

Journal of Economic Integration

Online Appendix for

**Effects of Technical Barriers to Trade on Vietnam's
Export Performance and Global Value Chain
Participation**

By

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Appendix

Table A.1. Classification of Industries by Level of Technology

ADB-MRIO Industry Code	Names	Technology level
c1	Agriculture, Hunting, Forestry and Fishing	AGR
c2	Mining and Quarrying	MIN
c3	Food, Beverages and Tobacco	LTI
c4	Textiles and Textile Products	LTI
c5	Leather, Leather and Footwear	LTI
c6	Wood and Products of Wood and Cork	LTI
c7	Pulp, Paper, Paper , Printing and Publishing	LTI
c8	Coke, Refined Petroleum and Nuclear Fuel	LTI
c9	Chemicals and Chemical Products	HTI
c10	Rubber and Plastics	MTI
c11	Other Non-Metallic Mineral	MTI
c12	Basic Metals and Fabricated Metal	HTI
c13	Machinery, Nec	HTI
c14	Electrical and Optical Equipment	HTI
c15	Transport Equipment	HTI
c16	Manufacturing, Nec; Recycling	LTI

* AGR: Agriculture, Hunting, Forestry and Fishing ; MIN: Mining and Quarrying; HTI: High R&D intensive industries; MTI: Medium R&D intensive industries; LTI: Low R&D intensive industries

Table A.2. The Effects of TBT along with GVC Participation of Agriculture and Mining Sector

PANEL A		Forward GVC Participation					
	(1)	(2)	(3)	(4)	(5)	(6)	
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)		
	FI	CR	FI	CR	FI	CR	
$\ln GDP_{jt}$	0.569*** (0.145)	0.569*** (0.148)	0.839*** (0.176)		1.041*** (0.263)	1.042*** (0.261)	
$D.RTA_{jt}$	-0.170** (0.0859)	-0.170* (0.0879)	-0.359*** (0.0864)		-0.672*** (0.0857)	-0.672*** (0.0847)	
F_GVC_{jct}	0 (.)	0 (.)	0 (.)		0 (.)	0 (.)	
$\ln (1+Tariff)_{jkt}$	-0.533 (0.453)	-0.512 (0.465)	-0.236 (0.451)		0.559 (0.874)	0.615 (0.863)	
$D.TBT_{jkt}$	1.627 (1.329)	1.571 (1.538)	1.899* (1.026)		1.341 (1.191)	1.384 (1.142)	
$F_GVC_{jct} \# D.TBT_{jkt}$	-0.964 (1.329)	-0.910 (1.537)	-1.509 (0.970)		-1.371 (1.090)	-1.415 (1.044)	
Constant	0.890 (3.012)	0.897 (3.070)	-4.552 (3.691)		-8.488 (5.494)	-8.511 (5.456)	
Observations	7598	7598	5038		4319	4319	
Pseudo R-squared	0.969	0.969	0.971		0.969	0.969	
PANEL B		Backward GVC Participation					
	(1)	(2)	(3)	(4)	(5)	(6)	
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)		
	FI	CR	FI	CR	FI	CR	
$\ln GDP_{jt}$	0.725*** (0.142)	0.725*** (0.144)	0.832*** (0.186)	0.833*** (0.187)	1.032*** (0.277)	1.034*** (0.275)	
$D.RTA_{jt}$	-0.301*** (0.0885)	-0.301*** (0.0888)	-0.358*** (0.0780)	-0.359*** (0.0774)	-0.670*** (0.0824)	-0.670*** (0.0821)	
B_GVC_{jct}							
$\ln (1+Tariff)_{jkt}$	-0.661 (0.525)	-0.638 (0.541)	-0.196 (0.416)	-0.183 (0.419)	0.625 (0.874)	0.623 (0.885)	
$D.TBT_{jkt}$	0.754*** (0.131)	0.751*** (0.122)	0.394*** (0.147)	0.392*** (0.149)	-0.0245 (0.207)	-0.0273 (0.206)	
$B_GVC_{jct} \# D.TBT_{jkt}$	-1.103*** (0.137)	-1.102*** (0.136)					
Constant	-2.292 (3.002)	-2.295 (3.046)	-4.362 (3.930)	-4.375 (3.953)	-8.257 (5.828)	-8.297 (5.797)	
Observations	7598	7598	5038	5038	4319	4319	
Pseudo R-squared	0.971	0.971	0.970	0.970	0.969	0.969	

Table A.3. The Effects of TBT along with Backward GVC Participation depending on trading partner's GDP per capita

PANEL A	North					
	(1)	(2)	(3)	(4)	(5)	(6)
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)	
	FI	CR	FI	CR	FI	CR
ln GDP _{jt}	0.732*	0.734**	0.741**	0.757**	0.723*	0.752**
	(0.380)	(0.373)	(0.376)	(0.359)	(0.377)	(0.374)
D.RTA _{jt}	0.0727	0.0732	-0.0221	-0.0174	0.0187	0.0296
	(0.0720)	(0.0722)	(0.172)	(0.176)	(0.178)	(0.182)
B_GVC _{jct}	0.177	0.212*	0.0375	0.0893	-0.0133	0.0424
	(0.109)	(0.114)	(0.0981)	(0.103)	(0.123)	(0.115)
ln (1+Tariff) _{jkt}	-0.775	-0.786	-0.900	-0.958	-0.530	-0.621
	(0.930)	(0.896)	(0.923)	(0.994)	(1.136)	(1.155)
D.TBT _{jkt}	0.196	0.0238	0.221*	-0.0188	0.202	-0.0378
	(0.133)	(0.177)	(0.126)	(0.186)	(0.137)	(0.170)
B_GVC _{jct} # D.TBT _{jkt}	-0.229***	-0.258***	-0.0931	-0.149*	-0.0323	-0.101
	(0.0856)	(0.0951)	(0.0945)	(0.0857)	(0.116)	(0.105)
Constant	-3.945	-3.897	-4.039	-4.272	-3.633	-4.116
	(8.295)	(8.098)	(8.250)	(7.838)	(8.280)	(8.162)
Observations	178697	178697	139121	139121	124257	124257
Pseudo R-squared	0.980	0.980	0.981	0.981	0.982	0.982
PANEL B	South					
	(1)	(2)	(3)	(4)	(5)	(6)
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)	
	FI	CR	FI	CR	FI	CR
ln GDP _{jt}			1.025***	1.028***	1.062***	1.060***
			(0.185)	(0.181)	(0.206)	(0.204)
D.RTA _{jt}			-0.00884	-0.0116	0.115	0.122*
			(0.116)	(0.111)	(0.0703)	(0.0642)
B_GVC _{jct}			0.527***	0.522***	0.531***	0.548***
			(0.165)	(0.147)	(0.135)	(0.136)
ln (1+Tariff) _{jkt}			-2.082*	-2.074*	-1.387*	-1.368*
			(1.064)	(1.071)	(0.725)	(0.723)
D.TBT _{jkt}			-0.0996	-0.122	0.0993	0.0551
			(0.161)	(0.169)	(0.230)	(0.239)
B_GVC _{jct} # D.TBT _{jkt}			-0.104	-0.0997	-0.145	-0.171
			(0.101)	(0.0966)	(0.127)	(0.131)
Constant			-10.09**	-10.15***	-10.96**	-10.92**
			(3.924)	(3.819)	(4.469)	(4.429)
Observations			97949	97949	81903	81903
Pseudo R-squared			0.975	0.975	0.977	0.977

Notes: Panel A and B show the results with North and South trade partners, respectively. All estimations include importer-product and product-year fixed effects. Dependent variable is export value. FI is frequency index and CR is coverage ratio. Importer, product, and year clustered standard errors are in parentheses: ***p<0.01, **p<0.05, *p<0.1.

Table A.4. The Effects of TBT along with Forward GVC Participation depending on trading partner's GDP per capita

PANEL A	North					
	(1)	(2)	(3)	(4)	(5)	(6)
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)	
	FI	CR	FI	CR	FI	CR
ln GDP _{jt}	0.740*	0.749*	0.751**	0.781**	0.734*	0.770**
	(0.399)	(0.395)	(0.383)	(0.369)	(0.380)	(0.377)
D.RTA _{jt}	0.0854	0.0863	-0.0242	-0.0255	0.0160	0.0174
	(0.0717)	(0.0706)	(0.174)	(0.175)	(0.175)	(0.177)
F_GVC _{jct}	0.0544	0.203	0.0435	0.286**	0.0733	0.342**
	(0.0989)	(0.136)	(0.163)	(0.142)	(0.196)	(0.143)
ln (1+Tariff) _{jkt}	-0.816	-0.834	-0.913	-0.970	-0.525	-0.591
	(0.907)	(0.928)	(0.933)	(1.027)	(1.111)	(1.166)
D.TBT _{jkt}	0.0876	-0.00729	0.194**	0.0782	0.234***	0.136
	(0.113)	(0.151)	(0.0843)	(0.150)	(0.0817)	(0.136)
F_GVC _{jct} # D.TBT _{jkt}	-0.134	-0.329*	-0.0971	-0.420**	-0.134	-0.492***
	(0.124)	(0.181)	(0.206)	(0.191)	(0.262)	(0.188)
Constant	-4.008	-4.175	-4.267	-4.898	-3.909	-4.713
	(8.762)	(8.667)	(8.421)	(8.135)	(8.387)	(8.336)
Observations	178697	178697	139121	139121	124257	124257
Pseudo R-squared	0.980	0.980	0.981	0.981	0.982	0.982
PANEL B	South					
	(1)	(2)	(3)	(4)	(5)	(6)
	One-year lagged (t-1, s=1)		Two-year lagged (t-2, s=2)		Three-year lagged (t-3, s=3)	
	FI	CR	FI	CR	FI	CR
ln GDP _{jt}			1.031***	1.033***	1.063***	1.059***
			(0.192)	(0.188)	(0.216)	(0.215)
D.RTA _{jt}			-0.0107	-0.0124	0.108	0.118*
			(0.114)	(0.106)	(0.0736)	(0.0658)
F_GVC _{jct}			0.273	0.280	0.116	0.131
			(0.215)	(0.180)	(0.217)	(0.214)
ln (1+Tariff) _{jkt}			-2.063*	-2.056**	-1.377**	-1.360**
			(1.057)	(1.047)	(0.649)	(0.656)
D.TBT _{jkt}			-0.139	-0.154	-0.0834	-0.134
			(0.146)	(0.160)	(0.168)	(0.174)
F_GVC _{jct} # D.TBT _{jkt}			-0.0299	-0.0388	0.130	0.107
			(0.232)	(0.195)	(0.175)	(0.174)
Constant			-10.05**	-10.09**	-10.66**	-10.57**
			(4.113)	(4.012)	(4.611)	(4.589)
Observations			97949	97949	81903	81903
Pseudo R-squared			0.975	0.975	0.977	0.977

Notes: Panel A and B show the results with North and South trade partners, respectively. All estimations include importer-product and product-year fixed effects. Dependent variable is export value. FI is frequency index and CR is coverage ratio. Importer, product, and year clustered standard errors are in parentheses: ***p<0.01, **p<0.05, *p<0.1.