (1999).

[3] See Obstfeld and Rogoff (2000).

[4] Bennathan (1989), Amjadi and Yeats (1995), Francois et al. (1996), and Hummel (1999).

[5] Francois and Wooton (1999), Hummel (1999).

[6] White (1988), Franck and Bunel (1992), WTO (1998).

tanker. It was more difficult to put together a comprehensive data set on public policies and private practices, a problem that has inhibited meaningful empirical research in this area. The few attempts to measure the restrictive impact of government policies have only limited coverage (McGuire et al., 2000) and there has not been, as far as we know, an attempt to use existing information on carrier agreements.[7] This paper draws on a database, created as part of the World Bank's services project, which contains information on both policy and private rate-fixing arrangements affecting maritime trade with the United States.

These data made it possible to carry out the econometric analysis presented in this paper. Our estimates confirm, first of all, the importance of all the standard determinants of transport prices, ranging from distance to technology. More interestingly, we find that both public policy and private practices continue to exercise a significant influence on maritime transport prices. And, somewhat surprisingly, private anti-competitive practices seem to have a stronger influence on prices than public restrictions.

What are the implications for policy? The negotiations on maritime transport were the only post-Uruguay round services negotiations that completely failed. This failure implied an unfortunate loss of political momentum for reform of domestic policies, and, less obviously, a lost opportunity to develop pro-competitive rules. To some extent, an effort was made to develop rules that would ensure non-discriminatory access to port services.[8] But these rules, concerned primarily with ensuring market access, did little to protect consumers from the anti-competitive practices of international cartels. An international initiative is needed, since these practices cannot be adequately addressed only through national competition policy—given the weak enforcement capacity of small states. A further reason for developing a first-best international response to these practices is to prevent recourse to an inferior national response: recall that the cargo-sharing schemes imposed by many developing countries were primarily a response to the

[7] Kang (2000) uses the policy indicators developed by McGuire et al. to estimate the impact of restrictive maritime policies on bilateral shipping margins, defined as the ratio of CIF import values to FOB export values. This approach suffers from well-known data problems (import and export values are not reported by the same statistical entities) and by the undesirable property that shipping margins vary with unit values of shipped goods. The empirical approach adopted in the present paper addresses both of these problems.

[8] In some respects, the approach to port services, which can be seen as "essential facilities" often controlled by "major" or monopoly suppliers, was analogous to the approach to basic telecommunications networks established in the pro-competitive regulatory principles.

perceived power of conferences. A possible way forward is to strengthen the provision of the General Agreement on Trade in Services (GATS), dealing with anticompetitive business practices to ensure that the gains from liberalization are not eroded by collusive pricing.

II. An overview of international maritime transport

Maritime transport services consist of three types of activities*: international maritime transport* (freight and passengers), i.e. the actual transportation service performed once the commodity is on board of a ship in a country until the moment when the vessel reaches the destination port of a different state;[9] *maritime auxiliary services*, i.e. any activities related to cargo manipulation in ports and on ships;[10] and *port services*, i.e. activities related solely to ship management in ports.[11] In this paper, we use data pertaining to restrictions affecting each segment of the market.

Due to differences in commodity types as well as to technological improvements in the shipping industry (most importantly, containerization), international maritime freight transport has developed specialized branches. Thus, *liner shipping*, meaning maritime transport of commodities by regular lines that publish in advance their calls in different harbors, is distinct from *tramp shipping*, which refers to transport performed irregularly, depending on momentary demand. Typically, liner carriers transport commodities with a higher degree of industrial processing using containers, while non-containerized raw materials (crude and refined oil, iron ore, grain, coal, bauxite), generically known as bulk, tend to be carried in tramp carriers.[12]

Tramp shipping is generally believed to be a fairly competitive market, mostly free from restrictions (WTO, 1998). In contrast, liner shipping has traditionally been subject both to

[9] International transport as defined by GATS, excludes cabotage, which refers to transportation of commodities between ports of the same country.

[10] In the GATS classification, maritime auxiliary services include maritime cargo handling, storage and warehousing, customs clearance, container station and depot, maritime agency, and maritime freight forwarding.

[11] In the GATS classification, port services include pilotage, towing and tug assistance, provisioning, fuelling and watering, garbage collecting and disposal, port captain's services, navigation aids, shore-based operational services, emergency repair facilities etc.

[12] Bulk traffic is typically divided into two categories: tanker (including crude oil and oil related products) and dry bulk (including iron ore, grain, coal, bauxite, phosphates). Note that the distinction between liner and bulk is not watertight. There exists a gray area which includes "break-bulk" (i.e. loose, non-containerized cargo transported using liners), general cargo (non-bulk commodities transported on liners without using containers), or containerized goods transported by tramp carriers.

private cartel-like arrangements and government restrictions. This paper concentrates on the liner segment of the market.

II.1 *Cargo reservation schemes*

Over time, the most important category of barriers applied to international maritime transport have been various cargo reservation schemes. These require that part of the cargo carried in trade with other states must be transported only by ships carrying the national-flag or interpreted as national by other criteria. These policies have typically been justified by either security (self-sufficiency in times of war) or economic (infant industry) concerns.

Cargo reservation takes various forms. It can be imposed unilaterally, if ships flying national flags are given the exclusive right to transport a specified share of the cargo passing through the country's ports. An alternative form involves cargo sharing with trade partner countries on the basis of bilateral or multilateral agreements. Thus, governments of two or more countries may decide to distribute cargo arising from their common trade, so that each national-flag fleet is granted a significant share. Ships belonging to third countries are allowed access to a small share, or, in some cases, no share at all.

A specific form of cargo reservation scheme is the UNCTAD Liner Code of Conduct or the 40-40-20 rule. This legal instrument, which was adopted in 1974 and entered into force in 1983 through its ratification by more than 70 countries, was meant to counteract the anti-competitive actions of liner conferences – which are cartel-like arrangements, described below. Since in many cases, access of outside shipping companies to a liner conference used to be restricted,[13] governments applying the Liner Code required these cartels to divide the cargo transported according to the following rule: 40% for ships belonging to the exporting country, 40% for ships belonging to the importing country, and 20% for ships belonging to other countries. These restrictions were meant to encourage the development of the shipping industry of developing countries.

[13] Except for the United States, which banned closed conferences. Cargo sharing and shipping conferences interacted over time, and in many cases authorities tailored their policies by taking into account the presence of carrier agreements. For example, Chile's cargo reservation mechanism, before the liberalization of the last decades, was designed such as to favor access of Chilean shipping companies into conferences and to restrain conference pressures on non-affiliated carriers (Bennathan, 19890).

It is generally believed that cargo reservation schemes have declined in significance, as more and more countries have phased them out. A further indication of the reduced importance of cargo sharing is the spread of "open registries" in many countries and the intensification of the "de-flagging" process, i.e. the transfer of ships to open registries to enable the ship owners to benefit from more efficient cost conditions.[14] The UNCTAD Liner Code, which was never applied on a large scale, is even less visible today, being applied mostly on routes between West Africa and Europe.[15] Nevertheless, the evidence we have obtained on policy suggests that countries ranging from Benin to India still have in place reservation policies that at least nominally restrict the scope for trade. We shall try and assess whether these policies matter.

II.2 *Price-fixing and other cooperative agreements*

Maritime carriers enter various types of agreements, which help them enjoy advantages that arise from cooperation on technical or commercial matters. Far from being a recent phenomenon, carriers' collusive habits are deeply rooted in the history of maritime transportation, and the first shipping conferences, covering the routes between UK and Calcutta, date back to 1875. By joining carrier agreements, shipping companies retain their juridical independence, but consent to common practices with the other members regarding pricing, traffic distribution and/or vessel capacity utilization. Examples of carrier agreements that were recognized in US regulation by the end of 1998 were conference agreements, cooperative working agreements, joint services agreements, pooling agreements, space charter agreements, and transshipment agreements.

Conference agreements are made between two or more ocean common carriers, and provide for the fixing of and adherence to uniform tariff rates, conditions of service, etc. among them.[16] Conferences are the most widespread type of rate-binding agreement. In the US, conferences are required by law not to restrict the entry and exit of any shipping company. Therefore, shipping conferences in the U.S. foreign trades are "open", while those covering other routes may be

[14] WTO (1998)

[15] In many countries, national shipping companies which had access to the reserved share but did not possess sufficient technical means for its transportation, used to sell their preferential right to cargo, a practice which were resulted eventually in a higher transport cost.

[16] Since conferences are a characteristic of liner shipping, they are also referred to as liner conferences.

closed to outside carriers.[17] Cooperative working agreements are defined in the US Shipping Act of 1984 as agreements which establish exclusive, preferential, or cooperative working relationships, but which do not fall precisely within the arrangements of any specifically defined agreement. Only some of the carrier agreements have a rate-binding clause, i.e. they declare that they engage in unique price setting for transport services provided by all members.

The high incidence of Conferences and other types of carrier agreements in maritime transport is due to the fact that the United States, the European Union and many other countries exempt shipping conferences from antitrust regulation—on the ground that they provide price stability and limit uncertainty regarding available tonnage.[18] The exemption from antitrust law is compounded by the Federal Maritime Commission's (FMC) role in helping police price-fixing arrangements. The 1984 US Shipping Act required all ocean carriers to file their rates with the FMC and publish their rate and schedule information. Secret discounting on filed rates was considered illegal. The FMC was authorized to ensure, through the imposition of fines, that the filed rates were actually charged.[19] However, conferences were required to allow for "independent action", meaning that members could post a rate different from the conference rate, provided they notified the conference in advance. While this provision created some flexibility, there was probably limited incentive to make publicly pre-announced price cuts which were likely to be matched by rivals.

In recent years, there has been an erosion in the power of conferences for two reasons. The first is the entrance in the market of strong and efficient outside shipping companies. Containerization and other technological progresses have made it possible for outsiders to supply the same services as the conferences at lower costs to consumers. A second development is the change regulations affecting international shipping, notably the United States' Ocean Shipping Reform Act (OSRA) of 1998, amending the Shipping Act on 1984, entered into force in May 1999. While preserving the antitrust immunity of the rate-setting conference system, OSRA allows for

[17] Recently, the European Commission claimed that steps taken by the Trans-Atlantic Conference Agreement (TACA) to comply with the "open" conference obligations of US law had constituted an abuse of their dominant position. It was alleged TACA offered inducements to certain shipping lines to enter the transatlantic trade as parties to the conference rather than as independents (Levitt, 2000).

[18] Francois and Wooton (1999).

[19] The rationale for these measures was ostensibly to protect small shippers from being disadvantaged by their inability to extract discounts from shipping companies.

the confidentiality of key terms (prices are included in this category) in contracts between shippers and carriers. This amendment is bound to create greater scope for price competition.

In response to these developments, two types of arrangements have begun to emerge. First, shipping lines now sometimes enter "discussion agreements". These allow conference and non-conference carriers serving a particular trade lane to discuss and share information about rates, costs, capacity, and service. The members may adopt voluntary rate, capacity, and service guidelines. Another recent tendency is for shipping companies and conferences to enter more wide-ranging organizations, such as consortia, alliances and global alliances. There are two interesting questions, only the first of which we address in this paper: how much do the traditional conferences still matter, and, even though these new arrangements are different from conferences from a juridical point of view, how different are they in actual behaviour?

Some recent events provide implicit evidence of the continued influence of collusive practices. While price-fixing by conferences is exempted from the scope of competition law, the extension of collusion to other areas has provoked the wrath of European competition authorities. In 1998, the European Commission (EC) fined the "Trans Atlantic Conference Agreement" (TACA) a sum of $314 million. The EC concluded that the conference, which controlled more than 60% of the traffic crossing the Atlantic at the time, set prices not only for the ocean leg, but for inland transportation by truck or train as well.[20] In May 2000, the EC imposed a penalty on fifteen liner shipping companies that were members of the "Far East Trade Tariff Charges and Surcharges Agreement" (FETTCSA)—an agreement abandoned in 1994 following EC action. The companies controlled, altogether, 80% of the traffic between northern Europe and the Far East. Again the target of action was not price-fixing per se, but the FETTCSA members' collective strategy of not offering discounts from published fares.[21] Finally, reports in the maritime press

[20] As reported by CNN, the event marked a new record for fines imposed by the European Commission on a cartel. This was the first time that any EU authority had assessed the compatibility of liner conference practices with EU competition law.

[21] See "FETTCSA : Commission fines shipping lines for an illegal price agreement on the Europe / Far East trade" (DN: IP/00/486), available from the European Commission's Web-Page.

also suggest that the limited reductions in transport costs, despite an increase in entry, are attributable to the legal privileges granted to shipping company agreements.[22]

II.3 *Restrictions on port and auxiliary services*

Both port and auxiliary services, particularly cargo handling, have tended to be monopolized. There are two aspects to the liberalization of these services. One is to allow foreign ships serving the domestic market non-discriminatory access to such services. The second is to allow foreign competition in the supply of the service itself. Some progress was made in the GATS in ensuring access to and use of port services, and some progress also in allowing foreign entry into the supply of auxiliary services.

Seaports are coordinated by public or, in fewer cases, private organizations called port authorities. Depending on the role assumed by these institutions, seaports can be classified into different categories. First, there are *landlord ports*, in which the port authority owns and manages port infrastructure, while private firms provide the rest of port and maritime auxiliary services; private firms are able to own superstructure, and operate assets pertaining to infrastructure by concession or licensing (ex. Buenos Aires, Argentina). Then there are *tool ports*, where the port authority owns both infra and superstructure, but private firms provide services by renting port assets, through concessions or licenses (ex. Antwerp, Belgium). Finally, in *service ports*, the port authority owns assets and supplies services by directly hiring employees. It has been argued that the landlord port is the most desirable category from the efficiency point of view, since it allows private enterprise and market forces to play a role in the supply of services, while preventing monopolization of essential assets by private firms.[23] With this broad benchmark in mind, we shall seek to capture some of the restrictions in place on port and auxiliary services.

[22] See, for example, "Obstacles lie ahead", *1999 Year-end Economic Review*, Bangkok Post, 1999.

[23] Trujillo and Nombela (1999).

III. Econometric Model

In this section, we develop an econometric model of liner transport prices for U.S. imports. Our analysis focuses on the ocean leg of the journey, because the data available (described below) do not directly capture the price of maritime auxiliary services and port services.[24] Nevertheless, policy restrictions affecting the latter type of services are also included in the analysis. This is because the restrictions are likely to have an adverse effect on the efficiency with which these services are supplied to liners and hence push up the costs of liner services—for example, because of longer waiting or unloading times.[25]

We do not formally derive our estimation equation from a fully specified structural model of competition or collusion among liner companies, but our approach can be best understood in terms of a simple constant-elasticity pricing formula. This pricing rule relates the U.S. dollar price of shipping product *k* from foreign port *i* (which is located in country *I*) to U.S. port *j* (which is located in U.S. customs district *J*), P_{ijk}, to the marginal cost for this service, $MC(i, j, k)$, and a markup term, $\Phi(I, J, k)$:

$$P_{ijk} = \Phi(I, J, k)\, MC(i, j, k). \tag{1}$$

The markup term is a function of the elasticity of demand perceived by liner companies serving the routes between country *I* and customs district *J* for product *k*. The pricing formula in (1) could, for example, be easily derived from a model of Cournot competition.

Taking natural logarithms of (1) yields:

$$p_{ijk} = \phi(I, J, k) + mc(i, j, k), \tag{2}$$

where lowercase letters now refer to natural logarithms of the respective variables.

[24] More precisely, the data reflect transport charges incurred in bringing the merchandise from alongside the carrier at the port of export and placing it alongside the carrier at the first US port of entry.

[25] The possibility of measurement error provides a more mundane reason for considering the impact of restrictions on the port and auxiliary services. Even though in principle the liner transport prices do not include the prices of these services, in practice such a clean truncation may not have been possible. See below.

Unfortunately, we do not have any direct information on costs of maritime transport operations. We therefore decompose the *marginal cost term*, $mc(i, j, k)$, as follows:

$$mc_{ijk} = \alpha_J + \lambda_k + \gamma T_{ijk} + \delta d_{iJ} + \eta q_{iJ} + \rho\, CR_I + \varphi^1 PS_I^1 + \varphi^2 PS_I^2 . \quad (3)$$

The first term, α_J, reflects an effect specific to each U.S. customs district. It captures differences across customs districts in port services and other auxiliary services, such as cargo handling, and has been included for the reasons noted above. The second variable, λ_k, is a product specific effect that captures differences in the physical properties of shipped goods, such as weight or size.

The third effect is a technological effect represented by the share of goods shipped in containers, T_{ijk}. Since containerization is likely to reduce the marginal cost of liner services, we expect the coefficient γ to have a negative sign. Our fourth cost variable is the shipping distance between foreign port *i* and the main port in customs district *J*, d_{iJ}. There is some evidence that the effect of shipping distance on transport cost becomes less important for longer distances (Hummels, 1999), and so we expect $0 < \delta < 1$. Fifth, we include an economies of scale effect represented by the total value of U.S. imports carried by liners (including non-textiles goods) between foreign port *i* and district *J*, q_{iJ}. If there are economies of scale with regard to traffic originating from the same port, we expect the coefficient η to be negative.

Finally, we add three policy indicators that capture restrictions maintained by *I*'s government affecting the supply of maritime services by foreigners. These restrictions are expected to lead to inefficiencies and the employment of outdated technology. Specifically, CR_I is a dummy that indicates whether exporting countries maintain any form of cargo reservation policy for the domestic shipping fleet affecting trade with the United States. PS_I^1 is an index that captures the existence of barriers to the foreign supply of cargo handling services, considered to be one of the most important auxiliary services. PS_I^2 is an index that measures the extent to which port services (e.g., pilotage, towing, navigation aids) are mandatory for incoming ships. The extent to which the use of such services is mandatory can be seen as reflecting the restrictiveness of the port service regime. As noted above, the costs of auxiliary and port services are not directly

captured by the maritime price data, but restrictions in both are relevant because they could push up the costs of liner services.

The *markup term,* $\phi(I,J,k)$, is assumed to depend on the following four variables:

$$\phi(I,J,k) = \mu_k + \tau\, CR_I + \psi^1\, A_{IJ}^1 + \psi^2\, A_{IJ}^2 . \qquad (4)$$

The first term, μ_k, reflects a product-specific effect that captures differences in transport demand elasticities across sectors. Note that the transport demand elasticities are derived from the final demand for product *k* in the United States. The second variable is again the variable that captures the existence of cargo reservation policies, which directly limit the extent of competition from foreign liners and thus may push up markups. The third and fourth effects, A_{IJ}^1 and A_{IJ}^2, are due to the existence of collusive agreements among liner companies on routes between country *I* and customs district *J*. We distinguish between two kinds of collusive agreements: price-fixing agreements (which include most conferences), and cooperative working agreements that do not have a binding rate setting authority. A single agreement typically covers routes between the ports of a foreign country and one or more US *coastal* districts that each consist of several *customs* districts. Since collusion between liner companies is likely to push up markups, we expect both coefficients ψ^1 and ψ^2 to show a positive sign. But conference and other price-fixing agreements are likely to be more powerful and to have a greater impact on transport prices than cooperative working agreements, i.e. we expect $\psi^1 > \psi^2$.

Substituting (4) and (3) into (2), and inserting an error term ε_{ijk}, we obtain:

$$p_{ijk} = \alpha_J + \beta_k + \gamma\, T_{ijk} + \delta\, d_{iJ} + \eta\, q_{iJ} + \psi^1\, A_{IJ}^1 + \psi^2 A_{IJ}^2 + \omega\, CR_I + \varphi^1\, PS_I^1 + \varphi^2\, PS_I^2 + \varepsilon_{ijk}, \qquad (5)$$

where $\beta_k \equiv (\lambda_k + \mu_k)$, $\omega \equiv (\rho + \tau)$ and we expect the coefficients on the three policy indicators, ω, φ^1 and φ^2, to have a positive sign.[26]

[26] Since we estimate both product fixed effects and customs district-specific effects, we need to drop one dummy variable (for one customs district) to avoid perfect colinearity among the explanatory variables.

We calculate the transport price, p_{ijk}, as the share of liner transport charges in import values for good *k* (at the 6 digit HS aggregation), multiplied by the unit value of imports. The U.S. Department of Transportation defines transport charges as all freight, insurance and other charges (excluding import duties) incurred in bringing the merchandise from alongside the carrier at the port of export and placing it alongside the carrier at the first US port of entry.[27] However, actual data reported may include charges for port services and inland transportation.[28] To reduce the potential bias resulting from differences in inland transportation costs, we exclude observations for which the origin of the import is different from the country of the port of shipment (e.g., landlocked countries) as well as all in-transit shipments.[29] Additional information on the construction and sources of all variables is provided in the data appendix.

Table 1 presents an overview of our estimation dataset. It covers all U.S. imports carried by liners from the 59 countries for which we could find information on maritime policies. Data refer to 1998. Liner imports account for around 65 percent of the total value of maritime imports, the remaining 35 percent being carried by tramp services.[30] About half of all U.S. imports (including all modes of transport—maritime, air and road) are carried by liners.

IV. Econometric Estimates

Estimation methodology

We begin with an ordinary least squares estimation of equation (5) over the entire data set. The error term ε_{ijk} is assumed to be independently distributed across exporting countries, but we

[27] If insurance costs are not closely correlated with transport charges, there is the possibility that our transport price variable is distorted. However, this should at least partially be remedied by the inclusion of product fixed effects, as differences in insurance costs are likely to be greatest across products.

[28] According to e-mail communication with an official from the U.S. Department of Transportation.

[29] Note that we do not exclude the trade originating in third countries and in-transit traffic when calculating total import values q_{iJ}.

[30] However, if we exclude U.S. oil imports (HS category 27) this share rises to 70% and liner transport becomes relatively more important for developing countries.

allow for interdependence among observations within each country.[31] The results are presented in Table 2.

While the coefficients mostly accord with our expectations, this empirical approach has a weakness: it ignores competition from alternative modes of transportation, expressly tramp maritime services (bulk and tanker), air transport and road transport (in the case of Canada and Mexico). For a number of product categories, it is likely that shippers face an explicit trade-off between the quality and cost of shipping a good by these alternative modes of transport. One approach to remedying this problem is to exclude all products for which competition from tramp maritime and air services is important. Since it is difficult to make a clean separation based on product characteristics alone, we adopt a method relying on the revealed importance of the alternative modes. Specifically, we exclude all observations where either the share of air transport as a percentage of total imports for shipping product *k* from country *I* to customs district *J* is positive, or the share of tramp services for a particular product *k* on all routes between country *I* and district *J* exceeds 15 percent. This reduces our sample size from 250,237 to 98,997 observations. The estimation results with the reduced sample are presented in the first column of Table 3.

Even though these results are in line with our expectations, it is possible that the exclusion of observations introduces a sample bias in our estimation. We therefore adopt a sample selection model, where we estimate the likelihood of a shipment having no competition from air and tramp services (as defined above) in two separate probit equations. The explanatory variables in these probit equations are (the natural logarithms of) the unit value and the unit weight of shipments and, in the case of air transport, a dummy variable that captures the existence of an open skies agreement between country *I* and the United States.[32] We estimate this model using the

[31] Instead of using a fixed effect specification as in equation (5), we also estimated a model with random product effects and maintaining the customs district fixed effects. This model yielded very similar estimation results, however. Moreover, the Hausman test rejected the null hypothesis that the individual effects are uncorrelated with our regressors in the model, supporting the use of fixed instead of random product effects.

[32] Since the unit weight is unavailable for selected shipments, the number of observations in the probit regression is somewhat smaller than in the full sample. In the case of tramp services, we also included country fixed effects, except for Benin for which the share of tramp services was below 15 percent for all observations. As in the liner pricing regression, we assume that the error term in each probit equation is independently distributed across exporting countries, but allow for interdependence among observations within each country.

Heckman two-step estimation procedure, assuming that the error terms in the two probit regressions are uncorrelated.[33] The results of the sample selection model are presented in the second to fourth columns of Table 3. In the 'air' probit equation, the estimated coefficient on unit value is significantly negative and the coefficient on unit weight is significantly positive, suggesting that valuable and light products are more likely to be sent by air. By contrast, in the 'tramp' probit equation, the coefficient on unit value is significantly positive and the coefficient on unit weight is significantly negative, indicating that tramp services are primarily used for heavy commodities with low unit values.[34]

In the final regression, we exclude Mexican and Canadian imports from our (already reduced) sample. For these two countries, road transport is an alternative mode of transport that may compete with maritime and air services. The estimation results with both the simple reduced sample and the sample selection approach are presented in Table 4, and are similar to those presented in Table 3.

Estimates of the Model Coefficients

The results from the different estimating methods reveal a reassuring consistency. The estimated coefficient on distance lies between 0.2 and 0.3, and is always significantly different from both zero and one. This confirms that transport cost increase with distance, but less than proportionately. As we expected, containerization, as measured by T_{ijk}, works to reduce liner prices, the estimated coefficient being statistically significant. The coefficient on the total value of U.S. imports carried by liners, q_{iJ}, takes a small and significant negative value. This suggests that there are economies of scales with regard to traffic originating from the same port, and that small countries or economies with small trading volumes may be relatively disadvantaged.

[33] See Maddala (1983), p. 282, for a description of this model. The assumption that the error terms in the two probit regressions are uncorrelated seems warranted. Decisions on whether to ship goods by air or by vessel are likely to be independent from decisions on the mode of maritime transport.

[34] It is worth pointing out that the explanatory power is higher in the 'air' probit regression than the 'tramp' probit regression. This may be due to the fact that liner and tramp services are not good substitutes and that the dominant mode of maritime transport depends mostly on product specific idiosyncrasies.

Consider now the impact of restrictions on trade in maritime services. The most striking finding is the strong positive impact on liner prices of the existence of rate-binding conference and other price-fixing agreements. The existence of cooperative working agreements has a weaker impact which is not always statistically significant. These result confirms our expectation that price-fixing agreements matter, and are more important than cooperative working agreements.

The evidence on policy restrictions is mixed. The coefficient of the variable capturing the existence of cargo reservation policies is close to zero and not statistically significant in any of the regressions. This result gives credence to the claim that cargo reservation policies no longer exert an important influence on liner trade. The estimated coefficient on the restrictiveness index of cargo handling services is the only one that has a counter-intuitive sign and is statistically significant in the first set of estimates (Table 2), but with other, arguably more reliable methods (Tables 3 and 4), it ceases to be significant. Recall that our dependent variable captures the cost of complementary services not explicitly but only to the extent that they feed through into the ocean-leg liner prices. In this respect, the index on the restrictivenness of port policy probably has a stronger claim to significance. And our estimates confirm this – the coefficient is consistently positive and statistically significant. This result also seems in line with current wisdom that the biggest policy hurdles to competitive provision of shipping services are now to be found at the ports rather than in the ocean leg.[35]

Estimates of the Consequences of Policy Changes

The estimated model can be used to calculate hypothetical reductions in transport prices due to both the break up of private carrier agreements and allowing greater competition in the provision of port services. For this purpose, we take the estimated coefficients from the sample selection model in Table 3, which we consider to be the most reliable estimates—both from an economic and econometric standpoint. The simulated price reductions are presented in Table 5. The breakup of conference and other price-setting agreements would lead to a more dramatic reduction in transport prices (34 percent) than the breakup of cooperative working agreements

[35] Of course savings from the liberalization of port services are likely to be greater when their full impact on aggregate maritime transport costs is taken into account.

(17 percent), whereas the liberalization of port services would cause a 37 percent drop in the price of liner services.

If we compute the trade-weighted percentage reductions in transport prices across all observations included in the sample selection model, the average total reduction would be 31.7 percent—made up of the cumulative effects of the break up of carrier agreements (25 per cent) and the liberalization of port services (9 percent). Total savings would sum to $656 million of transport charges. To get a sense of the overall magnitudes involved, we can project these savings to total U.S. imports carried by liners across all sectors and all routes. Our simulations reveal that the removal of public restrictions to liner trade would lead to savings of up to $850 million dollars and the breakup of private cartels would bring about additional savings of up to $2 billion. There are two important qualifications to these estimates. First, the pattern of restrictions in our limited sample may not be representative of the pattern of restrictions in trade of all products across all routes. Second, competition from other modes of transport for some products may limit the ability of carrier agreements to fix prices. But note that our simulation pertains to the savings arising from goods carried to the United States alone. The imports of the United States are only about a fifth of total world merchandise imports. So global gains from the elimination of all forms of restriction are likely to be substantially larger—particularly, if we take into account the indirect benefits from reducing impediments to trade.

V. Conclusion

Our estimates confirmed the general belief that cargo reservations policies which proliferated in the 1970s and 1980s are no longer an important barrier to trade. However, it emerged that both public policy, specifically in the form of restrictions on the provision of port services, and private practices continue to exercise a significant influence on maritime transport prices. And, interestingly, private anti-competitive practices have a stronger influence on prices than public restrictions.

These results challenge the notion that collusive carrier arrangements have lost their significance over the past decade. In defense, maritime industry sources frequently point to the fact that liner operators hardly break even and, on this basis, argue that there is little scope for price reductions. But it is well-known that protection and cartel-like behavior in the presence of fixed costs can

lead to inefficient entry and reduced profitability. The benefits of competition typically arise not only from increased allocative efficiency, i.e. pricing close to costs, but also from increased internal efficiency, i.e. a reduction in the costs. And there may be scope particularly for increasing this latter type of efficiency in the maritime industry.

Our results need to be qualified. First, we have focussed only on routes leading to the United States. While there is need for further research on other routes, the paucity of transport data in other countries is a major constraint. Secondly, the analysis here has focussed on solely the maritime leg of the transport journey and not examined distortions on the inland leg. There is evidence to suggest that the ocean leg accounts for a little more than a third of total door-to-door shipping charges.[36] Unfortunately, there is no comprehensive data on such charges. An ambitious future research programme would seek to disaggregate the components of door-to-door shipping charges and subject them to an analysis similar to that carried out in this paper.

Notwithstanding these qualifications, this paper already has certain implications for policy. The elimination of policy restrictions to trade in maritime transport services is likely to produce substantial gains. Many of these restrictions can be removed unilaterally, and the GATS can be used to bind the openness to reduce uncertainty and the possibility of policy reversals. But it is not enough to eliminate policy restrictions. There is also a need to deal with the private anti-competitive practices of international maritime cartels. Large states can probably tackle such practices unilaterally through their own competition law, despite the extra-territoriality problems involved. But small states with limited enforcement capacity are at a disadvantage, and the problem is accentuated by the fact that major trading countries have diluted the application of competition disciplines to the maritime sector. One positive development described earlier is the elimination by the United States of some of the provisions in its shipping law that helped to police price-fixing arrangements (see Section II.2). Whether collusion can be sustained in the absence of such facilitating devices is open to question. But we would argue that there is cause for concern as long as the basic rate-setting conference system continues to enjoy anti-trust immunity.

[36] OECD (1968) and Livingston (1986).

An international initiative would seem to be desirable. One approach would be to deal with the problem by creating sector-specific competition rules, as in the case of basic telecommunications. Or, if such anti-competitive practices also affect other services sectors, there may be a need to strengthen the general GATS disciplines. Currently, Article IX of the GATS, which deals with private anti-competitive practices, has little substance, providing only for an exchange of information and consultations. The current round of services negotiations offers an opportunity to strengthen this provision.

What form could such a strengthening take? We believe that the harmonization of either sector-specific or general competition rules is probably neither feasible nor necessary. Our proposal is much simpler and would involve the creation of two obligations. First, an end to the exemption of collusive agreements in the maritime sector from national competition law. Secondly, the creation of a right of foreign consumers to challenge anti-competitive practices by shipping lines in the national courts of countries whose citizens own or control these shipping lines. The second obligation is necessary to deal with a possible failure to enforce, and already has a precedent in the WTO rules on intellectual property and government procurement.[37]

Would it be feasible to create such rules? History does not provide cause for optimism. The pro-competitive rules in basic telecommunications, in line with most WTO rules, were designed to protect the market access rights of foreign suppliers, and their creation was supported by conventional political economy forces. To put in place rules that enable small countries to protect their consumers from foreign oligopolies will be far more difficult. In fact, the negotiating history of the GATS reveals successful opposition to the strengthening of Article IX from some of the countries that exempt maritime conferences from the scope of their anti-trust law. However, the reluctance of many developing countries to make liberalization commitments under the GATS did not strengthen their case. One strategy in the current round of services negotiations would be for a coalition of developing countries to put forward an offer of substantial liberalization conditional on the strengthening of Article IX. Such a strategy, by targeting the twin maladies of maritime trade, would provide substantial global benefits if successful.

[37] See Mattoo and Subramanian (1997) for an elaboration of this argument.

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Data Appendix

Data on *liner transport charges, import values, the percentage of containerized cargo, total imports carried by liners*, and *the market share of tramp services* are from the Waterborne Trade Database compiled by the U.S. Department of Transportation. The containerization variable is measured in terms of the weight of goods shipped. Tramp services are defined as bulk and tanker services. *Unit values, unit weights* and *the market share of air services* are computed from the U.S. Merchandise Imports Database published by the U.S. Department of Commerce. This source does not publish data separately by foreign and U.S. ports and we therefore have to use these variables at the more aggregate level, i.e. U.S. trading partners and U.S. customs districts.

Shipping distances were kindly provided from a private service called BP Marine. Some missing ports that are included in the Waterborne Transport Database had to be approximated by the closest neighboring port. Information on private carrier agreements between U.S. coastal districts and individual countries comes from the Federal Maritime Commission (1998). We excluded agreements signed before 1970 and also those with an unspecified regional coverage (e.g., the Far East), as the *de facto* coverage of such agreements may only relate to a few particular routes. The potential bias introduced by this exercise is likely to be small, as most routes covered by such regional agreements are also covered by country-specific agreements. As mentioned in the text, we construct two dummy variables to account for the presence of carrier agreements on maritime routes. The first refers to conferences and other price-fixing agreements and the second captures cooperative working agreements that do not have a binding rate authority. Data on the existence of opens skies agreements were taken from the website of the U.S. Department of Transportation.

The three indicators of trade restrictions are constructed based on information compiled from the following sources: WTO (1994), various WTO Trade Policy Reviews, GATS schedules of commitments (available at http://gats-info.eu.int/index.html), APEC Individual Action Plan submissions (available at http://www.apecsec.org), unpublished OECD documents, ECLAC (1999), EU Market Access Database (available at http://mkaccdb.eu.int), and various editions of the National Trade Estimate Report on Foreign Trade Barriers compiled by the United States

Trade Representative (available at http:/www.ustr.gov). In some cases, data from the above sources was kindly supplied by Greg McGuire. The *cargo reservation* dummy variable is assigned a value of one if a country has a bilateral agreement involving cargo sharing with the United States, if it is a signatory of the United Nations Code of Conduct for Liner Conferences and applies Article 2 of the Code in its trade with the United States, or if it sustains any kind of unilateral cargo reservation scheme, and zero otherwise. The *cargo handling services* index measures restrictions or special requirements imposed in a country to potential foreign suppliers of cargo handling services (foreign suppliers means, in this case, locally registered companies with foreign participation in their capital or branches of firms established in other countries). The index values are 0, if there is no restriction, 0.25, if minor restrictions exist, 0.5, if a joint venture condition is imposed, 0.75, if a very high national participation in the capital of the company is required, and 1, if foreign companies are not allowed to provide cargo handling services at all. The index on *mandatory port services* assigns a score of 0.125 for the existence of each of the following mandatory services: pilotage, towing, tug assistance, navigation aids, berthing, waste disposal, anchorage, and other mandatory services.

Table A1 lists the countries for which we could find information on the three policy indicators and that are included in our estimation set. It also shows the assigned values of these policy variables as well as the average value of the dummy capturing the two types of collusive carrier agreements (the latter lying between zero and one, if not all U.S. coastal districts are covered by a particular agreement).

Table 1: Overview of U.S. imports carried by liners in 1998

	No. of countries	Liner Transport Charges (million $)	Liner Import Value (million $)	Share of Liner Imports in Total Maritime Imports (%)		Share of Liner Imports in Total Imports (%)	
				Total	Non-oil[a]	Total	Non-oil[a]
Developing countries	37	3,940	82,400	64.88	74.82	48.76	53.10
Developed countries	22	3,080	104,500	64.20	66.24	50.73	51.23
Total	59	7,020	186,900	64.71	70.04	50.13	52.38

Source: U.S. Department of Transportation and U.S. Bureau of Census.

[a] Excluding HS category 27

Table 2: Full sample fixed effects model

Dependent variable: Liner transport prices	(1)
Distance	0.300** (4.96)
Containerization	-0.072** (-2.82)
Total liner imports	-0.016* (-1.98)
Price-fixing agreements	0.514** (5.76)
Cooperative agreements	0.042 (0.98)
Cargo reservation	-0.004 (-0.04)
Cargo handling services	-0.199* (-2.25)
Mandatory port services	0.377** (2.70)
Number of products	4,356
Number of observations	250,237
F-statistic	40.31**
Adj. R-square	0.775

Notes: Fixed effect regressions assume independently distributed error term across exporting countries, but allow for interdependence among observations within each country. t-statistics in parentheses. The F-statistic tests the joint significance of all independent variables (except the fixed effects). ** and * indicate statistical significance at the 1 and 5 percent level, respectively.

Table 3: Reduced sample and sample selection model

		Sample selection model		
	Liner transport prices	'Air' probit	'Tramp' probit	Liner transport prices
Distance	0.204** (4.60)			0.231** (5.42)
Containerization	-0.134** (-3.97)			-0.116** (-3.05)
Total liner imports	-0.017* (-2.35)			-0.023** (-3.30)
Price-fixing agreements	0.464** (5.82)			0.409** (5.45)
Cooperative agreements	0.124* (2.49)			0.190* (2.42)
Cargo reservation	-0.051 (-0.47)			-0.018 (-0.16)
Cargo handling services	-0.090 (-0.89)			-0.059 (-0.52)
Mandatory port services	0.320** (2.30)			0.454** (3.06)
Unit value		-0.385** (-18.44)	0.130** (13.12)	
Unit weight		0.448** (17.49)	-0.131** (-11.52)	
Open skies agreement		0.007 (0.07)		
Sample selection correction (air)				0.416** (3.34)
Sample selection correction (tramp)				-0.710* (-2.34)
Number of products	4,214			4,208
Number of observations	98,997	250,159	250,159	98,815
F-statistic	33.16**			38.56**
Adj. R-squ.	0.779			0.783
Pseudo R-squ.		0.130	0.054	

Notes: All regressions assume independently distributed error term across exporting countries, but allow for interdependence among observations within each country. The sample selection correction variables are computed following Heckman's two-step estimation procedure. t-statistics (for liner price regressions) and z-statistics (for probit regressions) in parentheses. ** and * indicate statistical significance at the 1 and 5 percent level, respectively. The F-statistic tests the joint significance of all independent variables (except the fixed effects).

Table 4: Reduced sample and sample model (without Mexico and Canada)

		Sample selection model		
	Liner transport prices	'Air' probit	'Tramp' probit	Liner transport prices
Distance	0.227** (4.24)			0.223** (5.07)
Containerization	-0.147** (-4.57)			-0.142** (-4.20)
Total liner imports	-0.015* (-2.09)			-0.022** (-3.14)
Price-fixing agreements	0.488** (5.72)			0.406** (5.06)
Cooperative agreements	0.116* (2.40)			0.179* (2.33)
Cargo reservation	-0.035 (-0.32)			-0.005 (-0.04)
Cargo handling services	-0.098 (-0.97)			-0.067 (-0.59)
Mandatory port services	0.313** (2.31)			0.428** (2.95)
Unit value		-0.402** (-27.28)	0.131** (12.84)	
Unit weight		0.469** (27.56)	-0.132** (-11.30)	
Open skies agreement		0.021 (0.22)		
Sample selection correction (air)				0.480** (4.10)
Sample selection correction (tramp)				-0.673* (-2.23)
Number of products	4,190			4,184
Number of observations	97,676	247,673	247,673	97,518
F-statistic	31.79**			43.97**
Adj. R-square	0.781			0.784
Pseudo R-square		0.136	0.054	

Notes: All regressions assume independently distributed error term across exporting countries, but allow for interdependence among observations within each country. The sample selection correction variables are computed following Heckman's two-step estimation procedure. t-statistics (for liner price regressions) and z-statistics (for probit regressions) in parentheses. ** and * indicate statistical significance at the 1 and 5 percent level, respectively. The F-statistic tests the joint significance of all independent variables (except the fixed effects).

Table 5: Simulated reductions in transport prices

	Breakup of co-operative working agreements	Breakup of price-fixing agreements	**Cumulative effect of the breakup of private carrier agreements**	Liberalization of port services	***Cumulative total effect***
1. Percentage reductions on restricted routes	17.32	33.56	**45.07**	36.51	***65.12***
2. Trade-weighted percentage reductions across all observations in our dataset	6.73	19.89	**25.04**	8.97	***31.70***
3. Total savings across all observations in our dataset:					
Absolute value (in million $)	132	395	**499**	208	***656***
As a percent of total transport charges /a	5.29	15.73	**20.05**	8.27	***26.37***
4. Projected total savings across all exporting countries and all sectors (in million $) /b	544.1	1618.4	**2063.0**	850.4	***2712.5***

Notes: These calculations are based on the estimated coefficients of the sample selection model in Table 3. Given the functional form of the regression equation, the individual effects do not sum to the total effect.

/a The share of total savings in total transport charges is equivalent to the unweighted average percentage reductions in transport prices.

/b The projected total savings in the last row apply the percentage savings in total transport charges estimated for the reduced sample to total liner transport charges for all U.S. imports.

Table A1: Indicators of Maritime Policy and Carrier Agreements

Country	Cargo reservation	Cargo handling services	Mandatory port services	Price-fixing carrier agreements	Cooperative working agreements
Argentina	0	0	0.13	0.00	1.00
Australia	0	0	0.13	1.00	1.00
Belgium	0	0	0.06	1.00	0.00
Benin	1	1	0.00	0.00	0.00
Brazil	1	0.5	0.75	0.00	1.00
Brunei	0	0	0.00	0.00	0.00
Canada	0	0	0.13	0.00	0.00
Chile	0	0	0.25	0.43	1.00
China	1	0.5	0.00	0.00	0.00
Colombia	0	0.5	0.13	0.50	1.00
Costa Rica	0	0	0.00	0.00	1.00
Cyprus	0	1	0.31	0.00	0.00
Denmark	0	0	0.06	1.00	0.00
Dominican Rep.	0	0.25	0.25	0.50	1.00
Ecuador	0	0	0.00	0.43	1.00
Egypt	1	0.75	0.75	0.00	0.00
El Salvador	0	0	0.00	0.00	1.00
Finland	0	0	0.25	0.00	0.00
France	0	0	0.38	1.00	0.00
Germany	0	0	0.38	1.00	0.00
Ghana	1	1	0.50	0.00	1.00
Greece	0	1	0.19	0.00	0.00
Hong Kong	0	0	0.25	0.00	0.00
Iceland	0	0	0.13	0.00	0.00
India	1	0	0.00	0.00	1.00
Indonesia	1	1	0.06	0.00	0.38
Ireland	0	0	0.13	1.00	0.00
Italy	0	0.25	0.50	0.38	0.00
Ivory Coast	0	0	0.25	0.00	1.00
Jamaica	0	0.5	0.00	0.00	0.60
Japan	0	0.75	0.13	0.89	1.00
Korea	0	0	0.38	0.00	0.00
Malaysia	0	0	0.25	0.00	0.38
Mauritius	0	1	0.38	0.00	0.00
Mexico	0	0.5	0.38	0.00	1.00
Morocco	1	0.5	0.13	0.00	0.00
Netherlands	0	0	0.50	1.00	0.00
New Zealand	0	0	0.38	1.00	1.00
Nicaragua	1	0	0.00	0.00	1.00
Nigeria	1	0	0.50	0.00	1.00
Papua New Guinea	0	0.5	0.00	0.00	0.00
Peru	0	0.5	0.00	0.50	1.00
Philippines	0	0.5	0.00	0.00	0.38
Poland	0	0.25	0.00	0.00	0.00
Portugal	0	0	0.13	1.00	0.00
Romania	0	0	0.63	0.00	0.00
Senegal	0	0	0.00	0.00	1.00
Singapore	0	1	0.38	0.00	0.33
Spain	0	0	0.06	1.00	0.00
Sweden	0	0	0.06	1.00	0.00
Taiwan	0	0.5	0.00	0.00	0.00

Thailand	0	0.5	0.63	0.00	0.38
Togo	1	0	0.00	0.00	0.00
Tunisia	0	0.5	0.13	0.00	0.00
Turkey	0	0	0.00	0.43	0.00
United Kingdom	0	0	0.31	1.00	0.00
Uruguay	0	0	0.00	0.00	1.00
Venezuela	1	0	0.00	1.00	1.00
Vietnam	0	0	0.00	0.00	0.50