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Article

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Determinants of Myanmar's Trade Pattern and Policy Implications for Effective Financing

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A B S T R A C T

Purpose: This study examines Myanmar's international trade pattern in terms of suggesting strategies to accelerate the country's economic growth.
Design/methodology/approach: This study uses a panel dataset of Myanmar's 85 trading partners covering a period of a 25-year period (1994-2018). An empirical analysis based on the gravity model is conducted.
Findings: The empirical results are basically consistent with the prediction of the gravity model, and ASEAN+6 turns out to be the most effective economic bloc among regional dummies. Further comparison between Myanmar's actual and predicted trade flows showed its economic contact with neighboring countries was under-represented.
Research limitations/implications: It is recommended for Myanmar to promote regional economic cooperation with neighboring South Asian and ASEAN members based on the perspective that regional competitiveness is in line with national competitiveness.
Originality/value: Given the current military coup and potential economic sanctions from the international community, this study is timely and expected to have significant contributions to the literature.

Keywords: Trade Pattern, Myanmar, Gravity Model, Panel Data Analysis

I. Introduction

Since its independence in 1948, Myanmar has suffered from country-wide political unrests and ethnic rebellions that have weakened the country's economy with a mixture of nationalism, socialism and the market system.[1)] Political instability led to the military's rise to power in 1962. Soon after the military coup, the Revolutionary Council, led by General Ne Win, introduced the "Burmese Way to Socialism," declaring Myanmar a socialist country placing emphasis on self-reliance and inward-looking policies (Than, 2006). All major industries, including foreign and domestic trade, banking, forestry, fishery, and mining were nationalized and isolated from other countries, leading Myanmar to being categorized as a Least Developed Country (LDC) in 1987.

In 1988, the uprising and protests of ordinary citizens could have paved way for new reforms; however, instead of accepting the people's demands, the government cracked down on protesters, resulting in economic sanctions from western countries. West Germany and Japan suspended disbarment of aid

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by reasons of the Myanmar government's basic human rights violations, all arms sales are suspended by the US along with bans on foreign assistance except humanitarian aid to Myanmar, and development aid is suspended by the European Community in 1988 (Oh and Thant, 2016). It is reported that sanctions from the international community have damaged Myanmar's key industries, including garment (Kudo, 2008) and multinational enterprises' operation in the country (Meyer and Thein, 2014). As a result, Myanmar seems to be trading only at about 15% its potential (Ferrarini, 2013).

Nevertheless, adopting the market-oriented policy since 1988 allowed foreign direct investment (FDI) and encouraged private sector development as well as international trade (Than, 2007). This trend has become more distinctive since 2011 when a new government took office; international sanctions were gradually lifted, and the market principle was finally put into practice. Subsequently, Myanmar has seen improvements in its per capita income and a dramatic increase in the volume of bilateral trade with its major trading partners (Odaka, 2016), and Kubo (2014) suggested the country increase the potential for non-resource export potential after easing the sanctions.

However, due to the Myanmar military's coup d'état against the country's elected civilian government on February 1, 2021, the international community including the UN has called for tougher sanctions on Myanmar. Several countries have already taken concrete steps to pressure the military regime and its economic interests, with more details to come; the US government took the first steps in imposing sanctions, announcing the redirection of $42 million of bilateral assistance from the government to civil society and blocking access to $1 billion in Myanmar government funds held in the US; the UK suspended all trade promotion with Myanmar as it launches a trade and investment review; Canada imposed sanctions against nine military officials, and the previous trade embargo on arms still stands; the EU suspended its police training program which had been in place since 2016 (Andrews, 2021). The ongoing situation is expected to constitute a major setback to Myanmar's transition and its development prospects, as warned by the World Bank, turning back to when the country was subject to the toughest bilateral and multilateral sanctions, which severely damaged its economy.

Against this backdrop, it is timely to examine Myanmar's trade pattern and figure out potential trade barriers. More specifically, this study selects 85 trading partners of Myanmar, and based on the gravity model that utilized panel data for a 25-year period (1994-2018), analyzes whether the country's trade pattern is consistent with the model's prediction. Given the country's recent opening to the global economy, this study, with the up-to-date dataset, should have the significant contribution to the literature. To state the conclusion upfront, Myanmar's trade pattern is basically consistent with the prediction of the gravity model; distance shows a significantly negative effect on Myanmar's trade volumes and ASEAN+6 turns out to be the most effective economic bloc. However, a comparison between Myanmar's actual and predicted trade flows shows that the country's economic contact with Bangladesh, Cambodia, and Laos were significantly under-represented, implying the necessity of promoting regional economic cooperation with neighboring South Asian and ASEAN neighbors.

The remainder of this study is organized as follows. Chapter 2 discusses the major economic and social indicators of Myanmar for the selected years, as well as its trade compositions. Chapter 3 describes the model, data, and methodology, while Chapter 4 provides the empirical results, followed by a comparison between the actual and estimated trade levels to derive policy implications. Chapter 5 presents the conclusion.

1) For example, agricultural lands were nationalized and redistributed by the government to farmers; rice trade was monopolized by the government; timber, oil, and certain basic industries were also nationalized as state-owned enterprises (SOEs); the government still allowed the private sector to participate in marketing operations (Odaka, 2016).

Table 1. Myanmar's major economic and social indicators for the selected years

Commodity	1990	2000	2005	2008	2011	2014	2015	2016	2017	2018
GDP growth rate (%)	2.8	13.7	13.6	3.6	5.6	8.4	8	7	5.9	6.8
PGDP ($)	68	178	216	479	1127	1275.8	1140	1221.4	1248.8	1440.8
Export ($ millions)	409	1980	3707	6629	8861	11204	12524	11137	11952	14851
Import ($ millions)	668	3039	3577	6952	6413	13759.5	16633	16578	17211	18687
Trade balance ($ millions)	-259	-1059	130	-322	2448	-2555.5	-4108.9	-5441	5259.5	3836.3
Trade/GDP ratio	0.39	0.56	0.61	0.48	0.27	0.37	0.48	0.43	0.44	0.43
Current account Balance ($ millions)	-612	-71	444	-697	-1633	-1906	-3089.7	-2721	-3105	-3592
Inflations (%)	-21.9	-1.7	10.7	22.5	2.8	5.5	10.8	7	4.5	6.9
FDI ($ millions)	280.6	58.15	158.3	205.7	205.8	946.2	1824.5	2984.5	4002.4	1609.8
Population (million)	40.8	50.1	55.4	58.8	51	52.3	52.7	53	53.4	53.7
Life expectancy at birth (years)	51	57	59	60	64	65.4	65.8	66.2	66.6	66.9
Adult literacy (%)	78.6	89.8	89.8	91.9	89.3	89.5	89.6	75.6	n.a`	n.a
Infant mortality rate (per 1000)	120	107	101	98	46.8	42	40.6	39.3	38	36.8
HDI	0.58	n.a	0.406	0.438	n.a	n.a	0.565	0.571	0.577	0.584

Sources: Statistical Yearbook Myanmar (2018), WEO 2018

II. Myanmar's Economy and Foreign Trade under the Democratic Government

Myanmar's drastic transition to a democratic government in 2011 led to a series of political and economic reforms in support of basic civil rights, electoral democracy, and economic growth. These reforms also facilitated access to new markets, which increased trade, FDI, and consequently, the country's gross domestic product (GDP).

Table 1 shows that the per capita GDP, exports, and imports all skyrocketed in the past two decades. Non-economic indicators, including infant mortality, adult literacy, and the human development index (HDI) have also gradually improved. In 2018, Myanmar's FDI fluctuated and plummeted mainly due to political issues in the Rohingya and Rakhine ethnic minority areas and may have been negatively affected by investments from developed countries, particularly EU member states that seek to revoke Myanmar's Generalized Scheme of Preferences (GSP) status.

Table 2 presents Myanmar's major trading partners. As shown in the table, most of Myanmar's exports and imports were conducted with China, Thailand, India, Japan, and Singapore. Specifically, one-third of Myanmar's exports and imports were sourced from China alone. Unlike this over-dependency on China, commercial contacts with South and Southeast Asian countries, such as Bangladesh, Cambodia, and Laos, were relatively weak.[2] This topic will be re-examined in Chapter 4 based on empirical findings from the previous chapter.

As Table 3 shows, more than 70% of Myanmar's imports were manufactured goods. Myanmar's imports were generally more diversified than its exports. For example, motorcycles were Myanmar's top import from China and yet represented only 6.3% of the total Chinese imports. Myanmar imported a broad range of capital and consumer goods, both durable and nondurable, 60-80% of which were supplied by China. Myanmar's imports from Thailand were predominantly petroleum, food, and beverages, as well as a broad range of other consumer goods.[3] According to Table 3, Myanmar mainly imported capital goods such as vehicles, pharmaceutical products, construction equipment, polymers, tires and machinery, and other goods.

Regarding the composition of major exports,

Table 2. Ranking of countries with respect to their exports and imports (2018)

Rank	Country	Export ($ millions)	Rate (%)	Country	Import ($ millions)	Rate (%)
1	China	5,559.62	33.30	China	6,222.91	32.03
2	Thailand	3,056.88	18.31	Singapore	3,691.91	19.00
3	Japan	1,387.65	8.31	Thailand	2,595.09	13.36
4	India	574.14	3.44	India	990.20	5.10
5	Hong Kong	567.35	3.40	Indonesia	936.18	4.82
6	Germany	505.42	3.03	Malaysia	814.80	4.19
7	Singapore	490.41	2.94	Japan	696.07	3.58
8	United States	489.52	2.93	Euro Area	590.63	3.04
9	Rep. of Korea	445.84	2.67	Vietnam	586.45	3.02
10	United Kingdom	422.98	2.53	Rep. of Korea	439.93	2.26
11	The Netherlands	360.28	2.16	United States	324.81	1.67
12	Spain	321.58	1.93	Germany	184.73	0.95
13	Malaysia	262.82	1.57	Taiwan	184.53	0.95
14	Vietnam	211.20	1.26	The State of Eritrea	161.33	0.83
15	Belgium	210.87	1.26	Saudi Arabia	146.47	0.75
	Total Exports	16696.82		Total Imports	19429.18	

Sources: IMF Direction of Trade Statistics (DOTS)

Table 3. Structure of Imports by Commodity: 1991-2018 (%)

Commodity	1991	2001	2005	2006	2007	2008	2011	2014	2015	2016	2017	2018
Capital goods	31.6	26.9	29.9	27.6	23.9	29.6	30.2	38.1	37.1	42.5	30.5	27.4
Raw materials, spares for inter-industry use	30.2	30.4	29.3	32.1	40	28.7	36.3	28.4	27	26	34.1	34.9
Consumer goods	38.2	42.7	40.8	40.3	36.2	41.7	33.5	33.5	35.9	31.5	35.4	37.7
Total	100	100	100	100	100	100	100	100	100	100	100	100

Sources: Statistical Yearbook Myanmar (2018), WEO 2018

agricultural contributions dropped dramatically since 1991, while the exports of gas, which includes natural gas, petroleum, petroleum products, precious and semi-precious stones, tin, tungsten, zinc, coal, copper, lead and cement, have been increasing. Other major commodities exported by Myanmar are pulses and beans, wood/forest products (notably, teak), fish, rice, rubber, clothing/garments, jade, and other gems (Table 4).[4)]

2) Export and import rankings: Bangladesh (21st, 32nd), Cambodia (47th, 65th), Laos (131st, 70th).

3) Country reports on Myanmar prepared by the Sri Lanka Export Development Board in 1994.

4) Import and export operations in Myanmar have become easier and more profitable in recent years. As the government attempts to improve its business climate, rules governing import and export procedures will continue to change. In 2013, a One Stop Service (OSS) center was established within the Directorate of Investment and Company Administration (DICA), which was formed under the Ministry of National Planning and Economic Development in 1993, with headquarters in Yangon, to facilitate the coordination and engagement of business with other ministries concerned. Therefore, Myanmar became improved by 29 ranks in the indicator "Starting a business" of the Doing Business

Table 4. Structure of Exports by Commodity: 1991-2018 (%)

Commodity	1991	2001	2005	2006	2007	2008	2011	2014	2015	2016	2017	2018
Agricultural products	28.2	16.1	9.7	10.6	11.7	11.4	12.3	10.6	12.4	12.2	14.1	13.2
Animal and marine products	4.1	6.7	5.6	4.9	4	4.1	13	11	8	7	7	7
Forest products	36.7	5.6	11.9	11.5	8.6	7.2	5.94	8.98	4	1.05	1.18	8.8
Minerals and gems	1.3	4.8	6.1	8.4	8.4	9.8	20.3	6.04	2.8	2.8	1.54	3.04
Gas	n.a	7.7	30.7	26.2	34.1	34	25.2	33	37.1	25.1	17.3	20.8
Garment	8	26.3	6.5	6.7	4.7	3.8	3.79	8.83	10.2	8.57	18.7	25.6
Others	29.7	21.3	17.8	18.3	16.3	15.7	17.6	41.4	56.4	56.1	59.7	73.3
Total	100	100	100	100	100	100	100	100	100	100	100	100

Sources: Statistical Yearbook Myanmar (2018), WEO 2018

III. Model, Data, and Methodology

The gravity model, a major theory for all of the empirical analyses in this study, was originally derived from Newton's law of gravitation, which states that the force between two objects is proportional to their masses and counter-proportional to the distance between them. This model has been recognized for its consistent empirical success in various social sciences fields such as migration, traffic, FDI, and especially international trade flows.

Since the gravity model of international trade was pioneered by Tinbergen (1962) and Pöyhönen (1963), theoretical foundations have been improved and modified in various works (See Linnemann's (1966) four-equation partial equilibrium model of export supply and import demand; Anderson (1979), Helpman & Krugman (1985), and Bergstrand's (1985) imperfect competition and product differentiation models; Deardorff's (1995) Heckscher-Ohlin model based on perfect competition.)

We applied the equation used by Frankel (1997) and Sohn (2005) with several control variables. The regression equation takes the following form:

$$\begin{aligned} Ln(Exp\ or\ Imp)_{jt} = {} & \beta_0 + \beta_1\ ln(Lag\ GDP_{it}{*}GDP_{jt}) \\ & + \beta_2\ ln(Lag\ PGDP_{it}{*}PGDP_{jt}) \\ & + \beta_3\ lnDistance_{ij} + \beta_4\ lnLinder_{ij} \\ & + \beta_5\ ASEAN_j + \varepsilon_{jt} \end{aligned} \quad (1)$$

where i denotes Myanmar, j denotes its partner country, and t denotes a year in the 1994-2018 period. The other variables are defined as follows:

- Exp_{jt} represents Myanmar's exports to partner countries
- Imp_{jt} represents Myanmar's imports from partner countries
- Lag GDP_{it}*GDP_{jt} is the one-year lagged product of Myanmar's and its partners' GDPs
- Lag $PGDP_{it}$*$PGDP_{jt}$ is the one-year lagged product of Myanmar's and its partners' per capita GDPs (PGDPs)
- $Distance_{ij}$ refers to the distance between Myanmar and its partner countries in nautical miles
- $Linder_{ij}$ is the absolute difference of the per capita GDPs between Myanmar and its partners
- $ASEAN_j$ is a dummy variable, which is 1 if the partner country belongs to a regional bloc, including ASEAN, and 0 otherwise.

The product of their GDPs represents Myanmar and its partners' economic sizes. The greater the GDP, the higher the possibility to achieve economies of scale and increase exports or imports. Therefore, the trade volume between two countries increases proportionately with economic size, assuming that β_1

Report, making it the country with the biggest improvement in the ease of starting a business in 2014-2015. The Directorate of Investment and Company Administration (DICA).

is positive. Following previous papers, including Sohn (2005), this study included the product of the per capita GDPs, which evaluates the income levels of exporting and importing countries. Due to the endogeneity that may cause reverse causality and simultaneity issues, this study uses one-year lagged values for GDP and PGDP.

The distance between two countries works as a trade barrier, which involves higher transportation costs and longer delivery times, due to which β_3 is expected to have a negative sign.

The Linder test, which verifies the Linder hypothesis (1961), measures the absolute difference between the PGDPs of Myanmar and its partner countries; if β_4 is positive, the result would be supported by the Hecksher-Ohlin type North-South inter-industry trade model, and if β_4 is negative, the result would be explained by the New Trade Theory of North-North intra-industry trade.

ASEAN is the regional bloc dummy that is 1 for countries that belong to the bloc and 0 otherwise. The ASEAN initially included 10 ASEAN members, and was extended to include China, Japan, and Korea (known as ASEAN+3) and Australia, India, and New Zealand (known as ASEAN+6). If the bloc is successfully promoting trade flows, this dummy would have a positive sign.

Bilateral export and import data were obtained from the International Monetary Fund's (IMF) *Direction of Trade Statistics*, while the GDP and PGDP values were obtained from the IMF's *World Economic Outlook Database 2010*. The distance data was acquired from timeanddate.com.

To analyze the comprehensive panel data that covers Myanmar's 85 trading partners for a period of 25 years between 1994 and 2018 (all available time periods), this study adopted the random-effects model. The fixed-effects model effectively controls for all time-invariant differences between countries, making the estimated coefficients unbiased since the time-invariant characteristics are omitted. However, this advantage of fixed-effects analysis becomes a barrier when time-invariant variables, such as distance, must be estimated in this study. This limitation was already raised by Baldwin and Taglioni (2006), and similarly, this study, which utilized a random-effects estimation, assumed that the entity's error term was not correlated with the predictors, which allowed time-invariant variables to act as explanatory variables. Lastly, this study utilized White's robust standard errors to correct heteroskedasticity.

IV. Analyses and Discussions

Table 5 presents the empirical results regarding exports and imports. The positive signs of the GDP values of both exports and imports were basically consistent with the gravity model's prediction that trade volume increases with an increase in economic size. However, it should be noted that, while the coefficient of the GDP was statistically significant in all export cases, imports showed insignificant cases. This shows that the economic size of a trading partner is an essential determinant of Myanmar's exports; however, this does not explain the country's import pattern. Tables 5 and 6 also show that the PGDP variable was not an important factor; and the estimated coefficients of β_2 in the PGDP variable were consistently insignificant, implying that Myanmar's export flows were heavily dependent on its partner country's economic size relative to its income level.

Distance was consistently significant in all cases, with the expected negative signs for both exports and imports, indicating that distance is an important resistance factor for Myanmar's bilateral trade flows. Holding all other variables constant, a 1% increase in distance will result in a 1.3-1.9% decrease in exports and a 1.1-1.9% decrease in imports. Therefore, exports were slightly more elastic than imports with respect to distance, but this difference was negligible.

In the augmented model, the Linder variable was significantly negative, indicating that Myanmar's trade pattern follows the New Trade Theory model, which means that Myanmar tends to trade more with similar lower-income countries rather than higher-income

Table 5. Panel Random-Effect Estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L.lngdpij	0.444***	0.442***	0.455***	0.458***	0.447***	0.464***	0.254	0.260	0.264	0.259
	(0.056)	(0.167)	(0.157)	(0.162)	(0.160)	(0.056)	(0.212)	(0.211)	(0.217)	(0.214)
lndist	-1.767***	-1.767***	-1.904***	-1.479***	-1.322***	-1.842***	-1.910***	-1.907***	-1.273***	-1.075***
	(0.377)	(0.390)	(0.361)	(0.416)	(0.404)	(0.381)	(0.415)	(0.404)	(0.405)	(0.363)
L.lnpgdpij		0.001	0.053	0.048	0.060		0.234	0.246	0.242	0.248
		(0.184)	(0.178)	(0.182)	(0.180)		(0.234)	(0.235)	(0.240)	(0.236)
linder			-0.000**	-0.000**	-0.000**			-0.000***	-0.000***	-0.000***
			(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)
ASEAN			-0.582					0.008		
			(0.771)					(1.121)		
ASEAN+3				0.867					2.034*	
				(0.812)					(1.136)	
ASEAN+6					1.293**					2.509***
					(0.611)					(0.826)
constant	5.142	5.159	5.550*	1.909	0.593	5.141	6.786*	6.508*	1.046	-0.693
	(3.147)	(3.511)	(3.162)	(3.613)	(3.556)	(3.487)	(4.076)	(3.816)	(3.732)	(3.558)

Note: White heteroskedasticity-consistent standard errors are given in parentheses. ***, ** and * represent the significance at the 1%, 5%, and 10% levels, respectively. Models (1) to (5) are the results for exports and (6) to (10) are the results for imports. The Housman Test has been conducted but not very meaningful to distinguish the the systemic difference between the fixed and random effect, as the former is inapplicable due to the existence of the time-invariant variables, such as distance and ASEAN dummies.

Table 6. 2SLS Estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L.lngdpij	0.555***	0.630***	0.580***	0.598***	0.579***	0.900***	1.083***	1.100***	1.064***	1.029***
	(0.076)	(0.125)	(0.123)	(0.121)	(0.122)	(0.101)	(0.106)	(0.110)	(0.105)	(0.103)
lndist	-1.787***	-1.726***	-1.871***	-1.494***	-1.354***	-1.983***	-1.727***	-1.533***	-1.184***	-1.064***
	(0.215)	(0.215)	(0.270)	(0.277)	(0.271)	(0.255)	(0.172)	(0.229)	(0.225)	(0.215)
L.lnpgdpij		-0.184	-0.078	-0.098	-0.079		-0.555***	-0.557***	-0.521***	-0.485***
		(0.131)	(0.131)	(0.130)	(0.131)		(0.108)	(0.112)	(0.108)	(0.105)
linder			-0.000***	-0.000***	-0.000***			-0.000**	-0.000**	-0.000**
			(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)
ASEAN			-0.529					0.701		
			(0.627)					(0.532)		
ASEAN3				0.740					1.746***	
				(0.597)					(0.478)	
ASEAN6					1.128**					2.026***
					(0.540)					(0.420)
constant	2.929	3.529*	4.500*	1.180	0.069	-3.299	-1.021	-2.942	-5.727***	-6.598***
	(2.362)	(2.085)	(2.568)	(2.515)	(2.449)	(2.845)	(1.729)	(2.247)	(2.095)	(1.985)

Note: White heteroskedasticity-consistent standard errors are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% levels, respectively. 2SLS with population as an instrumental variable for GDP. The results from (1) to (5) are for exports and the remainder are the results for imports.

Table 7. Standardized Regressions and Beta Coefficient

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
lngdpij	0.5567	0.6276	0.6297	0.6201	0.6102	0.5554	0.654	0.6824	0.6348	0.6148
lndist	-0.4795	-0.4643	-0.4573	-0.4170	-0.4027	-0.4915	-0.4621	-0.3767	-0.3005	-0.2827
lnpgdpij		-0.0992	-0.1007	-0.0966	-0.0906		-0.145	-0.1682	-0.1438	-0.1304
ase			0.0114					0.1323		
ase3				0.0743					0.2467	
ase6					0.1001					0.2847

countries, such as European or North American countries; this finding could be raised as a policy implication.

Regarding the dummy variables, ASEAN+6 was the most meaningful group. These results indicate that if Myanmar's trading partner belongs to the ASEAN+6, the export and import volumes will be 3.64 and 12.29 times, respectively, higher than non-ASEAN+6 countries.[5] This finding is consistent with Lee and Oh's (2020) results which indicate that the ASEAN+6 was the most effective ASEAN trade bloc in terms of regional trade because the volume of ASEAN member countries' exports to ASEAN+6 countries was 2.44 times larger than that of exports to non-member countries.

To check the robustness, this study utilized the two-stage least-squares (2SLS) method. The potential endogeneity of the GDP was generally assumed, causing a reverse causality between the dependent variables and the GDP. Thus, the 2SLS model utilizes population as an instrumental variable that is strongly correlated to dependent variables but not to the error term. As shown in Table 6, the instrumental variable produces results consistent with the former estimations in Table 5.

Furthermore, the results in Table 7 allowed us to examine which independent variables had a greater effect on the dependent variables by comparing the standardized regression coefficients (β-coefficients), which adjusts the units between variables. These β-coefficients show that GDP was the most effective variable in explaining both, Myanmar's exports and imports, followed by distance. It seems that roughly 60% of Myanmar's trade pattern was explained by GDP and the remaining 40% by distance, validating the gravity model of Myanmar's bilateral trade flows. Among the dummy variables, ASEAN+6 was relatively more effective than other blocs, confirming findings from previous estimations.

5) Exp (1.293) = 3.64, Exp (2.509) = 12.29. See Model (5) in Table 1 and (10) in Table 2.

V. Policy Implications and Further Studies

Based on the findings in the previous section, this study examined Myanmar's estimated trade volumes with its partners and compared them with actual data. We calculated the ratio of the actual to expected values for each export and import to determine which countries were under-represented in terms of trade flows. This approach will allow us to figure out which countries are under-represented in terms of trade volume, which could lead to policy suggestions for promoting trade with those countries.

The results are provided in Table 8. The predicted volumes were derived from Models (2) and (7), where GDP, distance, and PGDP were used as independent variables. Following Sohn (2005)'s approach, this study considered the difference between the actual and predicted value as the estimated residual of the gravity equation.

The countries shown in bold letters are the ones whose actual trade volumes are below the predicted levels for both exports and imports, with a ratio of less than 1. This implies that there are possible trade barriers or distortion within these countries. For

Table 8. Actual versus Predicted: Myanmar's bilateral trade flows

Country	Exratio	Imratio	Country	Exratio	Imratio	Country	Exratio	Imratio
Algeria	10.16	1.93	Hungary	4.24	3.87	Philippines	0.82	1.05
Angola	1.41	1.05	India	1.46	1.25	Poland	0.90	2.55
Argentina	1.38	0.60	Indonesia	1.27	2.04	Portugal	2.66	4.98
Australia	1.25	1.38	Iran	1.08	2.94	Qatar	1.72	12.54
Austria	2.32	1.54	Ireland	1.74	0.68	Romania	323.01	6.57
Bahrain	0.95	4.15	**Israel**	**0.67**	**0.26**	**Russia**	**0.47**	**0.96**
Bangladesh	**0.86**	**0.41**	Italy	2.02	2.22	Saudi Arabia	0.75	2.00
Belgium	5.54	7.20	Japan	1.60	1.74	**Senegal**	**0.36**	**0.55**
Benin	**0.82**	**0.84**	Jordan	2.68	1.43	Singapore	1.95	2.62
Brazil	2.29	1.48	Kenya	4.42	1.64	Slovenia	0.64	3.11
Brunei	2.44	12.24	Korea	1.67	2.29	Spain	2.97	1.01
Cambodia	**0.75**	**0.85**	Kuwait	4.44	3.78	**Sri Lanka**	**0.45**	**0.69**
Canada	106.42	1.52	**Laos**	**0.99**	**0.80**	Sudan	6.46	3.53
Chile	1.28	0.71	Lebanon	1.93	1.87	Sweden	1.79	2.57
China	1.30	1.61	Libya	3.30	-	Switzerland	1.15	4.88
Colombia	1.83	1.66	Lithuania	2.38	3.03	Tanzania	4.82	1.34
Costa Rica	2.07	0.45	Malaysia	1.52	1.90	Thailand	1.33	1.29
Cote d'Ivoire	0.10	1.63	Mexico	32.49	6.41	Togo	1.31	0.95
Denmark	5.71	6.29	Morocco	3.13	1.11	Tunisia	2.68	1.17
Dominican	1.76	1.46	Netherlands	3.72	3.54	**Turkey**	**0.63**	**0.86**
Ecuador	1.46	0.87	New Zealand	0.65	2.01	UAE	0.39	4.36
Egypt	0.97	20.06	Nigeria	4.43	0.28	UK	2.65	1.92
Finland	2.72	7.94	Norway	0.39	7.71	USA	2.17	1.90
France	2.07	2.60	Oman	2.30	0.45	Ukraine	47.39	7.72
Germany	2.23	2.20	Pakistan	1.52	0.97	**Venezuela**	**0.08**	**0.46**
Ghana	0.51	1.23	**Panama**	**0.29**	**0.86**	Vietnam	1.27	1.39
Greece	0.51	6.36	Papua	0.85	1.13	Yemen	5.33	1.94
Hong Kong	1.62	1.28	Peru	1.97	0.92			

Note: Exratio = (Actual exports)/(Predicted exports). Imratio = (Actual imports)/(Predicted imports).

example, although Bangladesh shares a border with Myanmar, Dakar's economic contact with Nay Pyi Taw was minimal; 80% of Myanmar's border trade was conducted with China and Thailand, and its interactions westward with south Asian economies followed far behind.[6] The Rohingya crisis, which generated millions of refugees in Bangladesh and even inferior transport infrastructures, may have acted as adverse factors, worsening the relations between the two countries. Bangladesh is a large economy with a population of over 160 million and considered as a gateway to India and other SAARC (South Asian Association of Regional Cooperation) countries, including Sri Lanka. Therefore, it is important that Myanmar strategically expands its the bilateral exchanges.

Meanwhile, Myanmar's commercial relationships with its ASEAN partners (except Thailand) were not very strong either. Cambodia and Laos are shown in bold letters in Table 8. Although Laos shares borders with Myanmar, and the Myanmar-Laos

6) Based on 2018, Myanmar Ministry of Commerce.

friendship bridge was built in 2015, their bilateral trade volumes were almost the lowest when compared to other ASEAN members.

Regional economic cooperation will be advantageous if the trade creation effect is larger than the trade diversion effect (Viner, 1950). The trade creation effect refers to an increase in trade that occurs when consumption shifts from a high-cost producer to a low-cost producer, while the trade diversion effect means a decrease in trade since low-cost goods from outside the bloc are replaced by high-cost goods from inside the bloc. Viner argued that both impacts may have emerged from the establishment of the custom union, but various studies found that the trade diversion effect on economic well-being was unclear (Lipsey, 1957), and it was regional economic cooperation that improved the welfare of bloc countries, leading to the improvement of production specialization based on the comparative superiority (Salvatore, 2004). In this regard, Myanmar was required to promote economic cooperation with neighboring South Asian and ASEAN members based on the perspective that regional competitiveness is in line with national competitiveness.

Myanmar has reached a turning point for the liberalized economy with the global community. In order for the country to facilitate and sustain liberalized trade, Myanmar needs to improve the situation to create confidence among Western investors, particularly those from Europe and the US. However, the government needs to prioritize the construction of reliable infrastructure, especially power infrastructure, international standard highways, railways, ports, including inland water transport, to accelerate Myanmar's economic growth. Lastly, the country should pursue and implement stable and trustworthy domestic legislations. Discussions on how to achieve these tasks and how they should be prioritized will be reserved for further studies.

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