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Monitoring Trade Costs in Southeast Asia

Patricia SOURDIN
School of Advanced International Studies (SAIS)
Johns Hopkins University

Richard POMFRET
School of Economics, University of Adelaide

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Abstract: This paper develops an Index of Trade Costs for ASEAN Member Countries, 1990-2007 based on the gap between cif and fob values of ASEAN exports to Australia. The cif/fob gap is a commonly used aggregate measure of trade costs, and Australia is a useful benchmark for ASEAN countries because it is a large trading partner whose major ports of entry are roughly equidistant from the ASEAN countries. The case for using this Index as a measure of trade costs is set out in the first section. The second section examines the raw data for the ASEAN countries. The third section reports econometric analysis of the cif/fob measure to better understand why trade costs vary across countries and to compare the ASEAN members' record to the global average during the period 1990-2007. The final section presents the two versions of the Index, discusses some reservations to using the cif/fob measure of trade costs, and suggests how the Index could be upgraded, maintained and extended.

***Keywords*:** trade costs; ASEAN.

***JEL Classification*:** F10, F13, O24.

1. Introduction

In East Asia reducing trade costs has been the subject of unilateral action, bilateral agreements, regional trading arrangements (ASEAN) and broader plurilateral agreements (APEC). Agreements on customs coordination and other trade facilitation measures have existed for decades between individual ASEAN members. The pace of such actions accelerated following a strong increase in intraregional trade during the 1990s and development of regional value chains, but it is difficult to establish whether trade facilitation measures have actually reduced trade costs, and if so to what extent. The need for quantification has been highlighted by commitments such as that by APEC members to reduce trade costs by five percent between 2001 and 2006. Without a benchmark and measure of trade costs such a commitment is operationally meaningless.

There have been projects documenting the progress in the ASEAN Single Window and other trade facilitation measures. A broader approach, pursued by John Wilson in a number of World Bank studies, breaks down trade costs into various components and estimates their impact on trade with a gravity model.[1] Such studies are useful, but their drawback as aggregate measures is that we cannot be sure that they are including all of the most important trade facilitation measures. Using the gravity model to measure the impact of trade facilitation is also fraught, because the results rely on the specification being appropriate and on dummy variables capturing what they are claimed to capture (and not some other relationship).

At the aggregate level an economically meaningful and operational measure of trade costs is the gap between free-on-board (fob) values when a good reaches the port of exit in the exporting country and import values which include cost, insurance and freight (cif). The cif/fob price gap is an economically meaningful measure of the wedge between the cost of producing and moving a good to the exporter's port and the price paid by the importer upon the good's arrival in the destination country. It is operationally useful because an increasing number of national statistical offices are

[1] Wilson, *et al* (2003) use four broad TF indicators (port efficiency, regulatory barriers, customs environment and e-business usage. Shepherd and Wilson(2008) apply the method to ASEAN.

collecting data on fob and cif values at disaggregated levels.[2] Thus, although there are many definitions of trade costs and of trade facilitation, the cif/fob gap is widely accepted as an operational definition, using universally acceptable concepts and approximating the cost of international as opposed to domestic trade. It includes transport and logistics costs which may be driven by technical improvements as well as by improved policies and procedures, but at the margin these drivers are practically inseparable. The cif/fob measure should be treated as a benchmark rather than a perfect way to capture the impact of trade facilitation commitments. It is complementary to narrower studies of, for example, time release at customs posts.

The next section presents data for the 1990-2007 cif/fob price gaps on Australian imports from Southeast Asian countries which can be used to provide an index of ASEAN countries' trade costs over time and relative to a benchmark (Singapore in 2007). Australian cif/fob measures are an impartial guide to the trade costs of each bilateral trading partner. The trade costs on the Australian port of entry may be assumed equal for each partner, and it can be assumed that measures to facilitate the trade of ASEAN member will not discriminate differentially against trade with Australia.[3]

Some of the cif/fob price gap is exogenously determined by geography and the commodity composition of trade (e.g. low value/weight commodities have higher ad valorem transport costs). The third section of the paper reports the results of econometric analysis to separate out the impact of various determinants of the cross-country variation in trade costs and to establish the importance of different influences over time. This analysis is the basis for an Adjusted Index of Trade Costs, controlling for shifts in the commodity composition of trade, which a more nuanced picture than the Unadjusted Index to changes in trade costs over time.

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[2] It is important that the cif and fob data are consistent. Mirror techniques, matching fob values reported by exporting countries to cif values reported by importing countries, are subject to large measurement errors. Consistent cif and fob data for imports into Australia, New Zealand, the USA and some Latin American countries are described by Hummels (2007)

[3] The cif/fob measure captures trade costs on countries' exports. Thus it fails to capture, for example, simplification of customs procedures that only apply to imports into ASEAN countries. However, as trade taxes have fallen, the difference between trade costs on imports and on exports has narrowed.

2. Trade Costs in East Asia

This section uses cif/fob data for 1990-2007 from an important third country market, Australia, to examine ASEAN countries' actual trade costs. The Australian Bureau of Statistics collects annual fob and cif values of Australia's imports at the HS 6-digit level of aggregation (that is, with about 5,000 commodity categories), as well as reporting weight for many commodity groups and separating sea, air and parcel post.[4] After deleting parcel post, re-imports into Australia, country categories such as "Unidentified", ships supplies and Australian forces overseas and the miscellaneous category (HS99), the usable dataset contains 2,097,969 observations, or between 103 and 133 thousand per year. The weighted average ad valorem trade costs (cif-fob)/fob for Asian trading partners in 1990-2007 are reported in the Appendix.

Overall, average trade costs associated with imports into Australia fell continuously and substantially from 8.0% in 1990 to 4.9% in 2007, despite the large increase in the price of oil after 1998 (Table 1). Average trade costs are higher than Australia's applied tariff rates; average tariff rates as reported in the WTO *2008 Trade Policy Review of Australia* were 4.5% in 2002 and 3.8% in 2006.

Trade costs relative to value are lower for air freight than for sea transport, because in general higher value goods are sent by air. The pattern of falling costs applies to both sea and air transport (Figure 1).[5]

Table 2 illustrates the distribution of trade costs by country in 2007. Although there is a wide range, over half of the 211 trading partners exporting to Australia in 2007 had average trade costs between 3.5% and 7.9%. The outliers with trade costs less than 2%

[4] This section is based on Pomfret and Sourdin (2008), where the data and estimation techniques are treated in greater detail.

[5] Globally, there are related long-term trends of falling weight/value ratios of traded manufactured goods (as lighter materials are used) and a shift from maritime to air transport. Shifts in mode of transport whereby the lightest goods formerly shipped by sea become the heaviest goods sent by air will, other things equal, increase the average ad valorem trade costs by both modes even though time-adjusted trade costs have improved. This aspect is not addressed here because there is no measure of time in the dataset. The simple shares of sea and air are also difficult to disentangle for 1990-2007 due to the commodity boom in the second half of the period which increased the value of bulk goods shipped by sea.

or over 20% of fob value tend to be minor trading partners.[6] The ten largest sources of imports all have trade costs between 2.9 and 6.3%, but there is no clear pattern of these countries' average trade costs being determined by distance, level of development or preferential trading arrangements.[7]

Table 1. Average Trade Costs, Australian Imports, 1990-2007

Year	All Imports	Air	Sea	ASEAN 5	ASEAN	ASEAN+3	Asian APEC	ASEAN/ Total
1990	0.080	0.066	0.085	0.097	0.103	0.098	0.089	1.29
1991	0.076	0.057	0.082	0.090	0.085	0.084	0.077	1.12
1992	0.075	0.062	0.079	0.080	0.078	0.077	0.071	1.04
1993	0.073	0.061	0.076	0.078	0.103	0.096	0.086	1.41
1994	0.070	0.058	0.074	0.069	0.083	0.080	0.074	1.19
1995	0.067	0.055	0.071	0.062	0.075	0.073	0.068	1.12
1996	0.066	0.053	0.070	0.061	0.077	0.075	0.070	1.17
1997	0.066	0.054	0.070	0.057	0.063	0.063	0.060	0.95
1998	0.064	0.047	0.071	0.056	0.063	0.063	0.060	0.99
1999	0.056	0.041	0.062	0.050	0.060	0.060	0.057	1.07
2000	0.057	0.040	0.063	0.055	0.064	0.063	0.058	1.12
2001	0.057	0.040	0.063	0.053	0.070	0.066	0.061	1.22
2002	0.051	0.038	0.054	0.044	0.046	0.046	0.043	0.90
2003	0.051	0.037	0.056	0.048	0.053	0.053	0.049	1.04
2004	0.055	0.040	0.061	0.057	0.071	0.068	0.062	1.29
2005	0.055	0.039	0.060	0.059	0.052	0.053	0.050	0.95
2006	0.051	0.037	0.055	0.051	0.043	0.045	0.043	0.84
2007	0.049	0.036	0.053	0.046	0.039	0.042	0.041	0.79

Notes: The means in the first three columns are import-weighted (ad valorem trade costs = $\Sigma cif/\Sigma fob - 1$) and hence biased downwards because goods or trading partners with higher trade costs will be under-represented. The ASEAN averages are unweighted means for the original five members, the ten current members, and the current members plus China, Japan and South Korea. Asian APEC includes ASEAN+3, Hong Kong, Taiwan and Papua New Guinea. The final column is the ASEAN average divided by the world average.

[6] Among ASEAN countries the highest values are for Indonesia 5.5% and Philippines 5.4%. The outliers are the smallest economies, Laos 1.6%, Cambodia 2.6% and Brunei 3.2%. The volatility of the Lao measures, with a high of 43.2% in 1993, affects the unweighted averages reported in Table 1, but because they trade in few commodity lines the small economies have little impact on the econometric results reported in the next section.

[7] Apart from trade with New Zealand and other Pacific islands, no significant preferential trading arrangements influence Australia's trade.

Figure 1. Average Trade Costs, Australian Imports, 1990-2007

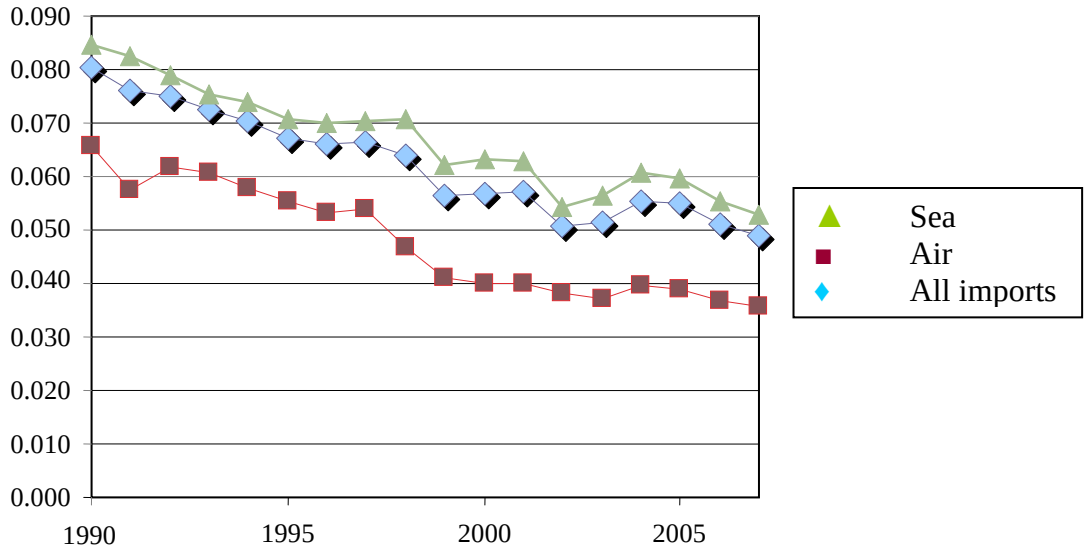


Table 2. Average Trade Costs by Country 2007 (per Cent)

Ad valorem trade costs	Number of observations
<2	13
2-3.9	31
4-5.9	57
6-7.9	43
8-9.9	23
10-11.9	17
12-13.9	8
14-15.9	4
16-17.9	3
18-19.9	3
20 or more	9
Total	**211**

The simple average ad valorem trade costs for the ten ASEAN countries declined from 10.3% in 1990 to 3.9% in 2007, which is a much more pronounced drop than in the global average (Table 1). The unweighted ASEAN average is, however, heavily

influenced by some outlier observations, especially for Laos.[8] A more robust indicator of Southeast Asian countries' trade costs is the average for the five original ASEAN members (Indonesia, Malaysia, Philippines, Singapore and Thailand) which fell by over fifty percent between 1990 and 2007. A similar picture applies to the Asian APEC members.[9]

The weighted ad valorem trade costs for individual Asian countries are provided in the Appendix. By any aggregate measure, East Asian trade costs appear to have fallen faster than the global average, and most of the relative improvement occurred before 2002. The country variations for 2007 are small, with all of the ASEAN+3 countries having trade costs below the median value for all countries in the dataset. China has the highest trade costs (6.3%) followed by Indonesia (5.5%), reinforcing the point that trade costs depend on factors other than distance or the size of bilateral trade. The lowest trade costs among the ASEAN+3 in 2007 were for Laos (1.6%) and Cambodia (2.5%), suggesting that commodity-specific factors are important.

Figure 2 shows the ad valorem trade costs of individual ASEAN countries' exports to Australia from 1990 to 2007. For the original five ASEAN members there is a substantial decline in trade costs during the 1990s and convergence towards the lowest-cost country, Singapore, although in the 2000s there is no clear trend. For the other five ASEAN members it is harder to identify a pattern; the values for Laos and to a lesser extent Brunei and Cambodia are volatile, reflecting the small number of trade items. For the other two new members, Myanmar and Vietnam, trade costs fell significantly after they joined ASEAN in the late 1990s. For seven of the ASEAN countries average trade costs converged from above to a range of 4-5.5% in 2007, with Brunei, Cambodia and Laos below this level.

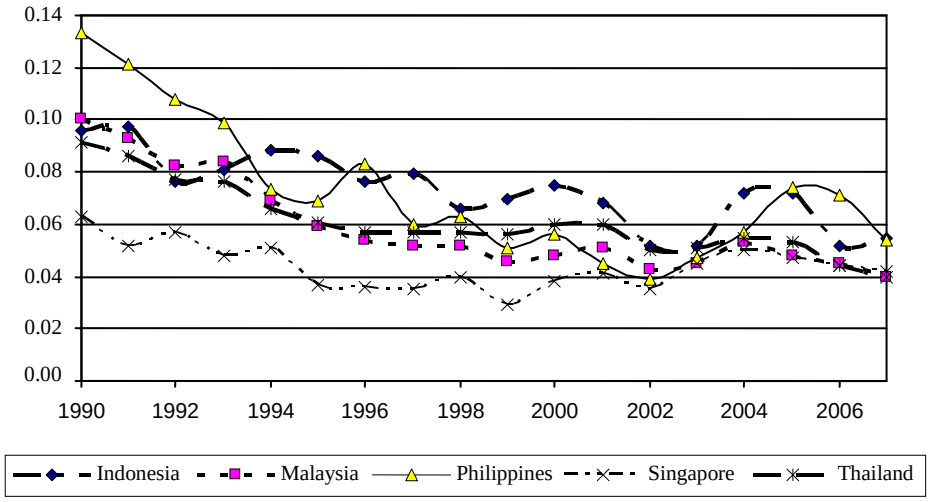
The data described in this section form the basis for the Index of Trade Costs for ASEAN Member Countries, which will be benchmarked to trade costs for Singapore.

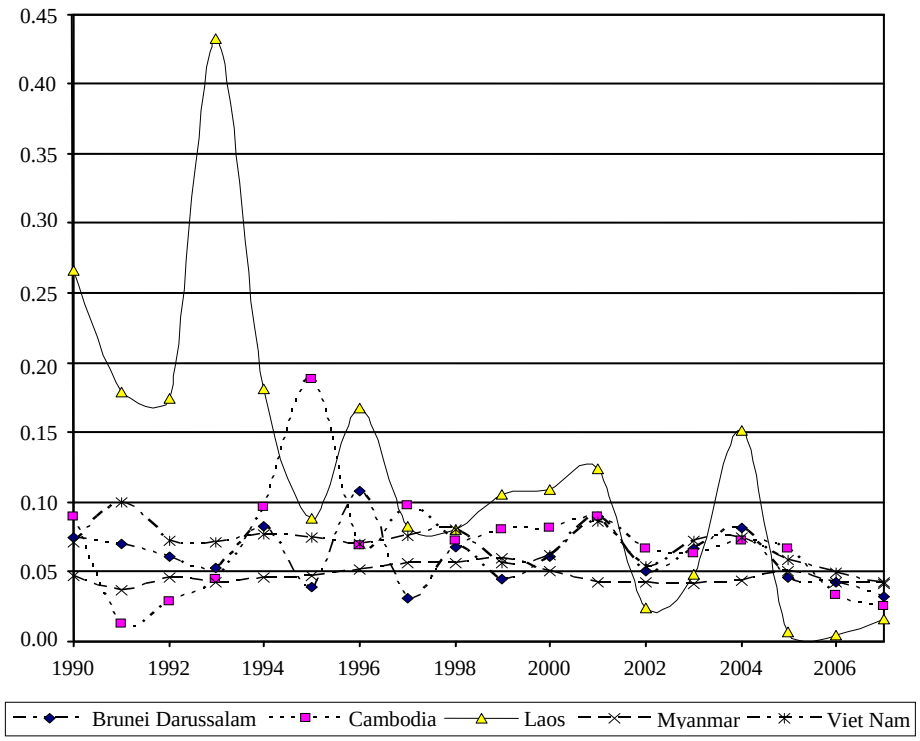
[8] The extreme case of ad valorem trade costs for Laos being over 43% in 1993 explains the local peak in the ASEAN average, despite the five original ASEAN members having slightly lower trade costs in 1993 than in 1992.

[9] The Asian APEC column in Table 1 includes ASEAN+3, Hong Kong, Papua New Guinea and Taiwan. New Zealand is omitted because the Closer Economic Relations Agreement involves deeper integration with Australia. Russia, whose ad valorem trade costs are higher than any of the countries covered and are volatile, is omitted because it is unclear how actively Russia has embraced the APEC trade facilitation targets.

Before constructing the Index, the next section examines in greater depth some characteristics of the data, in particular the importance of mode of transport (sea or air) and of commodity composition and other determinants of relative trade costs.

Figure 2. Average Trade Costs, ASEAN Member Countries, 1990-2007





Source: Appendix Table 3

3. Why Do Trade Costs Vary and is the Pattern Different for ASEAN?

Trade costs depend on exogenous factors such as distance or landlockedness and on commodity characteristics that are only indirectly policy-related (such as bulk/value ratios or perishability). In this section we first report estimates of trade cost functions with all of Australia's trading partners in terms of exogenous country characteristics such as distance and of commodity characteristics such as bulk. With these estimated relationships as the benchmark, we then examine ASEAN member countries' trade costs in greater detail.

To control for exogenous country and commodity characteristics, we estimate trade cost functions in terms of equation (1):

$$(1) \qquad ((\text{cif-fob})/\text{fob})_i^k = f\,(d_{i,A},\ B_i,\ VW_i^k,\ M_i,\ \text{institutions}_i)$$

in which ad valorem trade costs $((\text{cif-fob})/\text{fob})_i^k$ for commodity k from country i depend on the distance between the county and Australia ($d_{i,A}$), a dummy for landlocked countries to proxy added border crossings (B_i), the value/weight ratio (VW_i^k = cif value divided by weight in kilograms), total imports into Australia from the exporting-country (M_i) to capture scale effects, and a measure of institutional quality in the exporting country.

Table 3 reports regression results using 2006 data.[10] Distance and the value/weight ratio have the expected signs and are statistically significant at the one percent level. Bilateral trade (M_i) and the corruption index both have the expected negative relation to ad valorem costs. The mode of transport, captured by a dummy variable of 1 for sea and 0 for air in the first column of Table 3, indicates that sea transport is less expensive

[10] The first part of this section uses cross-country data for a single year because we are interested in the determinants' of trade costs at a point in time (and 2006 is the most recent year with complete information for the explanatory variables), rather than changes in trade costs over time. The institutions variable, Transparency International Corruption Perceptions Index, is on a scale from 0-10, with a higher number indicating less corruption; this Index is correlated with other commonly used indices and has the advantage of wide coverage with 163 countries included in 2006. Distance (great circle distance between each country's largest city and Sydney) and landlocked dummies are from the CEPII (Centre d'Etudes Prospectives et d'Informations Internationales, Paris) database.

than air transport, and this result is probably related to the negative and also significant coefficient on the value/weight ratio.

Table 3. Baseline Regressions, 2006: Dependent Variable Log (Cif-fob)/fob)$_i^k$

	Full sample	Air only	Sea only
Log distance	.297 (.0126)	.182 (.0258)	.349 (.0136)
landlocked	-.174 (.0272)	-.269 (.0566)	-.199 (.0292)
Log value/weight	-.310 (.00359)	-.250 (.006)	-.381 (.00465)
Log total imports	-.0238 (.00304)	-.0189 (.0075)	-.379 (.00457)
TI corruption index	-.0167 (.00260)	-.0586 (.0060)	.00339 (.00264)
sea	-1.467 (.0150)		
constant	-2.978 (.142)	-2.835 (.289)	-4.723 (.152)
Number of observations	18,682	5,716	12,966
F	F(6, 18675) = 1992.89	F(5, 5710) = 389.64	F(5, 12960) = 1592.34
R-squared	0.390	0.254	0.381
Root MSE	.800	.996	.681

Source: Pomfret and Sourdin (2008).
Note: Standard errors are in parentheses.

To examine whether the determinants of trade costs differ according to the mode of transport, the last two columns of Table 3 split the sample into goods arriving by sea and goods arriving by air. Distance and weight have the expected signs with both modes and the coefficients are larger for imports arriving by sea than for air freight. The sum of imports from the trading partner (M_i) has the expected negative sign for both modes, significant at the 1% level for sea and at the 10% level for air, suggesting that scale may be important, especially for sea transport. Finally, the institutional quality variable has the expected negative sign for air transport (as in the full sample), but for imports arriving by sea the coefficient is zero.

Table 4. Regression by HS 2-digit Industry, 2006

HS 2-digit category	Sea						Air					
	$ld_{i,A}$	B_i	lVW_i^k	$l\Sigma M_i$	TI	const	$ld_{i,A}$	B_i	lVW_i^k	$l\Sigma M_i$	TI	const
03	.141**	-.075	-.401***	-.011	-.003	-3.185***	.393***	.573	-.388***	-.056	-.024	-2.534
04	.535***	-.484**	-.183*	-.004	-.000	-7.219***	-.620	drop	-.160	.557**	-.441	-5.229
05	.268	1.069	-.401***	-.014	.079*	-4.389*	.243	-.746	-.266**	-.239	-.061	2.236
07	.240***	.228	-.229***	-.015	.039**	-4.139***	-.254	-1.057	.128	-.061	-.003	2.056
08	.315***	-.577*	-.419***	-.035**	.035**	-4.353***	-.100	drop	.011	.111	-.093	-2.461
09	.432***	-.236*	-.173***	-.004	-.002	-6.386***	-.048	1.049*	-.167	-.006	-.079	-.334
10	.518**	.501	-.314***	.065	.090*	-8.753***						
11	.578***	-.254	-.413***	-.036	.067***	-6.935***						
12	.402***	-.026	-.323***	-.013	-.068	-5.579***	.356**	.246	-.455***	-.031	-.048	-2.905
13	.255	-.654*	-.055	-.063	.050	-4.330**	.848***	.003	-.715***	.033	.007	-7.817***
14	-.635*	drop	-.404***	-.035	-.120***	5.235						
15	.221**	-.123	-.254***	-.036**	.027	-3.782***	.434*	-.464	-.154	.036	-.079	-5.496*
16	.194**	.091	-.309***	.021	.014	-4.649***	.509**	-.125	-.471***	-.126	.080	-2.326
17	.541***	.197	-.263***	.002	-.027	-7.018***	.249	.414	-.266*	-.189	.192*	-.277
18	.654***	-.275	-.164**	.071**	-.052*	-9.738***	.495**	-.115	.323***	-.004	-.098*	-6.154***
19	.446***	.039	-.382***	.002	-.030**	-5. 819***	-.428	1.507	.411	.149	-.146	-1.500
20	.354***	-.209**	-.274***	-.061***	-.006	-4.133***	-.211	1.070*	.100	.071	-.003	-1.646
21	.436***	-.128	-.351***	-.061***	-.016	-4.807***	.314*	.259	-.087	.140***	-.039	-7.095***
23	.157	-.077	-.570***	-.011	.051**	-3.845***						
24	.336	-.961**	-.088	-.137**	.039	-3.189	.369	-.552	-.539***	-.082	-.034	-.860
25	.215**	-.590	-.390***	-.022	-.038	-3.276***	.471	-.865	.075	-.119	.075	-4.486
26	.330	drop	-.538***	.092*	.005	-7.300***	-.663*	.574	.105	-.127	-.211**	6.989
27	.239*	.446	-.305***	.047	-.018	-5.274***	-.426	-.612	-.027	-.008	.018	2.353
28	.517***	.048	-.416***	.015	.050***	-7.521***	.123	-.246	-.144***	.001	.023	-3.020*
29	.501***	-.548***	-.367***	.001	.026***	-7.265***	.172*	-.107	-.310***	.068***	-.045**	-3.999***
31	.152	.558	-.427***	.012	.004	-3.680***						
32	.472***	-.285**	-.424***	-.037*	.038***	-6.006***	.200*	-.217	-.287***	-.019	-.025	-2.077
33	.385***	-.447***	-.315***	-.054***	-.013	-4.670***	.288***	-.251	-.323***	-.004	-.028	-3.087***

Table 4. Regression by HS 2-digit Industry, 2006 (Continued)

HS 2-digit	Sea						Air					
category	$ld_{i,A}$	B_i	lVW_i^k	$l\Sigma M_i$	TI	const	$ld_{i,A}$	B_i	lVW_i^k	$l\Sigma M_i$	TI	const
34	.348***	-.128	-.181***	-.041**	-.027*	-4.590***	.419***	-.401	-.134**	.050	.014	-6.526***
35	.444***	.076	-.370***	.017	-.034	-6.526***	.231	.431	-.221***	-.019	-.026	-2.673
38	.337***	-.231*	-.541***	.006	.029**	-5.451***	.219	-.111	-.147***	.044	-.020	-4.331***
39	.312***	.060	-.284***	-.045***	.003	-4.266***	.329***	.141	-.156***	.056**	-.081***	-5.022***
40	.356***	-.010	-.240***	.037	.016	-6.657***	.119	-.100	-.162**	.051	-.130***	-2.602
44	.421	drop	-.442**	-.080	.033	-3.905						
47	.397***	drop	-.451***	.078*	.096***	-8.007***						
48	.385***	-.213**	-.260***	-.013	-.028***	-5.320***	.145	-.256	-.110***	.057**	-.059***	-3.603***
51	.438**	-.282	-.542***	-.121***	.039	-3.374	.656**	-.233	-.216*	.006	-.068	-6.479**
52	.162	-.112	-.327***	-.045*	.021	-2.835*	.484	.513	-.036	.057	-.208***	-5.937*
53	-1.118	1.375	-.590***	.082	-.110	7.186						
54	.420***	.121	-.373***	-.028	-.010	-5.311***	.319*	-.846***	-.101	-.083	-.112***	-1.523
55	.293***	-.393*	-.306***	-.045	-.022	-3.789***	.000	.737	-.195*	-.034	-.102*	.444
56	.177	.016	-.186***	.001	-.009	-4.124**	.189	-.371	-.143**	.005	-.171***	-2.000
60	.371***	-.201	-.155***	.047	.034	-7.332***	.530***	-.209	-.380***	.015	-.069**	-5.326***
68	.074	-.245	-.371***	-.076	-.041	-0.602	.459*	.413	-.368***	-.036	-.116*	-3.138
69	.479	-.219	-.315***	.046	.002	-7.625*						
70	.379	-.120	-.484***	-.067	-.022	-3.668*	.192	-.671	-.239**	.080	-.093	-4.086
71							.856***	.148	-.174***	.048	-.091	-10.937***
72	.215***	-.249	-.447***	-.005	.028**	-4.544***	-.007	.691	-.002	.223***	-.118***	-6.056***
73	.264***	-.423***	-.330***	-.029	-.019	-4.044***	.105	-.322	-.143***	.041	-.071**	-2.820*
74	.561***	-.238	-.076*	.050	.026	-10.124***	.206	-.284	-.046	-.026	-.122***	-2.191
75	.372	1.236**	-.156*	.173	-.028	-10.980**	-.105	1.229**	-.098	.127	-.172*	-3.038
76	.324***	-.109	-.124***	.026	-.003	-6.599***	.349*	.680	-.348***	-.022	-.029	-3.300
81	.124	drop	-.420***	.063	.033	-5.543*	.374*	-.430	-.300***	.015	-.025	-4.889**
83	.433***	-.363	-.271***	-.059	.040	-5.636***	-.462	-.355	-.335***	-.091	-.038	6.034*
85	.436***	-.223	-.225***	-.020	-.016	-6.286***	-.274	-.061	-.317***	-.015	-.080*	2.271

Source: Pomfret and Sourdin (2008).
Notes: Categories with less than thirty observations are omitted; * significant at 10%, ** significant at 5%, and *** significant at 1%.

To capture commodity-specific influences on trade costs, we included dummies for the HS two-digit categories. For goods arriving by sea these dummies were almost all not significantly different from zero. For goods coming by air, however, the coefficients on the dummies were mostly statistically significant, suggesting that commodity-specific features (perhaps capturing timeliness, fragility and so forth) influence air transport costs. Table 4 reports results for the basic regression run at the industry level (i.e. by 2-digit HS categories). For goods shipped by sea, distance and weight are the key determinants of ad valorem trade costs in almost all categories, with only occasionally statistically significant coefficients on the landlocked dummy, the size of bilateral trade variable, and the corruption variable. In sum, the sea results in Table 4 provide a fairly traditional picture of the determination of transport costs. For air freight, distance and value/weight are also the most frequently statistically significant exogenous variables. The striking difference to the sea results is that the coefficient on the institutions variable is negative and statistically significant for 17 out of the 55 categories in Table 4. These categories are mainly manufactured goods; they include no raw or lightly processed animal or vegetable products, and are sectors in which global value chains are well-developed, such as electrical equipment, clothing, rubber and plastic.

Overall, the rich Australian dataset presents a striking picture of falling trade costs since 1990, but trade costs still remain a significant component of the wedge between the prices of domestic and imported goods. On average, ad valorem trade costs are larger than ad valorem tariffs on imports into Australia. Trade costs vary substantially across countries and this is only partially explained by geography or by commodity composition. The econometric results reported in Tables 3 and 4 find that distance and weight have the expected relationship to trade costs; both variables are statistically significant for imports arriving by air and by sea, but the coefficients are larger and confidence intervals tighter for sea. Costs fall with the volume of trade, but the relationship is only statistically significant for sea transport, not for air. Good institutions are associated with lower trade costs, but the relationship is only statistically significant for air freight; the institutional variable is commodity-specific, important for manufactured goods and irrelevant for primary products.

We next control for country and commodity characteristics and scale in order to draw conclusions about the reduction in trade costs which may be explained by policy or administrative reforms rather than by changes in the commodity-composition of trade. Table 5 reports results of country-fixed-effects regression for the entire panel for 1990-2007. Country fixed effects include distance, landlockedness and institutional factors, so the estimating equation includes as explanatory variables the value/weight ratio of each commodity and the total exports of each country to Australia, as well as year fixed effects and an interaction term between ASEAN countries and year.[11] The negative and statistically significant time dummies in Table 5 indicate the declining trade costs associated with exports to Australia over 1990-2007. Controlling for country fixed effects, commodity characteristics and scale, ad valorem trade costs fell relative to 1990 and the magnitude of the decline was larger in 1999-2007 than in 1990-8. The rate of decline was generally faster for goods sent by air than for goods shipped by sea (columns 2 and 3), although this was not true for 1995-8. The aggregate pattern and especially the accelerated rate of decline are primarily driven by the falling costs of air freight after 1999.

The ASEAN-year interaction term suggests that in 1991 and 1992 ad valorem trade costs fell by less for Southeast Asian countries than for the rest of the world, although the coefficients are not statistically significant. Over the decade 1994-2003, however, trade costs associated with ASEAN exports to Australia fell more rapidly than those for the rest of the world. The differences are small for 1994-6 and only statistically significant (at the 5 per cent level) for four years (1997, 1999, 2002 and 2003), but the signs are consistently negative and the coefficients are fairly large for 1997-2003. The picture for 2004-7 is less clear; these are years of substantially lower trade costs for all countries and the ASEAN countries are sometimes ahead of the rest of the world in trade facilitation (2006), sometimes behind (2004-5) and sometimes average (2007).

[11] The usable dataset contained 525,469 observations which are smaller than the total dataset because consistent weight data were not available for all commodities. The interaction term is between all ten current ASEAN members and year. Running the regressions with ASEAN5 interaction terms made little difference, probably because there are relatively few commodities exported by the five non-founding members.

Table 5. Regressions with ASEAN-Year Interaction Terms, 1990-2007: Dependent Variable Log $((cif\text{-}fob)/fob)_i^k$

	(1)	(2) Sea	(3) Air		(1)	(2) Sea	(3) Air
Log(value/weight)	-0.291***	-0.345***	-0.248***	**Constant**	-1.206	2.475	-8.989***
	(0.001)	(0.002)	(0.002)		(0.025)	(0.025)	(0.785)
Log(imports)	-0.040***	-0.046***	-0.042***	**Sea**	-1.408***		
	(0.001)	(0.001)	(0.001)		(0.004)		
1991	-0.032***	-0.026**	-0.042**	**ASEAN10*1991**	0.031	0.027	0.036
	(0.008)	(0.009)	(0.016)		(0.026)	(0.026)	(0.062)
1992	-0.054***	-0.048***	-0.055***	**ASEAN10*1992**	0.022	0.021	0.033
	(0.008)	(0.009)	(0.016)		(0.025)	(0.025)	(0.063)
1993	-0.081***	-0.061***	-0.102***	**ASEAN10* 1993**	0.050*	0.017	0.140*
	(0.008)	(0.009)	(0.016)		(0.025)	(0.025)	(0.062)
1994	-0.125***	-0.110***	-0.142***	**ASEAN10*1994**	-0.004	-0.033	0.062
	(0.008)	(0.009)	(0.016)		(0.026)	(0.027)	(0.062)
1995	-0.144***	-0.151***	-0.133***	**ASEAN10*1995**	-0.009	-0.046	0.092
	(0.008)	(0.009)	(0.016)		(0.025)	(0.025)	(0.060)
1996	-0.188***	-0.196***	-0.182***	**ASEAN10*1996**	-0.018	-0.053*	0.103
	(0.009)	(0.009)	(0.017)		(0.025)	(0.025)	(0.063)
1997	-0.133***	-0.158***	-0.101***	**ASEAN10*1997**	-0.055*	-0.121***	0.127*
	(0.008)	(0.009)	(0.016)		(0.025)	(0.024)	(0.061)
1998	-0.127***	-0.158***	-0.083***	**ASEAN10*1998**	-0.028	-0.037	0.034
	(0.008)	(0.009)	(0.016)		(0.025)	(0.024)	(0.062)
1999	-0.352***	-0.278***	-0.481***	**ASEAN10*1999**	-0.045*	-0.075**	-0.033
	(0.008)	(0.009)	(0.015)		(0.023)	(0.023)	(0.056)
2000	-0.327***	-0.258***	-0.444***	**ASEAN10*2000**	0.038	0.019	0.035
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.056)
2001	-0.284***	-0.215***	-0.393***	**ASEAN10*2001**	-0.032	-0.046*	-0.051
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.057)
2002	-0.345***	-0.310***	-0.402***	**ASEAN10*2002**	-0.116***	-0.155***	-0.029
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.056)
2003	-0.383***	-0.371***	-0.409***	**ASEAN10*2003**	-0.053*	-0.076***	0.016
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.057)
2004	-0.354***	-0.321***	-0.414***	**ASEAN10*2004**	0.090***	0.085***	0.071
	(0.008)	(0.008)	(0.015)		(0.022)	(0.023)	(0.055)
2005	-0.333***	-0.273***	-0.430***	**ASEAN10*2005**	0.065**	0.054*	0.038
	(0.008)	(0.008)	(0.015)		(0.022)	(0.023)	(0.056)
2006	-0.349***	-0.300***	-0.437***	**ASEAN10*2006**	-0.046*	-0.074**	0.026
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.059)
2007	-0.407***	-0.386***	-0.441***	**ASEAN10*2007**	0.006	-0.008	0.092
	(0.008)	(0.008)	(0.015)		(0.023)	(0.023)	(0.058)
R-squared	0.389	0.350	0.239				
N	525,469	332,512	192,957				

*** p<0.05, **p<0.01, ***p<0.001**

Notes: Fixed effects; robust standard errors in parentheses.

In sum, utilizing cif/fob data for Australian imports at the six-digit HS level and controlling for commodity fixed effects and geographical determinants of the gap, we can show that the impact of the concerted attempts by the Southeast Asian countries to reduce trade costs during the 1990s and 2000s. ASEAN countries' trade costs fell faster than the world average from the mid 1990s until early 2000s. The average ad valorem trade costs on ASEAN members' exports to Australia fell from over ten percent in 1990 to less than four percent in 2007, compared to the drop from eight percent to five percent in the ad valorem trade costs on all exports to Australia. For the five original ASEAN members the decline corresponds to the decade before 2002 when AFTA was being established, and for the two large new member countries it occurred after joining ASEAN in the late 1990s.

4. Creating and Extending an Index of Trade Costs

We provide two versions of the Index of Trade Costs, which can be used to assess the impact of trade facilitation measures. The first version, the Unadjusted Index, is based on the raw Australian cif/fob data reported in the Appendix. Using Singapore in 2007 as the benchmark (i.e. the Index equals 100), the values from 1990-2007 indicate the falling trend of trade costs in ASEAN countries, which can broadly be seen as convergence to regional best practice. The pattern is clearest for the five original ASEAN members and for Vietnam. For the four smaller trading nations, the index is more volatile and less valuable.

The Index provides a useful objective guide to trade costs, which can be used to monitor whether a country's trade costs are falling over time and whether they are falling relative to other countries' trade costs. However, if it is to be used as a policy guide, it is desirable to filter out changes in the Index which are not directly policy-related. Some determinants of trade costs, such as distance, are constant for each country over time, but the previous section showed that commodity effects are also significant, so we should control for the extent to which the Index may be reflecting

changes in a country's trade costs to due to commodity composition rather than trade facilitation measures.

The second version, the Adjusted Index, controls for commodity composition by running a regression with exporter-commodity fixed effects. The estimated trade costs capture ad valorem trade costs for a given commodity composition.[12] The first step in creating this index is to run a regression in which the log of ad valorem freight charges for commodity *k* between exporter *j* at time *t* is the dependent variable. The independent variables are separate exporter-commodity intercepts and year dummies. Including exporter-commodity effects controls for compositional change over time and for the fact that countries do not all export the same products. The exponentiated values of the year dummies estimate the ad valorem transport cost after controlling for change in the composition of trade. Table 1 presents the estimated ad valorem transport costs for each ASEAN member country using this methodology as well as by mode of transport for ASEAN as a whole and for all the countries in the sample. Table 2 presents the index constructed from the estimated ad valorem transport cost, as with the Unadjusted Index the reference point is Singapore in 2007 (set equal to 100). These indices are graphed in Figures 1 and 2. Compared to the Unadjusted Index, which is a simple trade-weighted index of trade costs, the estimates controlling for compositional change reveal a more rapid decline in transport costs over time from the ASEAN member countries relative to all countries in the world.

For reasons set out above, the Australian cif/fob measures are an impartial guide to the trade costs of each bilateral trading partner, and a good benchmark for ASEAN because it is a large trading partner whose cities are roughly equidistant from most ASEAN ports of export. As a robustness test of the characteristics of the Australian data relative to ASEAN trade costs, a similar exercise could be conducted using other countries' import data, although the currently available options are limited. At present comparable cif-fob data only exist for New Zealand, the USA, Argentina, Brazil and some other Latin American countries. Each of these, with the possible exception of the USA, has potential problems with the small volumes of bilateral trade which may make

[12] A similar approach was proposed by Hummels (2007), but he included a weight/value ratio, as in the analysis reported in section 3 of this paper. Unfortunately, weight is only reported for 15% of ASEAN exports to Australia, so we eschewed this approach due to the risk of sample selection bias.

bilateral trade costs volatile. If similar data were to become available for Japan, that would be an excellent source.[13]

The Index provides a single soundly based indicator of each country's trade costs in each year that can be easily updated. The corollaries are that it cannot match all definitions of trade facilitation, and it cannot provide evidence on specific elements of trade facilitation. The cif-fob measure does not include some behind-the-border reductions in trade costs and it includes elements of reduced transport costs that may not be included in some definitions of trade facilitation. The Index should be viewed as a complement to narrower direct measures, such as time-release studies of customs clearance or time/cost gradients along transport corridors. These detailed studies are useful because, if done properly, they provide firmly based evidence of the time and financial costs of trade, but they cannot provide across-the-board information on the level of and changes in trade costs.[14] The greatest shortcoming of the Index is that, by focussing only on dollar values of trade costs, it does not capture trade costs in the form of time.[15]

In sum, the Index provides a useful single-number measure of ASEAN countries' trade costs. There is no obvious bias from using trade with Australia as the basis for the Index. Once set up the Index has the advantage of being easy to update from year to year given the timeliness with which the Australian Bureau of Statistics releases its trade data, and to extend the country coverage, e.g. if new members accede to ASEAN or if it is desirable to cover ASEAN+3 or all East Asia Summit countries.

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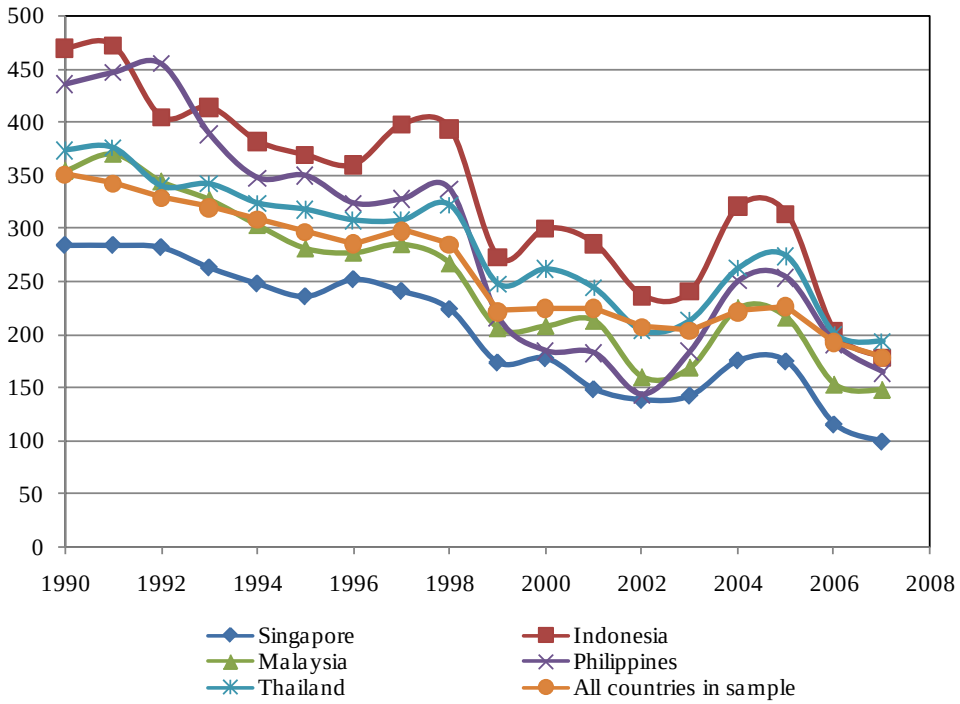
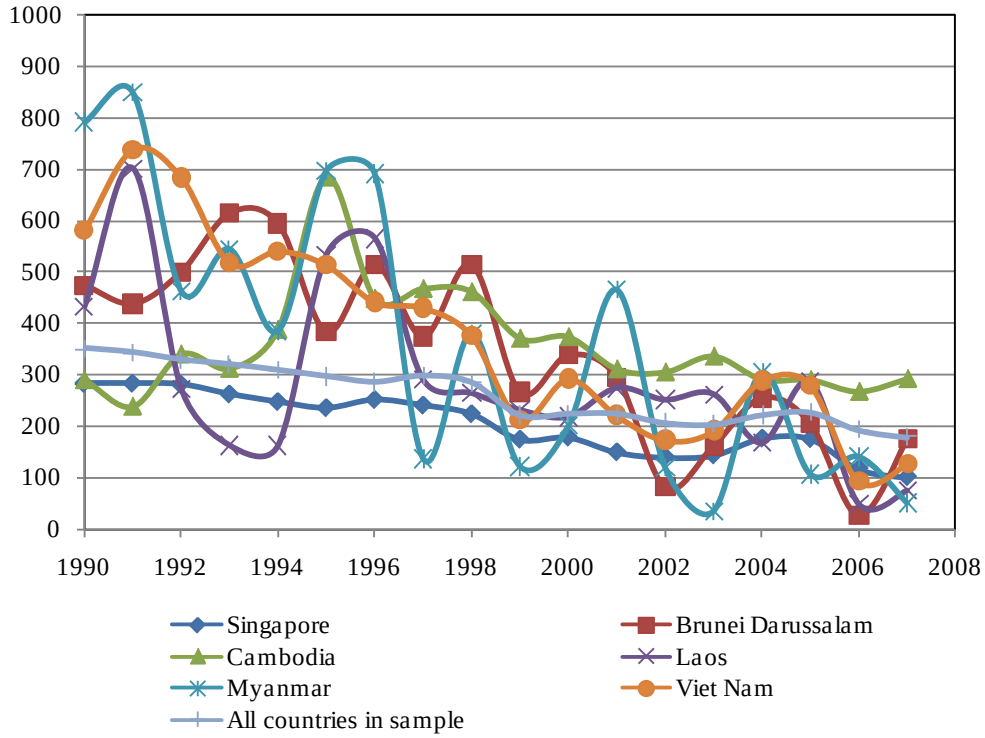
[13] Latin American data are available from ALADI (Asociación Latinoamericana de Integración). Data for Japan are believed to exist, but have not become available. With more reporting (importers) countries, a composite index could be created taking into account distance. It would also be better to have weight data, but this is hard to obtain since it is rarely collected at the customs level (the US data contain the most comprehensive commodity-level. weight data).

[14] Direct measurement of trade costs requires detailed microeconomic evidence. A number of attempts have been made to standardize the results of such studies. Border crossing surveys can be framed by the World Customs Organization's time-release methodology, but they cannot capture behind-the-border trade costs. The UN-ESCAP Time/Cost-Distance Methodology has been applied to several transport corridors in Asia, and ESCAP have improved the software which is now available on a disk.

[15] Time costs are important especially for perishable or fashion items or for traders involved in international value chains, but it is difficult to measure time costs other than in detailed case studies. The best currently available source is the World Bank's *Doing Business* dataset, which reports the number of documents needed and the time taken to import and export. The 2009 survey covered 181 countries, but as with all survey-based measure it is difficult to know how to treat the numerical results.

Appendix 1. Adjusted Index of Trade Costs, ASEAN Member Countries, 1990-2007 (Singapore 2007 =100)





Source: Appendix table 2.

Appendix Table 1. Unadjusted Index of Trade Costs: ASEAN Member Countries, 1990-2007

(Singapore 2007 = 100)

	Singapore	Indonesia	Malaysia	Philippines	Thailand	Brunei Darussalam	Cambodia	Laos	Myanmar	Viet Nam
1990	150	229	238	317	217	176	214	633	112	169
1991	124	231	221	288	205	167	31	426	88	238
1992	136	181	195	257	183	145	69	414	110	171
1993	114	193	200	2.6	181	126	107	1029	100	169
1994	121	210	164	174	157	198	229	431	110	183
1995	88	205	140	164	145	93	448	210	112	176
1996	86	181	129	198	136	257	164	398	124	167
1997	83	188	124	143	136	74	231	195	133	181
1998	95	157	124	150	136	162	171	190	133	190
1999	69	167	110	121	133	107	190	250	143	133
2000	90	179	114	133	143	145	193	260	121	148
2001	98	162	121	107	143	212	214	295	100	205
2002	83	124	102	93	119	121	157	57	102	129
2003	107	124	107	112	121	1.60	150	114	98	171
2004	119	171	126	136	131	193	171	360	105	179
2005	112	171	114	176	126	110	157	17	119	140
2006	105	124	107	169	105	100	79	12	100	117
2007	100	131	95	129	95	76	60	038	100	98

Source: Constructed from data in the Appendix.

Notes: Based on the gap between free on board and cost, insurance and freight values of ASEAN countries' exports to Australia. For the smaller trading nations (Brunei, Cambodia, Laos and Myanmar) the greater volatility reflects smaller trade volumes and greater sensitivity to changes in commodity composition or mismeasurement of individual commodities' fob/cif values.

Appendix Table 2. Adjusted Index of Trade Costs: ASEAN Member Countries, 1990-2007

(Singapore 2007 = 100)

	Singapore	Indonesia	Malaysia	Philippines	Thailand	Brunei Darussalam	Cambodia	Laos	Myanmar	Viet Nam	All countries
1990	284	470	354	436	374	474	290	433	791	580	351
1991	284	472	370	447	376	438	238	702	848	737	343
1992	282	405	344	455	340	500	340	272	462	683	329
1993	263	414	327	389	342	614	312	162	544	517	320
1994	248	382	303	348	324	594	388	162	385	540	309
1995	236	369	281	350	318	383	686	534	697	513	297
1996	252	360	277	324	308	514	449	566	690	441	286
1997	241	398	285	328	308	374	468	290	136	430	298
1998	224	394	267	337	322	514	462	264	380	376	285
1999	174	273	206	217	248	266	371	231	121	213	222
2000	178	300	208	185	262	338	374	218	200	292	225
2001	149	286	213	183	244	295	311	274	465	221	225
2002	139	237	160	144	204	81	305	251	119	173	207
2003	143	241	169	185	214	161	336	262	34	191	204
2004	176	321	225	251	263	255	291	167	303	288	222
2005	175	314	216	254	274	205	290	286	106	280	227
2006	116	203	153	192	201	26	267	48	140	93	193
2007	100	179	148	165	194	174	292	74	50	127	179

Source and Notes: See section 4 of text.

Appendix Table 3. Average Trade Costs by Country, Australian Imports from Selected Asian Countries, 1990-2007

Country of Origin	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Afghanistan	0.070	0.050	0.103	0.047	0.052	0.104	0.023	0.034	0.043	0.072	0.051	0.047	0.051	0.077	0.080	0.066	0.078	0.189
Bangladesh	0.182	0.179	0.178	0.161	0.150	0.145	0.159	0.148	0.161	0.146	0.144	0.154	0.138	0.123	0.169	0.150	0.102	0.088
Bhutan				0.008	0.012	0.040		0.127	0.155	0.034	0.040	0.157	0.118	0.013	0.057	0.122	0.419	0.205
Brunei Darussalam	0.074	0.070	0.061	0.053	0.083	0.039	0.108	0.031	0.068	0.045	0.061	0.089	0.051	0.067	0.081	0.046	0.042	0.032
Cambodia	0.090	0.013	0.029	0.045	0.096	0.188	0.069	0.097	0.072	0.080	0.081	0.090	0.066	0.063	0.072	0.066	0.033	0.025
China	0.093	0.091	0.085	0.087	0.081	0.075	0.073	0.071	0.069	0.064	0.063	0.058	0.050	0.060	0.070	0.065	0.059	0.063
Hong Kong (SAR of China)	0.065	0.061	0.059	0.057	0.054	0.053	0.054	0.056	0.048	0.045	0.047	0.038	0.037	0.042	0.049	0.047	0.040	0.047
India	0.115	0.116	0.115	0.112	0.099	0.091	0.085	0.091	0.080	0.069	0.067	0.065	0.060	0.060	0.075	0.074	0.061	0.057
Indonesia	0.096	0.097	0.076	0.081	0.088	0.086	0.076	0.079	0.066	0.070	0.075	0.068	0.052	0.052	0.072	0.072	0.052	0.055
Iran	0.067	0.073	0.088	0.092	0.098	0.073	0.108	0.095	0.097	0.063	0.068	0.071	0.054	0.076	0.065	0.091	0.061	0.082
Iraq	0.128			0.249				0.095	0.102	0.074	0.066		0.063	0.095	0.101	0.161	0.052	0.060
Israel	0.057	0.075	0.066	0.055	0.057	0.050	0.049	0.050	0.047	0.045	0.048	0.041	0.044	0.052	0.069	0.056	0.053	0.050
Japan	0.075	0.073	0.070	0.063	0.063	0.063	0.063	0.065	0.066	0.061	0.060	0.056	0.054	0.051	0.050	0.053	0.052	0.048
Jordan	0.189	0.342	0.225	0.278	0.300	0.451	0.338	0.392	0.425	0.157	0.120	0.047	0.117	0.137	0.169	0.159	0.147	0.123
Kazakhstan				0.110	0.122	0.100	0.158	0.067	0.071	0.090	0.112	0.079	0.121	0.117	0.081	0.061	0.075	0.051
Korea, Dem People's Rep	0.072	0.021	0.076	0.041	0.036	0.058	0.063	0.062	0.130	0.083	0.098	0.070	0.041	0.024	0.059	0.062	0.062	0.058
Korea, Republic of	0.072	0.077	0.066	0.062	0.065	0.064	0.068	0.056	0.052	0.059	0.055	0.047	0.043	0.043	0.049	0.051	0.045	0.045
Kyrgyzstan			0.083	0.185	0.058	0.058	0.162	0.087	0.130	0.154	0.122	0.151	0.095	0.298	0.147	0.269	0.142	0.023
Laos	0.266	0.179	0.174	0.432	0.181	0.088	0.167	0.082	0.080	0.105	0.109	0.124	0.024	0.048	0.151	0.007	0.005	0.016
Lebanon	0.151	0.156	0.138	0.145	0.133	0.111	0.102	0.123	0.105	0.111	0.087	0.107	0.113	0.084	0.101	0.108	0.105	0.094
Macau (SAR of China)	0.073	0.067	0.075	0.076	0.071	0.077	0.066	0.074	0.055	0.049	0.050	0.036	0.043	0.053	0.060	0.059	0.051	0.048
Malaysia	0.100	0.093	0.082	0.084	0.069	0.059	0.054	0.052	0.052	0.046	0.048	0.051	0.043	0.045	0.053	0.048	0.045	0.040
Maldives	0.109	0.197	0.100	0.059	0.347	0.095	0.080	0.427	0.072	0.079	0.073	0.008	0.090	0.048	0.132	0.060	0.037	0.019
Mongolia	0.075			0.043	0.038	0.350	0.075	0.117	0.027	0.163	0.126	0.052	0.044	0.061	0.071	0.132	0.065	0.077
Myanmar	0.047	0.037	0.046	0.042	0.046	0.047	0.052	0.056	0.056	0.060	0.051	0.042	0.043	0.041	0.044	0.050	0.042	0.042
Nepal	0.141	0.211	0.367	0.340	0.345	0.307	0.326	0.237	0.210	0.191	0.128	0.157	0.152	0.140	0.144	0.144	0.129	0.120
Pakistan	0.079	0.077	0.073	0.070	0.062	0.054	0.053	0.054	0.053	0.053	0.059	0.061	0.054	0.059	0.073	0.082	0.071	0.070

Appendix Table 3. Average Trade Costs by Country, Australian Imports from Selected Asian Countries, 1990-2007 (Continue)

Country of Origin	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Papua New Guinea	0.008	0.004	0.006	0.020	0.025	0.029	0.026	0.032	0.037	0.029	0.022	0.030	0.015	0.015	0.016	0.016	0.019	0.013
Philippines	0.133	0.121	0.108	0.099	0.073	0.069	0.083	0.060	0.063	0.051	0.056	0.045	0.039	0.047	0.057	0.074	0.071	0.054
Russian Federation			0.110	0.153	0.167	0.096	0.168	0.161	0.091	0.127	0.114	0.086	0.180	0.164	0.222	0.125	0.138	0.079
Singapore	0.063	0.052	0.057	0.048	0.051	0.037	0.036	0.035	0.040	0.029	0.038	0.041	0.035	0.045	0.050	0.047	0.044	0.042
Sri Lanka	0.103	0.116	0.105	0.094	0.082	0.079	0.085	0.070	0.081	0.071	0.066	0.066	0.056	0.068	0.071	0.072	0.066	0.068
Syria	0.070	0.175	0.257	0.289	0.187	0.174	0.180	0.176	0.175	0.127	0.134	0.146	0.143	0.155	0.179	0.191	0.104	0.118
Taiwan	0.074	0.074	0.065	0.061	0.059	0.057	0.060	0.057	0.055	0.050	0.046	0.043	0.038	0.044	0.048	0.048	0.044	0.048
Tajikistan									0.074			0.064	0.052	0.146	0.012	0.037	0.018	0.021
Thailand	0.091	0.086	0.077	0.076	0.066	0.061	0.057	0.057	0.057	0.056	0.060	0.060	0.050	0.051	0.055	0.053	0.044	0.040
Turkmenistan								0.045	0.034	0.048	0.045		0.121	0.049	0.062	0.050	0.042	0.040
Uzbekistan				0.033	0.017		0.183	0.067		0.188	0.029	0.100	0.193	0.088	0.165	0.121	0.141	0.133
Viet Nam	0.071	0.100	0.072	0.071	0.077	0.074	0.070	0.076	0.080	0.056	0.062	0.086	0.054	0.072	0.075	0.059	0.049	0.041
WORLD	**0.080**	**0.076**	**0.075**	**0.073**	**0.070**	**0.067**	**0.066**	**0.066**	**0.064**	**0.056**	**0.057**	**0.057**	**0.051**	**0.051**	**0.055**	**0.055**	**0.051**	**0.049**
ASEAN5	0.097	0.090	0.080	0.078	0.069	0.062	0.061	0.057	0.056	0.050	0.055	0.053	0.044	0.048	0.057	0.059	0.051	0.046
ASEAN	0.103	0.085	0.078	0.103	0.083	0.075	0.077	0.063	0.063	0.060	0.064	0.070	0.046	0.053	0.071	0.052	0.043	0.039
ASEAN+3	0.098	0.084	0.077	0.096	0.080	0.073	0.075	0.063	0.063	0.060	0.063	0.066	0.046	0.053	0.068	0.053	0.045	0.042

Notes: The country means and world average are import-weighted (ad valorem trade costs = $\Sigma cif/\Sigma fob - 1$) and hence biased downwards because goods or trading partners with higher trade costs will be under-represented. The ASEAN averages are unweighted means for the original five members, the ten current members, and the ten members plus China, Japan and South Korea.

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