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## APPENDIX A

### Commodity description of harmonised system (HS) coding system: automotives and related products at the 6-digit level

Number	HS-6 digit code of product descriptions
<i>Final products (Automobiles)</i>	
	<b>Motor vehicles and other vehicles for transport of persons</b>
1	H870210: Diesel powered buses with a seating capacity of > nine persons
2	H870290: Buses except diesel powered
3	H870310: Snowmobiles, golf cars, similar vehicles
4	H870321: Automobiles, spark ignition engine of <1000 cc
5	H870322: Automobiles, spark ignition engine of 1000-1500 cc
6	H870323: Automobiles, spark ignition engine of 1500-3000 cc
7	H870324: Automobiles, spark ignition engine of >3000 cc
8	H870331: Automobiles, diesel engine of <1500 cc
9	H870332: Automobiles, diesel engine of 1500-2500 cc
10	H870333: Automobiles, diesel engine of >2500 cc
11	H870390: Automobiles nes including gas turbine powered
12	H870399: Motor cars and other motor vehicles, including station wagons and racing cars
	<b>Motor vehicles for transport of goods</b>
13	H870410: Dump trucks designed for off-highway use
14	H870421: Diesel powered trucks weighing < 5 tonnes
15	H870422: Diesel powered trucks weighing 5-20 tonnes
16	H870423: Diesel powered trucks weighing > 20 tonnes
17	H870431: Spark ignition engine trucks weighing < 5 tonnes
18	H870432: Spark ignition engine trucks weighing > 5 tonnes
19	H870490: Trucks nes
20	H870499: Motor vehicles for the transport of goods - other
21	H870510: Mobile cranes
22	H870520: Mobile drilling derricks
23	H870530: Fire fighting vehicles
24	H870540: Mobile concrete mixers
25	H870590: Special purpose motor vehicles nes
26	H870600: Motor vehicle chassis fitted with engine
27	H870699: Chassis fitted with engines, for the motor vehicles of headings nos. 87.01 to 87.05
<i>Intermediate products (Automotive and related components)</i>	
	<b>Vehicle bodies</b>
28	H870710: Bodies for passenger carrying vehicles
29	H870790: Bodies for tractors, buses, trucks etc
	<b>Vehicle parts</b>
30	H870810: Bumpers and parts thereof for motor vehicles
31	H870821: Safety seat belts for motor vehicles



32	H870829: Parts and accessories of bodies nes for motor vehicles
33	H870830: Brakes and servo-brakes and parts thereof
34	H870831: Mounted brake linings for motor vehicles
35	H870839: Brake system parts except linings for motor vehicles
	<b>Transmissions</b>
36	H870840: Transmissions for motor vehicles
37	H870850: Drive axles with differential for motor vehicles
38	H870860: Non-driving axles/parts for motor vehicles
39	H870870: Wheels including parts/accessories for motor vehicles
40	H870880: Shock absorbers for motor vehicles
41	H870890: Other parts and accessories
42	H870891: Radiators for motor vehicles
43	H870892: Mufflers and exhaust pipes for motor vehicles
44	H870893: Clutches and parts thereof for motor vehicles
45	H870894: Steering wheels, columns & boxes for motor vehicles
46	H870895: Safety airbags with inflater system; parts thereof
47	H870899: Motor vehicle parts, nes
	<b>Metal parts</b>
48	H830120: Locks of a kind used for motor vehicles of base metal
49	H830230: Motor vehicle mountings, fittings, of base metal, nes
	<b>Engine and engine parts</b>
50	H840731: Engines, spark-ignition reciprocating, <50 cc
51	H840732: Engines, spark-ignition reciprocating, 50-250 cc
52	H840733: Engines, spark-ignition reciprocating, 250-1000 cc
53	H840734: Engines, spark-ignition reciprocating, over 1000 cc
54	H840790: Engines, spark-ignition type nes
55	H840820: Engines, diesel, for motor vehicles
56	H840991: Parts for spark-ignition engines except aircraft
57	H840999: Parts for diesel and semi-diesel engines
58	H841330: Fuel, lubricating and cooling pumps for motor engines
59	H841520: Air cond used in vehicle
60	H842123: Oil/petrol filters for internal combustion engines
61	H842131: Intake air filters for internal combustion engines
62	H842542: Hydraulic jacks/hoists except for garages
	<b>Machinery parts</b>
63	H848310: Transmission shafts and cranks, cam and crank shafts
64	H848320: Bearing housings etc incorporating ball/roller bearing
65	H848330: Bearing housings, shafts, without ball/roller bearings
66	H848340: Gearing, ball screws, speed changers, torque converter
67	H848350: Flywheels and pulleys including pulley blocks
68	H848360: Clutches, shaft couplings, universal joints
69	H848390: Parts of power transmission etc equipment
70	H848410: Gaskets of metal sheeting, including sandwich type
71	H848420: Mechanical seals

72	H848490: Gasket sets, other joints of similar composition
	<b>Electric parts</b>
73	H850710: Lead-acid electric accumulators (vehicle)
74	H850720: Lead-acid electric accumulators except for vehicles
75	H850730: Nickel-cadmium electric accumulators
76	H850780: Electric accumulators, nes
77	H851110: Spark plugs
78	H851120: Ignition magnetos, magneto-generators and flywheels
79	H851130: Distributors and ignition coils
80	H851140: Starter motors
81	H851150: Generators and alternators
82	H851180: Glow plugs & other ignition or starting equipment nes
83	H851190: Parts of electrical ignition or starting equipment
84	H851220: Lighting/visual signalling equipment nes
85	H851230: Sound signalling equipment
86	H851240: Windscreen wipers/defrosters/demisters
87	H851290: Parts of cycle & vehicle light, signal, etc equipment
88	H851829: Loudspeakers, nes
89	H852721: Radio receivers, external power, sound reproduce/record
90	H852729: Radio receivers, external power, not sound reproducer
91	H853921: Filament lamps, tungsten halogen
92	H853922: Filament lamps, of a power <= 200 Watt, > 100 volts
93	H853929: Filament lamps, except ultraviolet or infra-red, nes
94	H854430: Ignition/other wiring sets for vehicles/aircraft/ship
	<b>Other parts</b>
95	H902519: Thermometers, except liquid filled
96	H902610: Equipment to measure or check liquid flow or level
97	H902620: Equipment to measure or check pressure
98	H902680: Equipment to measure, check gas/liquid properties nes
99	H902910: Revolution counters/taximeters/mileometers/pedometers
100	H902920: Speed indicators, tachometers, stroboscopes
101	H903033: Other, without a recording device
102	H903039: Ammeters, voltmeters, ohm meters, etc, non-recording
103	H903210: Thermostats
104	H903281: Hydraulic and pneumatic automatic controls
105	H903289: Automatic regulating/controlling equipment nes
106	H910400: Instrument panel clocks etc for vehicles/aircraft etc
107	H940120: Seats, motor vehicles
108	H940190: Parts of seats
109	H980100: Original equipment components
111	H700711: Safety glass (tempered) for vehicles, aircraft, etc
112	H700721: Safety glass (laminated) for vehicles, aircraft, etc
113	H700910: Rear-view mirrors for vehicles
114	H401110: Pneumatic tyres new of rubber for motor cars



115	H401120: Pneumatic tyres new of rubber for buses or lorries
116	H401220: Pneumatic tyres used
117	H401290: Solid or cushioned tyres, interchangeable treads
111	H401310: Inner tubes of rubber for motor vehicles
118	H401390: Inner tubes of rubber except bicycle or motor vehicle

*Source:* Compiled from Quantec database

## APPENDIX B

### List of countries used in the regression analysis

Region	Countries
<b>EU and Other Europe</b>	United Kingdom (UK), Germany (DEU), Spain (ESP), France (FRA) Sweden (SWE), Italy (ITA) and Turkey (TUR).
<b>NAFTA</b>	United States of America (USA)
<b>Africa</b>	Zambia (ZAM), Mozambique (MOZ), Angola (AGO)
<b>Asia-Pacific</b>	Hong Kong (HK), China (CHN), Japan (JAP), Rep Korea (KOR), Taiwan (TAW), India (IND), Thailand (THA) and Australia (AUS)
<b>MERCOSUR</b>	Brazil (BRA)

## APPENDIX C

### Summary of classification of trade patterns

Trade Pattern	Formula of index/ degree of trade overlap	Description
Two-way trade or intra-industry trade (IIT)	$GL_{ij,kt} = \frac{(X_{ij,kt} + M_{ij,kt}) -  X_{ij,kt} - M_{ij,kt} }{(X_{ij,kt} + M_{ij,kt})}$	Index lies between 0 and 1, equal to share of IIT in total trade.
One-way trade (OWT) or inter-industry trade	$OF_{ij,kt} = \frac{Min(X_{ij,kt}, M_{ij,kt})}{Max(X_{ij,kt}, M_{ij,kt})} \geq 10\%$	No significant overlap $\leq 10$ per cent reflects OWT.
Horizontal intra-industry trade (HIIT)	$1 - \alpha \leq \frac{UV_{ij,kt}^X}{UV_{ij,kt}^M} \leq 1 + \alpha$	Overlap/IIT with small unit value differential where $\alpha=0.25$ (0.15; 0.35)
Vertical intra-industry trade (VIIT)	$\frac{UV_{ij,kt}^X}{UV_{ij,kt}^M} < 1 - \alpha \text{ or } \frac{UV_{ij,kt}^X}{UV_{ij,kt}^M} > 1 + \alpha$	Overlap/IIT with large value unit value differentials where $\alpha=0.25$ (0.15; 0.35)

Source: Author's compilation

## APPENDIX D

### List of selected empirical studies of determinants of IIT patterns

Author(s)	Model specification(s)	Determinants (Explanatory variables)	TIIT	VIIT	HIIT
Al-Mawali (2005)	Pooled, FE, Between and RE	Joint market size (GDP×GDP <sub>j</sub> )(+), distance (DIST)(-), technology gap(+/-), human capital differences (DHUM)(ns), landlockedness (LAND)(ns), political risk (POL)(ns), intellectual property rights(ns/-), trade barriers (TB)(tariffs)(+), trade intensity (TI)(+) & regional dummies (REG)(ns).	√	√	√
Aturupane, <i>et al.</i> (1999)	Non-linear least squares	Foreign direct investment (FDI)(+), economies of scale (EoS)(+/-), product differentiation (PD)(+/-), concentration (CONC)(ns/+) & labour intensity (L)(+/-) .	√	√	√
Byun & Lee (2005)	Tobit model	DGNIPC(+), DHUM(+ns), EoS(-), market structure (MS)(+), FDI(-ns), trade imbalance (TIMB)(-), (REG)(+), economic development (+), factor endowment difference (CAPLAB)(+/-), PD(+/-) & DIST(-).	√	√	√
Clark (2005)	Tobit model	Size of trading partner (GDP <sub>j</sub> )(+), DGDPC(-), PD (+), EoS(ns), technology intensity (TECH)(+), MS(ns), vertical specialisation (VS)(+), TIMB(-), TO(+) & international transport charges (-).	√	×	×
Chemsripong <i>et al.</i> (2005)	Pool–SUR (Lin-log) and Logistic model	Average GDP of <i>i</i> and <i>j</i> (SIZE)(+), DGDPC(+), DIST(-), culture (CUL)(+) & TO(+).	√	×	×
Chang (2009)	RE (Linear)	GDPC(-/+), FDI(-), R&D/GDP(+/-), EDU/GDP(+/-), PD(+/-), RCA(+/-) & REG(+/-).	√	√	√
Fontagné <i>et al.</i> (1997)	FE (Log-log)	SIZE(+), DGDPC(+/-), GDPC(+), DGDPC(+/-) DIST(-), NTB(+), FDI(+), PD(+/-), EoS(+) & EXR(+).	√	√	√
Fukao <i>et al.</i> (2003)	OLS & Instrumental variable (IV) approach	DGDPC(+), DIST(-), FDI(+), INDSIZE(+), DHUM & RDUM(+/-). IV (various).	×	√	×
Faustino & Leitão (2007)	Pooled, FE and RE. Dynamic panel data (GMM estimators)*	EoS( <i>na</i> /ns), (CONC)(+/-), PD(ns), capital/labour ratio (K/L) (+/-), intensity of human capital (HCS/L)(+/-), labour (L)(-/+), human capital (HC)(+/-), productivity (PROD)(ns) & FDI(ns).	×	√	√
Hirschberg <i>et al.</i> (1994)	Tobit model	DGDPC(ns), INEQGDPC (-/+), GDPC <sub><i>i</i></sub> (+), border(BOR)(+), DIST(-), (EXR)(-) & REG(+).	√	√	√
Hu & Ma (1999)	OLS (linear) and Tobit model	DGDPC(+) enrolment ratio of degree students(ns), EDU/GDP(+), share of manufactured X/total X(+), income distribution(-), FDI( <i>na</i> /+), MES(+) & (R&D)(+) & PD)(+/ <i>na</i> ).	√	√	√

Kind & Hathcote (2004)	Non-linear least squares	DGNIPC(-) DGDP(-), DIST(+), TB (tariffs)(+) & trade deficit (TD)(-) .	√	×	×
Montout <i>et al.</i> (2002)	FE (log-log)	SIZE(+), RDGDP(-), PCI(+), DPCI(-), DIST(-), MES( <i>na</i> -), EXR(-) & REG(+).	√	√	√
Sharma (2004)	FE, RE (VIIT and TIIT) and Tobit model (HIIT)	EoS(-ns+), MS(-/ns), PD(ns), effective rate of assistance (ERA)(-) & R&D(ns/-).	√	√	√
Sichei <i>et al.</i> (2005)	Logit model (GLM, wild bootstrapping)	RDGDP(-), DGDPC(-), EXR(+), degree of economic freedom(+), trade openness (ns) & FDI(+).	√	×	×
Thorpe & Zhang (2005)	OLS (Linear)	SIZE(+/-), RDGDP(+/-), GDPPC(+/-), DGDPC(-/-), DIST(ns), EoS(+/-), EXR(+)& TIMB(-) & TO(+).	√	√	√
Türkan (2005)	Pooled, FE and RE (Linear)	SIZE(+), RDGDP(+/-), weighted distance (WDIST)(-), DHUM(-) & EoS(ns).	√	√	√
Türkan (2009)	Pooled, FE, FGLS and Logit	SIZE(+), DGDP(ns), DGDPC(+), WDIST(-), FDI(+), EXR(ns) & REG(-).	×	√	×
Veeramani (2009)	FE & RE*	TAR(-), quantitative restrictions (QR)(-), FDI(+), (FDI×TAR)(-), (FDI×QR)(-), MES(-) & PD(-ns).	√	×	×
Umamoto (2005)	Pooled & FE*	SIZE(-), DGDP(+), GDPC(ns), DGDPC(ns) & DIST(-).	×	√	×
Zhang <i>et al.</i> (2005)	Factor analysis and GLS (cross section weights).	SIZE(+/-), DIST(+), BOR(+), CUL(+/-), public education expenditures (EDU)(+/-), school enrolments (EDU)(+/-), difference in electric power consumption per capita (ELECONS)(+/-), GINI(+/-), FDI(-/+)& TAR(-).	√	√	√
Zhang & Li (2006)	Pooled and FE (log-log)	SIZE(+), RDGDP(-/ns), DGDPC(+/-), FDI(-/+), TO(+) & DIST(+ns).	√	√	√

Source: Author's compilation

Notes: ns=not significant, (+)=positive, (-)=negative, If (+/-) indicate correct sign for VIIT and HIIT, respectively, otherwise correct sign applies to all IIT patterns, (√)=yes, (×)=no, (\*) denotes the preferred model. RE=random effects and FE=fixed effects.

## APPENDIX E

### Grubel & Lloyd (G-L) indices of IIT shares for automotive products, 2000-2007

Region/Country	2000	2001	2002	2003	2004	2005	2006	2007
<i>ROW</i>	0.701	0.741	0.755	0.762	0.708	0.647	0.627	0.612
<i>NAFTA</i>								
USA	0.811	0.865	0.825	0.851	0.979	0.703	0.947	0.815
<i>Europe</i>								
Sweden	0.126	0.128	0.141	0.138	0.096	0.098	0.410	0.254
Turkey	0.238	0.186	0.112	0.209	0.164	0.042	0.546	0.388
Spain	0.351	0.390	0.530	0.506	0.433	0.460	0.412	0.525
Italy	0.434	0.357	0.344	0.364	0.260	0.215	0.369	0.254
France	0.170	0.123	0.340	0.317	0.171	0.158	0.363	0.677
United Kingdom	0.977	0.671	0.724	0.766	0.626	0.759	0.951	0.435
Germany	0.841	0.597	0.548	0.457	0.462	0.240	0.386	0.467
<i>Asia-Pacific</i>								
Japan	0.186	0.382	0.470	0.762	0.640	0.670	0.568	0.812
China, Hong Kong	0.735	0.363	0.507	0.708	0.652	0.537	0.513	0.612
China, Taiwan	0.870	0.931	0.727	0.739	0.583	0.571	0.445	0.420
Australia	0.137	0.238	0.248	0.233	0.157	0.248	0.157	0.188
India	0.743	0.472	0.533	0.616	0.430	0.082	0.052	0.061
China	0.506	0.173	0.097	0.603	0.375	0.181	0.102	0.059
Thailand	0.067	0.053	0.066	0.031	0.018	0.008	0.009	0.015
Rep Korea	0.216	0.206	0.463	0.305	0.083	0.079	0.050	0.034
<i>MERCOSUR and Africa</i>								
Brazil	0.117	0.165	0.089	0.117	0.106	0.114	0.119	0.162
Mozambique	0.278	0.156	0.038	0.119	0.074	0.012	0.021	0.026
Zambia	0.098	0.010	0.036	0.047	0.009	0.022	0.013	0.006
Angola	0.009	0.002	0.003	0.004	0.010	0.011	0.005	0.007

Source: Authors' own calculations, Quantec data



## APPENDIX F

### Trade patterns of automotive products, 2000 and 2007

Country	2000						2007					
<i>NAFTA</i>												
USA	IIT	0.506	HIIT	0.005			IIT	0.571	HIIT	0.090		
			VIIT	0.501	HQ VIIT	0.449			VIIT	0.481	HQ VIIT	0.831
					LQ VIIT	0.551					LQ VIIT	0.169
	OWT	0.494			OWT	0.429						
<i>Asia-Pacific</i>												
Japan	IIT	0.116	HIIT	0.000			IIT	0.749	HIIT	0.000		
			VIIT	0.116	HQ VIIT	0.959			VIIT	0.749	HQ VIIT	1.000
					LQ VIIT	0.041					LQ VIIT	0.000
	OWT	0.884			OWT	0.251						
China	IIT	0.022	HIIT	0.000			IIT	0.065	HIIT	0.000		
			VIIT	0.022	HQ VIIT	0.966			VIIT	0.065	HQ VIIT	1.000
					LQ VIIT	0.034					LQ VIIT	0.000
	OWT	0.978			OWT	0.935						
India	IIT	0.095	HIIT	0.001			IIT	0.080	HIIT	0.033		
			VIIT	0.094	HQ VIIT	0.863			VIIT	0.047	HQ VIIT	0.702
					LQ VIIT	0.137					LQ VIIT	0.298
	OWT	0.905			OWT	0.920						
Australia	IIT	0.054	HIIT	0.000			IIT	0.148	HIIT	0.063		
			VIIT	0.054	HQ VIIT	0.024			VIIT	0.085	HQ VIIT	0.089
					LQ VIIT	0.976					LQ VIIT	0.911
	OWT	0.946			OWT	0.852						
<i>Europe</i>												
Germany	IIT	0.531	HIIT	0.050			IIT	0.309	HIIT	0.023		
			VIIT	0.481	HQ VIIT	0.861			VIIT	0.286	HQ VIIT	0.659
					LQ VIIT	0.139					LQ VIIT	0.341
	OWT	0.469			OWT	0.691						
UK	IIT	0.558	HIIT	0.025			IIT	0.454	HIIT	0.017		
			VIIT	0.533	HQ VIIT	0.146			VIIT	0.437	HQ	0.336
					LQ VIIT	0.854					LQ	0.664
	OWT	0.442			OWT	0.546						
Spain	IIT	0.128	HIIT	0.039			IIT	0.387	HIIT	0.239		
			VIIT	0.089	HQ VIIT	0.094			VIIT	0.148	HQ VIIT	0.608
					LQ VIIT	0.906					LQ VIIT	0.392
	OWT	0.872			OWT	0.613						
France	IIT	0.177	HIIT	0.001			IIT	0.456	HIIT	0.270		
			VIIT	0.176	HQ	0.125			VIIT	0.186	HQ VIIT	0.113
					LQ	0.875					LQ VIIT	0.887
	OWT	0.823			OWT	0.544						
Sweden	IIT	0.006	HIIT	0.000			IIT	0.136	HIIT	0.000		
			VIIT	0.006	HQ	0.918			VIIT	0.136	HQ VIIT	0.886
					LQ	0.082					LQ VIIT	0.114
	OWT	0.994			OWT	0.864						

Italy	IIT	0.174	HIIT	0.015		IIT	0.214	HIIT	0.058			
			VIIT	0.159	HQ VIIT			0.512	VIIT	0.156	HQ VIIT	0.863
					LQ VIIT			0.488			LQ VIIT	0.137
OWT	0.826				OWT	0.786						
Turkey	IIT	0.156	HIIT	0.041		IIT	0.055	HIIT	0.000			
			VIIT	0.115	HQ VIIT			0.963	VIIT	0.055	HQ VIIT	0.972
					LQ VIIT			0.036			LQ VIIT	0.028
OWT	0.844				OWT	0.945						
<i>MERCOSUR</i>												
Brazil	IIT	0.216	HIIT	0.045		IIT	0.084	HIIT	0.007			
			VIIT	0.171	HQ VIIT			0.137	VIIT	0.077	HQ VIIT	0.532
					LQ VIIT			0.863			LQ VIIT	0.468
OWT	0.784				OWT	0.916						

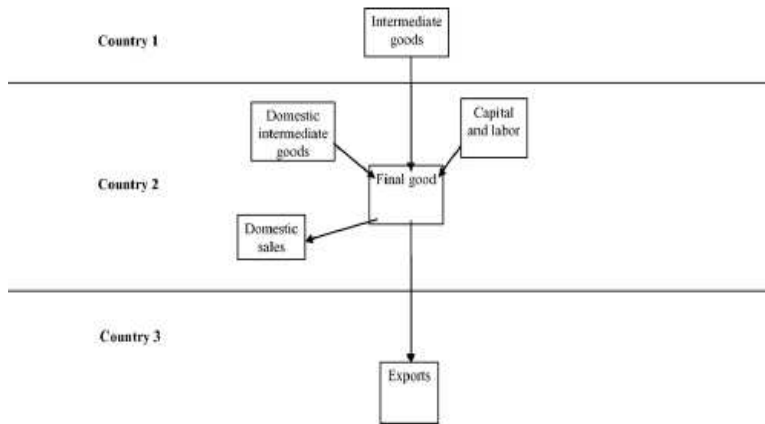
Source: Authors' own calculations, Quantec data

Notes: \*Estimates reported here are based on  $\alpha=0.25$ . Thus, HQ VIIT and LQ VIIT shares are determined according to Equation (5.4); if  $RUV^{XM} > (1+\alpha)=1.25$  and  $RUV^{XM} < (1-\alpha)=0.75$ , respectively.

\*\*Shares of HQ VIIT + LQ VIIT = VIIT (=1)

## APPENDIX G

### A simple illustration of vertical specialisation



Source: Chen *et al.* (2005)

## APPENDIX H

### Pooled estimation results of VIIT, HIIT and TIIT

Explanatory variables	Dependent variables		
	VIIT	HIIT	TIIT
Constant	0.1979 (1.3990)	-0.4978 (-0.7743)	0.2508 (1.7335)*
$RDGDP_{ijt}$	0.2859 (3.6954)***	-0.0278 (-0.2933)	0.2279 (2.6995)***
$WDIST_{ij}$	-0.0315 (-1.4218)	0.0139 (0.4811)	0.0028 (0.1302)
$TO_{ijt}$	-0.0333 (-2.2654)**	-0.0295 (-1.3452)	-0.0303 (-1.4376)
$FDI_{ijt}$	0.0274 (4.0674)***	0.0248 (3.1867)***	0.0219 (4.3786)**
$EoS_{ijt}$	-0.0002 (-0.0375)	0.0238 (1.8882)**	0.0309 (1.7667)*
$AA_{ijt}$	0.0069 (0.5805)	-0.0034 (-0.1828)	-0.0427 (-2.2809)**
$TAR_{ijt}$	-0.0833 (-2.9648)***	<i>n/a</i>	-0.0589 (-1.6710)*
$EXR_{ijt}$	<i>n/a</i>	0.0029 (0.0477)	<i>n/a</i>
Adjusted R <sup>2</sup>	0.44	0.09	0.48

Notes: White cross-section *t*-values are given in parenthesis. *n/a* denotes variables dropped. Asterisks indicate (1%)\*\*\*, (5%)\*\* and (10%)\* levels of statistical significance.



## APPENDIX I

### Country-fixed effects of VIIT, HIIT and TIIT

Country	VIIT	HIIT	TIIT
	Dependent variables		
$\alpha$ Australia	-0.4637	-0.1267	-0.6206
$\alpha$ Brazil	-0.0687	0.0266 <sup>#</sup>	-0.0713
$\alpha$ China	0.2534 <sup>#</sup>	0.0268 <sup>#</sup>	0.4433 <sup>#</sup>
$\alpha$ France	-0.1191	0.0791 <sup>#</sup>	-0.0751
$\alpha$ Germany	0.3197 <sup>#</sup>	0.0770 <sup>#</sup>	0.4127 <sup>#</sup>
$\alpha$ India	-0.4057	-0.0930	-0.3595
$\alpha$ Italy	-0.2874	-0.0379	-0.3322
$\alpha$ Japan	1.0648 <sup>#</sup>	0.0483 <sup>#</sup>	1.0511 <sup>#</sup>
$\alpha$ Spain	-0.2941	0.0275 <sup>#</sup>	-0.3224
$\alpha$ Sweden	-0.7509	-0.1727	-0.9252
$\alpha$ Turkey	-0.4413	-0.1296	-0.6222
$\alpha$ United Kingdom	0.1035 <sup>#</sup>	0.0408 <sup>#</sup>	0.1100 <sup>#</sup>
$\alpha$ United States	1.0896 <sup>#</sup>	0.2336 <sup>#</sup>	1.3115 <sup>#</sup>

Notes: # indicates a positive sign.

## APPENDIX J

### Random effects estimation results of VIIT, HIIT and TIIT

Explanatory variables	Dependent variables		
	VIIT	HIIT	TIIT
Constant	0.8470 (1.8328)*	-0.4651 (-0.6822)	0.5731 (1.3315)
$RDGDP_{ijt}$	0.4733 (3.3995)***	-0.0285 (-0.2733)	0.3989 (2.6413)***
$WDIST_{ij}$	-0.0949 (-2.4971)***	0.0151 (0.4749)	-0.0527 (-1.2470)
$TO_{ijt}$	0.0425 (0.4232)	-0.0303 (-1.2760)	0.0063 (0.0832)
$FDI_{ijt}$	0.0315 (1.8005)*	0.0244 (2.8716)***	0.0260 (1.4038)
$EoS_{ijt}$	0.0085 (0.6795)	0.0210 (1.6803)*	0.0060 (0.4380)
$AA_{ijt}$	-0.0213 (-0.3039)	-0.0020 (-0.1014)	-0.0238 (-0.5335)
$TAR_{ijt}$	-0.0588 (-0.4377)	<i>n/a</i>	-0.0819 (-0.6679)
$EXR_{ijt}$	<i>n/a</i>	0.0020 (0.0326)	<i>n/a</i>
Adjusted R <sup>2</sup>	0.02	0.06	0.02

Notes: White cross-section *t*-values are given in parenthesis. *n/a* denotes variables dropped. Asterisks indicate (1%)\*\*\*, (5%)\*\* and (10%)\* levels of statistical significance. Random country effects are not reported.