

The Northeast Asian Economic Review

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Contents

The Special Edition on the Mongolian Economy

- Analyzing the Impacts of Mongolia's Trade Costs Enkhbold Vorshilov
Nomintsetseg Ulzii-Ochir
- Logistics and Transport Challenges in Mongolia Erdenechimeg Eldev-Ochir
- Study on the Impact of a Free Trade Agreement between Mongolia and the Eurasian
Economic Union Nomintsetseg Ulzii-Ochir
Enkhbold Vorshilov
- The Importance of Multilateral Trade Negotiations for LLDCs and Mongolia in
Particular Odbayar Erdenetsogt
- Lessons Learned or Still High Political Temptation? The Case of Mongolia
..... Otgochuluu Chuluuntseren
- The Implications of Successful SEZs in Northeast Asia: Opportunities for Developing
SEZs in Mongolia Tsolmon Tsagaach



- Research into the Phased Supporting Enterprise Innovation Policy of China.. Yang Yang
Li Jin
Cheng Haiyan

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The Northeast Asian Economic Review is an ERINA English-language academic journal to be published twice annually, and we will accept a wide-range of contributions.

While it includes studies on all aspects of economy and society in Northeast Asia, research in areas related to ERINA's research activities is particularly welcome.

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Contents

The Special Edition on the Mongolian Economy

	<i>Page</i>
On the Special Edition <i>Tomoyoshi Nakajima</i>	1
Analyzing the Impacts of Mongolia's Trade Costs <i>Enkhbold Vorshilov</i> <i>Nomintsetseg Ulzii-Ochir</i>	3
Logistics and Transport Challenges in Mongolia <i>Erdenechimeg Eldev-Ochir</i>	21
Study on the Impact of a Free Trade Agreement between Mongolia and the Eurasian Economic Union <i>Nomintsetseg Ulzii-Ochir</i> <i>Enkhbold Vorshilov</i>	37
The Importance of Multilateral Trade Negotiations for LLDCs and Mongolia in Particular <i>Odbayar Erdenetsogt</i>	53
Lessons Learned or Still High Political Temptation? The Case of Mongolia <i>Otgochuluu Chuluuntseren</i>	69
The Implications of Successful SEZs in Northeast Asia: Opportunities for Developing SEZs in Mongolia <i>Tsolmon Tsagaach</i>	77

Research into the Phased Supporting Enterprise Innovation Policy of China <i>Yang Yang</i> <i>Li Jin</i> <i>Cheng Haiyan</i>	89
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The Special Edition on the Mongolian Economy

Tomoyoshi Nakajima

This is a special edition on the Mongolian economy, and in it we have published six related papers.

The paper by V. Enkhbold and U. Nomintsetseg is an analysis of Mongolia's trade costs. Using major trading partner nations' data, they made detailed analysis of the impact that the trade costs of Mongolia, a landlocked country, have. They employed a gravity model as the analytical method.

The paper by E. Erdenechimeg is an analysis of Mongolia's logistics and transportation systems. She comprehensively summarized the current situation for Mongolia's logistics and transportation infrastructure, which support the economy, trade and activity, and presented the future prospects thereof.

The paper by U. Nomintsetseg and V. Enkhbold is an analysis of the institutional economic integration, such as FTAs, involving Mongolia. As a case example they raised an FTA between the Eurasian Economic Union and Mongolia, and undertook analysis. For the analytical method they employed the CGE model using the GTAP database.

The paper by E. Odbayar is an analysis of multilateral trade negotiations with landlocked countries, and Mongolia in particular. He elucidated the importance of multilateral trade negotiations for countries disadvantaged geographically, and introduced the current situation for relations between landlocked countries and the WTO.

The paper by Ch. Otgochuluu is an analysis of Mongolia's economic policy management. In the paper he summarized the instability of fiscal and monetary policy since the move to a market economy and the excessive political influence that caused it. Given that, he proposed the necessity of policy formulation based on sociological understanding.

The paper by Ts. Tsolmon is an analysis of special economic zones. In the paper he first pointed out the actual situation of special economic zones (SEZs) in Mongolia. Next he introduced the initiatives on economic liberalization analogous to the special economic zones in other countries, including China, and then suggested future policy directions in Mongolia.

We hope that these papers will provide valuable information on Mongolia's economy in both the academic and practical respects.

Analyzing the Impacts of Mongolia's Trade Costs

Enkhbold Vorshilov*
Nomintsetseg Ulzii-Ochir**

Abstract

The objective of the analysis is to review the current status of Mongolia's trade pattern and carry out an analysis of the trade costs currently incurred by Mongolia. In particular, the authors aim at examining the factors that increase the costs of trade between Mongolia and its trading partners. This analysis employed a gravity model (AvW) to estimate the effects on trade volume. In addition, the study aimed at examining the effects of the accessibility for Mongolian export goods to major trading partner countries via Tianjin port, China. In particular, ten trading partner countries of Mongolia were selected for analysis. The first three sections analyze Mongolia's trade and transport patterns. Section 4 gives information on data collection, and in Section 5 the estimations of the impacts on trade costs using regression functions and the gravity model are described. Finally, Section 6 concludes the paper and gives some policy recommendations.

Keywords: trade costs, gravity model, landlocked country, transport, seaports

JEL classification codes: F13, F14

1. Introduction

In today's globalized world, trade costs matter as a determinant of the pattern of bilateral trade and investment, as well as of the geographical distribution of production. Although tariffs in many countries are now at low levels, overall trade costs remain high especially for landlocked countries such as Mongolia. Trade costs have the following two sources. The first encompasses entirely the bilateral factors of separation between the exporter and the importer, which are geographical distances and were used as a rough proxy for international transportation costs. The other source is the common features between the trading partners, such as a common history and the sharing of a common border. Mongolia has only two neighbors, China and Russia, via which it reaches the rest of the global market.

This separation and remoteness brings with it many logistical conundrums of cost, delay, and reliability, and trade facilitation bottlenecks, such as customs procedures and border control, and transit systems with third countries; international connectivity, such as the existence of regular maritime and air services, and; tariffs and non-tariff measures. Sources of other trade costs also represent significant obstacles to larger export and import volumes, particularly in areas such as poor infrastructure and the dysfunctional transport and logistics services markets.

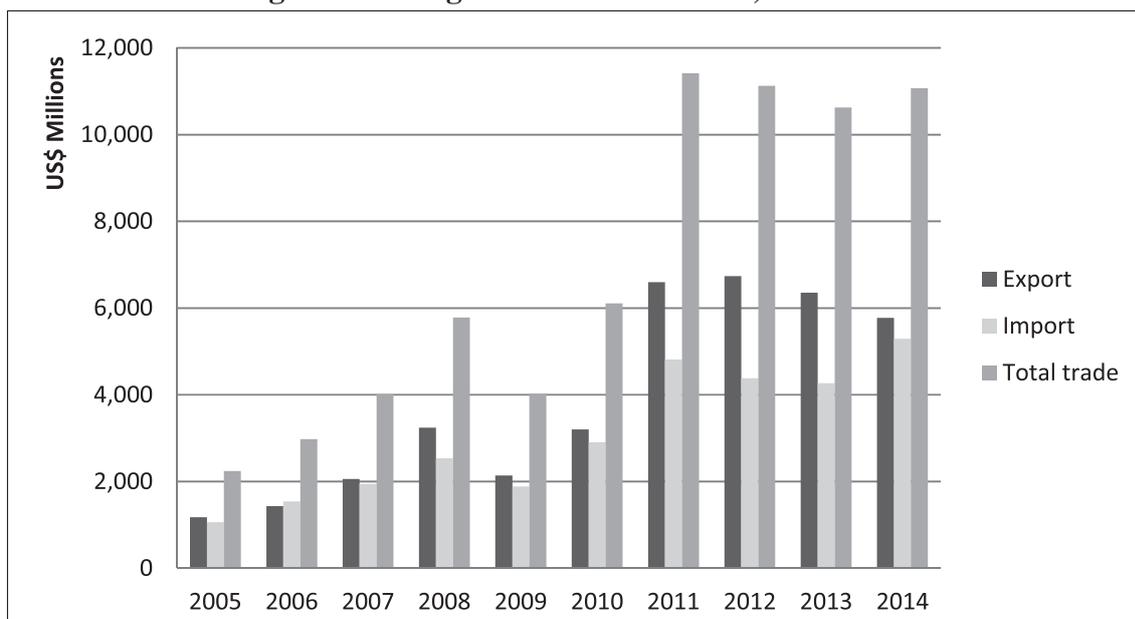
These constraints and logistical problems present Mongolia with many trade challenges. Due to the low accessibility to the sea via the nearest gateways, such as Tianjin port in China, Mongolia is prevented from diversifying its trading partners and still relies on a few export goods. High trade costs and low accessibility to seaports hamper Mongolia from diversifying its trading partners and exporting its goods.

2. Mongolia's Trade Pattern

Mongolia joined the World Trade Organization in 1997. Since then, Mongolia has adopted laws and regulations to bring its legislation in line with the WTO rules. Mongolia bound all its tariffs in *ad valorem* terms, with an average bound rate of 17.3%, but the current average applied rate is maintained at 5% for almost all goods. Mongolia has no commitments on tariff quotas, domestic support, or export subsidies for agricultural products. Mongolia's trade policy was reviewed by the WTO in 2005¹ and 2014². Today Mongolia is pursuing a relatively liberal trade policy. The Mongolian economy is heavily dependent on foreign trade and 37.1% of its GDP is accounted for by exports (Figure 1).

As illustrated in Figure 1, Mongolian foreign trade had deficits for the entire period of 2005–2014. The reasons behind this pattern are assumed to be trade dependency on a few export commodities, the high percentage of raw materials within exports, the heavy dependence on world market prices and the poor supply chain connectivity for Mongolian export goods to foreign markets.

Figure 1: Mongolian Trade Turnover, 2005–2014



Source: Mongolian Customs Department, 2015

China is the predominant destination for Mongolia's exports. In 2014, exports to China accounted for 87.8% of Mongolia's total exports, followed by the United Kingdom (6.9%), and Russia (1.1%), while the share to other countries accounted for 4.2% of the total. Thus, the Mongolian export market is not yet diversified (Table 1).

Mongolian exports are composed of a few items. Namely, minerals and agricultural origin raw materials, fluorspar concentrates, gold, coal, crude oil, natural stones, textiles, and wool, cashmere, hide skins and meat. In 2014, the key export commodities of Mongolia were copper concentrate (44.6%), coal (14.7%), crude oil (11.0%), iron ore and concentrates (7.7%), gold

(7.0%), and cashmere (4.1%). The share of all other items accounted for 10.9% of the total (Table 2).

Table 1: Mongolia's Major Export Destinations in 2014

No.	Country	Export Volume (US\$1,000)	Share of Total Exports, %
1	China	5,070,107.4	87.8
2	United Kingdom	398,740.2	6.9
3	Russia	61,607.3	1.1
4	Others	243,876.0	4.2
	Total	5,774,330.9	100.0

Source: Mongolian Customs Department, 2015

Table 2: Mongolia's Key Export Commodities in 2014

No.	Export Goods	Share of Total Exports, %
1	Copper concentrates	44.6
2	Coal	14.7
3	Crude oil	11.0
4	Iron ore and concentrates	7.7
5	Gold	7.0
6	Cashmere	4.1
7	Zinc ore and concentrates	2.0
8	Leucite and fluor spar	1.2
9	Other	7.7
	Total	100.0

Source: Mongolian Customs Department, 2015

Mongolian import sources are more diversified than are its exports. In 2014, 33.0% and 29.6% of total imports were from China and Russia, respectively, while imports from Japan, the ROK, the United States and Germany accounted for 7.0%, 6.7%, 4.4% and 3.0%, respectively. The remaining 16.2% of the total was accounted for by other countries (Table 3).

Table 3: Key Import Source Countries for Mongolia in 2014

No.	Country	Imports (US\$1,000)	Share of Total, %
1	China	1,729,610.5	33.0
2	Russia	1,549,318.3	29.6
3	Japan	367,789.5	7.0
4	ROK	352,556.8	6.7
5	USA	229,478.2	4.4
6	Germany	159,158.9	3.0
7	Other	848,755.3	16.2
	Total	5,236,667.4	100.0

Source: Mongolian Customs Department, 2015

In general, the key import products of Mongolia are fuel, vehicles, textiles, heavy machinery, equipment and electrical appliances. In 2014, the major import items were petroleum products (22.0%), vehicles (5.5%), electricity (2.5%), machinery (2.2%), trucks (2.1%), cement (1.7%), electrical appliances (1.6%) and pharmaceuticals (1.3%). The import of all other items accounted for 61.1% of the total. Russia's share in Mongolian imports is almost the same as China's, due to its petroleum exports to Mongolia. Mongolia is almost entirely dependent on petroleum imports from Russia. Japan and the ROK mainly export to Mongolia vehicles, machinery, trucks for mining, electrical appliances, and electronics, while the United States exports mainly consumer goods to Mongolia. Germany is also one of the key sources of Mongolia's imports of vehicles, electrical machinery, appliances, medical equipment, consumer goods and some food items (Table 4).

Table 4: Key Import Items for Mongolia in 2014

No.	Import Goods	Import Share, %
1	Petroleum products	22.0
2	Motor cars / vehicles	5.5
3	Electricity	2.5
4	Machinery	2.2
5	Trucks	2.1
6	Cement	1.7
7	Electrical apparatus	1.6
8	Pharmaceuticals	1.3
9	Other	61.1
	Total	100.0

Source: Mongolian Customs Department, 2015

3. Mongolia's Transport Options for International Trade

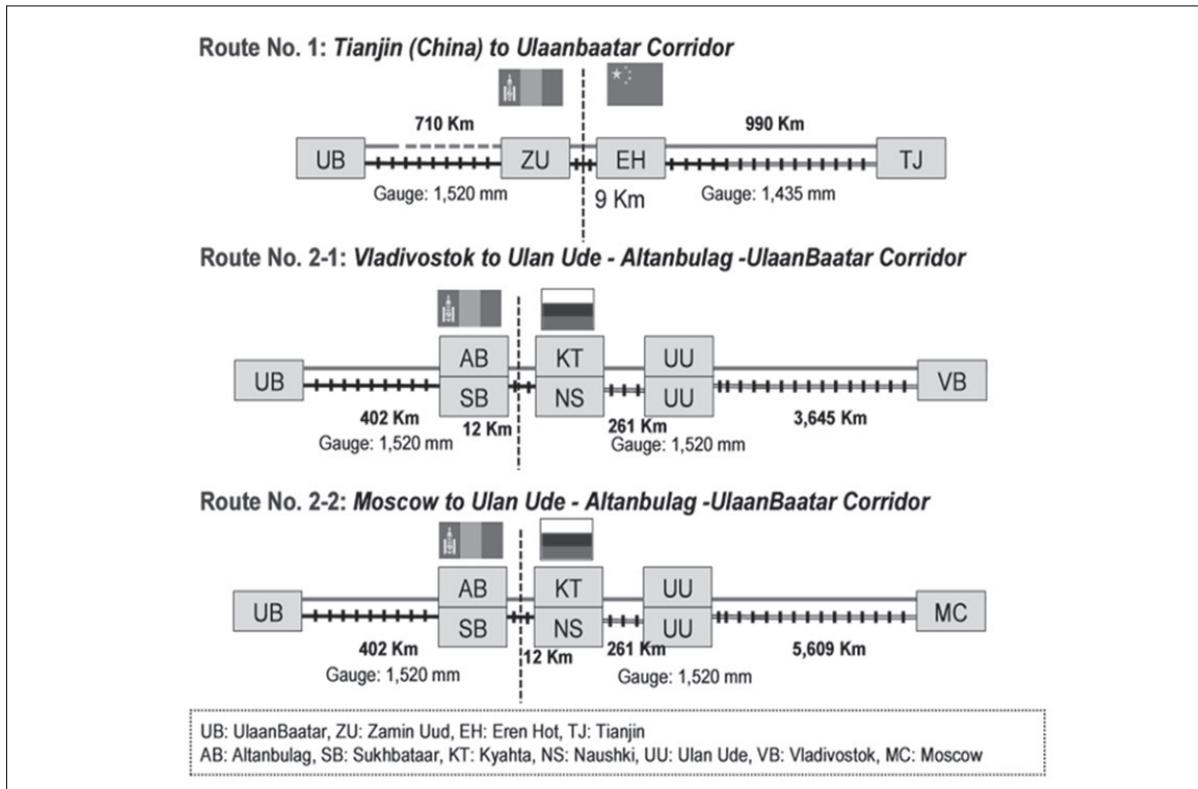
As a landlocked country, Mongolia has bottlenecks, and the problems of high transport costs, complicated border-crossing procedures, long distances and remoteness from global markets hinder Mongolia from promoting foreign trade, and diversifying export goods and its trading partners. Mongolia is located in the intermediate area between Northeast Asia and Central Asia and surrounded by China and Russia.

Mongolia's main border-crossing points are Zamyn Uud on the border with China (Figure 2: Route No. 1) and Sukhbaatar on the border with Russia (Figure 2: Route Nos. 2.1 and 2.2). The railway borders can be divided into two types according to the transshipment method. Transshipment on the border with Russia is not needed since the two countries have the same railway gauge. However, at the railway border crossing with China transshipment is necessary due to the different railway gauges. Mongolia mainly accesses the sea through Tianjin port in China and uses Vostochny port in Russia infrequently due to its long transportation distance (Figure 2).

The government of Mongolia is trying to diversify gateway ports in order to lower transport costs and secure safe access to the sea. New gateway ports would be those with handling

facilities for containers, coal and other minerals, such as iron ore.

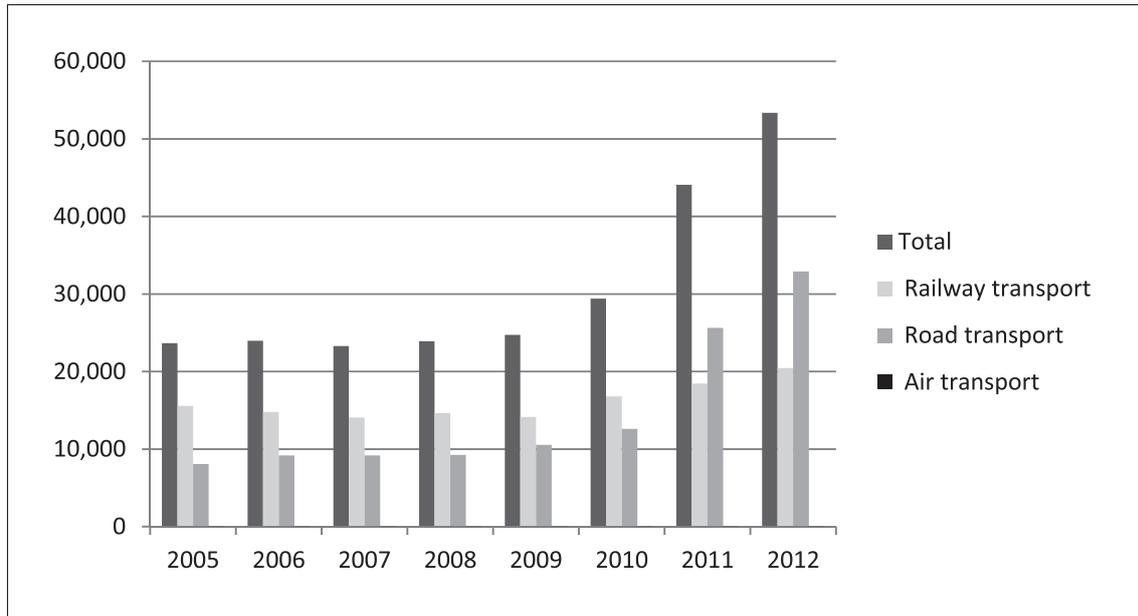
Figure 2: Transport Routes of Mongolian Merchandize Trade



Source: Ministry of Road and Transport Development, 2015

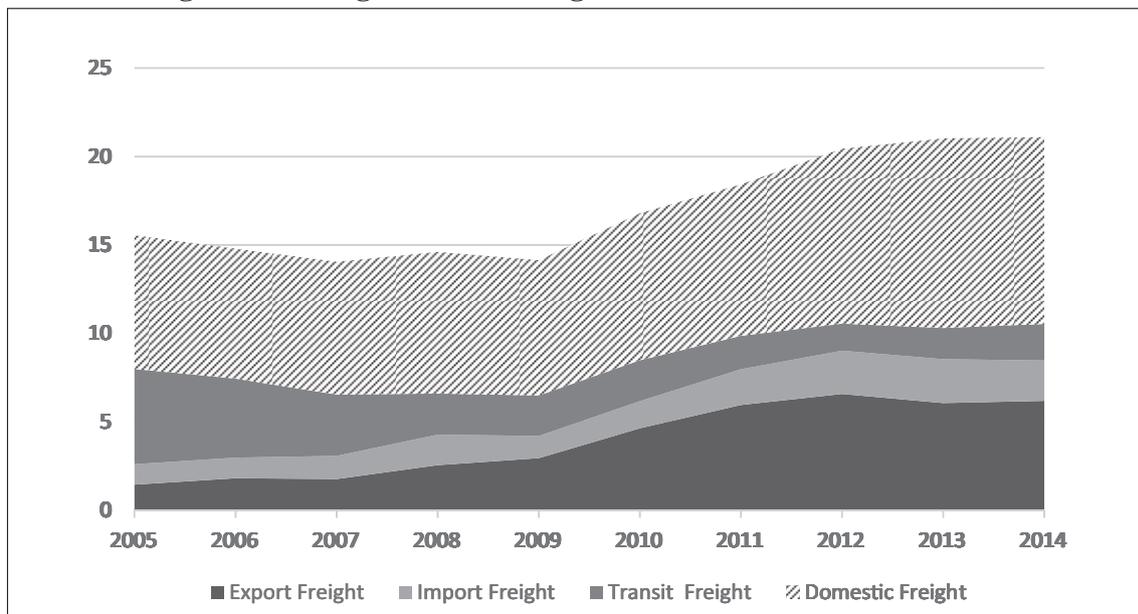
The ports of Dandong, Dalian, Qinhuangdao, Tangshan, Tianjin, and Huanghua in China can be considered as new gateways in Northeast Asia for Mongolian export goods. Meanwhile, Nakhodka, Vladivostok, and Vostochny in Russia could serve as gateway ports to the Pacific region. The main container yards of railway stations in Mongolia are located in Ulaanbaatar and Zamyn Uud. The gateway port for handling Mongolian containers is Tianjin port in China. The logistics pathway of containers for imported goods is comprised of: Tianjin port, railway transport to Erenhot (Erlian) in China, border-crossing into Mongolia, the customs clearance process and transshipment at Zamyn Uud, arrangement of locomotives and wagons by the Mongolian Railway company at Zamyn Uud, and railway transport to Ulaanbaatar in Mongolia. The logistics pathway of export containers is in the opposite direction.

Overall transportation in Mongolia has been increasing during the past ten years and the share of rail transport is more than 60% of the total. This implies that rail transport plays a key role in the transportation of Mongolian export and import goods. Road transport has significantly increased since 2011 due to the increased export of Mongolian coal to China by trucks through a minor port of entry on the Mongolia–China border, Gashuun Sukhait. The role of air transport is minimal for transporting trade goods, except for a minimum amount of cargo (Figure 3).

Figure 3: Mongolia's Carried Freight (million tonnes)

Source: Mongolian Customs Department, 2015

In 2014, the transit freight volume by railway dropped to almost a quarter of its 2005 level, while export and import freight was relatively stable. The assumption can be made that Mongolia's transit capacity is worsening due to its logistics and infrastructure conditions and its connecting capacity (Figure 4).

Figure 4: Mongolian Rail Freight Breakdown (million tonnes)

Source: Ulaanbaatar Railway (UBTZ), 2015

4. Data Collection

In this analysis, the authors collected extensive data from various sources to create panel data for estimating the transport and trade costs for Mongolian trade flows. Ten-year time series bilateral trade data for the period 2005–2014 between Mongolia and each of China, Russia, Japan, the ROK, Canada, the United States, the United Kingdom, Germany, India, and Singapore were taken from the Mongolian Customs Department and were used as base panel data for the analysis using a gravity model.

GDP, per capita GDP and population time series data for the ten-year period (2005–2014) were obtained from the World Bank. The other indicators on rail and container shipping were taken from different sources. For example, the International Supply Chain Connectivity indices for the partner countries were taken from the ESCAP (ISCC) Database, trading across border (TAB) indicators are from the World Bank's Doing Business Reports, and the Liner Shipping Connectivity Index (LSCI) is from UNCTAD.

Data relating to freight from Ulaanbaatar to Tianjin was obtained from Ulaanbaatar Railway (Table 3) and average tariff information was taken from the WTO website (Tables 5–11).

Table 5: Mongolia's Exports to Its Top-10 Trading Partners, US\$ million

	China	Russia	USA	Britain	Singapore	India	Japan	Germany	ROK	Canada
2005	512.4	27.3	152.5	87.1		1.8	5.8	12.3	65.1	122
2006	1,046.5	45.1	119	38.6	2.3	3.7	7.1	9.2	21.4	171.2
2007	1,406.9	58.5	99.9	22.1	6.1	6.1	15.1	17.8	41.5	178.6
2008	1,633.8	86.3	114.2	165.8	0.4	2.1	27.6	11	29.9	174.6
2009	1,392.3	68.2	13.9	126.9	0.6	1.6	4.6	15.6	15.4	147.5
2010	2,454.4	82.7	6	67.4	2.5	11.9	2.7	22	30.5	141.6
2011	4,404.6	96.3	5	20	3.4	35.3	11	15	37.9	90.8
2012	4,028.5	79.6	3.6	11.9	4.3	31.2	5.6	15.9	12.3	117.3
2013	3,700.3	61.8	3.9	200.7	8.2	5.3	10.5	18.4	13	135.5
2014	5,070.1	61.6	15.4	398.7	14.2	3.1	24.5	15	13.5	1.2

Source: Mongolian Customs Department, 2015

Table 6: Mongolia's Imports from Its Top-10 Trading Partners, US\$ million

	China	Russia	USA	Britain	Singapore	India	Japan	Germany	ROK	Canada
2005	291	417.9	37	29.3	16.3	40.5	75.5	37.6	63.7	17.3
2006	353.8	547.8	43.6	16.8	20.7	49.8	97.6	43	82.5	9.9
2007	664.7	745	58.6	24	29.3	30.2	140.2	76.5	119.6	10.6
2008	888.0	1,242.3	84.1	33.7	45.6	25.6	238.5	92.6	194.8	10.8
2009	531.7	772.8	103.7	59.4	27.7	16.8	97.1	70.3	155.1	
2010	956.4	1,046.7	158.9	52.8	51	8.3	196.5	87.2	181.8	22.3
2011	1,978.2	1,624.7	536.0	100.2	69.5	16.9	490.2	273.6	356.7	128.3
2012	1,842.5	1,847.4	535.9	63.6	69.2	20.5	501.6	246.4	467.8	97.2
2013	1,785.8	1,561.9	512.7	62.5	66.6	34.2	444.2	252.2	507.4	80.4
2014	1,729.6	1,549.3	229.5	53.6	52.8	29.4	367.8	159.2	352.6	21.5

Source: Mongolian Customs Department, 2015

Table 7: Selected Indicators for Container Shipment from Ulaanbaatar to Tianjin Port by Rail

Dist_inland ¹	Cont_cost_inland ²	Time_inland ³	Time_port ⁴
km	\$ per 20 ft. container	hours	hours
1,700	2,250	312	120

Notes: 1. UB–Tianjin port railway distance
 2. Rail freight rate from UB to Tianjin
 3. Transport time from UB to Tianjin
 4. Delay in Tianjin port

Source: Ulaanbaatar Railway (UBTZ), 2015

Table 8: Shipment of 20-Ft Containers from Tianjin, China, to Seaports of Top-10 Trading Partners of Mongolia

Country	Seaport	dist_sea ¹	time_sea ²	container_cost ³	Border ⁴	trade_across_border ⁵	Infra_density ⁶	Tariff ⁷	supp_con ⁸
		5	6	7	8	9	10	11	12
		Km	Hours	\$ per 20-ft cont.		Unit	Unit	%	Unit
Canada	Vancouver	9,662.01	732	2,600	0	86.07	6.89	4.2	51.14
China	Tianjin				1	71.68	1.16	9.9	77.59
Germany	Hamburg	20,971.77	796	850	0	87.67	4.18	5.5	66.01
India	Calcutta	8,160.07	314	550	0	65.47	0.11	13.5	32.84
Japan	Tokyo	2,399.97	92	600	0	87.23	3.88	4.9	54.26
ROK	Busan	1,254.31	48	50	0	95.45	0.87	13.3	79.70
Russia	Vostochny	2,179.31	84	810	1	53.58	3.06	9.7	25.88
Singapore	Singapore	5,130.33	197	50	0	96.47	0.35	0.2	94.63
UK	Belfast	20,400.39	738	500	0	88.25	3.34	5.5	65.14
USA	Los Angeles	10,993.52	784	100	0	88.32	7.31	3.4	71.03

Notes: 1. Distance to destination country by sea
 2. Shipping time from Tianjin to other seaports
 3. Container costs
 4. Border dummy for Mongolia
 5. Ocean freight rate from Tianjin to the destination port
 6. Infrastructure density
 7. Customs tariffs imposed by trading partner
 8. Supply chain connectivity

Sources: World Bank (2015) and CEPII (2015)

Table 9: GDP of Mongolia and Top-10 Trading Partners (2005–2014), current US\$ billion

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Canada	1,164.1	1,310.8	1,457.9	1,542.6	1,370.8	1,614.0	1,788.8	1,832.7	1,839.0	1,786.7
China	2,268.6	2,729.8	3,523.1	4,558.4	5,059.4	6,039.7	7,492.4	8,461.6	9,490.6	10,360.1
Germany	2,857.6	2,998.6	3,435.7	3,746.9	3,413.0	3,412.2	3,751.9	3,533.2	3,730.3	3,852.6
UK	2,412.1	2,582.8	2,963.1	2,791.7	2,309.0	2,407.9	2,592.0	2,614.9	2,678.2	2,941.9
India	834.2	949.1	1,238.7	1,224.1	1,365.4	1,708.5	1,835.8	1,831.8	1,861.8	2,066.9
Japan	4,571.9	4,356.8	4,356.3	4,849.2	5,035.1	5,495.4	5,905.6	5,954.5	4,919.6	4,601.5
ROK	898.1	1,011.8	1,122.7	1,002.2	901.9	1,094.5	1,202.5	1,222.8	1,305.6	1,410.4
Mongolia	2.5	3.4	4.2	5.6	4.6	7.2	10.4	12.3	12.5	12.0
Russia	764.0	989.9	1,299.7	1,660.8	1,222.6	1,524.9	1,904.8	2,016.1	2,079.0	1,860.6
Singapore	127.4	147.8	180.0	192.2	192.4	236.4	275.4	289.9	302.2	307.9
United States	13,093.7	13,855.9	14,477.6	14,718.6	14,418.7	14,964.4	15,517.9	16,163.2	16,768.1	17,419.0

Source: World Bank, 2015

Table 10: GDP per Capita of Mongolia and Top-10 Trading Partners (2005–2014), US\$

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Canada	36,028	40,244	44,328	46,400	40,764	47,464	52,087	52,733	52,305	50,271
China	1,740	2,082	2,673	3,441	3,800	4,515	5,574	6,265	6,992	7,594
Germany	34,651	36,401	41,763	45,633	41,671	41,726	45,868	43,932	46,255	47,627
UK	39,935	42,447	48,320	45,168	37,077	38,362	40,975	41,051	41,777	45,603
India	740	830	1,069	1,042	1,147	1,417	1,503	1,481	1,487	1,631
Japan	35,781	34,076	34,034	37,866	39,323	42,909	46,204	46,679	38,634	36,194
ROK	18,658	20,917	23,102	20,475	18,339	22,151	24,156	24,454	25,998	27,970
Mongolia	999	1,334	1,632	2,136	1,715	2,650	3,780	4,396	4,419	4,170
Russia	5,323	6,920	9,101	11,635	8,563	10,675	13,324	14,079	14,487	12,736
Singapore	29,870	33,579	39,224	39,722	38,577	46,570	53,122	54,578	55,980	56,287
United States	44,308	46,437	48,062	48,401	47,002	48,374	49,781	51,457	52,980	54,629

Source: World Bank, 2015

Table 11: Population of Top-10 Trading Partner Countries of Mongolia (2005–2014), millions

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Canada	32.3	32.6	32.9	33.2	33.6	34.0	34.3	34.8	35.2	35.5
China	1,303.7	1,311.0	1,317.9	1,324.7	1,331.3	1,337.7	1,344.1	1,350.7	1,357.4	1,364.3
Germany	82.5	82.4	82.3	82.1	81.9	81.8	81.8	80.4	80.6	80.9
United Kingdom	60.4	60.8	61.3	61.8	62.3	62.8	63.3	63.7	64.1	64.5
India	1,127.1	1,143.3	1,159.1	1,174.7	1,190.1	1,205.6	1,221.2	1,236.7	1,252.1	1,267.4
Japan	127.8	127.9	128.0	128.1	128.0	128.1	127.8	127.6	127.3	127.1
ROK	48.1	48.3	48.6	48.9	49.2	49.4	49.8	50.0	50.2	50.4
Mongolia	2.5	2.6	2.6	2.6	2.7	2.7	2.8	2.8	2.8	2.9
Russian Federation	143.6	143.1	142.8	142.7	142.8	142.9	143.0	143.2	143.5	143.8
Singapore	4.3	4.4	4.6	4.8	5.0	5.1	5.2	5.3	5.4	5.5
United States	295.5	298.4	301.2	304.1	306.8	309.3	311.7	314.1	316.5	318.9

Source: World Bank, 2015

5. Gravity Model: Analyzing the Trade Costs of Mongolia

The gravity estimation was conducted by two methods to identify the impacts on Mongolia of its trade with trading partners: i) regression analysis on factors affecting the transport costs of Mongolia; and ii) gravity model analysis on factors affecting Mongolia's trade flows. In this particular case, Mongolia's export route via the Port of Tianjin, China, is considered (Figure 2, Route No.1). Therefore, the distance-related data in this analysis refers to distances between Ulaanbaatar (UB) and partner countries via Tianjin port, China.

i) Regression analysis on factors affecting the transport costs of Mongolia

Transport costs in foreign trade will be decided by the characteristics of each intermodal transport network (Gallup et al, 1999). The ratio of CIF and FOB provides the measure of transport costs for trade between Mongolia and its trading partners, and is used to measure the costs of imports and all charges incurred in placing goods on board a carrier in the exporting port (Limão and Venables, 2001). The other factors for the estimations, all affecting the transport costs for Mongolia, are: the distance of sea transport, the distance of inland transport, the

infrastructure density of the partner countries, a border dummy, the container costs, the supply chain connectivity, and the time for shipment.

Hence, the regression function for Mongolian transport costs is expressed as follows:

$$CFR=f(\text{DISS}, \text{DISL}, \text{TIME}, \text{INFRA}_{\text{density}}, \text{Supp}_{\text{con index}}, \text{Con}_{\text{cost}}, \text{Border})$$

where:

CFR	= transport costs (CIF/FOB)
DISL	= transport distance from UB to Tianjin port
DISS	= shipping distance from Tianjin to port near to main city of trading partner
TIME	= time of transportation from UB to port in trading partner
INFRA_density	= density of infrastructure of trading partner country
Supp_con_index	= International Supply Chain Connectivity index of each country
Con_cost	= container cost of each trading partner country
Border	= dummy variable for border-sharing with Mongolia

This analysis assumes that transport costs for Mongolia can be measured by a log linear function (Limão and Venables, 2001) and the logarithmic function is as below:

$$\ln CFR_t = \alpha_0 + \alpha_1 \ln \text{DIST} + \alpha_2 \ln \text{TIME} + \alpha_3 \ln \text{Con}_{\text{cost}} + \alpha_4 \ln \text{Infra}_{\text{density}} + \alpha_5 \ln \text{Supp}_{\text{conn}} + \alpha_6 \text{Border} + e_{ijt}$$

where:

α_1	= distance elasticity coefficient
α_2	= time elasticity coefficient
α_3	= container cost elasticity coefficient
α_4	= infrastructure density elasticity coefficient
α_5	= International Supply Chain Connectivity elasticity coefficient
α_6	= border dummy

An estimation of the above model is used to analyze the transport costs for Mongolia in its trade with its top-10 trading partners: China, Russia, Japan, the ROK, the United States, Canada, Britain, Germany, India, and Singapore. The estimation is run using Stata 10 by inputting the time series data of these countries for the period 2005–2014.

The model estimation gave statistically significant results as below:

$$\ln_{CFR} = 9.7 + 0.13 * \ln \text{DIST} + 0.23 * \ln \text{Time}_{\text{imp}} - 0.38 * \ln \text{Con}_{\text{cost}} + 0.2 * \ln \text{Infra}_{\text{density}} - 2.4 * \ln \text{Supp}_{\text{conn}} = 1.6 * \text{Border} + e$$

These results can be explained as follows:

- A one percentage point increase in distance between Mongolia and a trading partner will increase the transport costs for Mongolian international trade by 0.13%;

- The container costs had a negative coefficient for Mongolian transport costs. This means that a one percentage point increase in container costs will reduce transport costs by 0.38%. This was a slightly different result to that assumed by the authors, but will be re-estimated in the next section;
- The border-crossing time is positive for the transport costs of Mongolia. That is, a one percentage point increase in border-crossing time will increase transport costs by 0.23%. This result demonstrates that a reduction of time in border-crossing will significantly facilitate Mongolian trade;
- The International Supply Chain Connectivity index is negative for Mongolian transport costs. That is, a one percentage point improvement in the connectivity index will reduce Mongolian transport costs by 2.4%;
- If partner countries share a common border with Mongolia, then transport costs are 1.6% lower (Table 12).

Table 12: Mongolian Transport Costs Regression Results

. reg ln_cfr ln_dist ln_time_imp ln_con_cost_imp ln_infra_density ln_supp_conn_index border						
Linear regression				Number of obs = 90		
				F(5, 83) = .		
				Prob > F = .		
				R-squared = 0.9227		
				Root MSE = .14648		
ln_cfr	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
ln_dist	.1328631	.0744202	1.79	0.078	-.0151557	.2808819
ln_time_imp	.2337339	.0598002	3.91	0.000	.1147938	.352674
ln_con_cos~p	-.3826563	.0203673	-18.79	0.000	-.4231659	-.3421466
ln_infra_d~y	.2071822	.0188965	10.96	0.000	.1695978	.2447665
ln_supp_co~x	-2.395573	.0899083	-26.64	0.000	-2.574396	-2.216749
border	-1.570615	.1015618	-15.46	0.000	-1.772617	-1.368612
_cons	9.729292	.3820156	25.47	0.000	8.969478	10.48911

ii) Gravity model analysis of factors affecting the trade volume of Mongolia

Over the years, the gravity model has played an important role in estimating trade patterns. The model has been a success from the empirical point of view. The gravity model was first analyzed by Tinbergen (1962) and Pöyhönen (1963) for estimating bilateral trade flows between EEC countries. Studies such as Anderson (1979), Bergstarnd (1985), Sanso et al (1993), Matyas (1997, 1998) and Anderson and Van Wincoop (2003) have improved upon its theoretical foundations, and these models have been applied in several empirical studies. Thus the goal of our gravity estimation was to investigate and determine the key factors that affect Mongolian trade with its partner countries and that increase transport and trade costs for Mongolia.

As illustrated in Figure 5, there is a positive correlation between Mongolian exports and GDP, while Mongolian exports and distance are adversely correlated. Similarly as in the previous

method, the estimation was made using the Stata 10 program to investigate the correlations between Mongolian trade volume and the GDP of trading partners, the time of transport, the infrastructure density, and the supply chain connectivity index.

Figure 5: Correlation between Mongolian Exports and GDP and Distance

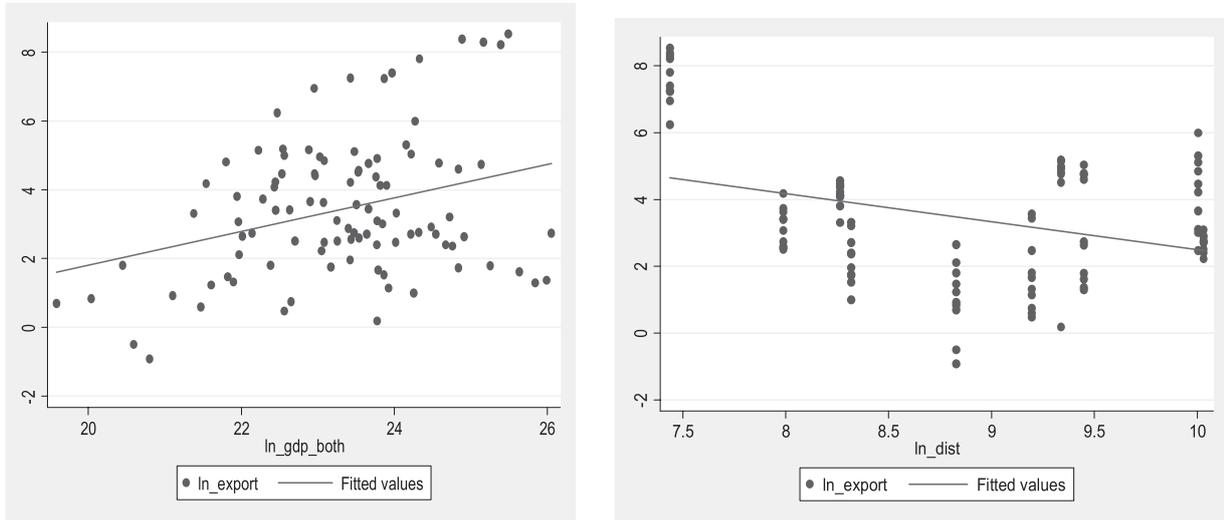


Table 13: The Correlations among Trade Cost-Related Factors

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. correlate trade dist_tj_exp gdp_exp gdp_imp time_both infra_density supp_conn_index
(obs=100)

```

	trade	dist_t~p	gdp_exp	gdp_imp	time_b~h	infra_~y	supp_c~x
trade	1.0000						
dist_tj_exp	-0.3883	1.0000					
gdp_exp	0.2406	0.0000	1.0000				
gdp_imp	0.2296	0.0962	0.1306	1.0000			
time_both	-0.3948	0.8908	-0.0000	0.3252	1.0000		
infra_dens~y	-0.1897	0.3988	0.0000	0.5655	0.7019	1.0000	
supp_conn_~x	0.0783	0.0075	0.0000	0.1519	-0.0053	-0.1527	1.0000

As illustrated in Table 9, the distance to trading partners, transport time, and infrastructure density are negatively correlated with Mongolian trade flows, while the GDP of trading partners has a positive relationship.

First, the standard gravity model was used to investigate whether the income and distance factors affect Mongolia’s trade flows with its top-10 trading partner countries. The logarithmic function is set as below:

$$\ln(\text{Trade}_{ij}) = \beta_0 + \beta_1 \ln(\text{GDP}_i) + \beta_2 \ln(\text{GDP}_j) + \beta_3 \ln(\text{Dist}_{ij}) + e_{ijt}$$

where:

- b1, b2 = income sensitivity
- b3 = distance sensitivity

Table 14: The Standard Gravity Model

. reg ln_trade ln_gdp_exp ln_gdp_imp ln_dist, robust						
Linear regression			Number of obs = 100			
			F(3, 96) = 83.17			
			Prob > F = 0.0000			
			R-squared = 0.6264			
			Root MSE = .86777			
ln_trade	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
ln_gdp_exp	.5580608	.1734615	3.22	0.002	.2137425	.9023791
ln_gdp_imp	.5796464	.0532675	10.88	0.000	.4739112	.6853817
ln_dist	-1.052848	.0931994	-11.30	0.000	-1.237847	-.8678488
_cons	1.365285	1.780645	0.77	0.445	-2.169267	4.899837

Model Results:

$$\ln \text{Trade} = 1.3 + 0.56 \ln \text{gDP}_{\text{exp}} + 0.58 \ln \text{GDP}_{\text{imp}} - 1.05 \ln \text{Dist}_{\text{exp,imp}}$$

Std. error	1.8	0.17	0.05	-11.3	
t-stat	0.77	3.2	10.9	0.09	
					$R^2 = 0.87$

The standard gravity model estimation is run using the Stata 10 program. It has revealed significantly good results and they can be explained as follows:

- Mongolian GDP is positively related to Mongolian trade flows. That is, a one percentage point increase in Mongolian GDP will increase Mongolian trade flows by 0.56%;
- The partner country's GDP also has a positive relationship with Mongolian trade flows. That is, a one percentage point increase of the partner country's GDP will increase Mongolian trade flows by 0.58%;
- However, the distance between Mongolia and the partner country is negatively related to Mongolian trade flows. That is, a one percentage point increase in the distance between Mongolia and the partner country may result in reducing Mongolian trade flows by 1.05%.

After estimating the standard gravity model, the authors extended the model to enable investigation of factors affecting Mongolian trade flows (*Gravity with Gravitas*, Anderson and Van Wincoop, 2003).

Broadly defined, trade costs include all the costs incurred in getting a good to another place above the marginal cost of producing the good itself. That is, they include transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff barriers), information costs, contract enforcement costs, costs associated with the use of different currencies, legal and regulatory costs, and local distribution costs (wholesale and retail) (Anderson and Van Wincoop, 2004).

As Mongolia is a landlocked country, the authors assume that trade costs are key elements for Mongolia. For this particular estimation, the authors selected the following variables to determine their effects. These are: Mongolian GDP (GDP_{exp}), partner countries' GDP (GDP_{imp}), distance ($dist$), customs applied tariff ($Tariff$), container costs (con_cost_both), border-crossing time ($time_imp$), infrastructure density of partner countries ($infra_density$), the international supply chain connectivity index ($supp_con_index$), and a dummy for borders ($border$), which is either 0 or 1 depending on the geographical location.

Hence, the logarithmic function of the gravity model with gravitas is set as illustrated in Table 15. After estimating the model using the Stata 10 program, the model resulted in:

$$\begin{aligned} \ln Trade = & 22.1 + 0.4 \ln GDP_{exp} - 0.62 \ln GDP_{imp} + 0.39 \ln GDP_{pc} \\ & + 0.78 \ln Dist_{exp_imp} + 0.42 \ln Tariff_{both} - 2.9 \ln Con_{cost_both} \\ & - 0.89 \ln Time_{imp} + 0.48 \ln Infra_{density} - 0.02 \ln Supp_{conn} \\ & + 0.98 Border \end{aligned}$$

Table 15: "Gravity with Gravitas" for Mongolian Trade Flows

. reg ln_trade ln_gdp_exp ln_gdp_imp ln_gdp_pc ln_dist ln_con_cost_both ln_tariff_imp > ln_time_imp infra_density supp_conn_index border						
Linear regression						
					Number of obs =	90
					F(10, 79) =	143.82
					Prob > F =	0.0000
					R-squared =	0.8520
					Root MSE =	.45488
ln_trade	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
ln_gdp_exp	.4051807	.4176251	0.97	0.335	-.4260812	1.236443
ln_gdp_imp	-.6204362	.3589947	-1.73	0.088	-1.334997	.0941249
ln_gdp_pc	.3913795	.2959481	1.32	0.190	-.1976905	.9804495
ln_dist	.7839282	.8228978	0.95	0.344	-.8540089	2.421865
ln_con_cost~h	-2.982313	1.473447	-2.02	0.046	-5.915137	-.0494898
ln_tariff_~p	.42189	.1096199	3.85	0.000	.203697	.640083
ln_time_imp	-.8976493	.6798487	-1.32	0.191	-2.250854	.4555556
infra_dens~y	.4848897	.2209227	2.19	0.031	.045154	.9246254
supp_conn_~x	-.0227569	.0192159	-1.18	0.240	-.0610052	.0154913
border	.9777373	.6214898	1.57	0.120	-.2593072	2.214782
_cons	22.14604	12.88036	1.72	0.089	-3.491679	47.78375

These results can be explained as follows:

- Mongolian GDP is a positive factor for Mongolian trade flows. That is, a one percentage point increase in Mongolian GDP will increase Mongolian trade flows by 0.4%;
- The partner country's GDP is a negative factor for Mongolian trade flows. That is, a one percentage point increase in the partner country's GDP will reduce Mongolian trade flows by 0.62%;

- A one percentage point increase in distance between Mongolia and a partner will increase trade flows by 0.78%. This result differs from the authors' assumption, and perhaps the data quality needs to be improved;
- Tariff reduction is a positive factor. That is, a one percentage point reduction in the average tariff rate by the partner country will increase Mongolian trade turnover by 0.42%;
- Container costs are a negative factor for Mongolian trade flows. That is, a one percentage point increase in container costs by the partner country will reduce Mongolian trade flows by 2.9%. Therefore, container costs are the key factor affecting the trade flows of Mongolia and increasing trade costs;
- Border-crossing time is a negative factor for Mongolian trade flows. That is, a one percentage point reduction in border-crossing time will increase Mongolian trade flows by 0.89%;
- The infrastructure density of partner countries is a positive factor for Mongolian trade flows. That is, a one percentage point improvement in the infrastructure density of partner countries will increase Mongolian trade flows by 0.48%;
- Borders are a positive factor for Mongolian trade flows, meaning that Mongolian trade flows will increase if the partner country shares a common border with Mongolia.

6. Conclusions and Recommendations

Remoteness and isolation from world markets are the major challenge for Mongolia. There are more than 1,700 km to the nearest seaport in China and 4,100 km to the nearest one in the Russian Far East. Despite that, Mongolia is making numerous efforts toward facilitating trade, reducing trade costs and improving railway infrastructure. The results of the gravity model analysis revealed that Mongolia's trade is still facing high trade costs.

Although Mongolia's export volumes have increased significantly during the period 2005–2014, it is worth mentioning that China alone took advantage of importing Mongolian minerals and raw materials and became the major export destination for Mongolia. In 2014, China's share in Mongolia's total exports reached 87.8%, while the shares of Mongolia's exports to other trading partners (seaborne markets) stayed at almost the same level as 1995. This indicates that Mongolia's export route access to seaborne markets via Tianjin port has not yet been sufficiently facilitated, and both sides need to intensify talks on facilitating transit transportation for Mongolian export goods via Chinese territory.

The results of the regression analysis on Mongolian transport costs (Ulaanbaatar–Tianjin port–trading partner seaport) indicated that factors such as distance between Mongolia and the partner country, border-crossing time, and the supply chain connectivity are the factors that most affect cost increases in the rail transportation of Mongolian goods to Tianjin port in China.

In addition, the gravity model trade cost analysis of the impacts on Mongolian trade flows confirmed that factors such as tariffs, the infrastructure density of the partner country, container costs, supply chain connectivity, and border-crossing time are the main factors that

affect Mongolia's trade flows and potentially increase the trade costs of Mongolian merchandise exports and imports.

As the results indicated, it is obvious that Mongolian trade faces high trade costs in its trade with trading partners. In both estimations, trade facilitation-related factors, such as border-crossing time and supply chain connectivity, were the key factors increasing transport and trade costs for Mongolian trade.

Consequently, Mongolia could benefit considerably in terms of trade volumes and trade costs from continued efforts in the areas of simplification and harmonization of documents at customs and border-crossing agencies, and the integration of regional and world supply chains.

Furthermore, it is necessary to carefully address these trade cost-related factors within the framework of the trade facilitation policy of Mongolia and develop capacity building activities for customs and border service agencies along with awareness-building activities in the private sector. Moreover, further detailed studies on the impacts of trade facilitation for Mongolia need to be conducted.

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¹ https://www.wto.org/english/tratop_e/tpr_e/tp245_crc_e.htm

² https://www.wto.org/english/tratop_e/tpr_e/tp397_e.htm

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Logistics and Transport Challenges in Mongolia

Erdenechimeg Eldev-Ochir*

Abstract

In a globalized economy, efficient logistics and low transport costs are a significant determinant of a country's competitiveness. Indeed, transport and logistics have a number of direct and indirect links with important economic and social development goals. Reducing the cost and improving the quality of logistics and transport systems creates an integrated and efficient transport network, which improves international market access and leads directly to increased trade. Increasing trade leads to better jobs, higher incomes and poverty reduction, specifically an increase in the per capita real income of a country. Indeed, transport and logistics have direct and indirect links with socioeconomic development.

Keywords: logistics, transport, Mongolian economy, trade, rail, air, and water transportation

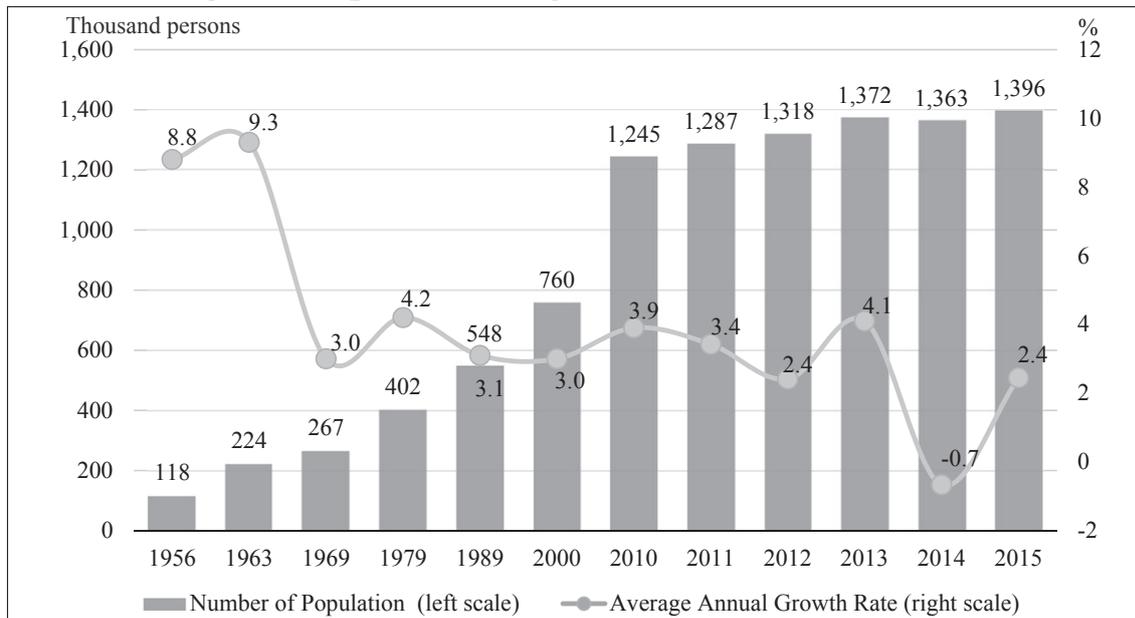
JEL classification codes: R40, A10

1. Overview of the Mongolian Economy

1.1. *Geography.* Mongolia is the 18th largest country in the world with an area of 1.564 million km². Mongolia is a landlocked country, located between the Russian Federation (RF) and the People's Republic of China (PRC). Being landlocked presents more challenges, associated with increased import prices, reduced export revenues and increased logistic costs. The high logistics costs of Mongolia also derive from poor transport infrastructure, underdeveloped transport and logistics services, and slow and costly procedures for dealing with both exported and imported goods.

1.2. *Population.* The total population was 3.06 million as of 2015, which increased by 10.8% over five years from 2.76 million in 2010. Mongolia has a population density of 1.8 people per km² and is very sparsely populated. But in contrast the population density (people per km²) in 2015 for Ulaanbaatar was 291.9, Orkhon Aimag 117.43, and Darkhan-Uul Aimag 29.99. Migration to Ulaanbaatar started in 1990 and rose steadily, greatly increasing between 2000 and 2010. In 2000, 32% of the total population resided within Ulaanbaatar, increased to 45.1% in 2010 and subsequently increased to 45.5% in 2015 (Figure 1).

In Mongolia, the cities of Ulaanbaatar, Erdenet and Darkhan are the main locations for business activities. Hence they play an important role in economic development. However, given the highly concentrated development in urban areas, these cities, especially Ulaanbaatar, have serious traffic problems and negative environmental impacts, such as noise, air, water, and land pollution. These negative factors reduce the economic competitiveness of a city and make its quality of life decline. City logistics is the process for optimizing the logistics and transport activities by private companies with the support of advanced information systems in urban areas, taking into consideration the traffic environment, congestion, safety, and energy savings within the framework of a market economy (Taniguchi et al., 2001).

Figure 1. Population Changes for Ulaanbaatar, 1956–2015

Source: Mongolian Statistical Yearbook, various issues

1.3. *Domestic Economy.* In 2015, GDP was 23.16 trillion togrogs at current prices and 15.84 trillion togrogs at constant prices in 2010. Mongolian economic growth or GDP at 2010 constant prices increased 2.3% in 2015, and compared to 2014 this was lower by 5.6%. The GDP growth rate was at its highest in 2011 at 17.51%, and subsequently decreased to 12.40%, 11.74%, 7.9%, and 2.3% in 2012, 2013, 2014, and 2015, respectively. The shares within GDP of (i) mining and quarrying, (ii) the wholesale and retail trade, and the repair of motor vehicles, (iii) agriculture, forestry, and fisheries, and (iv) transportation and storage were 17%, 17%, 13.6%, and 4.8%, respectively (National Statistical Office of Mongolia, 2015). Mongolia ranks 7th in global resources with around 1,170 known deposits and over 10,000 known instances of 80 different types of minerals have been identified, and the resources of coal, copper, gold, silver and uranium are known to be especially abundant (Mineral Resource Authority of Mongolia, 2014). From 2000, with the rapid price increase of key resources such as coal and oil, major mineral developers around the world turned their eyes to the potential of Mongolia's mineral resources, and began to enter the market. In addition, the government is trying to establish a manufacturing industry-based structure, expand the domestic market, and foster specialists to promote economic growth. However, the high expectations for the Oyu Tolgoi and Tavan Tolgoi development projects have been facing difficulties and delays, and there have been adverse impacts on mine development prospects. There is a need to devise efficient and effective measures to promote mineral resource development. The Mongolian government wishes to grow the economy using the abundant mineral resources, but there are many difficulties such as delays in development, insufficient transport infrastructure, obstacles to third country exports, and the limitations of implemented investments.

1.4. *External Trade.* In 2015 the surplus in Mongolia's foreign trade equaled US\$872.31 million, with exports at US\$4,669.47 million and imports at US\$3,797.16 million. In comparison with 2014 exports and imports they decreased by 19.1% and 27.5%, respectively; however, the foreign

trade balance increased from US\$539.23. Mineral resources provided over 80% of total exports, and this was 79% in 2015 (Table 1).

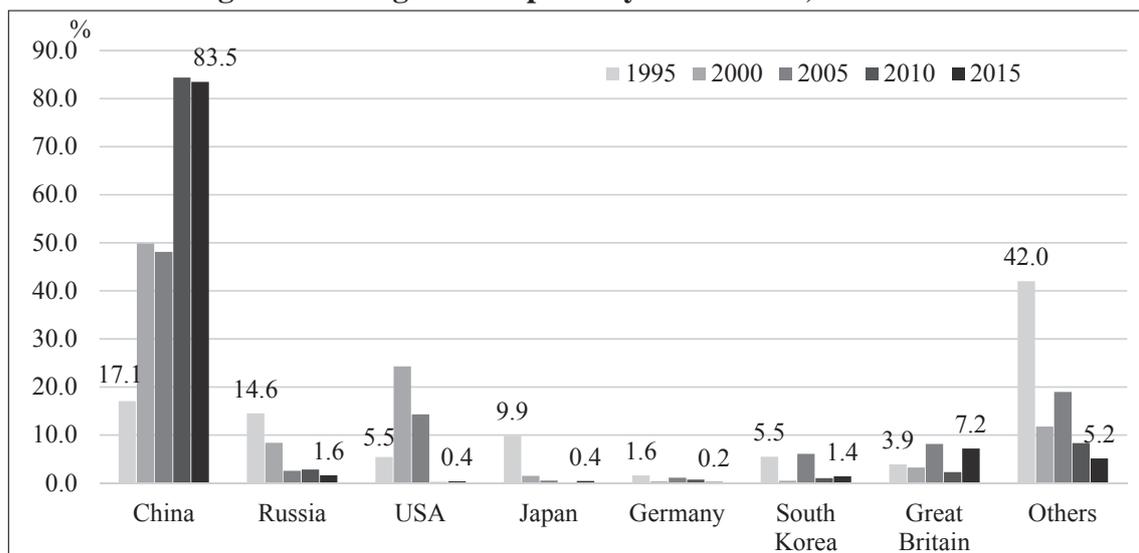
Table 1. External Trade Turnover, Exports, and Imports, 2010–2015 (US\$ million)

Main Indicators of Foreign Trade	2010	2011	2012	2013	2014	2015
Total turnover	6,108.6	11,415.9	11,123.0	10,626.9	11,011.0	8,466.6
Exports	2,908.5	4,817.5	4,384.7	4,269.1	5,774.3	4,669.5
Mineral products	2,354.5	4,299.4	3,909.3	3,495.5	4,791.5	3,678.4
Imports	3,200.1	6,598.4	6,738.4	6,357.8	5,236.7	3,797.2
Mineral products	754.9	1,274.4	1,581.2	1,738.6	1,463.9	936.4
Machinery, equipment, electric appliances, recorders, TV sets and spare parts	681.3	1,783.9	1,653.0	1,395.4	984.7	785.5
Auto, air and water transport vehicles and their spare parts	607.6	1,512.9	1,272.1	1,000.7	615.8	368.1
Balance	-291.6	-1,780.9	-2,353.7	-2,088.8	539.2	872.3

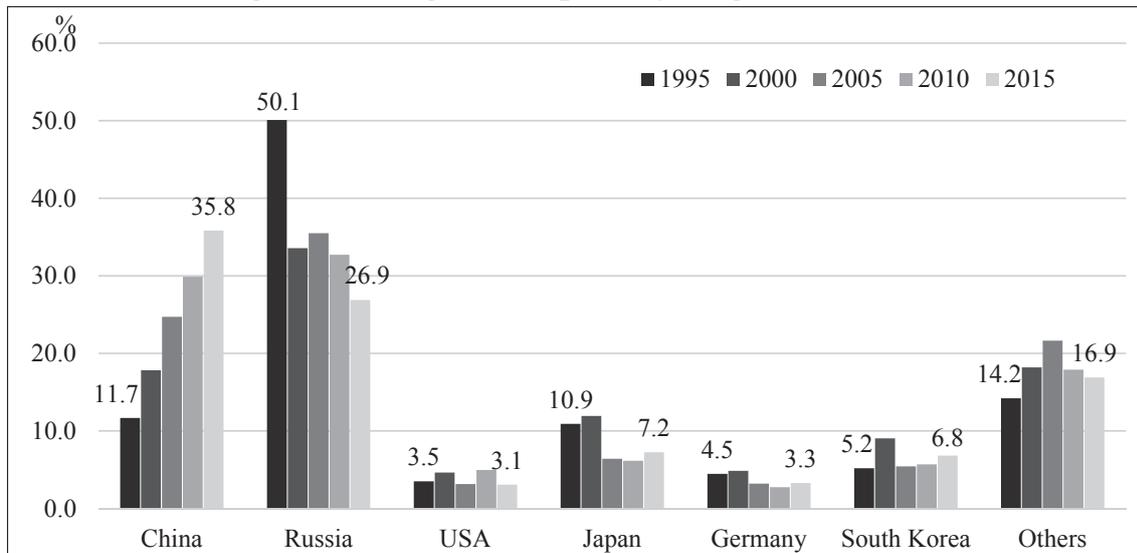
Source: National Statistical Office of Mongolia, 2015

The country's largest foreign trading partners are China (83.5% of total exports, 35.8% of total imports) and Russia (1.6% of total exports, 26.9% of total imports) (Figures 2 and 3). In contrast, trade with other countries accounts for only 14.9% of exports and 37.8% of imports. This can be explained by being a landlocked country with weak infrastructure connecting Mongolia to the world (especially Asia and the EU). The country's trade relations with its two neighbors is expected to remain robust and to grow rapidly.

Figure 2. Mongolia's Exports by Destination, 1995–2015



Source: General Customs Administration of Mongolia, 2016

Figure 3. Mongolia's Imports by Origin, 1995–2015

Source: General Customs Administration of Mongolia, 2016

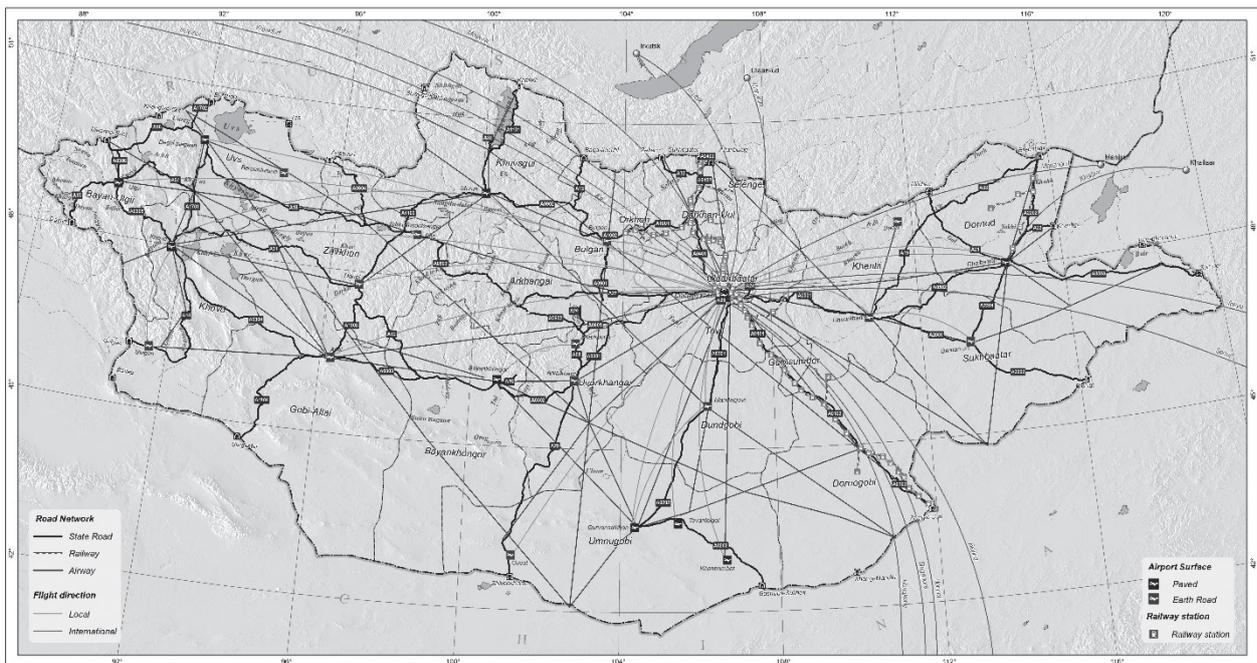
Mongolia's main imports are mineral products, machinery, and electric and electronic equipment. Its main exports are mineral products, such as copper concentrate, coal, crude oil, zinc concentrate, and gold. The Mongolian economy is too dependent on the mineral resources sector, which could entail huge risks. The establishment of controlled sustainable mineral extraction is necessary, especially for mineral commodity exports so as to manufacture value-added products meeting international standards at optimum market prices, as Mongolian mineral resources are non-renewable. Infrastructure and transportation, especially rail transportation, are important for both the domestic and international trade in mineral products. The government of Mongolia (2012–2016) wishes to establish a Minerals Exchange of Mongolia. The government considers that the establishment of a minerals exchange will create a reliable system for connecting suppliers and buyers, consisting of real market prices with more reliable access to information for the international market and investors, thereby increasing the competitiveness of Mongolian mineral products. It is essential to developing countries like Mongolia to widen their development base and meet growing socioeconomic needs. Industry extracts materials from the natural resource base and puts both products and pollution into the human environment. It has the power to enhance or degrade the environment. Therefore the government of Mongolia needs to prioritize particular industries for value-added products in terms of the importance of strengthening the Mongolian economy and positively impacting foreign and domestic investors.

2. Transport and Logistics in Mongolia

Mongolia ranked 119th with a 3.1 rating out of 144 countries in the Global Competitiveness Report 2014–2015 published by the World Economic Forum. This shows that Mongolian infrastructure is unsatisfactory. There are four sub-sectors of transportation operating in Mongolia. These are road, railway, air, and water transport. It is essential that transport and logistics in Mongolia should cope with increased demand for their services (Figure 4).

Mongolia's domestic economy is relatively small, consisting mainly of mining, livestock, and processing industries. Its main exports are mineral products and they account for approximately 80% of total exports. The basis of industrial development lies in the support and development of infrastructure, ecology, geology, and future planned development in accordance with state policies and sociopolitical factors. Increasing demand for transport and logistics involves supporting industrial development, including the agricultural sector's development, and both international and domestic trade development, including the development of free trade zones (FTZs) and special economic zones (SEZs). FTZs and SEZs have already been identified and stipulated by the government as focus points for investment: namely Zamyn-Uud, Altanbulag, and Tsagaannuur. Addressing increasing demand-side factors for industrial development involves attracting foreign investors to relocate to Mongolia, in the process increasing transit traffic through the country while engendering more economic activity, especially in regions away from Ulaanbaatar. Attracting foreign investors to the three FTZs requires that the necessary infrastructure in and around these areas be made available and that policies are formulated and adopted to provide sufficient economic incentives.

Figure 4. Mongolian Road Network



Data source: Ministry of Roads and Transportation, 2015

Source: Asian Infrastructure Research Institute

2.1. Automotive Transport. The road network in Mongolia is 49,250 km in length, of which 12,722 km are state/national roads and 36,528 km are local/provincial roads (including 553 km of mining roads) (Figure 5). The Mongolian road network is classified into the following categories: international roads, state roads, local roads, special purpose roads (including mining roads, etc.), and private roads. International roads consist of three Asian Highways (the AH3, AH4, and AH32). The feasibility study for the AH3 (from Altanbulag to Zamyn-Uud) construction work is underway. According to the current plan in the pre-feasibility study, the AH3 will be a six-lane highway (Zagdradnaa, 2016). State roads are intended to connect Ulaanbaatar with the aimag

centers, important towns, and border crossing points designated by government resolutions. The state roads have 33 routes. Local roads are intended to connect aimag centers with other aimag centers and villages. Mining roads are built by private-party and/or consortium agreement, with the condition of transferring the ownership of roads to the state after the expiration of the mine's life.

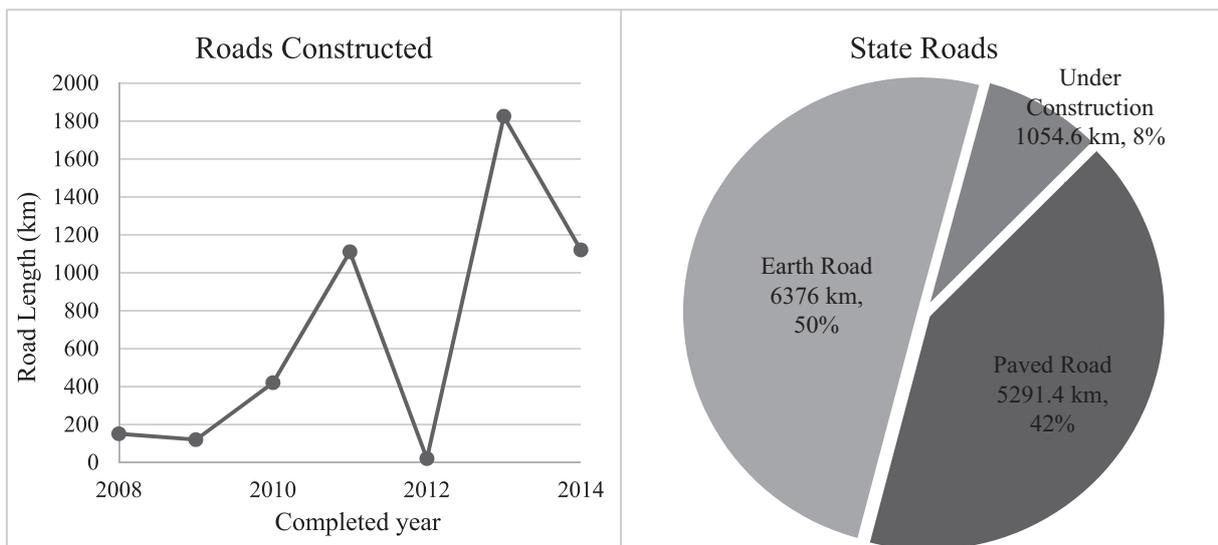
Figure 5. National Road Network



Source: Ministry of Roads and Transportation, 2015

2,656 km of paved roads were built in 2013 and 2014, and as a result Ulaanbaatar is now connected by paved road to the centers of six aimags (Moron, Bayankhongor, Dalanzadgad, Mandalgovi, Sainshand, and Baruun-Urt) (Ministry of Roads and Transportation, 2015). As of today, out of 21 aimags, 17 aimags are connected with Ulaanbaatar by paved road. The total investment amount was 1.4 billion togrogs. The length of paved road increased from 2,950 km to 5,300 km (20% of the state gravel/earth roads were upgraded to paved roads).

Figure 6. Road Conditions in Mongolia



Source: Ministry of Roads and Transportation

Mongolian state road construction has made some social contributions, such as improving

mobility and transportation safety, enabling economic development, and combating poverty. However, road maintenance is essential. Unfortunately, road maintenance in Mongolia is often neglected or improperly performed resulting in rapid deterioration of roads and eventual failure from both climatic and vehicle use impacts. There are 26 companies (20 are state-owned) that operate in road maintenance and repairs (Zagdradnaa, 2016). The National Road Fund was established as the backbone of the road and transportation sector. For 2015, 18 billion togrogs from the central government budget was allocated to road maintenance work (Zagdradnaa, 2016). Limited funds force a setting of priorities on the necessity and severity of the required maintenance, and repairs which are insufficiently undertaken are other minor necessities, such as installing new road signs and lighting. Approximately 200 km out of every 1,000 km of road require maintenance and repairs and that would require 60 billion togrogs.

Although new paved roads increase from year to year, roadside facilities are underdeveloped. *Michi-no-Eki* [Roadside Stations] could be adopted in Mongolia to facilitate the more effective management of national roads and to provide services for road users and to promote the sustainable socioeconomic development of local areas. The Norms and Standards for Roadside Facilities were approved in 2012. These norms and standards will need to be revised in order to have roadside facilities to international standards and to promote local socioeconomic development including local tourism, and trade, etc.

2.2. Rail Transport. There are a small number of stakeholders in the Mongolian railway sector. The current national operator of Mongolian railway transport is "Ulaanbaatar Railway" (UBTZ), which has a joint venture status between the Mongolian and Russian governments, where the countries' shares are equal, at 50/50. The second largest stakeholder is the state-owned "Mongolian Railway" (MTZ) joint stock company. The MTZ was established in 2008. Bold Tomor Yeroo Gol LLC (a private mining company) has 93 km of railway connecting Yeroo on the UBTZ mainline with Khandgait near the Bayangol deposit in Selenge Aimag. The Bold Tomor Yeroo Gol company was established in 2007 and exports iron ore mined at the Bayangol deposit. The total length of railway lines in Mongolia is 1,908 km. Mongolia has 182 locomotives and 6,577 wagons (Figure 7).

Figure 7: Current Railway Sector: General Information

 <ul style="list-style-type: none"> Total railway lines: 1,908 km 	 <p>2014:</p> <ul style="list-style-type: none"> Freight transportation: 21.0 million tonnes Passenger transportation: 3.7 million passengers
 <ul style="list-style-type: none"> Wagons: 6,577 Locomotives: 182 	 <p>Human resources</p> <ul style="list-style-type: none"> UBTZ: 15,002 MTZ: 1,568
 <p>2014:</p> <ul style="list-style-type: none"> Income: 310.1 billion togrogs Profit: 2.4 billion togrogs 	 <p>Stations</p> <ul style="list-style-type: none"> UBTZ: 80 Bold Tomor Yeroo Gol: 5

Source: Ministry of Roads and Transportation, 2015

2.2.1. UBTZ: The railway sector receives 310.1 billion togrogs in income with an annual profit of 2.4 billion togrogs. Freight transport amounted to 21 million tonnes, with 3.7 million passengers

in 2013. Of the total income of freight transportation, 38% comes from iron ore, 19% cargo transport, and coal 11% (Ministry of Roads and Transportation, 2015). Although the net weight of coal transportation is 36% (as compared to iron ore: 26%; construction materials: 10%; oil: 8%; and cargo: 5%), coal transportation makes a financial loss (Ministry of Roads and Transportation, 2015). Coal transportation is for domestic sales, particularly for the energy sector. Therefore, it has a reduced tariff, and compared to other products it is cheaper. The tariffs for coal and fares for passenger transportation are set low by the government. Mongolia exports coking coal and uses non-coking coal for domestic use. There is a restriction on coal transportation through Zamyn-Uud–Erlan from the Chinese side because of environmental issues and congestion. The UBTZ makes a profit from its transport of iron ore and copper.

The passenger service operates at a substantial financial loss. They lost railway passengers due to the new highway from Ulaanbaatar to Zamyn-Uud. Passenger trains have set speeds of 90 km/hour and 80 km/hour, with an average speed of 42 km/hour (this speed includes the time for stops, and UBTZ trains are some of the slowest). Moreover, the UBTZ railway improvements of signals and communications on the mainline (Sukhbaatar–Sainshand–Zamyn-Uud line) are still underway. The most important factor for improving freight and passenger transportation is to improve signaling and communications.

The mainline's capacity is 25 million tonnes of freight transportation. The UBTZ development strategy plan (development/expansion plan for Mongolian railways) up to 2020 was developed. According to this development plan, they were expecting to reach 34 million tonnes of freight transportation by 2016, and 100 million tonnes by 2020. The planned volume of transportation will be highly dependent on the development of UBTZ. The UBTZ development plan (UBTZ partnership agreement in strategic development and modernization) to 2020 comprises four parts:

- 1) 770 km of the north rail line (Erdenet–Artssuuri) will be constructed. The north line will create a high volume of traffic in coal transportation from Elista, Russia. Therefore, the north line will be essential for the increase in transit traffic.
- 2) The mainline (Sukhbaatar–Zamyn-Uud) will become double-tracked and electrified (1,100 km, including the Bogdkhan railway).
- 3) 239 km of the east rail line (Choibalsan–Ereentsav) will be constructed.
- 4) The west line is still under study

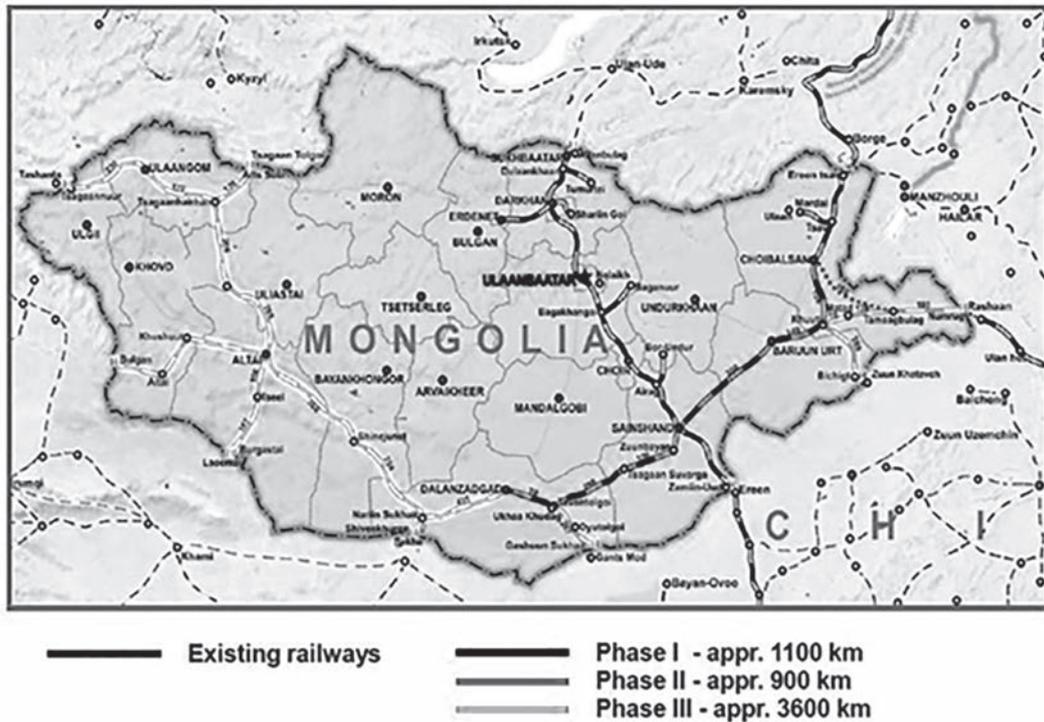
2.2.2. *MTZ*: The main objective of the railway sector is to implement new railway projects. According to the State Policy on Railway Transportation of Mongolia (Parliament Resolution No. 32, 24 June 2010), 5,600 km of railway is planned to be constructed (Figure 8). MTZ has been granted the concession rights to develop, construct, finance and operate approximately 1,800 km of railway as per phases 1 and 2 of the State Railway Policy.

- Tavan Tolgoi/Ukhaa Khudag to Gashuunsukhait (“South Line”) (~ 267 km);
- Tavan Tolgoi to Khoot (~ 918 km);
- Khoot to Choibalsan (~ 155 km);
- Choibalsan to Ereentsav (~ 238 km);
- Khoot to Bichigt (~ 200 km) or to Nomrog (~ 380 km);

- Nariinsukhait to Shiveekhuren (~31 km).

However, new railway development projects are at a standstill due to current economic conditions and a lack of investment. The mining industry is a key economic industry in Mongolia. The expected export volume of minerals and mining products from the three major mining deposits of Tavan Tolgoi, Oyu Tolgoi and Nariinsukhait is 100 million tonnes by 2020.

Figure 8. State Policy on Railway Transportation



Source: Ministry of Roads and Transportation, 2015

Construction of part of the 267 km Ukhaa Khudag–Gashuunsukhait line had already started, but is at a standstill due to funding issues. The new railway line plan is as follows:

- Phase 1: US\$5.2 billion invested, expected duration 2013–2016;
- Phase 2: Planned by Nippon Koei.

According to this development plan, they were expecting to reach 34 million tonnes in freight transportation by 2015. The Nariinsukhait–Shiveekhuren line is 45 km, of which 20 km was decided upon as standard narrow-gauge track. The implication will be the possibility to transport 28 million tonnes of coal through this border point. The 230-km Khoot–Bichigt line was designed by Nippon Koei and it has the potential to transport 10 to 15 million tonnes of coal. Currently they are planning a narrow-gauge track.

2.2.3. Bogdkhan new railway: The feasibility study and design of the Bogdkhan new railway will be conducted by the ADB. However, the financing is still open for other investors to co-partner with the ADB through international bidding. On the other hand, the new logistics center

at Khushgiin Khundii will be developed with or without the new railway. That means that the new logistics center at Khushgiin Khundii will have a railway line whenever the Bogdkhan new railway is developed. Transit traffic will bypass Ulaanbaatar. The freight traffic will be sorted at the logistics center and can be redistributed to Ulaanbaatar. However, all freight and transit traffic will pass through it. The current Maanit to Ulaanbaatar line has a lot of curves (a critical point). There are a lot of complications with these curvatures, such as speed and volume capacity. The new line will be much straighter which means more speed and more volume, thus more efficiency. It will be efficient once the new airport train connects to Ulaanbaatar. The new airport will open in 2017.

The Transit Mongolia Program has been being implemented since 2008. A trilateral conference on transit railway transportation passing through Mongolia, Russia and China was held in December 2013 and the three countries concluded a joint statement.

2.3. Air Transport. The Mongolian Civil Aviation Authority (MCAA) is managing the operations of Mongolian civil aviation organizations in accordance with the Law on Civil Aviation. There are three main aviation companies, including passenger transportation companies with regular operations such as “MIAT”, “Aero Mongolia” and “Hunnu Air” and eight smaller aviation companies. MIAT is the national courier. As MIAT is the national courier, the MCAA supports it; the MCAA gives first choice to MIAT when new routes are plotted and approved by the Ministry of Roads and Transportation. Hunnu Air is a 100% private company.

Mongolian civil aviation organizations are studying how to increase the number of passengers transported via developing new domestic flight routes. Mongolian civil aviation international air transport is increasing the number of flight destinations. Currently Mongolian civil aviation organizations are in a constant relationship regarding flight clearance issues with the same organizations in Russia, Germany, China, the ROK, Japan, and Turkey, and their representative agents are operating in Berlin and Frankfurt in Germany, Moscow in Russia, Beijing, Hohhot, and Hong Kong in China, Seoul in the ROK, Tokyo in Japan, and Istanbul in Turkey, providing ticketing, reservation, luggage, and passenger services. Over the last few years, Mongolian civil aviation organizations have been researching the development of possible new international routes, in particular to increase the number of routes to Mongolia’s two neighboring countries, including destinations in northern Russia (Novosibirsk, Krasnoyarsk, and Khabarovsk) and in China (Manzhouli, and Harbin, etc.). Hunnu Air has striven to create routes (Frankfurt, some Russian cities such as Khabarovsk, and Manzhouli).

There are no transit flights for either passengers or cargo yet. A new transit hall at the Chinggis Khaan Airport (or Buyant-Ukhaa Airport) has opened recently and it is expected to have some transit traffic there. Previously there were feasibility studies on transit traffic, but they didn’t have the appropriate facilities for transit traffic. The new airport will have transit halls when it starts operations in June 2017. Compared to other countries, demand must be lower in Ulaanbaatar. Therefore it is more likely that other countries would choose connecting routes such as EU–Ulaanbaatar–Seoul to combine the demand in one route. There are some Russian cities that wish to fly over Mongolia to China or to Frankfurt and other European cities. There are more opportunities for new routes with Russian cities (for example from Irkutsk).

Carried cargo in 2014 was 3.4 thousand tonnes, which decreased from 4.1 thousand tonnes in 2013. MIAT has the right to transport goods, and they are a member of the International Air Transport Association (IATA). MIAT has the right to transport dangerous items, explosives, combustibles, chemicals, toxic substances and hazardous materials. Currently, the facilities for handling air cargo are insufficient. The new airport will have larger cargo terminals. Construction of the new airport will finish in June 2017, and after the new airport is complete the MCAA plans to move a major part of Chinggis Khan Airport to the new airport. If an FTZ is developed around the airport, it could increase air passenger traffic, and local people could work within the FTZ as well. It is essential to ensure an appropriate business environment and more flexible taxation and fees. The new draft law on an FTZ was submitted to parliament, but it has not yet been approved. The Ulaanbaatar city government will be responsible for the construction and development of the shuttle and highways. According to the plan, the highway will be ready by the time the new airport is in operation. There will be no employee residences near the airport as the nearby areas are designated as an FTZ. That might cause some problems. As transit air cargo has been increasing year on year, Mongolia's other dream project should be MICA (Mongolian International Cargo Airport).

2.4. *Water Transport.* Mongolia has 580 km of waterways. Lake Hovsgol (135 km), the Selenge River (270 km), and the Orkhon River (175 km) offer navigable routes but carry little traffic. Most rivers and lakes freeze over in winter and are only navigable from May to September. As such, waterway transport makes virtually no contribution to Mongolia's overall transport industry.

2.5. *Logistics.* Logistics are not very well developed in Mongolia. There are no regulations or legal frameworks for logistics services. Mongolia does not have any logistics hub including freight terminals, truck decks, cross-dock operations, and distribution centers, etc. Imported goods from Russia and China are carried by trucks from Zamyn-Uud and Altanbulag, but there are no logistics and roadside services. Table 2 shows a comparison of transportation costs (TEU twenty-foot equivalent units) for landlocked countries.

Table 2. Comparisons of Transportation Cost per TEU (Twenty-Foot Equivalent Unit) of Landlocked Countries

Variables	Almaty, Kazakhstan	Tashkent, Uzbekistan	Dushanbe, Tajikistan	Bishkek, Kyrgyzstan	Ulaanbaatar, Mongolia Export	Ulaanbaatar, Mongolia Import
Distance to the Closest Seaport, km	3,380	2,720	2,040	3,100	1,700	1,700
Cost /TEU/ km, US\$	0.37	0.35	0.59	0.34	0.61	0.87

Source: Mongolian Logistics Association, 2015

This comparison shows that the Mongolian unit cost per TEU (for the distance from Ulaanbaatar to Tianjin Port, China) is high. Both China and Mongolia impose high tariffs. The UBTZ has a joint venture status between the Mongolian and Russian governments, where the countries' shares are equal, at 50/50. Therefore, Mongolia cannot control transport tariffs freely.

The World Bank has been conducting a Logistics Performance Index (LPI) Survey every two years since 2007. According to the LPI survey reports, Mongolia ranks approximately 138–140 out of 156 countries (Table 3).

Table 3. LPI Rank Comparisons

Country	LPI	Customs	Infrastructure	International Transshipment	Logistics Quality and Competence	Tracking and Tracing	Timeliness
1. Singapore	4.09	4.02	4.22	3.86	4.12	4.15	4.23
26. China	3.49	3.16	3.54	3.31	3.49	3.55	3.91
95. Russia	2.61	2.15	2.38	2.72	2.51	2.60	3.23
68. Botswana	2.32	2.09	2.09	1.91	2.29	2.59	2.99
138. Mongolia	2.25	1.98	2.22	2.13	1.88	2.29	2.99

Source: The World Bank, 2014

In order to improve the LPI for Mongolia, it is necessary to improve the following issues which are appropriate for the Mongolian case:

- 1) Management of the transportation routes and logistics corridors to seaports, and improvement of the transit transport agreements with Mongolia's two neighbors;
- 2) Border management and improvement of collaborative cooperation with the neighboring countries' border offices; and
- 3) Transportation and logistics quality of domestic transportation, timeliness and technology for transportation, and transportation costs.

Domestic freight transportation is highly underdeveloped, and Mongolia needs a freight transportation control and monitoring office. Logistics for agriculture, construction, petroleum, and the mineral resource industry should be introduced in Mongolia.

According to E. Dorjzovd, General Director of Landbridge LLC and President of the Freight Forwarders' Association of Mongolia, the Freight Forwarders' Association consists of 200 members, of which 100 companies are active. Among the 100 companies, 50 freight forwarders have regular business and the other 50 freight forwarders' business is irregular (on and off). 65–70% of the total volume of transport, freight forwarding, and logistics services are handled by 6 or 7 companies. There are very few foreign freight forwarders.

Transporting products depends on economic conditions. Mining booms encourage imports of mining equipment and technologies. When the government started to issue housing loans at a low interest rate (8%), imports of construction products and materials increased. Currently, there are no mining booms and housing loans with low interest rates, and imports of consumer goods predominate. However, the transport volume of consumer goods is not high. Used car imports from Japan take the largest share of consumer goods. Approximately 500–600 containers of used cars per year are imported from Japan. For new car imports, the main imported vehicles are from Ford from the United States, Mercedes from Germany, and Toyota from Japan. They use containers for automobile shipments. It might be possible to use double-decker carriers for

many cars to and from Vladivostok, but this type of shipment is very expensive. Transporters and freight forwarders do not initiate business and they follow the existing business because they depend on economic conditions and business. This means that transporters and freight forwarders are moving goods to any business.

Mongolians consume 240,000 tonnes of meat annually. Without refrigeration meat loses 15% of its weight. This means 36 million kg of meat is lost annually during transportation. Supposing that 1 kg of meat is 5,000 togrogs, then a loss of 180 billion togrogs can be estimated. This is one of the reasons that Mongolian meat prices are high compared to meat prices in the ROK. It is also the case with vegetables. Comprehensive studies were conducted on agriculture, construction, petroleum, and the mineral resource industry. They concluded that logistics for agriculture, construction, petroleum, and the mineral resource industry should be introduced in Mongolia. They also require the CAS (Cells Alive System) refrigerating system, which keeps food products fresh on the cellular level for a very long time. Other systems are unreliable. The CAS system is suitable for Mongolian conditions. This system will be useful in both exporting and importing food products. There are temperature controls with an insulation system, and thus it will give protection from the extreme continental climate.

The priority will be to improve logistics in Tianjin (10 hectares in area), Zamyn-Uud, and Ulaanbaatar (Bogdkhan Railway). These logistics centers will need to be integrated. Regarding Bogdkhan logistics center, when the government builds a facility they will need someone to operate it, but often they sell it at a cheaper price than the cost of its construction. Therefore they need the railway tracks first, and then they should discuss logistics.

3. Relationship with Neighboring Countries

Mongolia is a landlocked country between China to the south and Russia to the north. The only way to connect to third country markets is by crossing either the Chinese or Russian border. This results in transportation costs dependent on those neighbors.

The Chinese president Xi Jinping's state visit on 8 May 2014 resulted in agreements over important issues of roads, transportation and infrastructure, and the signing of a Memorandum of Understanding. The agreements enable and increase the amount of authorized use of Chinese seaports which are open to foreign trade for Mongolia. These seaports are the north Chinese and northeastern Chinese regional open-trade seaports of Dalian, Jinzhou, Yingkou, Qinhuangdao, Huanghua, Huangdao and Tianjin. The previous 1991 agreement only authorized the use of Tianjin Xingang international port. The principal agreements included no less than a 40% tariff discount, customs and VAT exemptions for Mongolian international transit cargo through Chinese territory, and running the transportation of one-third of Asia-to-Europe transit cargo through Mongolian territory. This enables the opportunity to transport Tavan Tolgoi coal through China to third country markets instead of transporting it all to China. The agreement has a tariff discount that may lower the tariff more than domestic tariffs. The Memorandum of Understanding between the Ministry of Roads and Transportation of Mongolia and the Railway Authority of the People's Republic of China on the renewal of the 1955 "Mongolia and China Border Railway Agreement"

includes the development of four new border crossings (Shiveekhuren–Sekhee, Gashuunsukhait–Gantsmod, Bichigt Zuun–Khatavch, and Sumber–Ashaan).

The state visit of Russian president Vladimir Putin in September 2014 resulted in the signing of 15 documents, including on: increasing the capacity of the main railway line of Ulaanbaatar Railway (UBTZ) to an annual capacity of 100 Mt, and this is proposed by electrifying the UBTZ line, extending the Salkhit–Erdenet line to the border to the northwest, opening a new railway crossing connecting to Kyzyl in Tuva, Russia, which would enable Russian mineral commodity access to China through Mongolia; the construction of the “Bogdkhan” railway line to increase rail transportation, and; a joint venture for establishing a new vertical corridor through Mongolia’s western regions. The bilateral meeting also resulted in a shared ownership of the Russian invested Rajin port in the DPRK. For Mongolia this provides for the first time the opportunity to possess a seaport. The Russian government is favorable to the rail transportation of Mongolian mineral commodities, but the issue is as to whether the Russian railway line capacity is sufficient for Mongolian mineral commodities. At present there is only a line in the eastern region which can transport mineral commodities through Russia to third country markets, but this line is too long to be feasible.

4. Conclusion

Mongolia is too dependent on its vast mineral resources, which are mostly non-renewable resources. This prompts us to seek proper use and appropriate measures such as environmental protection and to advance value-added products on world markets with optimum prices as a priority. The development of these transportation and logistics systems would solve a lot of Mongolian socioeconomic issues. An integrated and connected transportation system that extends to all corners of Mongolia, and international open border ports will be the foundation for the development of mineral resources, transportation, logistics, agriculture and other industries.

Construction of new roads is important. However if there is no maintenance, then the new roads and existing roads will deteriorate. The main problems of road maintenance are related to roads carrying overloaded trucks and to extreme climate conditions. The current state roads have two lanes and belong to the Road Class III, which has a weight limit of 10 tonnes per axle. Since we know there are many overloaded trucks, we need to construct roads to a higher standard and with better technology. Again, although new paved roads are increasing from year to year, there are no roadside services. *Michi-no-Eki* [Roadside Stations] could be adopted in Mongolia to facilitate the more effective management of national roads and to provide services for road users and to promote the sustainable socioeconomic development of local areas. Certain roadside stations, which are located at important junctions for long-distance travel, should be integrated with logistics hubs. Therefore, comprehensive roadside development studies including transport demand analysis are needed. Moreover, freight transports do not have any registration, which creates informal transportation services. It may be possible to introduce RFID technology for transportation and logistics. There are insufficient (almost no) transportation specialists who can undertake transport modeling and future planning. It is important to enhance the human resource capacity for transportation and logistics specialists.

The following are short summaries of issues in railway transportation: (i) a need for investment for renovation and improvement of assets. Over 50% of the locomotives and wagons of UBTZ have been in use for more than 25 years; (ii) main line (TMGR) improvement (double track or new developments, such as electric) is essential; (iii) Mongolia needs to make a legal decision on ownership of newly developed railways. It may be possible to make a new railway the property of the state. On such a railway, any Mongolian operator will be able to carry freight and passengers; (iv) unified automatic signals, controlling and monitoring systems are needed; and (v) train stations need to meet international standards and to improve passenger transportation services.

Mongolian civil aviation organizations are researching the development of possible new international routes, particularly increasing the number of routes to the two neighboring countries. If an FTZ is developed around the new airport, it could increase air passenger traffic, including transit traffic, and also local people could work within the FTZ. Therefore, the government should support and ensure the optimization of the legal and trade environment in the FTZ.

Improving logistics in Tianjin (10 hectares of area), Zamyn-Uud, and Ulaanbaatar (Bogdkhan Railway) should be a top priority in logistics development. Moreover, logistics hubs and roadside stations should be integrated in order to support the sustainable growth and infrastructure development of local areas.

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Study on the Impact of a Free Trade Agreement between Mongolia and the Eurasian Economic Union*

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Abstract

This study aims to undertake a detailed quantitative analysis on the formation of a free trade agreement between Mongolia and the Eurasian Economic Union (EAEU). Mongolia has recently concluded an economic partnership agreement with Japan; however, the country further seeks to align with integration in other regions in order to accelerate its economic and social development. Therefore, this research work concentrates on the next possible regional integration, namely with the EAEU.

In doing so, we utilize the Computable General Equilibrium (CGE) model and the latest GTAP database, 9.0, provided by Purdue University. Assuming a hypothetical scenario of full liberalization, the macroeconomic and trade effects were investigated.

Keywords: trade agreement, Eurasian Economic Union, CGE analysis, GTAP database

JEL classification codes: F13, F14, F17

1. Objective of the Study

This study analyzes the impacts of a free trade agreement on Mongolia and the EAEU members. The study used the Global Trade Analysis Project (GTAP) database for this purpose. The GTAP model is a comparative, static multiregional computable general equilibrium (CGE) model that uses a common global database. This is an analytical tool used to understand the dynamics of major economic variables in a simulated environment. Utilizing the GTAP database (the latest version, 9.0), a number of simulations were carried out in this study, involving the scenario of the full liberalization of tariffs, being completely eliminated, on all products traded between Mongolia and the EAEU members.

The results of the simulations were then used to assess the impact of liberalization on Mongolia and the EAEU members, as well as on certain other countries. This study tries to shed light on the possibilities for the welfare and macroeconomic implications, which will aid policymakers in assessing the actual situation in quantitative terms.

According to an ADB study, it is necessary to conduct economic evaluations and studies of FTAs both before negotiation and after implementation. A clear and accurate understanding of the potential effects of an FTA before its negotiation (an ex-ante evaluation) is necessary in deciding the overall negotiation position of a country, based on an overall cost–benefit analysis and the identification of what the country can and cannot provide to its FTA partners in the negotiations. Pre-negotiation studies are also helpful to exploit the potential export benefits of FTAs and to draw up necessary adjustment policies for sectors which may be negatively affected by FTAs. The results of pre-negotiation impact assessment studies should be reflected effectively in the FTA negotiations.

2. Literature Review

There have been several studies conducted on the possibilities of free trade agreements between Mongolia and other countries. During the past few years, negotiations between Mongolia and other trading partner countries have created considerable interest among Mongolian and foreign researchers.

For example, Sh. Enkhbayar and Tomoyoshi Nakajima (2013) studied the impact of Mongolian FTAs with the countries in Northeast Asia, using the GTAP database. They found that Mongolia's bilateral FTAs with four Northeast Asian countries would be almost negligible as Mongolia's import tariff rates are already relatively low and the partners impose zero tariffs on Mongolia's major export commodities (mining and livestock origin products).

There have been some other studies which assessed the possibility for Mongolia concluding a trade agreement with Japan. In 2010 and 2012, N. Batnasan and N. Otgonsaikhan examined the impact of the proposed EPA between Mongolia and Japan. The studies were both qualitative and quantitative, using CGE analysis. Additionally, N. Batnasan, N. Otgonsaikhan, D. Narandalai, and Ts. Oyunbileg used a CGE model to evaluate the risks and possible paths for concluding trade agreements with Mongolia's five major trading partner countries, namely Japan, Russia, China, the United States and Canada. They suggested that Mongolia's domestic consumption and production will accelerate in the case of liberalizing trade with any of these five countries. However, Mongolia's GDP will not increase significantly, with less than 1% growth.

Similarly, using a CGE model, a team comprised of members from the Mongolian Academy of Sciences and the Business School of the National University of Mongolia (2014) examined the potential impacts and risks of bilateral trade agreements between Mongolia and its two neighbors, Russia and China. The study suggested that there will not be big impacts on Mongolia's economy in the short run. However, in the medium to long-term, the proposed agreements might lead to significant increases in the extraction industry. As a consequence, it would bring on the "Dutch Disease" due to the increased exports of the extraction sector.

It is important to emphasize that there is a lack of quantitative studies with regard to trade agreements with the Eurasian Economic Union. Therefore, the objective of this study is to fill this gap and support assessments on the possible economic impacts and risks for Mongolia, utilizing a general equilibrium methodology.

3. Methodology

The actual assessment of the potential and actual impacts of an FTA is performed mainly using economic data and methods. To analyze the economy-wide impact of trade liberalization, a CGE model of global trade is employed for the model simulations. A CGE model numerically simulates the general equilibrium structure of the economy. It is built on the Walrasian general equilibrium system, in which the central idea is that market demand equals supply for all commodities at a set of relative prices. Moreover, a CGE model has solid micro-foundations that are theoretically transparent. Functional forms are specified in an explicit manner, and interdependencies and feedback are incorporated. Therefore, the model provides a framework for assessing the effects of policy and structural changes on resource allocation by clarifying "who gains and who loses".¹

By studying the simulated changes caused by the FTA, this method is able to answer questions, such as: how does real gross domestic product change in a country that joins an FTA?; how does the country's trade balance change?; how do the country's terms of trade change?; how do import and export prices in a particular sector change?; how do output and trade in different sectors within the country change?, and; how does the country's welfare change?

The main advantage of the CGE method is that, given the FTA-related policy changes in various markets, the analysis can quantitatively capture the effects of these changes on all markets, rather than just one market.

The present study used the GTAP database version 9.0 which contains a total of 140 countries and 57 sectors. Both the factors and product markets of each region in the GTAP model are assumed to be characterized by perfect competition. The reference year used for the database corresponds to the global economy in 2011.

4. Regional and Sectoral Aggregation

In this study, the 140 GTAP countries or regions were aggregated into 14 regions: Russia, Kazakhstan, Belarus, Armenia, Kyrgyzstan, Mongolia, Oceania, East Asia, Southeast Asia, South Asia, North America, Latin America, 25 EU members, and the rest of the world. However, our main focus is on the five EAEU member countries and Mongolia. The regional and sectoral aggregations of the model are illustrated in Tables 1 and 2.

Table 1: Regional Aggregation of the Model

Model Regions	GTAP Database 140 countries or regions
Russia	Russia
Kazakhstan	Kazakhstan
Belarus	Belarus
Armenia	Armenia
Kyrgyzstan	Kyrgyzstan
Mongolia	Mongolia
Oceania	Australia, New Zealand, Rest of Oceania
East Asia	China, Hong Kong, Japan, Korea (ROK), Taiwan, Brunei Darussalam, Rest of Asia
Southeast Asia	Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand Vietnam, Rest of Southeast Asia
South Asia	Bangladesh, India, Nepal, Pakistan, Sri Lanka, Rest of South Asia
North America	Canada, United States, Mexico, Rest of North America
Latin America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Rest of South America
EU 25	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom
Rest of the World	Rest of the World

Table 2: Sectoral Aggregation of the Model

Model Sectors	GTAP Database 57 sectors
Grains, Crops	Paddy rice, Wheat, Cereal grains nec, Vegetables, fruit, nuts, Oil seeds, Sugar cane, sugar beet, Plant-based fibers, Processed rice, Crops nec
Animal Products	Raw milk, Fishing
Wool	Wool, silk-worm cocoons
Meat	Cattle, sheep, goats, horses, animal products nec, Meat: cattle, sheep, goats, horse, meat products nec.
Forestry	Forestry
Coal	Coal
Oil and Gas	Oil, gas, petroleum, coal products
Other Minerals	Minerals nec
Processed Food	Vegetable oil & fats, Dairy products, Sugar, Food products nec, Beverages and tobacco products
Textiles and Apparel	Textiles, apparel
Leather Products	Leather products
Wood and Paper	Wood products, Paper products, publishing
Metals	Ferrous metals, Metals nec, Metal products
Automobiles	Motor vehicles and parts
Machinery and Equipment	Transport equipment nec, Electric equipment, Machinery and equipment nec
Other Manufactured Products	Chemical, rubber, plastic products, Mineral products, Manufactures nec,
Electricity	Electricity
Services	Gas manufacture, distribution, Water, Construction, Trade, Transport nec, Sea transport, Air transport, Communication, Financial service nec, Insurance, Business service nec, Recreation and other services, Public administration, Defense, Education, Health, Dwellings

The composition of GDP of the regions is described in Table 3. Mongolia's export and import shares each exceed 70% of GDP, which are the highest compared to other regions. Meanwhile, Mongolia's ad valorem import tariff rate is relatively low at 5%, as compared with other regions. However, most of those regions' ad valorem import tariff rates are zero for raw materials, such as animal-origin products, meat, wool, and coal. It should be noted that the Eurasian Economic Union members impose a 4% import tariff, the lowest rate, on coal, grains and crops, and other manufactured products from Mongolia. On the other hand, the EAEU imposes higher ad valorem tariffs on Mongolian products, such as meat (21%) and processed food (19%) (Tables 4 and 5).

Table 3: Composition of GDP (%)

Item	Regions											
	EAEU	Mongolia	Oceania	East Asia	SE Asia	South Asia	N America	Latin America	EU 25	MENA	SSA	Rest of World
Private Consumption	50.1	47.3	54.8	47.7	58.2	66.2	68.3	62.3	59.7	51.9	64.5	57.7
Investment	22.4	47.7	26	33.6	28.3	31.1	19.1	19.7	18.9	24.1	20.1	21.9
Government Consumption	17.8	12.6	18.3	16	10.7	11.8	16.7	17.5	22.2	16.1	15.1	15.8
Exports	31	71	21.8	27	55.6	19.6	14.7	18.1	39.3	40.7	31.3	45.5

Imports	-21.3	-78.6	-20.9	-24.3	-53	-28.7	-18.8	-17.6	-40.1	-32.8	-31	-41
Total	100	100	100	100	100	100	100	100	100	100	100	100

Notes: MENA = Middle East and North Africa; SSA = Sub-Saharan Africa

Source: Compiled from GTAP Database 9.0

Table 4: Percentage Ad Valorem Rates of Mongolia's Import Taxes

Sector	Regions										
	EAEU	Oceania	East Asia	South east Asia	South Asia	North America	Latin America	EU 25	MENA	SSA	Rest of World
Grains, Crops	5	0	7	2	4	5	3	5	1	2	0
Animal Products	0	0	4	1	0	0	0	0	0	0	0
Wool	5	0	0	0	0	0	0	0	0	0	0
Meat	14	5	3	2	4	5	2	4	0	0	0
Forestry	5	0	4	0	0	0	0	0	2	0	0
Coal	2	0	4	0	0	0	0	0	0	2	0
Oil and Gas	5	3	5	4	5	5	1	5	0	0	2
Other Minerals	5	5	5	1	0	5	2	4	1	2	0
Processed Food	6	5	6	5	5	5	5	5	5	0	5
Textiles and Apparel	5	5	5	5	5	5	1	5	4	0	3
Leather Products	5	5	5	5	3	5	3	5	5	0	5
Wood and Paper	5	5	5	5	5	5	0	5	4	1	5
Metals	5	5	5	5	5	5	5	5	5	4	5
Automobiles	5	5	5	5	5	5	5	5	5	1	5
Machinery and Equipment	5	5	5	3	5	5	5	5	5	4	5
Other Manufactured Products	5	5	5	5	5	5	3	5	5	3	5
Electricity	5	0	4	0	0	0	0	0	0	0	0

Source: Compiled from GTAP Database 9.0

Table 5: Percentage Ad Valorem Rates of Import Taxes of Other Regions vis-à-vis Mongolia

Sectors	Regions										
	EAEU	Oceania	East Asia	SE Asia	South Asia	North America	Latin America	EU 25	MENA	SSA	Rest of World
Grains, Crops	4	0	11	0	0	0	0	0	0	0	0
Animal Products	0	0	0	4	0	0	0	0	0	0	0
Wool	5	0	9	0	5	0	0	0	0	0	0
Meat	21	0	13	0	0	0	0	0	4	21	26
Forestry	0	0	0	0	0	0	0	0	0	0	0
Coal	4	0	0	0	0	0	0	0	0	0	0
Oil and Gas	0	0	0	0	0	0	0	0	0	0	0
Other Minerals	13	0	0	1	5	3	6	0	0	1	0
Processed Food	19	4	12	2	8	0	0	0	39	2	1
Textiles and Apparel	13	5	13	4	6	25	3	0	2	11	6
Leather Products	16	2	9	0	0	24	0	0	1	2	0
Wood and Paper	11	0	1	0	7	0	0	0	0	12	0
Metals	14	1	1	2	10	0	0	0	0	5	1
Automobiles	9	0	0	33	0	0	0	0	0	18	0
Machinery and Equipment	18	2	1	5	7	0	11	0	0	4	0
Other Manufactured Products	4	2	6	0	13	0	1	0	0	1	2
Electricity	0	0	0	0	0	0	0	0	0	0	0

Source: Compiled from GTAP Database 9.0

5. Macroeconomic Effects

To assess the impact of an FTA, we assume full trade liberalization between Mongolia and the EAEU members. Under this scenario, all tariffs on imports from all the EAEU members to Mongolia were reduced to zero and, similarly, tariffs on all sectors imported by EAEU members from Mongolia were eliminated. In other words, we simulate a scenario of an FTA where tariffs on all products traded between Mongolia and the EAEU members are completely eliminated.

The implications of full liberalization on selected macroeconomic indicators for the regions are presented in Table 6. The results indicated Mongolia would experience relatively positive effects as a result of a free trade agreement with the EAEU. For example, Mongolia's overall welfare effect, which measures the effect on public welfare, increases by US\$6.64 million. It indicates that Mongolia's consumers would benefit from price decreases due to tariff reductions

with the EAEU countries. Meanwhile, Mongolia's GDP increases by 0.14% and household income rises by 0.18%. The GDP price index² would also experience a 0.16% increase. On the other hand, there are almost no effects for the EAEU member countries. Among those countries, Russia and Belarus had slightly positive effects of 0.55% and 0.36% increases, respectively, in terms of total welfare. In terms of GDP change and household income, there were no effects for all the EAEU members.

The results for East Asia were very remarkable. Its welfare effect decreases by 8.3% when Mongolia enters into an FTA with the EAEU. As mentioned above, the East Asia aggregation consists of countries and regions such as China, Hong Kong, Japan and the ROK, which are Mongolia's main trading partners. Mongolia's alignment in an FTA with the EAEU members may lead to trade diversion effects away from the East Asian countries (Table 6).

To sum up, as far as concerns the selected macroeconomic variables of welfare (equivalent variation), GDP, and household income, Mongolia gains effectively if there is complete tariff elimination or tariff liberalization. Under the full tariff elimination (full liberalization), Russia and Belarus would benefit slightly in terms of welfare compared to the other three countries.

In a comparative static applied general equilibrium model, with population, endowment and technology being fixed, the only way to increase welfare is to reduce the excess burden arising from existing distortions.³ Mongolia is a country that consistently earns large positive welfare gains, mostly on account of terms of trade gains. This is due to the fact that even prior to an FTA the tariffs imposed by Mongolia for almost all products exported from the EAEU countries were very low (Table 7).

Table 6: Changes in Selected Macroeconomic Variables
Full Liberalization Scenario (All EAEU Members and Mongolia)

Region/Country	Total Welfare Effect, US\$ Million	Change in GDP Price Index, %	Change in Value of GDP, %	Change in Household Income, %
1 Russia	0.5508	0.0006	0.0006	0.0006
2 Kazakhstan	0.1019	0.0003	0.0003	0.0003
3 Belarus	0.3632	0.0015	0.0016	0.0016
4 Armenia	-0.0052	0	0	0
5 Kyrgyzstan	0.0075	0.0002	0.0002	0.0002
6 Mongolia	6.6357	0.1438	0.1619	0.1856
7 Oceania	1.4894	0.0003	0.0003	0.0003
8 East Asia	-8.2891	-0.0002	-0.0002	-0.0002
9 Southeast Asia	0.3569	0	0	0
10 South Asia	-0.6177	-0.0001	-0.0001	-0.0001
11 North America	-0.7649	0	0	0
12 Latin America	0.4828	0	0	0

Source: Simulation results

Table 7: Total Welfare and Its Composition, US\$ Million

Region/Country	Allocative Efficiency	Terms of Trade	Investment-Savings Effect	Total
1 Russia	-0.67	2.11	-0.89	0.55
2 Kazakhstan	0.03	0.13	-0.06	0.1
3 Belarus	0.07	0.18	0.12	0.36
4 Armenia	0	0	0	-0.01
5 Kyrgyzstan	0	0	0	0.01
6 Mongolia	1.58	4.53	0.52	6.64
7 Oceania	0.16	1.34	-0.01	1.49
8 East Asia	-1.51	-7.61	0.82	-8.29
9 Southeast Asia	0.01	0.29	0.06	0.36
10 South Asia	-0.01	-0.45	-0.16	-0.62
11 North America	-0.01	-0.21	-0.54	-0.76
12 Latin America	0.02	0.44	0.03	0.48
13 EU 25	-0.37	-2.61	-0.05	-3.03
14 MENA	0.06	1.35	0.09	1.5
15 SSA	0.06	0.51	0.01	0.59
16 Rest of World	-0.01	0	0.06	0.05

Source: Simulation results

6. Trade Effects

Under full liberalization, in Mongolia the volume of exports decreases by 0.15% and the volume of imports increases by 0.18%. Nevertheless, there is almost no change in exports and imports for the EAEU members. It is obvious that the EAEU members' economic and trade potential is huge compared with Mongolia. Therefore, changes cannot be seen as a result of liberalization with Mongolia. When Mongolia and the EAEU implement a trade agreement, the highest decrease in trade balance is reported by Mongolia, which shows a decline of US\$18.1 million. As for Russia and Belarus, their trade balance decreases somewhat by 1.16% and 0.17%, respectively. The terms of trade⁴ (ToT) do not show any change for all of the countries.

Table 8: Change in Trade Variables, Full Liberalization (All EAEU Members and Mongolia)

Region/Country	Change in Volume of Exports, %	Change in Volume of Imports, %	Change in Trade Balance (US\$ million)	Change in Terms of Trade, %
1. Russia	0.0005	0.0016	-1.16	0.0004
2. Kazakhstan	0.0001	0.0005	0.0279	0.0002
3. Belarus	-0.0001	0.0008	-0.1733	0.0006
4. Armenia	0.0002	-0.0001	0.0051	-0.0001
5. Kyrgyzstan	0.0001	0.0002	-0.0154	0.0001

6. Mongolia	-0.1564	0.1883	-18.1661	0.073
7. Oceania	-0.0002	0.0003	-0.3009	0.0004
8. East Asia	0.0002	-0.0002	8.6803	-0.0002
9. Southeast Asia	0	0	0.5776	0
10. South Asia	0.0002	0	0.6273	-0.0001
11. North America	0.0001	0	3.4575	0
12. Latin America	0	0	0.5227	0.0001
13. EU 25	0.0001	0	4.6563	0
14. MENA	0	0	0.7837	0.0001
15. SSA	0	0.0001	0.1333	0.0001
16. Rest of World	0	0	0.344	0

Source: Simulation results

Looking at the change in trade balance for 18 sectors, almost all sectors have a deficit in the trade balance, with the exception of the meat sector and other minerals sector. The EAEU members' trade balance practically does not change, as can be seen in the table. In particular, countries such as Armenia, Belarus and Kyrgyzstan get no effect in their trade balances when Mongolia enters an FTA with the union. There is a positive trade balance effect only in the meat sector (0.9%) and the mineral products sector (1%) for Mongolia.

Terms of trade is defined by the ratio of export and import price indices, which is shown in the following table. From the theoretical standpoint, the terms of trade contribute positively to society if post-simulation export prices rise more than import prices. As we expected, the Mongolian post-simulation export price index for selected sectors can be seen as positive, greater than the import price index. There is almost no change in the import price index for Mongolia and the EAEU members.

The proposed trade agreement increases Mongolia's export prices more than it does import prices, resulting in positive trade effects.

In order to assess the effects of the trade agreement on the Mongolian economy, one should look at the simulation results by aggregated sectors. The percentage changes in the value-added sectors by selected regions are provided in the following table. The result reveals that most of the value-added industries have negligible and negative effects. The only positive value-added industry was meat products exported by Mongolia to EAEU members. At the same time, in five countries there is no such effect on value added for all 18 sectors. There is evidence that the value added for the meat sector shows high growth (3.9%) in the study by Sh. Enkhbayar and T. Nakajima (2013). They pointed out that the meat, leather, and textile and apparel sectors are competitive export sectors with the mining industry and could generate significant export earnings.

Furthermore, we planned to see the results for demand for endowments in selected sectors in Mongolia. As shown in Table 13, the change in demand for endowment for meat products is more positive than for the other 17 sectors. However, change is very low, at 0.3% for both the skilled and unskilled labor force. In addition to this, demand for endowment in the service sector has a slight positive effect post-simulation.

Table 9: Changes in Trade Balance by Sector, US\$ Million

Sector	Russia	Kazakhstan	Belarus	Armenia	Kyrgyzstan	Mongolia	Oceania	East Asia	Southeast Asia	South Asia
Grains, Crops	-0.1898	-0.0084	-0.0128	0.0007	-0.0019	-0.202	-0.0981	0.2156	0.032	0.0688
Animal Products	-0.0144	0	-0.0007	0.0001	0	-0.0032	-0.0042	0.018	-0.0018	0.0002
Wool	0.0028	0.0045	-0.0001	0.0001	0.0031	-1.597	0.6409	0.5707	0.002	0.0276
Meat	-0.6275	-0.0436	-0.013	0.0001	-0.0039	0.9131	-0.1926	0.1783	0.0173	0.0256
Forestry	-0.0277	-0.0001	-0.0048	0	0	-0.0026	-0.0098	0.0257	0.003	0.0047
Coal	0.2066	0.0182	0.0001	0	-0.0004	-1.9538	0.9102	-0.1417	0.6932	-0.1626
Oil and Gas	-1.5625	0.0726	0.0473	-0.0014	-0.0046	-0.5392	-0.0552	-1.587	0.1148	-0.0084
Other Minerals	-0.4385	-0.1152	-0.0003	-0.0015	-0.0008	1.0947	0.9406	-1.6182	0.1712	0.1289
Processed Food	0.8729	0.12	-0.0305	0.0027	0.0047	-0.7414	-0.2475	0.0369	-0.0443	0.0442
Textiles and Apparel	-0.1438	-0.0135	-0.0484	0	-0.0014	-0.7555	-0.0661	1.2411	-0.0374	0.0902
Leather Products	-0.0346	-0.0015	-0.0016	0	-0.0003	-0.341	-0.0127	0.3946	-0.0073	0.0139
Wood and Paper	-0.2779	0.0901	-0.0246	0.0001	-0.0012	-0.2968	-0.1096	0.4851	-0.0159	0.0112
Metals	0.7757	-0.0531	-0.1053	0.002	-0.0054	-1.999	-0.4653	-1.0395	0.1486	0.0752
Automobiles	-0.097	-0.0036	0.5055	0.0001	0.0013	-1.3788	-0.1043	1.0738	-0.007	0.0088
Machinery and Equipment	2.0964	-0.0276	-0.1407	0.0003	0.0015	-5.846	-0.5665	5.3327	-0.4034	0.0203
Other Manufactured Products	0.0096	0.0878	-0.2113	-0.0002	0	-0.4532	-0.3257	0.8843	-0.193	0.0528
Electricity	0.0883	-0.0019	-0.0333	0.0003	-0.0002	-0.114	-0.0038	-0.0138	-0.0031	-0.0009
Services	-1.7985	-0.0965	-0.0988	0.0015	-0.0058	-3.9505	-0.5312	2.6237	0.1088	0.2268
Total	-1.16	0.0279	-0.1733	0.0051	-0.0154	-18.1661	-0.3009	8.6803	0.5776	0.6273

Source: Simulation results

Table 10: Changes in the Export Price Index for Goods in Selected Countries, %

Sector	Russia	Kazakhstan	Belarus	Armenia	Kyrgyzstan	Mongolia
Grains, Crops	0.0005	0.0002	0.001	0	0.0003	0.1497
Animal Products	0.0005	0.0004	0.0007	0.0001	0.0006	0.2876
Wool	0.0004	0.0002	0.0009	0	0.0005	0.134
Meat	0.0005	0.0002	0.001	0	0.0003	0.3398
Forestry	0.0004	0.0006	0.001	0	0.0002	0.164
Coal	0.0012	0.0005	0.0009	0.0007	0.0004	0.0185
Oil and Gas	0.0004	0.0002	0.0004	0	0.0003	0.002
Other Minerals	-0.0003	-0.0002	0.0009	-0.0002	-0.0008	0.1225
Processed Food	0.0006	0.0003	0.001	0	0.0003	0.1161
Textiles and Apparel	0.0005	0.0001	0.0009	0	0	0.0783
Leather Products	0.0006	0	0.001	0	0	0.2116
Wood and Paper	0.0006	0.0003	0.001	0	0.0002	0.0843
Metals	0.0002	0.0001	0.0008	0	0.0001	0.0785
Automobiles	0.0004	0.0002	0.001	0	0.0001	0.0584
Machinery and Equipment	0.0005	0.0003	0.0011	0	0.0002	0.0573
Other Manufactured Products	0.0004	0.0002	0.0008	0.0001	0	0.052
Electricity	0.0005	0.0003	0.0008	0.0001	0.0002	0.1143
Services	0.0007	0.0003	0.0013	0	0.0002	0.1387

Source: Simulation results

Table 11: Changes in the Import Price Index for Goods in Selected Countries, %

Sector	Russia	Kazakhstan	Belarus	Armenia	Kyrgyzstan	Mongolia
Grains, Crops	0	0	0	0.0003	0.0001	0.0001
Animal Products	0	0.0001	0	0	0	0
Wool	0.0037	0.0016	0.0004	0.0023	0.0008	0.0004
Meat	0.001	0.001	0	0	0.0005	0.0002
Forestry	0	0	0	0.0001	0.0003	0.0001
Coal	0.0007	0.001	0.0007	0.0008	0.0005	0.001
Oil and Gas	0.0002	0.0002	0.0003	0.0002	0.0003	0.0003
Other Minerals	0.006	-0.0002	-0.0001	-0.0001	0.0015	0
Processed Food	0	0.0001	0	0.0002	0.0004	0.0002
Textiles and Apparel	0	0	0	0	-0.0001	-0.0001
Leather Products	-0.0001	-0.0001	0.0001	0	-0.0001	0
Wood and Paper	0	0.0001	0.0001	0.0001	0.0002	0
Metals	0	0.0001	0.0001	0.0001	0.0001	0.0001
Automobiles	0	0	0	0.0001	0	0
Machinery and Equipment	0	0	0	0	0	0
Other Manufactured Products	0	0	0	0.0001	0.0001	0.0001
Electricity	0.0001	0.0002	0.0001	0.0001	0.0001	0.0005
Services	0	0	0	0	0	0

Source: Simulation results

Table 12: Change in Value-Added Industry of Selected Regions, %

Sector	Russia	Kazakhstan	Belarus	Armenia	Kyrgyzstan	Mongolia	Oceania	East Asia	Southeast Asia	South Asia
Grains, Crops	-0.0002	-0.0001	-0.0005	0.0001	0	-0.1367	-0.0003	0.0001	0	0
Animal Products	-0.0001	0.0002	-0.0003	0.0001	0.0014	-0.1352	-0.0002	0	0	0
Wool	0.0003	0.0006	-0.0009	0.0002	0.0035	-0.6321	0.0146	0.0045	0.0007	0.0005
Meat	-0.0009	-0.0004	-0.0002	0	-0.0004	0.2631	-0.0007	0	0	0
Forestry	-0.0006	0.0008	-0.0014	0	0	-0.0086	-0.0002	0.0001	0	0
Coal	0.0003	0.0001	-0.0002	0.0001	0.0001	-0.0798	0.0006	0.0006	0.0008	0.0005
Oil and Gas	-0.0003	-0.0001	-0.0004	0.0009	0.0001	-0.1352	-0.0001	-0.0002	0.0001	0.0001
Other Minerals	-0.0016	-0.0011	-0.0004	-0.0003	-0.0008	-0.0642	0.0004	0.0004	0.0004	0.0004
Processed Food	0.0009	0.0007	-0.0002	0.0001	0.0018	-0.3225	-0.0003	0	0	0
Textiles and Apparel	-0.001	-0.0007	-0.0029	-0.0001	-0.0001	-0.2442	-0.0006	0.0002	-0.0001	0.0001
Leather Products	-0.0009	0.0001	-0.0013	0	0.0002	-1.515	-0.0014	0.0003	0	0
Wood and Paper	-0.0007	0.0026	-0.0017	0.0001	0.0001	-0.1451	-0.0002	0.0001	0	0
Metals	0.0011	-0.0003	-0.0039	0.0004	-0.0004	-0.5186	-0.0008	0	0.0001	0
Automobiles	0.0003	-0.0002	0.0144	-0.0001	0.0027	-0.0974	-0.0004	0.0001	-0.0001	-0.0001
Machinery and Equipment	0.0024	-0.0002	-0.0016	-0.0002	0.0009	0.0004	-0.0008	0.0001	-0.0002	-0.0001
Other Manufactured Products	0	0.0009	-0.0036	0	0.0004	-0.2024	-0.0004	0.0001	-0.0001	0
Electricity	0.0002	-0.0001	-0.0006	0	0.0001	-0.0084	-0.0002	-0.0001	0	0

Source: Simulation results

Table 13: Change in Demand for Endowment for Selected Sectors (Mongolia), %

Endowment	Land	Unskilled Labor	Skilled Labor	Capital
Grains, Crops	-0.1334	-0.1412	-0.1413	-0.1221
Animal Products	-0.133	-0.139	-0.1391	-0.1238
Wool	-0.5511	-0.6681	-0.6682	-0.6508
Meat	0.1484	0.2986	0.2983	0.3374
Forestry	-0.0349	-0.0205	-0.0206	-0.0074
Coal	-0.1419	-0.1489	-0.149	-0.1358
Oil and Gas	-0.2117	-0.2432	-0.2433	-0.2235
Other Minerals	-0.0884	-0.0847	-0.0848	-0.0715
Processed Food	-0.2337	-0.3756	-0.3761	-0.3021
Textiles and Apparel	-0.1963	-0.3089	-0.3095	-0.2262
Leather Products	-0.7378	-1.5272	-1.5279	-1.4456
Wood and Paper	-0.1502	-0.2048	-0.2055	-0.1221
Metals	-0.3202	-0.5884	-0.5891	-0.506
Automobile	-0.1367	-0.1744	-0.1751	-0.0917
Machinery and Equipment	-0.0959	-0.0821	-0.0828	0.0007
Other Manufactured Products	-0.1794	-0.2707	-0.2714	-0.188
Electricity	-0.0793	-0.0447	-0.0454	0.0382
Services	-0.0555	0.0147	0.014	0.1047

Source: Simulation results

7. Conclusion

The present study provides an analysis of and insight into the impact of a Mongolia–EAEU free trade agreement on the macroeconomic variables and trade variables of Mongolia and the EAEU member economies. Utilizing the latest version (9.0) of the GTAP database, 14 main regions and 18 potential sectors were aggregated in this study. Under the hypothetical scenario of full liberalization, we simulated the impact of a free trade agreement between Mongolia and the EAEU and obtained the following results.

First of all, Mongolia's welfare gain appears to be positive due to both positive allocative efficiency and positive terms of trade. Meanwhile EAEU members' welfare gain does not seem to have any noticeable changes. In addition to this, the real GDP growth of Mongolia slightly increased, less than 1%, when there is a trade agreement. Therefore, Mongolia's benefit from a free trade agreement with the EAEU seems to have a relatively smaller effect on the economy. Similarly, EAEU members' GDP growth saw almost no change post-simulation.

Second, Mongolia's trade effect under full liberalization appears to have a negative or decreased export volume and a positive or increased import volume. Moreover, Mongolia's trade balance has a deficit, amounting to US\$18 million. The deficit is mainly due to raw products. The meat sector alone has a positive effect among all the 18 sectors in terms of the volume of exports, value-added industry and the change in demand for endowments. On the other hand, the EAEU members have no greater effect in terms of trade indicators.

In general, this ex-ante study reveals that Mongolia receives better results than the EAEU regarding the total welfare effect and GDP growth. Mongolia's benefit lies in its attempts to link export-oriented value-added products. Through this approach, Mongolia can accelerate its value-added exports to the EAEU and neutralize the negative effect of export volumes.

It should be noted that this study estimates only the quantitative aspects based on the GTAP database. Furthermore, it is necessary to include non-tariff barriers to trade, and sanitary and phytosanitary measures in order to have a more comprehensive conclusion.

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¹ Kawasaki, 2003

² The GDP deflator that measures the price levels of final goods and services produced in an economy during a particular period.

³ C. Sikdar (2011): "Impact of India-ASEAN Free Trade Agreement: A cross country analysis using applied general equilibrium modelling"

⁴ Change in relative commodity prices which the nation trades in; this results from the tendency of the volume of trade to change as the nation grows.

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The Importance of Multilateral Trade Negotiations for LLDCs and Mongolia in Particular

Odbayar Erdenetsogt*

Abstract

Mongolia and the other LLDCs suffer from extra border crossings, cumbersome and costly transit procedures, inefficient logistics systems, weak institutions and poor infrastructure. These challenges for the LLDCs are compounded by other difficulties such as dependency on a few markets, one or more transit neighbors, a small population, equally small markets, and dependency on a few commodities, etc. Therefore, this paper promotes the active participation of the LLDCs in the areas of multilateral, regional and bilateral trade negotiations.

This paper is based on the latest edition of the International Think Thank for LLDCs' "Multilateral Trade Negotiations and LLDCs: A Handbook for Negotiators and Practitioners", which focuses on multilateral trade negotiations (MTNs). It considers the overlapping agendas in regional trade agreements and the WTO, and the way forward for LLDCs. It also considers the accession process, given that six LLDCs are currently negotiating accession to the WTO. Furthermore, the paper suggests that Mongolia and other LLDCs should consider active engagement and cooperation at the domestic, regional and global levels to enhance their capacity for negotiation in order to benefit from the global market.

The author encourages LLDCs to utilize the existing trade agreements of the WTO containing provisions on trade facilitation, freedom of transit, and transparency and simplification of transit trade regulations. The paper also suggests the importance of group formation.

Keywords: LLDC, multilateral, regional, and bilateral trade negotiations, landlocked countries
JEL classification codes: L92, O19

1. General Background and Context

Mongolia is categorized as a landlocked developing country (LLDC). There are 32 countries that are categorized as LLDCs by the UN. 16 out of the 32 LLDCs are on the African continent, 2 in South America, 4 in Europe, and the rest are in Asia. There is a difference between LLDCs and landlocked developed nations like Austria, the Czech Republic and Luxembourg. Developed landlocked countries are naturally not part of the LLDC group, which is an official group at the United Nations.

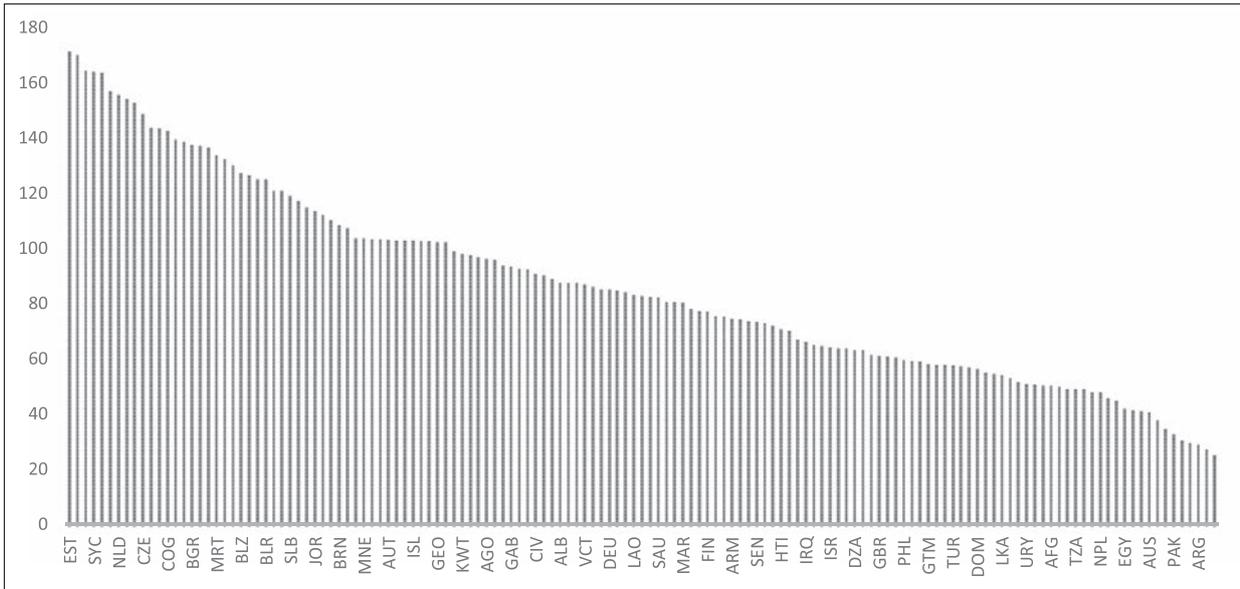
2. The Trade Performance of LLDCs in General

The phenomenal rate of economic growth experienced by the LLDC group masks wide differences amongst the different countries. Kazakhstan's economy, for example, is 130 times larger than the smallest economy amongst the LLDCs. Kazakhstan has also experienced one of the most rapid growth rates in the group. Azerbaijan experienced the strongest performance of all the LLDCs. For some economies, in particular the top 10, the level of growth is so significant that the pursuit of economic growth alone should not be a policy primacy, but rather development ambitions (social, environmental and stabilization

objectives) would be more relevant. For other LLDCs, there is still clearly a need for more buoyant economic growth to lift populations out of poverty.

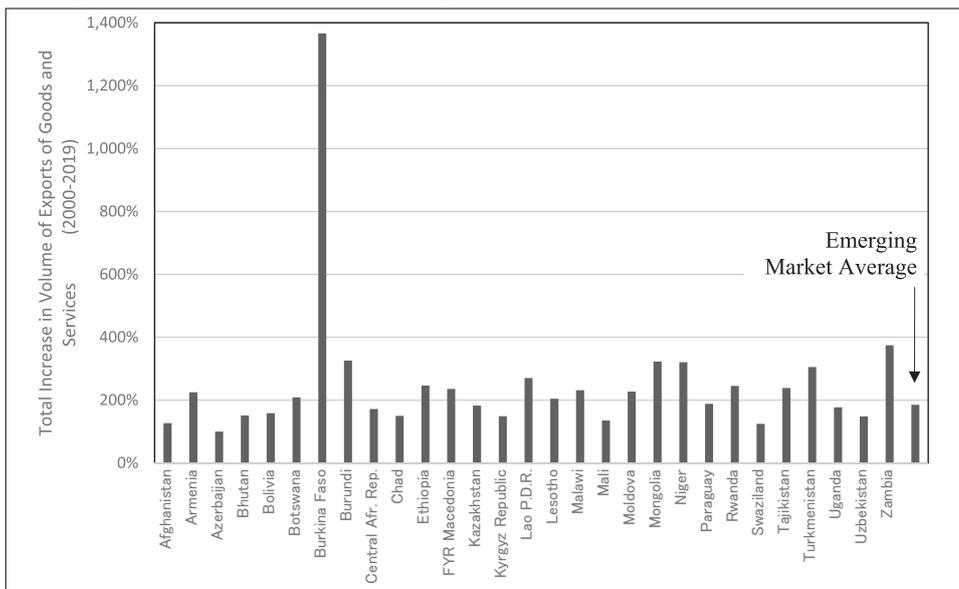
LLDCs often have relatively low levels of trade openness (as measured by the size of trade flows to GDP), have highly concentrated levels of RCA (Revealed Comparative Advantage) in a few sectors and typically experience low export survival rates in non-commodity exports. In comparison to other countries in the world, the ratio of trade to GDP is nevertheless variable (Figure 1).

Figure 1. Trade to GDP in Percentages for Selected Economies, 2013



Source: International Think Tank for LLDCs, 2015.

Figure 2. LLDC Increase in Exports of Goods and Services 2000–2019



Source: International Think Tank for LLDCs, 2015

Challenges for LLDCs

Mongolia lacks territorial access to the sea just like the 31 other LLDCs around the globe. Remoteness from major growth poles and markets as well as remoteness from major sea ports (See Figure 4) often translate into high transport and transit costs for landlocked developing countries (LLDCs). As a result, the cost of imports are higher, exports are less competitive and hence attracting foreign direct investment (FDI) more difficult. Thus, landlockedness hinders Mongolia and other LLDCs from fully participating in international trade and minimizes comparative advantage.

In addition to the geographical disadvantage, LLDCs, including Mongolia, suffer from additional border crossings, cumbersome and costly transit procedures, inefficient logistics systems, weak institutions and poor infrastructure. These additional costs and obstacles have a tremendous trade-reducing effect that puts Mongolia and other LLDCs at a disadvantage in fully harnessing their potential to support their sustainable development efforts.

These challenges of LLDCs are compounded by other difficulties such as

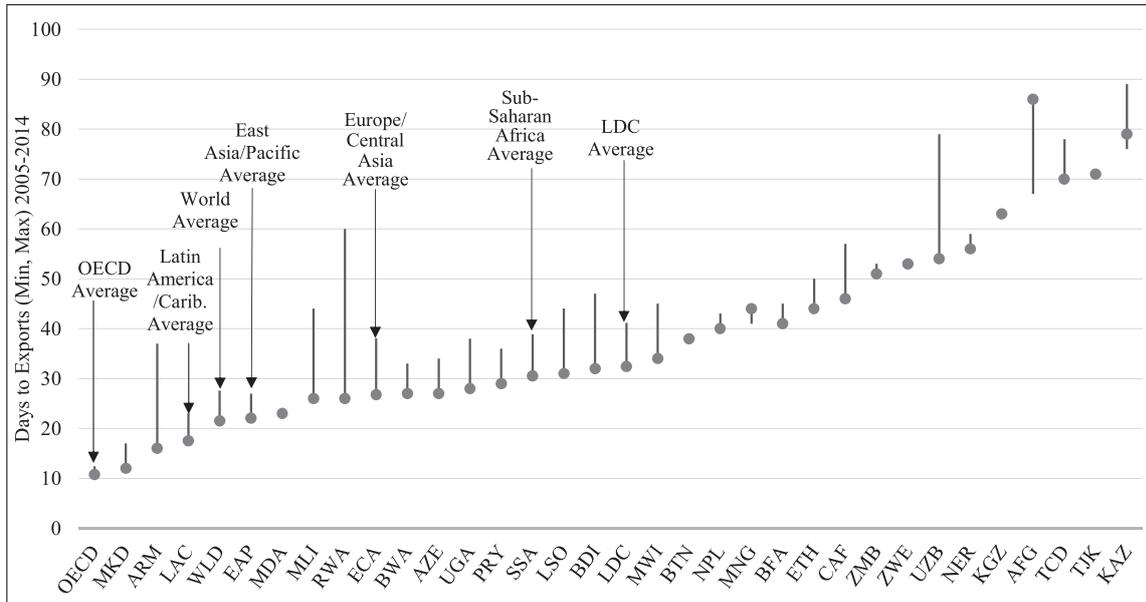
- Dependency on few markets;
- One or more transit neighbours;
- Small population;
- Equally small markets;
- Dependency on a few commodities, etc.

The trade cost for exporting a container from Mongolia to other countries amounts to US\$2,745, and the cost of importing a container amounts to US\$2,950. The trade time for Mongolia is 49 days for exports and 50 days for imports, where the LLDC average is 37 days for exports and 42 days for imports. The abovementioned challenges impose serious constraints on LLDCs' overall socio-economic development, including their trade competitiveness.

A recent study¹ by the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (OHRLLS) revealed that the LLDCs' trade was just 61% of the trade volume of coastal countries and their transport costs were 45% higher than a representative coastal economy in 2010. The close linkage between transit transport, international trade and economic growth has led landlocked and transit developing countries to take an increasingly active role in multilateral, regional and bilateral trade negotiations.

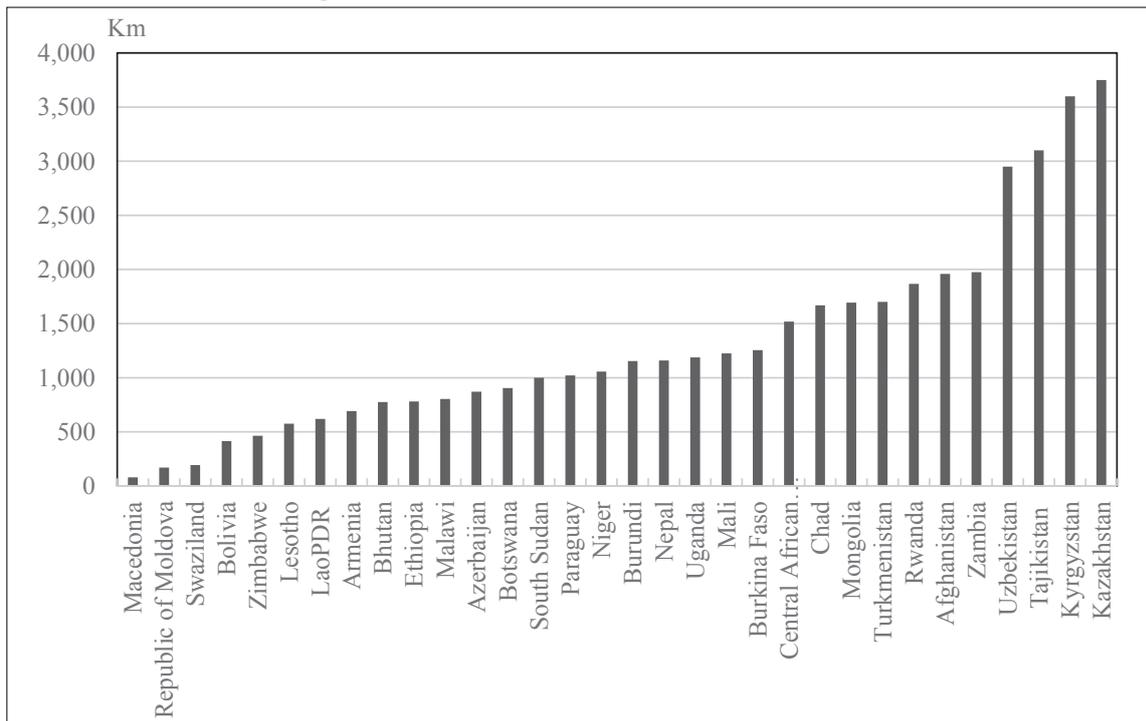
The UN-OHRLLS has emphasized the need to support the strengthening of South–South cooperation and triangular cooperation for diversifying trade opportunities, and increasing additional FDI flows for the sustainable development of LLDCs. UN Agencies and other international organizations, such as the WTO, the World Bank, the WCO and Regional Development Banks, can help mitigate the constraining effects of landlockedness, by providing more targeted technical assistance to LLDCs and supporting the strengthening of the negotiating capacities of LLDCs and their ability to implement trade facilitation measures, and thereby ensure their effective participation in the negotiation of multilateral trade agreements.

Figure 3. Days to Export, 2005–2014



Source: The World Bank, World Development Indicators, 2014

Figure 4. Distance of LLDCs from the Sea

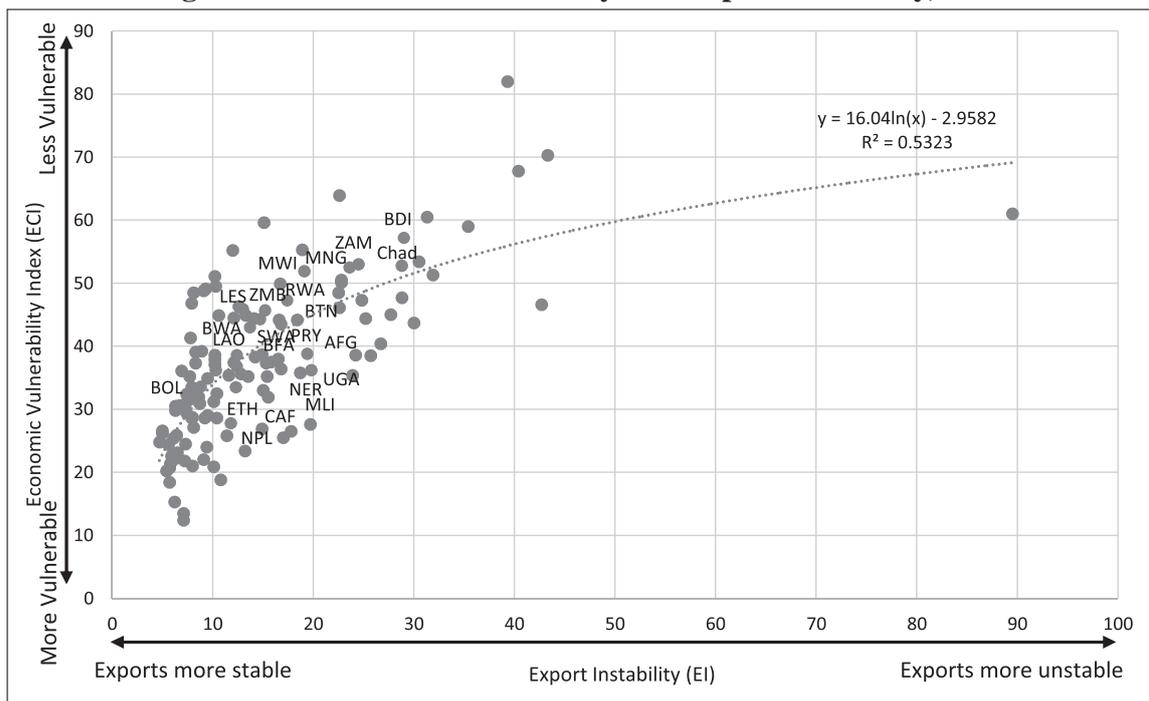


Source: UNCTAD, 2014b

3. Vulnerability of LLDCs and Mongolia

The economic vulnerability of LLDCs compared with that of developing countries can be seen from Figure 5. Each country is plotted according to its individual level of vulnerability and according to the stability or instability of its exports. Economic vulnerability is defined as the relative risk posed to a country's development by exogenous shocks (e.g. remoteness and environmental, economic, and migratory risks). The level of risk depends on the characteristics of the country concerned (e.g. that country's export concentration, the growth trend of exports of goods and services, agricultural production trends, and the share of population living in vulnerable regions, etc.), the magnitude and frequency of exogenous shocks, and the country's ability to adapt to such shocks (e.g. population size, victims of natural disasters). Export instability is defined as the volatility (measured by standard deviation) of export earnings from a long-term trend, using regression analysis. In analyzing the degree of vulnerability and export instability of LLDCs, we note the diversity of underlying characteristics facing LLDCs and that some are far more vulnerable than others. Some of these countries have been affected by wars and unrest, while in other cases, countries are plagued by weak institutions and inflationary policies, which are responsible for exacerbating their marginalization from the world economy.

Figure 5. Economic Vulnerability and Export Instability, 2012



Source: International Think Tank for LLDCs, 2015

The WTO aims toward helping LLDCs exercise their rights of WTO membership and fully participate in multilateral trade negotiations and assisting the least developed countries to integrate into the multilateral trading system, benefit from the progressive liberalization of world trade and participate fully in the negotiating process. Even though LLDCs can use ongoing trade negotiations at the WTO as important entry points to defend their interests, many LLDCs, including Mongolia, are failing to fully benefit from the WTO capacity building system. To

date 26 of the 32 LLDCs are members of the WTO, while the rest are negotiating accession. Concerted group action has been demonstrated recently by the least developed countries (LDCs) and LLDCs, forming the foundation of successful negotiation strategies at the WTO.

The existing trade agreements of the WTO contain provisions on trade facilitation, freedom of transit and transparency and simplification of transit trade regulations, as well as loose commitments from developed countries to support developing countries, and particularly the least developed countries, in adopting standards and procedures prescribed by international conventions and WTO agreements.

In addition, Article IV of GATS on Increasing Participation of Developing Countries indicated: the strengthening of their domestic services capacity and its efficiency and competitiveness, inter alia through access to technology on a commercial basis, and; the improvement of their access to distribution channels and information networks.

4. Trade Overview of Mongolia

Mongolia's main exports are mineral products (mainly to China) and to a lesser extent, cashmere and meat products. As a landlocked country, located between the economic heavyweights of China and Russia, transit considerations and its dependency on China in particular have made transport issues a key area for Mongolia.

Despite a bright future and a fairly high GNI per capita (US\$4,280 in 2014), Mongolia is facing several economic and development issues. One is that, as with any resource-dependent nation, Mongolia faces boom-and-bust cycles. It has to deal with fluctuating growth rates, ranging from -1.3% in 2009 to 17.3% in 2011.² Second, Mongolia's mineral deposit exploration requires substantial financial and technological inputs, making foreign investment essential. However, Mongolia has faced certain problems. In 2013, for example, investor confidence in the mining sector was shaken, owing to disputes with Rio Tinto over phase two of the Oyu Tolgoi copper and gold mine. Consequently, the Mongolian government revised investment-related legislation in 2013.

Third, Mongolia is faced by certain development issues, in particular those relating to environmental pollution and poverty, which has led to Mongolia's low rank of 90 on the UNDP's HDI in 2014. In fact in 2011, 29.8% of Mongolia's population was estimated to be below the poverty line.³ In order to address development issues in the country, the government hopes to catalyze foreign investment in mining, petroleum and infrastructure to jump-start the next phase of development.⁴ Mongolia became a WTO member in 1997. Mongolia's exports make up 0.02% of the world export total (ranking 112 within global exports).

Table 1. Mongolia Trade Snapshot

	Commodities Traded	Trade Partners (2014)
Exports	Copper, apparel, livestock, animal products, cashmere, wool, hides, fluorspar, other nonferrous metals, uranium, coal, crude oil	China 95.3%
Imports	Machinery and equipment, fuel, cars, food products, industrial consumer goods, chemicals, building materials, cigarettes and tobacco, appliances, soap and detergent	China: 41.5%; Russia: 27.4%; ROK: 6.5%; Japan: 6.1%

4.1. Mongolian Trade Agreements, an Overview

Mongolia's President Tsakhia Elbegdorj and Japan's Prime Minister Shinzo Abe met in Tokyo on 22 July 2014 to sign a Joint Statement affirming the final roadmap toward instituting an Economic Partnership Agreement (EPA). Aimed at promoting mutual trade and investment, the agreement was ratified by the parliaments of both nations in the first quarter of 2015. The EPA became the first such agreement for Mongolia and the fifteenth for Japan. Within the EPA, all Mongolian exports to Japan, including meat and raw minerals, and 96% of Japanese exports to Mongolia will be exempt from tariffs in the coming decade. Japan pledged to support policies to increase Mongolia's exports.

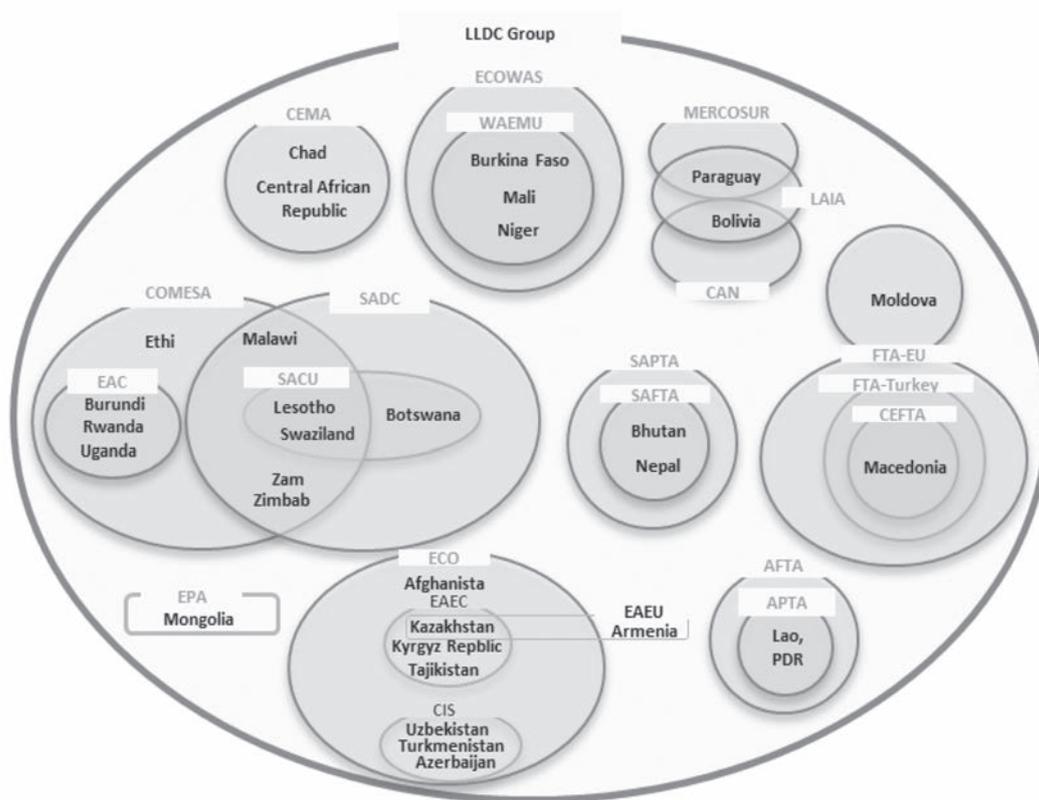
Statistics for 2012 from the Mongolian government show that 66.4% of Japan's export value to Mongolia (39.9 billion yen) was made up of automobiles and their components, followed by machinery at 18.5% and chemical engineering products at 5.1%. Meanwhile, 53% of Mongolia's export value to Japan, which totaled 1.9 billion yen in 2012, was of coal, followed by mineral products representing 25%, and clothing at 15.4%, according to the Japanese Finance Ministry. Mongolia's imports from Japan, mostly vehicles, are roughly 16 times the size of its exports to Japan. The agreement signed between Mongolia and Japan in 2014 calls for Japan to scale back tariffs on its imports of Mongolian products such as cashmere. The negotiation was made for three years and it showed the Mongolian public officers and experts lacked capacity and experience of negotiation. Many LLDCs have taken up various negotiation positions with different coalitions in a bid to influence negotiations (Figure 6).

Table 2: The Trade Agreement Regime of Mongolia

Multilateral	WTO
Regional	None (See Figure 7)
Bilateral	China, Russia, Japan EPA

Table 3: Non-Exhaustive Overview of Mongolia's Trade and Transit Agreements with China and Russia

	China	Russia
1990s	Agreement on Road Transportation, 1991 Agreement on Transit Freight from China to Mongolia, 1991	Agreement on International Road Transport, 1996 Agreement on Reaching Seaports: Facilitate the access of Mongolian goods to seaports and set up special custom's warehouse or terminal zones for the purpose of storage, transit, grouping and other operations for goods
2014	Agreement on Access to and from the Sea and Transit Transport by Mongolia through Chinese Territory Agreement on Railway Transit Transport Cooperation	

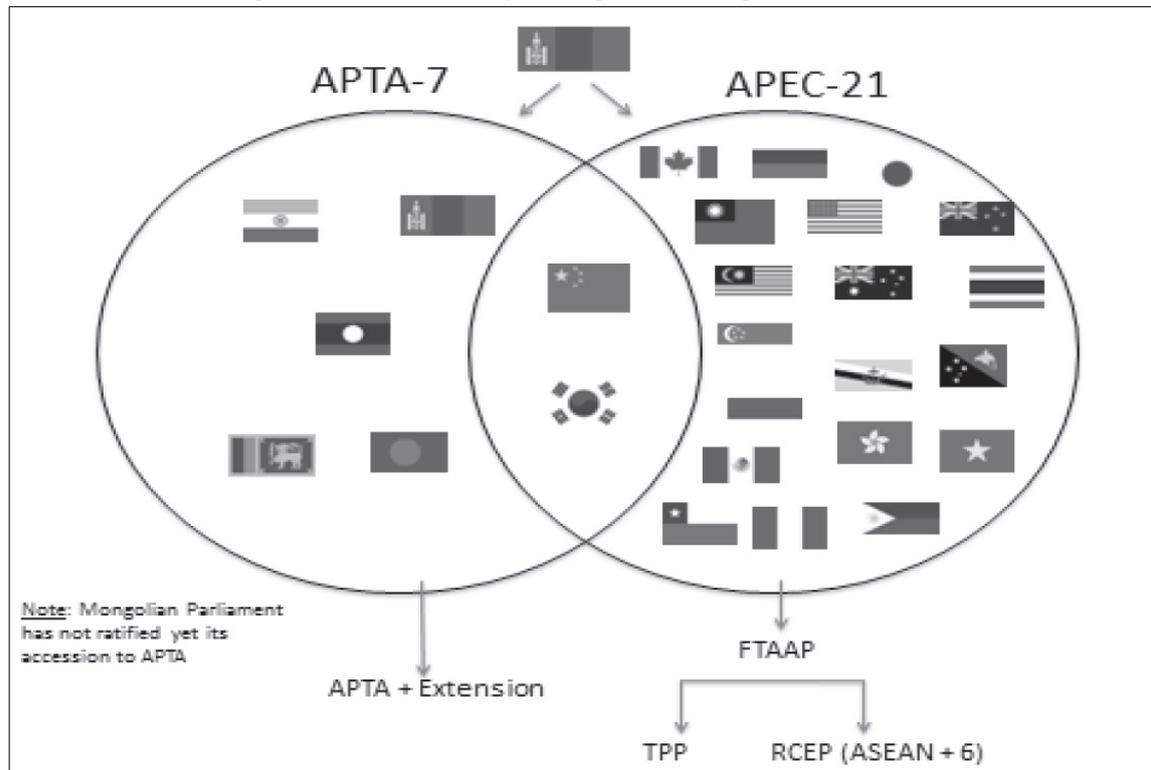
Figure 6. LLDC Major Regional Integration Efforts

Source: International Think Tank for LLDCs, 2015

There is an urgent need for Mongolia and other LLDCs to strengthen their effective participation in multilateral trade negotiations. As a prerequisite, Mongolia must have a better understanding of its interests and of the relevant provisions in trade agreements, such as trade facilitation, freedom of transit, transparency and simplification of transit trade regulations.

As Table 3 indicates Mongolia has concluded several transit (rail and road) agreements with China in particular, and Russia. The latest round of transit agreements with China was concluded in 2014. Mongolia has been in discussions with China regarding the China-led OBOR (One Belt, One Road) project. Mongolia's transit agreements with Russia date back to the 1990s. In the context of the Russian-led EEU, discussions are underway on transport infrastructure, particularly railways, and the creation of a free trade zone as part of this customs union.⁵ The EEU becomes relevant if Mongolia accedes to it.

Mongolia is also an active participant in the Trilateral Transit Traffic Agreement (Mongolia, China and Russia), which has been under negotiation for over fifteen years. The agreement is intended to facilitate transit trade among the parties by filling the gaps in international trade and transit conventions and agreements which the three countries are already parties to. In particular, it will guarantee freedom of transit by all modes of transport and promote simplification, harmonization and standardization of customs, administrative procedures and documentation.⁶

Figure 7. LLDC Major Regional Integration Efforts

5. The WTO and Mongolia

26 of the 32 LLDCs are members of the WTO, while the rest are observers and negotiating accession to the WTO. As of June 2015, six LLDCs (Afghanistan, Azerbaijan, Bhutan, Ethiopia, Kazakhstan and Uzbekistan) were negotiating their accession to the WTO.

Mongolia faced difficulties in complying with the WTO rules and commitments after its accession to the WTO, which were:

- Its strong degree of state control over the private sector;
- Appropriately regulating its trade regime;
- It still does not have a trade policy or trade law in place;
- Its lack of knowledge on the principles of the WTO;
- Its weak implementation and monitoring of the market access provisions (the weak implementation has led to a certain loss of confidence in the benefits of the WTO practices since no advancement had been made in the provisions for landlocked countries in order to facilitate their transit of goods);
- It had negotiated its accession protocol without fully consulting the industries which would be most affected by the commitments taken.

The most common and effective way of participating in the WTO is through coalition building. Coalition groups often speak with one voice using a single coordinator or negotiating team. LLDCs belong to a number of major coalition groups of the WTO. These include: ACP; the African group; Asian developing members; APEC; ASEAN; the EU; MERCOSUR; the G-90; the least developed countries (LDCs); small, vulnerable economies (SVEs) for agriculture; small, vulnerable economies (SVEs) for non-agricultural market access (NAMA); small, vulnerable

economies (SVEs) for rules; recently acceded members (RAMs); low-income economies in transition; the Cairns group; the tropical products group; the G-10; the G-20; the G-33; the Cotton-4; the NAMA 11; “Paragraph 6” countries; Friends of Ambition (NAMA); Friends of Anti-Dumping Negotiations (FANs); Friends of Fish (FoFs); “W52” sponsors, and; joint proposals.

But there is no formal LLDC coalition group or negotiating team at the WTO, although LLDC representatives do meet in Geneva to discuss issues of common interest and occasionally prepare position papers. Some LLDCs are also not members of the WTO but belong to Regional Economic Commissions and/or negotiate bilaterally with other WTO members. LLDCs that were not members of the WTO as of June 2015 include Afghanistan, Azerbaijan, Bhutan, Ethiopia, Kazakhstan and Uzbekistan, but all have observer status and have been negotiating their accession to the WTO. The Asunción Platform, the Almaty Programme of Action and the Vienna Plan of Action for LLDCs are examples of common communications made by LLDCs. The LLDC group also appointed Paraguay as their coordinator in matters regarding multilateral negotiations.

6. Importance of Capacity Building in the Field of Negotiation

LLDCs can strengthen their bargaining position in the negotiation of transit and trade agreements by demonstrating the value of the transit business provided to the neighbors, taking into account not only the direct costs involved, but also income generated through additional multiplier effects.

However, in addition to the constraints imposed by their landlockedness, the LLDCs, especially Mongolia, are constrained by their lack of experience of effectively negotiating and bargaining at multilateral trade negotiations to overcome the negative effects of being landlocked.

The latest publication “Multilateral Trade Negotiations and LLDCs: A Handbook for Negotiators and Practitioners”, which has just been published by the International Think Tank for LLDCs, focuses on Multilateral Trade Negotiations (MTNs), the outcome of past negotiation rounds and the topics of the highest relevance to LLDCs in the current Doha Round. It considers the overlapping agendas in Regional Trade Agreements and the WTO, and the way forward for LLDCs. It also considers the accession process, given that six LLDCs are currently negotiating accession to the WTO.

The main chapters of the handbook are devoted to introducing key concepts for negotiating trade in goods and services, as well as forming LLDC positions. The chapter on goods focuses specifically on negotiations in non-agricultural market access, special and differential treatment, rules of origin, sanitary and phytosanitary (SPS) measures, technical barriers to trade (TBT), trade facilitation and customs, subsidies and countervailing measures, safeguards, export taxes and public stockholding. The chapter on services considers in depth the negotiation proposals and ends with an in-depth review of ICT, transport and tourism services. The handbook also explores the negotiations linked to trade-related intellectual property rights (TRIPS), social and environmental standards, rules on regional trade agreements, and the dispute settlement mechanism.

The handbook reviews all relevant multilateral trade agreements and related articles of the respective resolutions on LLDC issues and provides LLDCs with recommendations on

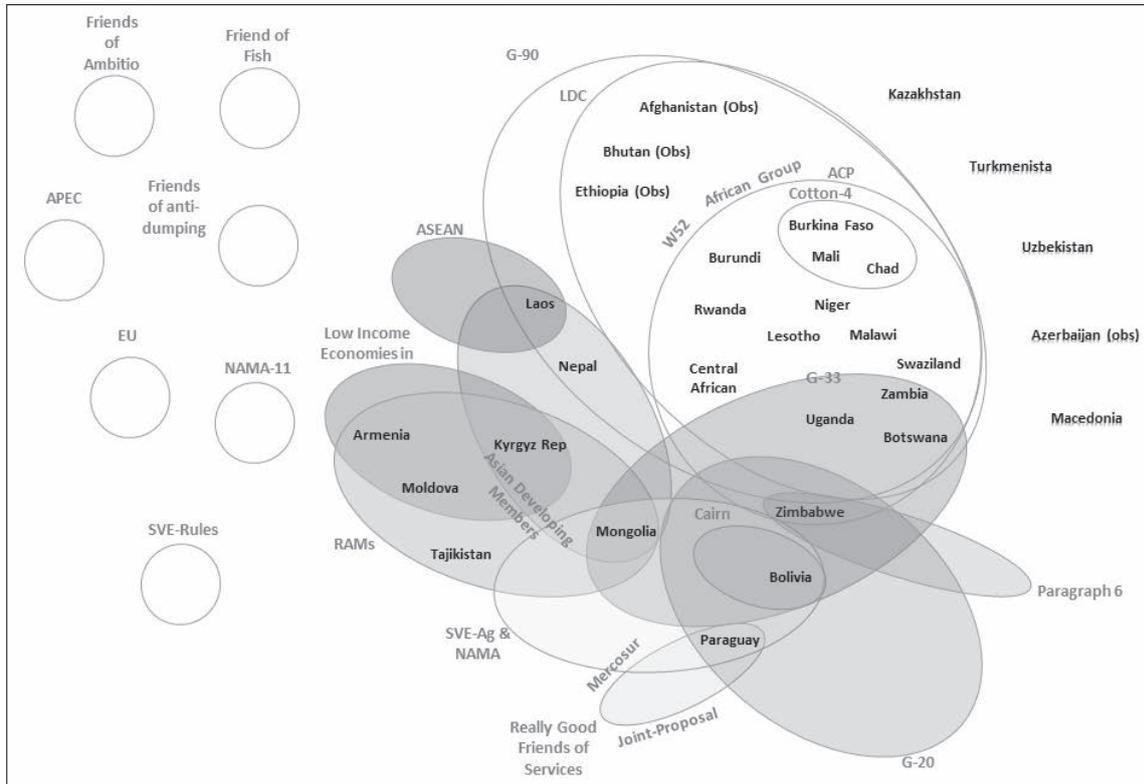
effectively participating in multilateral trade negotiations and using the articles of existing multilateral agreements efficiently for negotiations. The handbook also provides practical guidance on the areas identified in the Asunción Platform for the Doha Development Agenda 2005, the Bali Ministerial Declaration 2013 and the Ministerial Communiqué adopted at the 12th Annual Meeting of the Group of LLDCs held in New York in 2013. The handbook also provides an introduction and mapping of existing handbooks and guidelines on multilateral trade and negotiations produced by the relevant UN system organizations and other international organizations.

It is in the interest of Mongolia that such handbooks are widely used in universities and other institutions which provide training in the area of trade. Only by doing so can a country create a community of trade experts that would support the development efforts of the government in the long run. The newly adopted SDGs and the Vienna Programme of Action for LLDCs call for structural change in economies and the diversification of economies in developing nations around the globe.

In addition the diversification of the economy increasing the capacity to negotiate mutually beneficial agreements can be a firm foundation for the successful implementation of the newly adopted SDGs. There are currently many activities being carried out in Mongolia by such donors as the Asian Development Bank, the European Union and the European Bank for Reconstruction and Development, which work precisely on strengthening the trade policy framework and the private sector-related institutions.

But none of those, apart from UN ESCAP and UNCTAD, are really dedicating their powers toward building capacity in the area of bilateral and multilateral trade negotiations. The WTO provides training for member states via the Virtual Institute, but these courses and training require membership and the membership itself has to be negotiated.

Once inside, the WTO member states are free to join courses and capacity building activities as well as join one or more negotiation structures. Figure 8 demonstrates which structures exist and the membership of an LLDC will vary due to their interests. However, membership does not necessarily indicate active involvement.

Figure 8. LLDC Membership of Negotiation Structures in the WTO

Source: International Think Tank for LLDCs, 2015

7. The Way Forward

The International Think Tank for LLDCs sees great potential in intra-LLDC cooperation, and cooperation with development partners, as well as the private sector in general. Mongolia and other LLDCs should work together in order to overcome common and specific challenges of development by building their capacity to negotiate more successfully in the area of bilateral and multilateral trade.

For that to happen Mongolia should consider active engagement on three levels.

I. Domestically

- a. Mongolia should improve the capacity of trade experts in government agencies and in the private sector;
- b. Better involve the private sector in negotiations and even before the country enters multilateral trade negotiations;
- c. Improve the coordination between domestic actors, better coordination and exchange of information between ministries and other government institutions;
- d. Improved and frequent training modules for practitioners and stakeholders of the relevant trade-related issues;
- e. More training for national experts on WTO-related issues such as membership, dispute settlement, and training.

II. Regionally

- a. Mongolia should strengthen its effective participation in multilateral trade negotiations;
- b. Intensify negotiations with neighbors and partners to become party to regional integration efforts;
- c. Better understand and make use of regional multilateral trade- and development-related initiatives;
- d. Organize more frequent training activities in cooperation with UN ESCAP, the GTI, and regional banks.

III. Globally

- a. Make better use of WTO membership and participate actively in the activities of the WTO;
- b. Organize more training for negotiators in cooperation with UNCTAD, the WTO, the ICT and the ICTSD;
- c. Better understand and make better use of already existing agreements, recently signed agreements and new conventions related to trade, trade facilitation, transit transportation and logistics;
- d. Experience sharing with other LLDCs within the framework of South–South Cooperation;
- e. Promote and better utilize North–South and triangular cooperation;
- f. Continue to promote the special needs and challenges of LLDCs to the global community and speak as one for achieving the most favorable treatment or better inclusion in aid for trade.

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¹ “Global Review of the Progress in Implementing the Almaty Programme of Action”, Mr. Sandagdorj Erdenebileg, Chief, Policy Development Coordination, Monitoring and Reporting Service, UN-OHRLLS, 2012

² Oxford Business Group Report, 2015

³ CIA Factbook, Mongolia Profile, accessed 15 December 2015

⁴ Oxford Business Group Report, 2015

⁵ Oxford Business Group, Mongolia Economy, Mongolia Trading Up, Economic News Update, 19 August 2014

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Lessons Learned or Still High Political Temptation? The Case of Mongolia

Otgochuluu Chuluuntseren*

Abstract

Over the last decade Mongolia has navigated stormy global economic and financial times. However, state institutions are still not mature enough to adapt to the free market challenges they face. With its past socialist inertia, Mongolian policy-makers are still dealing with voters who lack modern education on how a liberal state should function. While Mongolia has a young vibrant democracy, this has encouraged short-term election-motivated (even debt fueled) “policies” rather than providing long-term, solid reforms that would encourage healthier state regulation. The biggest lesson for Mongolia is that too much politicization of economic and fiscal issues leads to a cyclical and unstable monetary and budgetary policy. Mongolia should have invested more in public education and policy liberalization to avoid volatility and extreme shifts in its political landscape. Open and participatory policy-making, with stable implementation and routine evaluation can better serve encompassing growth.

Keywords: Mongolia, macroeconomic policy, liberalization, public education, independent policy review councils, think tanks

JEL classification codes: E52, E61, O23

1. Introduction

Mongolia is rich in natural resources. Known reserves valued at US\$300–500 billion are underground and waiting to be exploited over the next few decades. Taking into account this current subterranean wealth, Mongolia with a small economy of US\$11 billion, with a population of only three million, has great potential to achieve prosperity. Yet the resources alone are not a guarantee for winning a ticket to the dreamed-of economic success. Prudent macroeconomic policy and management is required to direct natural resource wealth to social welfare and rapid development. Currently, Mongolian macroeconomic indicators are showing signs of the resource curse in terms of a high dependence on commodity prices, a lack of competitiveness, especially in non-mining sectors, and the high volatility in inflation and exchange rates, etc. On top of this economic basis, the young democracy of Mongolia is pursuing short-term election policies rather than long-term policies based on research. With this paper, I attempt to address the following key questions:

- a) Economically a mining nation. But is a political and social consensus established?
- b) Fiscal policy is in place. But how has it been implemented, especially in terms of discipline?
- c) Is there coexistence between monetary and SME policy?
- d) Should Mongolia be an “Inflation Targeter” as well as a “Free Floater”?
- e) Diversification, Yes. But how? Does Mongolia have a clear strategy?

2. New Minerals Policy Seeking Predictability

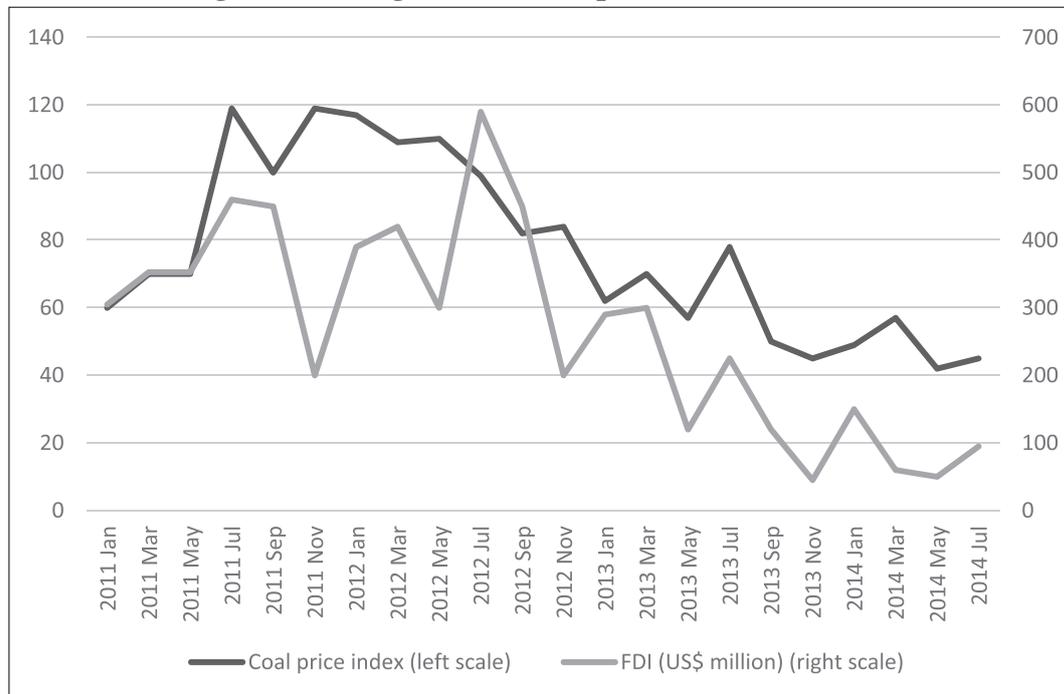
Mongolia is perceived by investors as “unpredictable” due to its frequently changing policy and

legal environment¹. Examples are the so-called “long-named” law², the “Khan Resources dispute”, the “106 suspended licenses”, and SEFIL³, etc. The sharp drop in FDI from 2012 to 2015 was not only caused by international price falls, but also by homemade political mistakes brought on by short-term populist election promises. In reaction to this negative development, Mongolia has approved a new state policy for the minerals sector⁴ and changed key laws aiming to enable a more investor friendly environment. The amendments were made in the fields of mining and petroleum, and an investment law aimed at making Mongolia more competitive in attracting FDI. However, the consistency of policy implementation is the key to achieving the desired goal.

McKinsey⁵ created criteria for defining resource-driven countries. A country can be (economically) considered a mining nation, if: 1) resource exports account for more than 20 % of total exports; 2) resources account for more than 20 % of government revenue, and; 3) resource rents are more than 10 % of GDP. Mongolia is definitely a mining nation (or resource-driven country) by these criteria. However, politically the nation is divided and controversial debate dominates.

The Mongolian survey company “Sant Maral Foundation” publishes poll results annually⁶. The surveys not only reveal the rankings and ratings of political figures, but also include questions addressing socioeconomic issues. Respondents in Mongolia do not show a common consensus on big mining projects (Oyu Tolgoi, Tavan Tolgoi, etc.), state participation in mining, and public revenue management. The lack of an educated public creates favorable conditions for the rise of populist politicians.

Figure 1: Mongolia's Coal Exports and Inward FDI

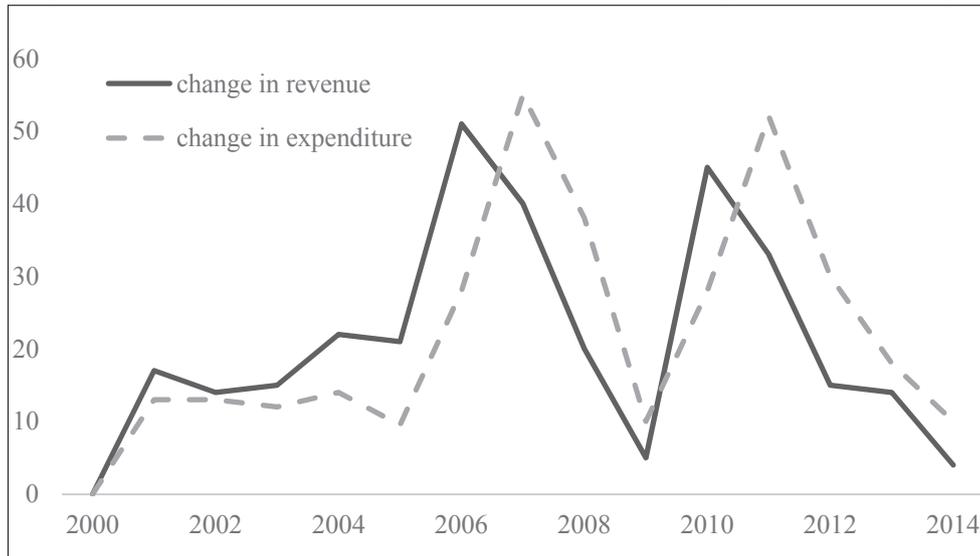


3. Cyclical Fiscal Policy

Besides the election cycles, Mongolia is exposed to a commodity cycle. The latest super-

cycle driven by Chinese demand is over and this is revealing Mongolia's weakness in fiscal management. The so-called "pro-cyclical fiscal policy" was sharply criticized even in the early 2000s. To tackle this problem the Mongolian parliament has adopted laws aiming toward fiscal stability and better debt management. However, lack of fiscal discipline is calling into question the effectiveness of such laws.

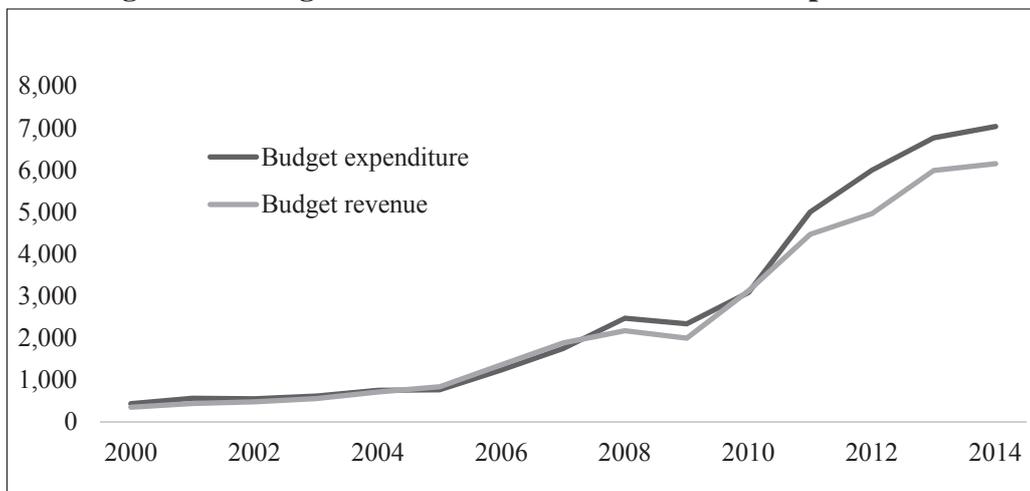
Figure 2: Mongolian Government Revenue and Expenditure Changes



Source: International Monetary Fund, 2014

The budget is highly dependent on commodity exports, basically copper and coal, and therefore the prices for these commodities play a major role. An increasing contribution from the developing oil and gas sectors was expected to bring success in regard to the diversification of exports. Yet the actual oil price has been more than disappointing. Price risk exposure is high due to the openness of the economy (foreign trade volume to GDP). Increased foreign debt bears the risk of triggering default.

Figure 3: Mongolian Government Revenues and Expenditures



Source: International Monetary Fund, 2014.

Mongolian policymakers were interested in increasing budget expenditure when the expected budget income was not realized. Because of election cycles, Mongolia is one of the worst examples in terms of managing fiscal revenues. Strong pro-cyclical fiscal policy fueled by populist promises for short-term election purposes has triggered high inflation. To sustain expenditure, which was initiated by the boom times, the government of Mongolia was pushed to borrow and increase debt in the bust times.

Another factor which may be supporting undisciplined and unconsolidated budget policy might be the new Mongolian election law. According to this election law, Mongolia has 76 electoral districts. The plurality-at-large system gives a strong incentive to candidates (and parliamentarians) to focus on local (micro-) issues rather than macro-policy. This inconsistency between the election system and fiscal policy-making encourages fractional budget expenditure rather than consolidated policy.

4. Monetary Policy in Mongolia and Its Impact on SMEs

Mongolia has an independent central bank which operates under its own dedicated law⁷. The law says the Bank of Mongolia (BoM) must safeguard the value of the national currency, the togrog (MNT)⁸. Over the last few years, the policy rate was kept consistently high (Mongolia: 12%; Australia: 1.75%; Canada: 0.5%; China: 4.35%, and; Russia: 10.5%), aiming to fight inflation. Inflation peaked at almost 40% in 2008–2009, due to the sudden expansionary budget policy targeting the election in 2008. One of the other negative side effects is the high lending costs to SMEs. The normal loan requirements of the commercial banks of Mongolia have been marginalizing the SME sector, which is believed to be the main motor of job creation. Usual commercial loans have a duration of 2–5 years, interest rates of between 17 and 20% per annum, and collateralization of 150%.

Tax collection in Mongolia is weak and the few largest companies contribute the majority of the state budget. To increase its tax base, any developing country should support the SME sector with cheap capital. Because of populist and expansionary budget policy, Mongolian governments (2004–2012) were not able to lower the cost of capital to fight inflation. In addition, unemployment is high because of the weak SME sector. An international study shows Mongolians are entrepreneurial⁹. The high inflationary environment hampers this creativity.

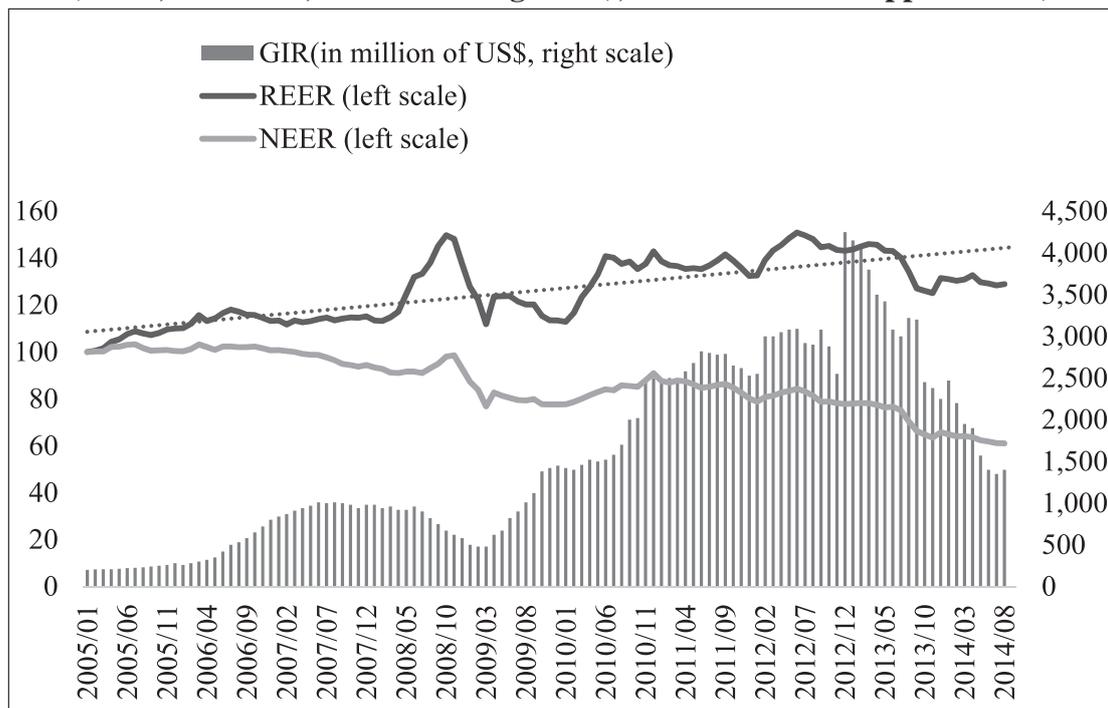
5. Can Mongolia be an ‘Inflation Targeter’ and a ‘Free Floater’ at the Same Time?

To avoid a pass-through effect, Mongolia has tried to fight inflation by exchange rate policy over the last decade. Mongolia was *de jure* a free floater but *de facto* a hard pegger. The reasons for Mongolia declaring itself as a floater are the following. A flexible exchange rate better supports the independence of a central bank. With a fixed exchange rate a central bank should sustain exchange rate parity, and so the ability to react to a domestic situation is weakened. Theoretically, a flexible exchange rate should function as an adjustment mechanism (buffer) in case of shocks. However, in reality that is not the case, especially for small open economies. If a small open economy tends toward a more discretionary monetary policy, then the exchange rate can destabilize domestic price levels. As discussed in Calvo and Reinhart (2002) the discretionary

Central Bank lacks credibility. Hakura (2005) argues that such countries 1) try to stabilize the exchange rate (“Fear of Floating”) or 2) the Central Banks should pursue clear and transparent policy to earn credibility. These are two ways to avoid pass-through effects.

But is this just a normal reaction for small open economies (as in Svensson (2000))? To answer this question, more research in the field (especially for Mongolia) is needed.

Figure 4: Exchange Rates for the Mongolian Togrog
(Index, 2005=100, Jan. 2005–Aug. 2014); an increase is an appreciation)



Source: Mongolian authorities and IMF staff estimates

Monetary policy is hard enough to maintain in an advanced economy. With its high cyclical volatility and high dollarization (30–40%) Mongolia has to solve more complicated problems. The cost of capital is high, and the policy rate is high due to combating inflation (a pro-cyclical expansionary policy).

Some economists (Calvo, etc.) argue that an emerging market country is macroeconomically better off if it behaves as a real floater to avoid the “pass-through effect”. But politically, volatility in exchange rates might be seen as a byproduct of weak government. Consequently, political pressure on central banks is high, bearing the next election in mind. The BoM should be confident and accountable as a policy-maker to earn credibility.

6. Diversification? Yes! But How?

Almost all economic reports, recommendations and political party agendas emphasize the importance of economic diversification. But how to do it? In my opinion, Mongolia still has no clear policy-maker. The role of parliament in policy-making is questionable. The Ministry of

Finance prepares policy drafts for the following year which are to be approved by the parliament. The policy drafts can dramatically change during the discussion process in parliament (including its standing committees).

Also, in the Mongolian language, the word “policy” can have two different meanings. First as “бодлого” [*bodlogo*], implying a long-term policy that declares some goals. Second, every year parliament approves “мөнгөний бодлого” [*mongonii bodlogo*] (monetary policy) and “төсвийн тухай хууль” [*tosviin tukhai khuuli*] (law on the state budget) for the following year. In this context “policy” (“бодлого” [*bodlogo*]) means more like a program or a one-year plan. The Ministry of Finance and the BoM develop the policy drafts and parliament approves them separately. On the one hand, parliament approves low inflation goals, while on the other hand it can approve overly expansionary budget plans. It gives a confusing message to the economy and makes the life of the BoM’s governor harder. High inflation through excessively expansionary fiscal policy forces the BoM to increase the lending rate, which drives up the capital cost to the SME sector. Additionally, some economists criticize the Mongolian parliament for lacking professionalism and that the political tug of war between political groups (anecdotal evidence of business group interests) takes the upper hand in decision making.

Policy democratization and supporting think tanks are essential for creating a sound environment for long-term policy and public education. A few new young think tanks in Mongolia still need strong financial support and also trained professional researchers. Under the democratization of policy-making, I understand the participation of independent boards (or think tanks), not only in the creation but also in the evaluation of key policies. Mongolians can adopt the Chilean example and create independent expert boards on state budget planning and price forecasting. Such a mechanism of public (or expert) consultation on budget discussions prior to final approval by parliament might be a good tool for Mongolian macroeconomic policy.

An educated public is fundamental in any democracy. Mongolia should invest in its public (voters’) education to strengthen its institution building. Germany has a center for political education (Bundeszentrale für politische Bildung)¹⁰. Such an organization or initiative might be worth starting here in Mongolia.

Another serious issue is so-called “politicized mega-projects”. Instead of commercially-driven policy some Mongolian politicians use mining projects as an opportunity to appear “patriotic”. The Mongolian constitution clearly deals with a secular state and religion. However a clear separation between politics and business is not stated. According to the constitution of Mongolia, the state can regulate the market and owns the resources. So far liberalization as a tool for reaching goals has not achieved a national consensus.

7. Conclusion

In 2013 Mongolia raised bonds (Chinggis and Samurai) for investment focusing on infrastructure and energy. In the coming years, restructuring debt will be the main challenge. However, this event (issuing international bonds) was a significant milestone for Mongolia, showing the ability and capability of Mongolia having access to international financial markets.

The parliamentary election (June 2016) surprisingly resulted in a landslide majority for the Mongolian People’s Party (MPP), the oldest and most disciplined party in Mongolia, with a strong heritage in its post-communist history. Without a powerful opposition, the MPP now has

the chance to roll back or postpone the legal reform which was completed under the formerly dominant Democratic Party (DP). Also, the plurality-at-large electoral mechanism gives strong incentives to elected parliamentarians to follow a “circular” (fractional) policy. The MPP is recognized as rooted in the countryside¹¹. Consequently, the parliamentarians interested in being reelected will support circular investments rather than seeking a long-term comprehensive budgetary procedure for the whole country.

Mongolia has started dozens of initiatives to support employment in non-mining sectors. Yet often forgotten fundamental issues remain unsolved. Mongolia is learning from its near past as a young vibrant democracy and conducting a paradigm shift from short-term cyclist policy to long-term predictability. The institutions and Mongolia as a whole should learn to address the issues and determine solutions before repeatedly starting new initiatives.

Finally, Mongolia must strengthen itself as a mining nation and a frontier market. Therefore, preparing for the next super-cycle (if it ever happens) is a wise path.

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¹ Behre Dolbear’s annual political risk assessment.

² Law on Prohibiting Mineral Exploration and Extraction Near Water Sources, Protected Areas and Forests. The law came as a great surprise to miners and created a long-time dispute between companies (which lost their licenses) and the Government of Mongolia.

³ Mongolia’s Strategic Entities Foreign Investment Law (SEFIL), passed in May 2012 (just before the parliamentary election), was blamed for deterring foreign investment. However, the law was replaced by a more liberal investment law in 2013.

⁴ Ch. Otgochuluu, 2016, EBRD, Law in Transition, “Mongolia’s State Policy on the Minerals Sector and Its Application in the Promotion of Sustainable Development”. See more at: <http://2016.lit-ebd.com/en/in-focus/#13-6>

⁵ McKinsey Global Institute, December 2013, “Reverse the Curse: Maximizing the potential of resource-driven economies”

⁶ The politbarometer, www.santmaral.mn

⁷ Law of Mongolia on the Central Bank (Bank of Mongolia) https://www.mongolbank.mn/documents/law/Law_on_Central_Bank.pdf

⁸ Article 4. Objective of the Bank of Mongolia. 1. The main objective of the Bank of Mongolia shall be to ensure stability of the togrog.

⁹ Nikolova et al., 2012, “Entrepreneurship in the Transition Region: An analysis based on the Life in Transition Survey”, Working Paper No. 141, EBRD

¹⁰ Federal Agency for Civic Education, <https://www.bpb.de/>

¹¹ Even though half of the voters live in the capital city, less than one third of parliamentary seats are elected from the city.

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The Implications of Successful SEZs in Northeast Asia: Opportunities for Developing SEZs in Mongolia

Tsolmon Tsagaach*

Abstract

Mongolia has been trying to develop several types of Special Economic Zones (SEZs) after it passed “The Law on Free Trade Zones” in 2002. Unfortunately, these efforts haven’t been fruitful so far. As of today, there are three state-supported Free Trade Zones (FTZs), which are being promoted unsuccessfully by the government of Mongolia. The Zamyn Uud FEZ is located at the biggest trade port between Mongolia and China, while on the other hand, the Altanbulag FTZ is located on the northern border of Mongolia and is the main port for entering Russia. The other FTZ, Tsagaannuur, is located at the crossroads of four countries: China, Kazakhstan, Mongolia and Russia.

In this paper, we will analyze the policies and lessons from the countries that have benefited from successful FTZs. Then we will compare them by certain criteria and will try to find a suitable mode that can enable and push the development of Mongolia’s SEZs. Also in this paper we will examine the dark side of the so-called “isolated enclaves” and will identify certain causes for unsuccessful or unbeneficial SEZs, so that Mongolian SEZs can avoid them.

Keywords: Special Economic Zone (SEZ), Free Economic Zone (FEZ), Free Trade Zone (FTZ), benefit for local economy, FTZs of Mongolia, new concepts in SEZ development
JEL classification code: K33

1. Introduction

In the global context, SEZs are entering the next stage of development throughout the world. SEZ concepts are changing in regard to their rapid expansion in developing countries. For a long time SEZs have been isolated enclaves and have been criticized for being less beneficial to local economies.

However, recent developments in SEZs are signalling a different tone in that aspect. China launched its latest SEZ in Shanghai as a “pilot SEZ” to test a new policy toward changing the traditional concept of “no benefit to local economy FTZs”. Malaysia even downgraded the success of the Penang Export Processing Zones (EPZs) because they haven’t been beneficial in other areas except employment generation. India has started changing regulatory procedures within the SEZs in favor of the long-term benefit of the local economy. Even Russia has begun taking some initiatives in the establishment of newly defined SEZs, and they are planning to establish a border FTZ right next to Altanbulag FTZ.

Where do we fit within these new, changing forms? Do we need to improvise and get in line with these new policies or should we take advantage of the niche that has been opened after other countries are shifting to the new horizon?

In Northeast Asia, the country that has great experience in SEZs is China. Therefore, first we will look into the success and failure stories of Chinese SEZs and then we will discuss the preferential policies of Korean SEZs.

According to the World Bank, in 2014 there were 6 SEZs, 14 open coastal cities, 4 pilot

free trade areas and 5 financial reform pilot areas in China. There were also 31 bonded areas, 114 national high-tech development parks, 164 national agricultural technology parks, 85 national eco-industrial parks, 55 national ecological civilization demonstration areas, and 283 national modern agriculture demonstration areas.

2. What Did They Do to Attract FDI and MNCs to the SEZs?

To demonstrate this in more detail we will focus on the case of the Shenzhen SEZ, which is regarded as the most successful SEZ in China in many studies. One could argue that there are more reasons than we illustrate here to the success of Chinese SEZs; we list those success factors below:

Flexibility of SEZ policies and autonomy of local government of SEZs. The central government of China granted Shenzhen municipality the right to make its own local rules and policies in response to the needs of the investors and multi-national corporations (MNCs). This enabled the Shenzhen authorities to act according to their planned strategy and they issued several important policies and regulations (300 enacted laws, 70% of which were related to opening up and the market economy) that put them above the competing SEZs from other areas of China (Shenzhen Planning Bureau, 2001). One example is that they allowed investors in high-tech sectors to sell their products on the local Chinese market for the first time in the history of Chinese SEZs.

Timely transformation into reform. Shenzhen was the first SEZ which announced no more labor-intensive investments to the existing and potential investors of the zone (Wang, 2003). It was one of the top FDI destinations in the 1980s, since it was one of the few zones which were protected by special grants from the government to openly attract investments in certain sectors, especially in labor-intensive ones. However, the early 1990s indicated the disadvantages in this approach due to strong competition from other SEZs in China to host MNCs in labor-intensive industries. Therefore, Shenzhen defined a new strategy of establishing itself as a modern, world class SEZ in high-tech industries with the latest urban infrastructure. To reach this goal the authorities in the zone didn't approve any labor-intensive projects and introduced new regulations that drove out many former factories (except pollution-free companies) to non-SEZ zones such as Liantang. Seeing SEZs as experimental laboratories for developing and putting new policies into effect, central government not only avoided the potential disruption in the economic, social and political spheres, but also has been able to identify problems, sort out issues, develop measures, and test and evaluate results (Ge, 1999).

Effective involvement of the government. In the case of the various Chinese clusters the government has been relatively effective in building infrastructure, creating market places, and establishing technology innovation platforms and R&D centers. Moreover, the government was willing to let the SEZ authorities create their own business environment to attract investors without intervention from the government. For Shenzhen SEZ, due to its favorable business legislation and high quality infrastructure, leading MNCs like IBM, Seagate, Compaq, Olympus, Sanyo and Lucent have their production facilities in Shenzhen, making Shenzhen one of the top three hi-tech zones among China's 52 hi-tech zones (Wang, 2003).

FDI attraction. Lack of capital and technology in the early periods of SEZ development made the Chinese government desperately seek FDI from MNCs. It offered generous financial

incentives (some argued it was too generous) to the investors in the SEZs. Incentives successfully attracted FDI (especially in port-cities) and has become an important source of capital, skills, technology, and modern management techniques. For Shenzhen, besides the low tax rates there were several additional preferences for investors in the zone. For instance:

- Exemption from income tax for the first two years then a 50% reduction for the next eight years;
- Export-oriented, newly established entities would be spared half of the fee for land use. If the business was in the high-tech industry there would be no fee for land use;
- High-tech enterprises were free from property tax for five years. Other projects were exempted from property tax for three years;
- High tech companies which were run by foreign investors (including Macao, Taiwan and Hong Kong) could be registered as domestically-funded if the share of the foreign capital in the total investment was not higher than 25%.

Public-private partnership approach. In the developing stage of SEZs the government can partner with private companies in financing the project and building infrastructure. For Shenzhen, some part of the basic infrastructure was built by private developers and joint ventures from Hong Kong (Yeung, Lee, and Kee, 2009). In the Puyuan sweater cluster in Zhejiang, the local government formed a shareholding company with 27 private logistics and transport firms to build the cluster's logistics center (Ruan and Zhang, 2008). In the technology innovation center in Guangdong, public institutions and private firms joined forces to conduct R&D.

Innovation, adaptation, and learning. Rising competition to attract investment in labor-intensive, low-cost industries made the government realize the importance of innovation and technological know-how for the competitiveness of SEZs. Thus the government started investing more in R&D infrastructure, knowledge sharing, and offering more favorable incentives to high-tech investors. For Shenzhen, it was obvious that high-tech companies in the zone were transferring very little technological know-how to their Chinese partners. Therefore the SEZ authorities took some measures to fix this issue, and one was to offer preferential access to domestic high-tech companies if they wanted to enter the zone. As a result, not only did a number of domestic high-tech firms enter Shenzhen from other parts of China, but also the most prestigious universities, such as Peking University, Tsinghua University, Harbin University of Science and Technology and Central China University of Science and Technology, established their research institutions in the zone (Shi, 2002). On the other hand the local authorities of the zones and industrial associations have been offering managerial and technical training to the workers of the zone using a large budget from the government.

Realistic objectives, good benchmarking and local competition. Chinese SEZs have their own clear objectives, plans, expected GDP growth, employment, export, FDI and even tax revenue. These results are under the strict annual monitoring of the central government. One interesting aspect of the SEZs in China is that they compete vigorously with one another to benefit from the reward system of the central government. The local authorities of the SEZs have great responsibility to sustain or increase their competitiveness in comparison with other competing zones (Zeng, 2011). Even clusters rival each other in terms of the level of GDP growth reached, despite the lack of precise development plans for the clusters. In recent years, the focus of the competition has shifted to being "green" and contributing to social development.

Now we can discuss some successful examples of preferential policies implemented by the Korean SEZs. Masan Free Trade Zone, the most successful zone among the eight Korean SEZs, was established in 1970 and initially was a prototypical export processing zone. The objective of Masan FTZ was to support the development of manufacturing activities that complemented those of the Korean economy but did not compete with them. For this reason, the zone was relatively small (90 hectares) compared to the other zones. However, through offering excellent infrastructure (port, airport, roads) and high quality industrial parks with capable management and support services, it managed to attract leading foreign MNCs in the electronics industry of the ROK. In 1971, these MNCs “imported” only 3 percent of their production components from the ROK, but by 1986, 45 percent of these components were sourced from the ROK. This shows that the zone had achieved its main goal to serve as a catalyst for the production diversification of domestic industry by creating reliable clusters for the high-tech manufacturing sector (Baissac, 2011).

According to the Planning Office of Free Economic Zones at the Ministry of Finance and Economy of Korea, the preferential policies of the ROK SEZs are as described in Table 1.

Countries which are trying to develop SEZs should look at the experience provided by China and the ROK. These insights demonstrate some useful ideas and tactics that could be learnt and replicated by developing countries, such as Mongolia, which is struggling to start SEZs. However, replicating them without considering the substantial differences between countries could lead to failure once again. Thus, adaption of these approaches to the local situation should be the most important aspect of the development of successful SEZs. Next we will have a quick look into the mistakes and difficulties related to SEZ development.

Table 1: Preferential Policies of the Republic of Korea SEZs

Sector	Benefits
Tax Breaks	<ul style="list-style-type: none"> • Corporate tax exemptions for the first 3 years and a 50 percent reduction for the following 2 years (for investments of more than US\$50 million, a 100 percent exemption for the first 7 years and a 50 percent reduction the following 3 years); • A flat 17 percent income tax for foreign CEOs and executives at foreign companies; • Capital goods import tariff exemption for 3 years; • Acquisition, registration, property, and aggregate land tax exemptions for the first 3 years and a 50 percent reduction for the following 2 years
Financial Support	<ul style="list-style-type: none"> • Companies that locate in FEZs will either be exempt from or subject to reduced land fees; • Financial assistance for the construction of facilities, such as hospitals and schools, to make life more convenient for the foreigners
Deregulation	<ul style="list-style-type: none"> • Minimal land-use regulations governing factory construction and enlargement (currently applicable to the Seoul metropolitan area); • Lift restrictions on businesses reserved for small and medium enterprises (SMEs); • Direct foreign currency payments for ordinary transactions of less than US\$10,000 are allowed
Employment and Labor Management	<ul style="list-style-type: none"> • Unpaid weekly holidays are allowed (currently paid); • Exemption from obligatory employment of veterans, the disabled, and the elderly

Educational Improvements	<ul style="list-style-type: none"> • Schools can be established by foreign investors; • Domestic residents can attend foreign schools
Foreign Hospitals and Pharmacies	<ul style="list-style-type: none"> • Foreign-financed hospitals and pharmacies for foreigners are allowed
Foreign Broadcasting	<ul style="list-style-type: none"> • The ratio of cable network foreign broadcasting retransmission channels expanded from the current 10 to 20 percent
Administrative Support	<ul style="list-style-type: none"> • English is allowed for processing of public documents; • Foreign Investment Ombudsman's office will be established

Source: "Free Trade Zone and Port Hinterland Development", UNESCAP and the Korea Maritime Institute, 2005.

3. What Did They Do Wrong?

Despite their relatively successful run, Chinese SEZs had their own difficulties and negative aspects. We can divide them into four main categories based on the experience from Shenzhen SEZ.

I. ***Negative impact on economic indicators.*** Based on some economic indicators some argued that in the early stages of their development SEZs had been used as bridge for durable goods to enter the local market and threatening domestic industry and decreasing foreign exchange, and caused an increase in inflation (Reardon, 1996). Consequently, the government banned imports of 17 durable goods to the SEZs and there were some demands to close the SEZs.

II. ***Investment disparity.*** At the end of 1981, 91 percent of total foreign investment originated in Hong Kong, indicating a huge disparity in investment source. By 1995, 96 percent of Shenzhen's textile industry and 95 percent of its garments industry were owned by Hong Kong investors (Lau, 2001). This was caused partly by the lack of detailed regulations concerning wages, employment and hiring/firing policy. Foreign companies were reluctant to open a business in the zones because they weren't familiar with the Chinese business culture and stated that there was too much red tape. In contrast, companies from Hong Kong were more active in starting business thanks to their cultural similarities and knowledge about how businesses work in China. Similarly, the majority of the Hong Kong investments (71%) were concentrated in the real estate sector alone, due to the excessively high price of land in Hong Kong, which was causing migration to Shenzhen SEZ (China Insights, 2014). As a result, foreign companies started withdrawing their investments and closed their branches in China. The government quickly responded and approved five new regulations to reduce the red tape, especially in entry and exit procedures and wage requirements.

III. ***Speculation and loss of land.*** With the purpose of developing new zones the government started the requisition of rural lands from farmers at very low compensation rates. Between 1992 and 1993, the government granted the rights to 127,000 hectares of land to real estate developers, but only 46.5% of it was actually developed into economic zones (Huang and Yang, 1996). This caused the so-called phenomenon of "zone fever". Even the central government itself promoted this trend by creating 54 new technological zones in 2006. Meanwhile, local governments and municipalities made it worse by declaring their

own special zones, promising incentives and land to real estate developers. Subsequently, this trend quickly grew to its limit and in the 1990s it was impossible to estimate the actual number of special zones. According to a 1993 estimate there were 6,000 to 8,700 zones. In 1994, the government cancelled over 1,000 zones which were established outside of the national and provincial regulations. The negative effects of “zone fever” on the country’s arable land was huge. Between 1986 and 1995, approximately five million hectares of arable land were transferred to infrastructure and real estate development (Cartier, 2001). This trend also continued within the zones as well. In 1986, the government restricted permission to build hotels, restaurants and commercial buildings as they were negatively affecting export output. Hainan SEZ was a clear example. It had the biggest bubble in real estate markets at that time, having almost empty office buildings, hotels and villas. According to Cartier (2001), the concept of SEZs was developed without any causal analyses on arable land and the natural resource base.

IV. **Labor dispute.** Another big problem for Shenzhen SEZ is labor abuse within the zone. 7 million of the total 12 million workers in the zone are contract (migrant) workers who don’t have any legal or social protection. This situation leads to three main violations of labor standards: 1) the use of child laborers; 2) poor living conditions; and 3) excessive compulsory overtime work (Sklaire, 2001). By 2003, half of the firms in Shenzhen owed wage arrears to their workers (ICFTU, 2003). In addition one-third of the workers received less than the minimum wage. Although the minimum wage in Shenzhen increased to RMB 1,500 (US\$240) in 2012, it is still lower than the global market rate and enables China to protect its comparative advantage in labor costs. Unsurprisingly, most workers in the zone are very poor migrant women from rural areas. They don’t complain and send their money home. Occupational health and safety requirements are not up to standard, as illustrated by factory fires, explosions, lost limbs and even suicides by workers (Chan, 2009). The crime rate is also high in the zones. For example, the current Shenzhen crime rate is nine times higher than in Shanghai and it is well-known for human trafficking and the sex trade within China (Goswami, 1997). The simplified customs controls also made it possible to smuggle large amounts of goods through the zones. Two of the original zones, Shantou and Xiamen, were accused of massive tax and smuggling fraud in 2000 and 1999 respectively (Business China, 2006).

Some Chinese academics and leaders have been criticizing the SEZ concepts due to their dark side, which is rarely acknowledged as the dazzle of FDI and the technological miracle blind public awareness. As predicted by Li Peng in 1996, it is becoming more and more realistic that investors will no longer be able to enjoy duty free imports and the low tax rates in the zones. To demonstrate this, we can look at the Shanghai Pilot Free Trade Zone which is experimenting with drastically changed policies (e.g. no fiscal incentives and tax preferences) toward the SEZ development.

4. What Are the Future Trends for SEZs?

Low labor costs, economies of scale, preferential access to markets, duty-free inputs, quality infrastructure and generous fiscal incentives have been crucial elements in attracting

foreign direct investment. However, this era is coming to an end for several reasons. After the 2008–2009 global financial crisis, the United States and European economies ceased to be a global engine of demand and this led the leading companies in global production networks to increasingly consolidate their supply chains both in terms of supply and production locations (Farole and Akinci, 2011).

Furthermore, the expiration of the Multi-Fiber Agreement (MFA) in 2004 almost wiped out the textile and apparel manufacturing SEZs in Latin America, Africa and Eastern Europe in favor of low cost Asian producers. Thus, the countries who haven't established SEZs, yet need to offer something more valuable, are advantageous to the MNCs. The traditional assembly activities of the global production network are no longer attractive to investors unless the country has a huge cost advantage, like Bangladesh and Vietnam, or a big market, like China.

According to Farole (2011), there is a shift away from the traditional EPZ model towards the SEZ model. The main point has been the forward and backward links between the zones and local economies, and a shift away from fiscal incentives to value added services and the presence of an attractive investment environment in the zone. These new concepts of SEZs favor multiuse developments, including industrial, commercial, residential, and even tourism activities. Additionally, there are other SEZs specializing in high-end services, such as information and communication technology (ICT) and biotechnology. Privately owned (in some cases privately operated) SEZs are growing in number (FIAS, 2008).

China has been very active in promoting SEZs in six African countries. They are trying to leverage their own proven model to create successful zones. However, due to major differences between Chinese and African SEZ development bodies (Chinese SEZs are led by provincial or local governments, whereas African ones are being led by private developers) there have been some troubling signs of difficulties.

First, a clear distinction between political support and political objectives is needed in the zone projects. Without any commercial base, which is the source of sustainable competitive advantage, these zones cannot be effective relying only on fiscal incentives. Second, the success of the zones should have a strong connection to the competitiveness of the national economy and national investment environment. However, most projects in Africa are operating in weak local and national value chains that lack access to global markets and have poor infrastructure. Third, there is *de jure* and *de facto* implementation. The lack of a clear and transparent legal and regulatory framework and an authority with the capacity to enforce it has led to disputes and delays in several of the projects (Brautigam and Tang, 2011).

According to Naoko Koyama, expansion of regional trade agreements is creating opportunities and threats at the same time. Even though multilateral trade efforts failed, bilateral and regional trade agreements have been growing rapidly in recent years. Usually selling to the domestic market is prohibited in most SEZs. If a sudden regional agreement erases barriers between the domestic and foreign markets, SEZ policy will have to adapt to the new circumstances in terms of the rules of origin, treatment of exports and fiscal incentives.

On the other hand, such regional agreements are also creating opportunities for smaller countries, giving them access to bigger markets (it is a common finding in SEZ studies that market access is often the number one investment location determinant). Hence, having regional agreements can lead to increased investment opportunities that can improve the competitiveness of an SEZ.

5. Where Did Mongolia Get Stuck?

The successful development of SEZs is often seen as the main economic driving force for Mongolia's heavily mining-based economy. Thus, the industrial policy section of the "Action Plan of the Government of Mongolia for 2012–2016" includes several SEZ-related objectives, such as completing the infrastructure of Zamyn Uud FEZ as well as of Altanbulag and Tsagaannuur FTZs by the end of 2015.

In 1995, the Mongolian parliament passed the first legal act for establishing SEZs entitled "Concepts for Establishment of Free Economic Zones". Then, in 2002 "The Law of Free Trade Zones" was passed and initiated the first provisions for the establishment of FTZs. Additionally, laws on the legal status of several FTZs were passed by parliament in 2003 and 2004.

Mongolia is embracing a free trade regime and has opened its markets to foreign investment. Thus, in order to improve export capacity, increase foreign investment flows, and acquire the latest technology, the government decided to establish three FTZs in different areas of Mongolia. Zamyn Uud FEZ is located at the biggest trade port between Mongolia and China. Altanbulag FTZ, on the other hand, is located on the northern border of Mongolia, which is the main port for entering Russia. Tsagaannuur is located at the crossroads of four countries (China, Kazakhstan, Mongolia, and Russia). Their main characteristics are provided in Table 2.

There are several expected benefits from SEZs, including:

- Positive impact on export growth, composition, and the import-substitution sectors: Mongolia's main export products are all mining-related products (89.2% of the total in 2012) and almost all consumer products (close to 90% of the total in 2013) are imported;
- Improvement of the manufacturing sector: The GDP share of this sector was only 8% in 2012. It is anticipated that the most important benefit will be an increase in manufacturing through foreign and domestic investment, especially in the case of Zamyn Uud FEZ;
- Development opportunities for regional and rural areas: Employment, local businesses, and thus the national economy, are expected to greatly benefit from successful SEZ creation;
- High technology, management skills, and know-how are the most sought-after benefits from SEZs.

In 2004, USAID conducted an "Assessment of Mongolia's Free Trade Zone Program and Site Evaluation" for Zamyn Uud FEZ. In the report, two major recommendations were emphasized in order to make the FEZ program successful and competitive, and to align it with international standards. First, it noted that the government had not conducted an economic cost-benefit analysis for the establishment of the FEZ. Second, no full commercial feasibility study for the FEZ had been conducted, including market assessment, market planning, infrastructure requirements, implementation planning, as well as business and financial modelling.

Table 2: Main Characteristics of Mongolia's SEZs

Zone	Type of Zone	Location	Objectives	Targeted Sectors
Altanbulag	FTZ (Trade Facilitation & Logistics)	<ul style="list-style-type: none"> • Mongolia–Russia border • 25 km from Sukhbaatar City • 335 km from Ulaanbaatar 	<ul style="list-style-type: none"> • Important transport corridor connecting China, Mongolia and Russia • Free access to third country markets • Developing into a major trade, industry, commerce, and service center in northern Mongolia 	<ul style="list-style-type: none"> • International trade between Russia, China, and Mongolia • Becoming a link between Asia and Europe • Hotels, resorts, and auto service centers • Promotion of rent free spaces for businesses that operate in the auto parts or construction material sectors
Zamyn Uud	Free Economic Zone (Trade Facilitation & Logistics)	<ul style="list-style-type: none"> • Mongolia–China border • South of Zamyn-Uud City 	<ul style="list-style-type: none"> • Creation of a major commercial, industrial and tourism center • Increase of economic welfare, jobs and business opportunities for residents of Dornogovi and Omnogovi aimags • Benefiting from the transport corridor linking Russia and China 	<ul style="list-style-type: none"> • Foreign trade, manufacturing, tourism, resorts, casinos, and warehousing
Tsagaannuur	FTZ (Trade Facilitation & Logistics)	<ul style="list-style-type: none"> • 68 km away from the aimag center Bayan-Olgii • About 1,720 km away from Ulaanbaatar 	<ul style="list-style-type: none"> • Accelerate development of western Mongolia through foreign and local investments • Create more jobs and business opportunities for local residents 	<ul style="list-style-type: none"> • International trade between China, Kazakhstan, Mongolia and Russia • Heavy and light industries, hotels, resorts, service industries

Altanbulag, which opened in June 2014, is the more complete zone in terms of infrastructure. Unlike Zamyn Uud, proper feasibility studies were conducted and a detailed master plan was finalized. Also, costs for infrastructure construction were fully funded by the government (however, in 2013 its budget was cut). According to the governor of Altanbulag Soum, Altanbulag FTZ has already started providing benefits to the local economy. As dams, sewers, roads, and lighting were constructed, and 120–250 new jobs were created, the market for local herders, farmers, and small shops is growing. However, since all the projects are dependent on government-sponsored tenders and bids, planned actions, and construction works, the future development of the zone is lagging.

According to the above mentioned USAID report, we are expecting the following possible outcomes from successfully established SEZs: projected tax revenues, revenues from granting concessions, licenses, production-sharing agreements, job creation, introduction of new technologies and management know-how, as well as backward and forward linkages with other local firms, eventually leading to the formation of clusters and increased incomes.

However, there are also potential costs, such as loss of tax revenues due to tax breaks, expenditure on infrastructure paid by the government, and negative environmental impacts or other negative externalities.

The main reasons for the under-achievement of these FTZs are not small in number. Here are some of the much needed improvements to be made in the areas of the legal and administrative aspects of the FTZs:

- Laws on FTZs are not up to standard. They are incomplete and unclear. For example, these laws are not detailed in the level of supplemental services and activities within the zones and this creates uncertainty in how to establish living standards and working environments for the workers inside the FTZ;
- Inconsistency of the Mongolian governmental policy toward developing FTZs in the long term. After every election, sudden changes of the whole FTZ master plan and an unrecognizable new vision for the FTZs are not a surprise. For example, Altanbulag FTZ has been “officially” opened four times so far and this count may rise further.
- Inability to run FTZs effectively from administrative offices. Even though the administrative offices have a large budget and enough staff, they are mostly outsourced to organize the main activities and events which are vital for developing FTZs successfully.
- Some of the feasibility studies and detailed master plans for the FTZs are not thorough. They lack reliable research and sophisticated insight.
- Funds for infrastructure development of FTZs are scarce. Unreliable government policy, restrictions on FDI and a poor economic situation are making it more difficult to be able to attract investment from abroad.

6. Conclusion

Special economic zones have been one of the most effective catalysts for economic development. However, around the world there are not many countries which have enjoyed success with SEZs. China is one of them. Through flexible policy, autonomous municipalities, timely reform, effective government, a significant flow of FDI, public–private partnerships, innovation adaptation, clear goals and local competition, Chinese SEZs, especially Shenzhen SEZ, have fulfilled the goals by serving as catalysts for economic transformation. However, the zones in China didn’t have an easy path in reaching this level. There was the initial negative impact on the economy, a huge disparity in investment diversity, speculation for land, and labor abuse in the zones.

Attracting investment to SEZs has become more and more difficult as the traditional EPZ model is no longer effective for many MNCs. Investors are looking for more than mere assembly activities and newly defined SEZs are offering multiuse developments including industrial, commercial, residential, and even tourism activities (and there are other SEZs specialized in high-end services, such as information and communication technology (ICT) and biotechnology). One interesting trend is the growth of privately owned and operated SEZs.

In the case of Mongolia, it has three SEZs on paper, one of them has recently opened and the others are still in the construction stage. The laws are not complete. SEZs are doing a poor job. Thus, it is necessary to work out further arrangements, such as:

- Developing SEZs based on mining industries using M&A, joint ventures, or licensing.

Mongolia's competitive advantage is in the mining sector. Therefore, we need to exploit that within SEZ development;

- To look into the possibility of joint SEZs with China or other countries. In the east, there could be collaboration with Erlian (Erenhot) on the border with China. In the west, Mongolia could cooperate with Khorgas in Kazakhstan;
- During his visit, Chinese president Xi Jinping agreed to establish joint SEZs between China and Mongolia. He approved that Mongolia would get favorable conditions regarding transportation costs and routes through Chinese territory. It will make a huge difference for trade and manufacturing in the SEZs of Mongolia;
- Building of meat processing and other food facilities in Altanbulag FTZ should be based on the demand estimates for Siberia and the Urals of Russia, as a quota on food products from Mongolia is imposed in these areas;
- Need of a “one at a time approach” to all these separate "industrial parks", "logistics centers", "cluster cities", and so forth. There is a wise Mongolian saying that if you chase two rabbits at one time then you will be left empty-handed.

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Research into the Phased Supporting Enterprise Innovation Policy of China

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Abstract

A technology enterprise has its own unique characteristics and laws of development at different life-cycle stages. These characteristics are seen in business venture and enterprise development and differ in terms of enterprise size, organizational management, innovation activities, investment and financing, market environment, and business risk. Therefore, the policy demands of enterprises at different life-cycle stages vary widely. The government should follow the rules of business venture and enterprise development, and formulate and improve a policy system featuring the characteristics of different stages in order to create a favorable entrepreneurial environment. Based on the analysis of characteristics of enterprises at the startup stage, the developing stage and the mature stage and their different policy requirements, this paper proposes an innovation policy system based on enterprise life-cycle stages, and makes suggestions on how to improve it.

Keywords: enterprise life cycle, technology enterprise, policy system

JEL classification codes: L25, L52, L53

1. Introduction

China is fully implementing the Innovation-Driven Development Strategy, the core of which is strengthening enterprises' status as the main bodies of innovation. Due to the characteristics of enterprises at different stages of development, there is a need to introduce targeted policy measures. Currently China's science and technology policy is still relatively sweeping and there is a lack of research on enterprise characteristics. We need to study science and technology enterprises' development cycles and their characteristics, develop a targeted policy system, and strengthen the cohesion of all aspects of policy.

2. Research on an Innovation Policy System Based on Enterprise Life-Cycle Stages

2.1 Division of the life cycle of technology enterprises

The enterprise life-cycle theory is a set of systematic management theories, which has developed gradually since the 1950s. Mason Haier (1959) first proposed the concept of an enterprise life cycle. Haier believed an enterprise, like an organism, has its own growth curve and life cycle. An enterprise always experiences a process running from birth, to growth, maturity, recession, and eventually death. Subsequently, different scholars had different methods to classify the life-cycle stages, such as a three-stage model, a four-stage model and a five-stage model. For example, Lippitt and Schmidt (1967) raised a three-stage model: birth, adolescence and maturity; Smith, Mitchell and Summer (1985), from the perspective of enterprise size,

presented another three-stage model: birth or early growth, mid-life, and organizational maturity; Ichak Adizes (1988), from the perspective of flexibility and controllability, put forward a new three-stage model: birth and growth, maturity and recession. Quinn and Cameron (1983), based on management style and organizational structure, developed a four-stage model: entrepreneurship, collectivity, formalization and control, and elaboration of structure. Neil C. Churchill and Virginia L. Lewis (1983), from the perspective of enterprise size and management factors, divided the organization life cycle into five stages: startup, survival, success, take-off and maturity. Since then, more and more scholars have improved the enterprise life-cycle theory from different perspectives. Different scholars have their own ways to classify the enterprise life cycle and presented different life-cycle models.

Table 1: Typical Division of an Enterprise Life Cycle

Scholar(s)	Life-Cycle Model	Criteria for the Division
Smith, Mitchell, Summer, 1985	3	enterprise size
Downs 1967, Lippitt, 1967	3	complexity of organizational structure
Scott, 1971	3	complexity of organizational structure
Zhou Sanduo, Zou Tongqian, 2002	3	business strategy
Steinmetz, 1969	4	owner's control mode
Quinn, Cameron, 1983	4	management style, organizational structure
Kazanjian, 1988	4	life cycle of product or technology
Timmons, 1990	4	management style
Li Ye, 2000	4	sales volume
Greiner, 1972	5	management style organizational structure
Galbraith, 1982	5	management style organizational structure
Lewis, 1983	5	organizational size, operational strategy
Roweetal, 1994	5	organizational size, management structure
Chen Jiagui, 1998	5	enterprise size
Flamholt, 1990	7	enterprise size, sales volume
Adizes, 1989	10	flexibility, controllability

Although enterprise life-cycle models differ with the scholars' criteria for the classification, the criteria for the division of the life cycle of technology enterprises can be summarized into five aspects: enterprise size, organization and management structure, the features of innovation activities, the financial situation and the source of funds, and market positioning. Based on the five-stage characteristics and shared requirements for policy, this paper develops a three-stage model of technology enterprises.

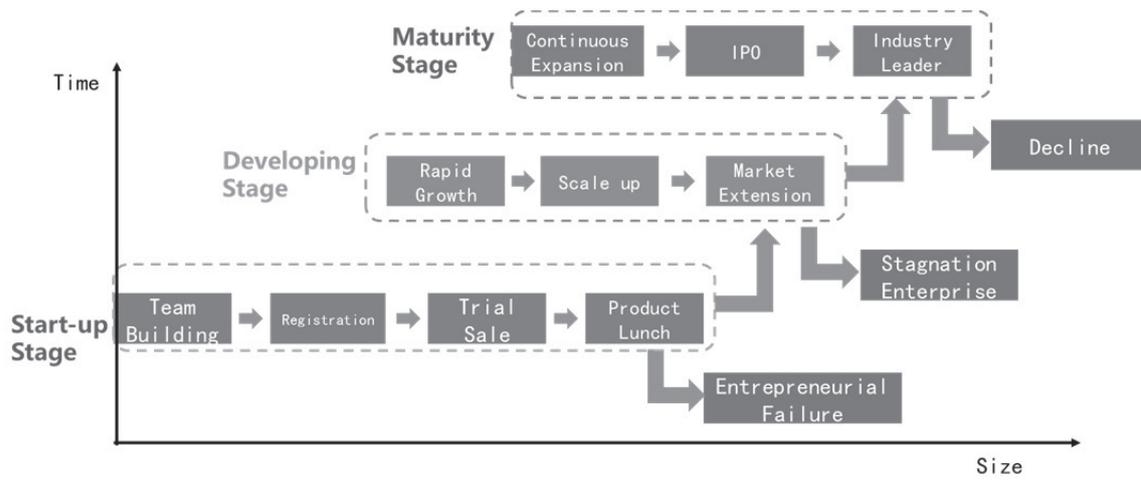
Startup stage: At this stage, enterprises are set up as entrepreneurial teams are built. The startup enterprises begin to operate, making products and generating revenues. However, the enterprises can't generate a steady stream of revenue as they incur a lot of initial costs and risks. It is difficult for them to get bank loans. Therefore the startup stage is also called the "death valley" stage of enterprise development.

Developing stage: At this stage, the enterprises generate stable revenues, with an increase of size and market share. They make active efforts to expand their production and explore new

markets. The enterprises have passed through the “death valley”. After the primal accumulation and struggle for survival, the enterprises have generated stable revenues and standardized the operational management mode and financial management. They have entered a phase of rapid development.

Maturity stage: At this stage, the enterprises explore new businesses and markets. The enterprise businesses become mature. Some of them are listed on the stock market or receive financing. They have entered a phase of stable development and become the backbone or even the leading enterprises in the industry.

Figure 1: The Three Stages of Technology Enterprise Development



2.2 The Stage Characteristics of Technology Enterprise Development

Based on the analysis of six characteristics of the technology enterprise life cycle—enterprise size, organizational management, innovation activities, financial situation, market environment and risks—this paper summarizes the unique characteristics of technology enterprises at the three stages of the startup stage, the developing stage and the maturity stage.

Startup stage: The enterprises are small and have limited personnel numbers. The employees are required to undertake multiple tasks, most of which are skilled technical tasks. The organization structure is simple and linear. The decisions are centralized and the division of labor is clear. Enterprise members are allowed to participate in important decision-making. Product development and design, and turning scientific research achievements into a productive force are their primary innovation activities. Startup firms invest more in research and development, and they urgently need to attract resources to conduct technology research. However, products have not been fully recognized by the market, and therefore the market share is still low. The higher production costs weaken the enterprises’ financial situation. Most of the enterprises run at a loss, and only a few of them gain poor profits. The products or services at this stage are not mature, and consequently they have not been recognized by the market, even though some of them are really good and have great market potential. Additionally, the higher research and development costs incur great risks for the enterprises. They’re mainly faced with technical risks, namely, the failure of innovation activities caused by technical factors may incur capital losses.

Developing stage: As the sales volume increases, the enterprise grows in size and in the number of employees. A further division of labor makes rapid changes to the organizational structure. Functional departments are established so as to adapt to the rapid development of the enterprise. Many enterprises use a matrix structure to enhance cooperation and information exchange among departments. At this stage, the technology enterprise must remain active in technology innovation, intensify the innovation of second-generation products and strengthen the research capacity of hi-tech products in order to make a diversified series of products and increase competitiveness. The effect of economies of scale has been achieved. Business profits grow fast. The enterprise sees a rapid increase in financing capacity and can raise money from banks and other indirect financing. The products or services are positioned in the market and technical advantages have been shown. The market share also increases gradually. Some enterprises have made the transition from a single business to an integrated business. With the significant improvement of risk resistance capability, the enterprise is able to basically fend off technological risks. Market risk and management risk are the most major.

Maturity stage: The expansion of scale obviously slows down. The enterprises have entered a phase of steady growth. To avoid contention between the business and the internal resources of multiple departments, the enterprises usually use a flattening and networking organizational structure. Initiative in technology innovation wanes compared to the first two stages. At this stage, technology innovation activities have different forms, mainly including developing new products and technology and upgrading the old. To seek to maintain a leading position in the industry, the enterprises no longer develop general or mature technology, but focus more on making technological breakthroughs and innovations. The enterprises begin to seek cooperation with institutions, universities and other external agencies, and obtain and develop original and cutting-edge technological achievements in order to occupy a leading position in technology development. Many enterprises begin to establish their own research and development institutions and vie for top-notch professionals. The enterprises have a stable return on capital and profits, as well as a strong capacity for the payment of financial commitments. They also enjoy a very robust financial situation at this stage. Thanks to the improvement of the financing environment, the strategies for enterprise development and financing are designed for the enterprise capital operation. Due to the characteristics of high-technology, the reorganization and replacement of resources are more involved in the transition. As a result, the risks in the transition are higher.

Table 2: Characteristics of Technology Enterprises at Different Life-Cycle Stages

Stage	Characteristics of size	Characteristics of organizational management	Characteristics of innovation activities	Characteristics of financial situation	Characteristics of market environment	Characteristics of risks
Startup stage	Limited personnel number; part time	Simple, centralized	Make technological breakthroughs; large investment in research	Poor income; financing difficulties; majority of enterprises run at a loss	Not been recognized by the market	Technological risk

Developing stage	Expand rapidly	Further division in management; matrix management	Second-generation innovation; expand size	Economies of scale occur; increasing profits; enhanced financing ability	Unique features of product positioning; market share increases gradually	Market risk; management risk
Maturity stage	Steady growth	Multiple departments; business overlap	Develop new products and technologies; seek leading positions in technology development	Improved financing environment; capital operation	Explore new markets	Strategy risk

3. Innovation Policy Demands of Technology Enterprises at Different Life-Cycle Stages

As enterprises grow, their demands for innovation policies also change accordingly. In general, they have four demands: for innovation resource services; for innovation ability; for technology finance, and; for creating an innovation environment.

3.1 Policy demands of enterprises at the startup stage

The major problems of enterprises at the startup stage lie in an incomplete industrial structure, a weak innovation ability, financing difficulties, and the high pressure of survival, which hinder the innovation and development of enterprises. To overcome the above obstacles and create a favorable entrepreneurial and innovation environment, the government should focus on reducing the innovation and initial costs of enterprises.

3.2 Policy demands of enterprises at the developing stage

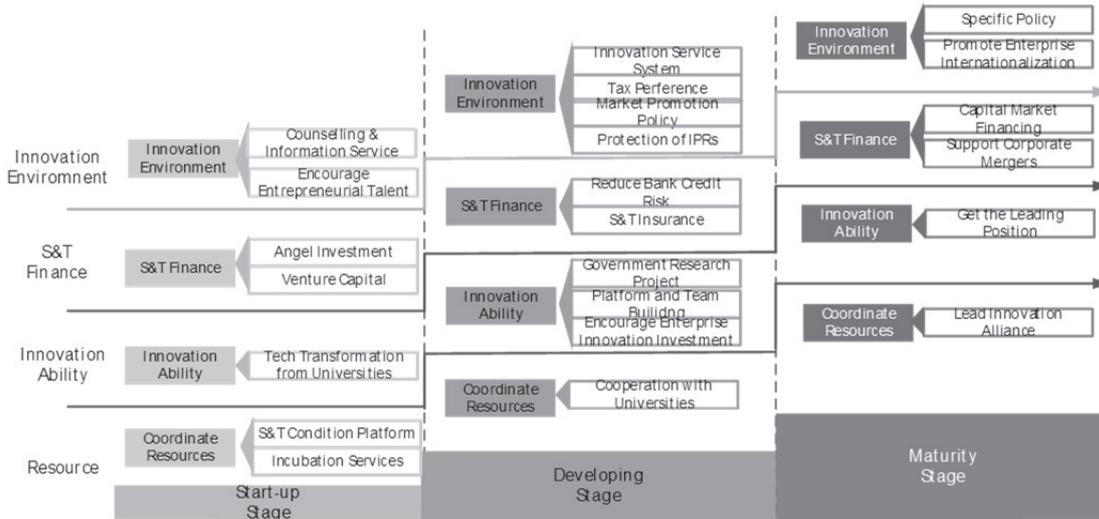
Enterprises at the developing stage have a strong technological innovation capacity. Thus, at this stage, enterprises need to attract and use good employees, technologies, capital and other resources, expand operations, reduce costs, occupy the market quickly, and increase competitiveness. The core objectives of enterprises' technology innovation lie in keeping a vibrant technology innovation capability and consolidating the advantages in developing high-tech products (services) or technology.

3.3 Policy demands of enterprises at the maturity stage

After a period of growth and expansion, an enterprise's management and technology become mature. Technology enterprises have their own featured products (services) and built-brand awareness. Their production, sales and services are accepted by most consumers. The prices and sales volume remain stable. The market is nearing saturation. At this stage, enterprises hope to achieve sustainable development and are thirsty for innovation in cutting-edge domains. They also strive to dominate the industry and master core technologies. Thus, their demands for

government policies are different and personalized.

Figure 2: Policy Demands at Different Development Stages



4. Significance of an Innovation Policy System Based on the Enterprise Life Cycle

4.1 It is beneficial to set policies with clear aims

The characteristics of innovation and financing demands will result in significant differences in the policy demands of enterprises at different life-cycle stages. If the characteristics of the stage are ignored, the same policy will be introduced in different types of enterprises. If so, it will be impossible to realize the original intentions of the policies. For example, the present policy of ratifying new and high-tech enterprises sets strict rules for the duration of an enterprise’s registration and core independent intellectual property rights. It results in the exclusion of startup firms, however, and it is these enterprises which are thirsty for government support and reduction of initial costs. We also find a gap between government support and enterprises’ policy demands. The present policies cannot meet the demands of most enterprises at the startup stage. So after fully grasping the stage characteristics at different enterprise life-cycle stages and enterprises’ policy demands, the government should establish an innovation policy system based on the enterprise life cycle, which will solve prominent problems at different stages, introduce policies with clear aims, and exert joint effects of policies.

4.2 It is beneficial to exert the joint effects of policies

Many departments, such as technology departments, finance departments, economy and informatization departments, and reform and development departments, are entitled to set support policies and allocate capital. The division of department functions and responsibilities is not clear, which results in repeated policies and investment. Therefore, based on the enterprise life cycle and enterprise demands, the departmental responsibilities and the key projects they support should be clarified, and policies and capital should be coordinated. Only with that will the joint

effects of policies be exerted and the efficiency of government resources will improve.

4.3 It is beneficial to clarify the boundary between the government and the market

The Third Plenary Session of the 18th Central Committee of the Communist Party of China proposed that “Economic system reform is the focus of deepening reform comprehensively. The underlying issue is how to strike a balance between the role of the government and that of the market, and let the market play the decisive role in allocating resources and let the government fulfill its functions better.” In terms of supporting technology enterprises, clarifying the boundary between the government and the market means handling relations between stable support and competitive support, direct investment and indirect investment, and government orientation and market orientation. The government should use different support modes and directions. For example, generalized preferential policies like preferential tax and tax reduction should be introduced to support startup firms. The government should also set enterprise-oriented policies for enterprises at the developing stage, such as a compensation mechanism and an incentive mechanism. What’s more, it should popularize advanced experience through demonstration by typical examples. Meanwhile, the government should avoid providing direct support to enterprises at the maturity stage. Instead, it should strictly follow market rules and give full play to the fundamental role of the market in the allocation of resources. Developing policies should take an enterprise’s life cycle into consideration. A policy system integrating market resources with government resources should be set up.

5. Thoughts on Building an Innovation System Based on the Enterprise Life Cycle

5.1 The problems of China’s present policy system for supporting enterprise innovation

5.1.1 The connections between policies for different life-cycle stages should be enhanced

Within the policy-making process the division of enterprises is too broad. The criteria for ratifying technology-based microenterprises, small and medium-sized enterprises, or large enterprises have not been laid down. The government does not have a good command of the stage characteristics of enterprises at the three stages, and fails to provide diversified support. Policies are incoherent also. Some enterprises never benefit from favorable policies or get government support. For example, in terms of offering a favorable innovation environment, newly-established enterprises, as well as small and microenterprises are not entitled to enjoy the favorable policies for new and high-tech enterprises. What’s worse, insufficient venture capital funding and the incomplete venture investment market put higher pressure on such enterprises.

5.1.2 Support modes should be improved

In terms of means of supporting technology innovation, the government arranges grants and related policies in every link of the innovation chain, including technological development, commercialization of research findings, and business venture support. Compared with preferential taxation, financing for technology and other fiscal tools, the grants can directly reflect

policy intentions and are easily operated by the government. However, direct financial support to enterprises at the late stage of technology development or the industrialization stage means allowing the government capital into the competitive domain, which interferes with the operation of the market and causes unfair competition to some extent. On the one hand, government funding for helping the commercialization of research findings flows into the competitive domain, interfering with the operation of the market and causing unfair competition. On the other hand, government funding is always inclined toward large enterprises which have sufficient funds and strong research capabilities. Unfortunately, large enterprises often don't take financial funds seriously and have a lower efficiency than small and medium-sized enterprises.

5.1.3 Policies should be fully implemented

Systemic constraints have, to some degree, hindered the implementation and weakened the efficacy of certain policies. For instance, the cost of office space remains a daunting challenge for many startups despite extensive government support in this respect, such as subsidies and other supportive measures for incubators. One of the major hindering factors is a lack of policy coordination between industry and commerce, taxation, quality supervision, and other departments.

5.2 Suggestions on setting up an innovation policy system based on the enterprise life cycle

5.2.1 Undertake more research on an innovation policy system based on the enterprise life cycle

The government should undertake in-depth research on the stage characteristics of microenterprises, small and medium-sized enterprises and large enterprises, and their policy demands, remedy deficiencies in the innovation policies, and keep from overstepping its authority. A new innovation policy system based on the different life-cycle stages should be developed. The government should create a better innovation environment for startups, help small and medium-sized enterprises improve their innovation capabilities and encourage large enterprises to play an exemplary role.

5.2.2 Readjust government input into innovation support

The government should abandon the original scientific research funds, mainly grants, in support of projects, and gradually decrease the use of free economic aid. In terms of supporting business ventures and encouraging innovation input for large enterprises, the government should give indirect support to them by creating a better market environment, such as offering subsidized loans, and providing policy security and venture funding, in order to encourage enterprises to increase input into research and development, and guide social resources toward innovation activities.

5.2.3 Promote policy coordination between different departments

The government should coordinate internal functional departments. From the perspective of setting up a regional innovation system and improving industrial innovation policies, the

government should specify a clear direction and proper support modes. It should also readjust the positioning of functional departments, and optimize the functions of departments and the goals of policy regulation in order to promote policy coordination between different departments and the development of high-tech industry.

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