ASSESSING MONGOLIA'S ECONOMIC DEPENDENCE ON CHINA: A FOREIGN ECONOMIC DEPENDENCE INDEX ANALYSIS

B. Enkh-Amgalan[1]

Abstract: *The influence of foreign economies on Mongolia's economic development is increasing. Key factors such as rapid growth in foreign trade, stable increases in foreign direct investment, foreign debt, and remittances significantly contribute to this growth. Mongolia's economic development is deeply interconnected with the economic conditions of its two neighboring countries, particularly China. China's stable economic growth has a notable impact on Mongolia's economy, necessitating an assessment of whether this effect is short-term or long-term. Understanding the level of economic dependence on China is crucial for informed policymaking. This study confirms a long-term relationship between Mongolia's economy and China's. The foreign economic dependence index, measured at 28.2 percent, highlights a significant reliance on a single country. This underscores the need for Mongolia to diversify its economy and enhance economic engagement with a broader range of countries.*

Keywords: *Economic dependence, China, foreign economic dependence index*

1. Introduction

No country can accelerate its economic development without relying on foreign economies. Today, foreign trade and investment are key determinants of international economic relations. Countries stimulate their economic activities by exporting domestically produced goods to foreign markets and importing necessary goods from other countries.

Since Mongolia transitioned to a market economy, its foreign trade and investment have expanded beyond a few socialist countries to include many countries worldwide. During the early transition period, Mongolia relied heavily on loans and aid due to its small economy and high level of crisis. However, as the economy stabilized, the reliance on aid decreased, and exports, imports, and foreign investment intensified. International trade has been the backbone of Mongolia's economic growth. Its trade-to-GDP ratio has stood consistently at over 100 per cent. While domestic market expansion is one way of increasing a country's economic growth, it is not an easy option for Mongolia, as it is a country with a relatively small population spreading over a huge territory (Tapan Mishra 2023).

[1] Ph.D, Associate Professor, Business School, National University of Mongolia, email: enkhamgalan@num.edu.mn

Diplomatic relations between Mongolia and the People's Republic of China, established on October 16, 1949, were put on hold until 1990 for political reasons. Since then, relations have revived, and trade, investment, people-to-people relations, tourism, and business activities have intensified. By 2023, foreign trade alone reached 17.1 billion USD, equivalent to 83.9 percent of Mongolia's GDP. Mongolia enjoys a friendly political and economic relationship with China, characterized by wide-ranging cooperation:

- **Foreign Trade**: Recent years have seen continuous growth in foreign trade. Mongolia primarily exports mining products such as gold, copper, and coal, while importing equipment, consumer goods, and industrial products.
- **Investment and Development Projects**: China invests mainly in Mongolia's mining and infrastructure sectors, including coal and copper extraction and the construction of roads, railways, and power plants.
- **Belt and Road Initiative**: This initiative, while not exclusive to Mongolia, enhances Eurasian economic cooperation, infrastructure, and transport logistics, facilitating trade and investment.
- **Border Trade and Free Zones**: These efforts aim to accelerate the development of border areas through investment and trade.
- **Cultural and Educational Exchange**: This social relationship fosters mutual understanding of culture and customs, tourism development, and education improvements.

China's policy of mutual economic development with neighboring countries, based on the "win-win" principle, suggests that China's economic growth can guide Mongolia's economic growth. This is evident in the increase in foreign trade and investment, enhanced people-to-people relations, tourism development, and loan assistance in recent years. Consequently, China's economic growth significantly impacts Mongolia's development.

International studies indicate that a country becomes economically dependent on another country when it integrates into the global financial system. (Fathimath Musthaq 2021) notes this phenomenon, while (Bassam Jouny 2017) categorizes economic dependence into four types, based on Lebanon's economic situation:

1. **Relevance of Foreign Trade**: Includes the total trade turnover to GDP ratio, import to GDP ratio, export product concentration index, and foreign trade regional distribution index.

2. **Indicators of Food Dependency**: Includes the food commodity ratio index and food commodity gap index.
3. **Financial Dependence**: Includes the debt-to-GDP ratio and the indicator of flexibility in debt repayment schedules.
4. **Dependence on Citizens Living Abroad**: Reflects the economic influence of remittances from citizens working abroad.

These indicators can illustrate a country's dependence on foreign economies, though they do not provide a comprehensive measure of overall dependence. The degree of foreign economic dependence intertwines closely with efforts towards economic diversification. In the case of Mongolia, its standing in the Global Economic Diversification Index 2023 (Prasad A., et al 2023) reveals a significant challenge. Out of the participating nations, Mongolia ranked 6th from the bottom, scoring 82.2 points, highlighting the pressing need for diversification initiatives. Therefore, economic diversification can effectively mitigate reliance on foreign economies.

The ICC Georgia (2023) developed a methodology to quantify foreign economic dependence for each country. This methodology uses indicators such as import, export, remittance flows, foreign direct investment (FDI), and tourism income. According to this methodology, as of 2022, Georgia's economic dependence was 21 percent on the EU, 19 percent on Russia, and 12 percent on Turkey.

In this research, we aim to determine whether Mongolia's economic dependence on China has a short-term or long-term effect and to quantify the level of this dependence by calculating the foreign economic dependence index.

2. *Methodology and data*

Methodology

We analyzed the changes in economic relations between Mongolia and China from 1990 to 2023 using quantitative data from secondary sources such as the World Bank, the National Statistics Office (NSO), and the Bank of Mongolia. The research is divided into three main parts, employing the following methodology:

1. **Dynamic Changes in Key Indicators**: To determine China's participation in Mongolia's foreign economy, we graphically illustrate the dynamic and percentage changes in key foreign economic indicators.

2. **Relationship Analysis**: We assess whether there is a long-term or short-term relationship between the economic growth of Mongolia and China. Using the unit root test, cointegration test, and Granger causality test, we identify whether the economic growths of the two countries mutually influence each other or if there is a one-way effect, and we quantify the magnitude of that effect.
3. **Foreign Economic Dependence Index**: Using the methodology from the ICC of Georgia, we determine the level of Mongolia's economic dependence on China based on foreign economic indicators.

Data

To explore the long-term relationship between the economies of Mongolia and China, we used real GDP data from the World Bank database, constant 2015 US dollar, covering the period from 1990 to 2022. For analyzing the level of dependence and the dynamics of foreign economic relations, we utilized data on exports, imports, remittances, foreign direct investment (FDI), and foreign debt from the NSO and the Bank of Mongolia. Due to data availability constraints, the quantitative data spans seven years, from 2017 to 2023.

3. China's role in Mongolia's foreign economy

Mongolia has experienced significant economic growth compared to other developing countries. However, global economic conditions and the pandemic have led to episodes of economic crisis. Additionally, the volatility of raw material prices on the world market has caused considerable fluctuations in Mongolia's economic growth, indicating that sustainable growth has not yet been fully achieved. As the world's second-largest economy, China has been a crucial supporter of Mongolia's economic growth through imports, exports, loans, and investments.

In recent years, Mongolia's foreign trade has expanded, involving more countries and steadily increasing in volume. By 2023, Mongolia's total foreign trade turnover is reached 24.4 billion USD, with trade relationships spanning 160 countries. China remains Mongolia's most important trade partner, accounting for 70 percent of total foreign trade. Russia follows with 10.2 percent, Japan with 3 percent, South Korea with 2.3 percent, and the United States with 1.3 percent. Trade with other countries remains below 1 percent. Specifically, in 2023, China accounted for 91.2 percent of Mongolia's exports and 34.7 percent of its imports.

The European Bank for Reconstruction and Development (EBRD) and the World Bank have highlighted the importance of this trade relationship, noting that China accounts for a significant portion of Mongolia's trade activities. The economic updates from these institutions emphasize the critical role of mining exports in Mongolia's economy and the country's efforts to maintain a positive trade balance amid growing export volumes (EBRD and World bank 2023).

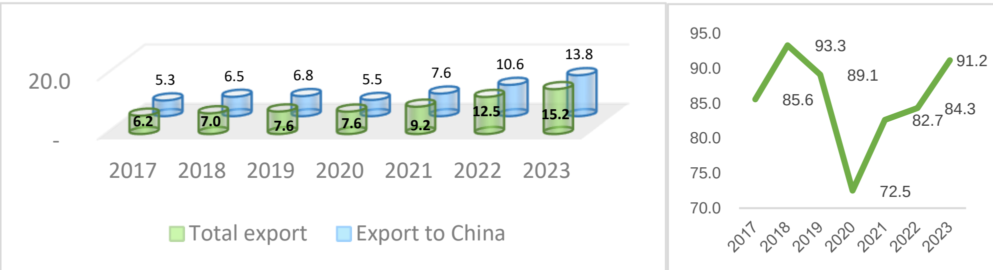
China's removal of Covid-related restrictions in December 2022 enabled a rapid expansion of Mongolian mining and quarrying activities, as well as the full recovery of tourism (EBRD 2023).

Below, we will briefly examine the dynamics of key economic indicators representing Mongolia's foreign economy.

Exports

Mongolia's exports have been steadily increasing, nearly tripling from 2017 to 2023 to reach 15.2 billion USD in 2023. In the years following the Pandemic, Mongolia's exports have grown by over 3 billion USD annually. Almost 90 percent of these exports are mining products, primarily coal and copper.

Figure 1. *Total Exports, Exports to China, and Share of Exports to China (Billion USD, Percentage)*



Source: National Statistics Office

The growth of Mongolia's total exports has mirrored the growth of its exports to China. Although exports to China dropped to 72.5 percent during the pandemic, they have consistently increased each year, reaching 91.2 percent by 2023. This deepening economic relationship is largely driven by the growth of mining exports. Moving forward, Mongolia should focus on diversifying its exports to include agricultural and processed finished products, not just mining products.

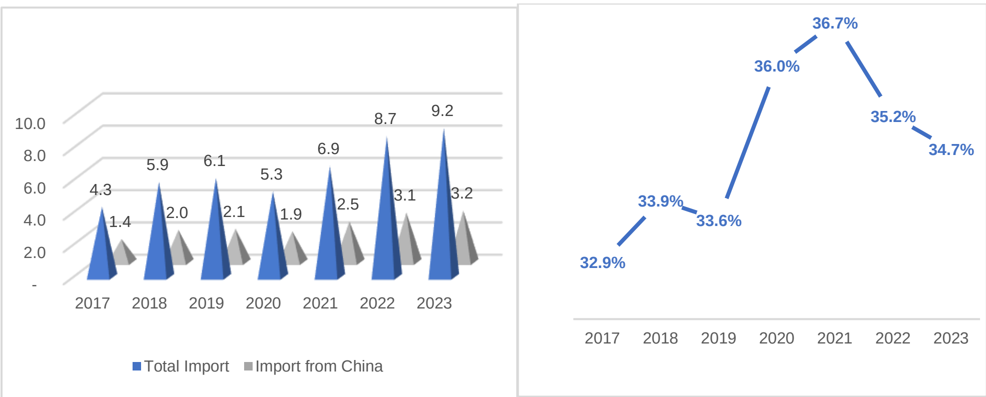
While exports to China are on the rise, the heavy reliance on mining products poses a significant risk of potential decline in the future.

Resource-rich economies may need to strengthen monetary policy and institutions to avoid Dutch disease, diversify to lower risks of volatility and boost employment in higher value-added sectors. As China is rapidly phasing out inefficient and polluting activities, countries such as Mongolia, with its high export dependence on mining and markets in China could face more urgent pressures. Commodity exporters could leverage investment links of the BRI to enhance industrial diversification (UN ESCAP 2019).

Imports

Mongolia primarily imports consumer goods from China, fuel and lubricants from Russia, and machinery from Japan. Total imports increased from 4.3 billion USD in 2017 to 9.2 billion USD in 2023, a 2.14-fold increase, though the growth rate was lower compared to exports.Although the volume of goods imported from China is smaller compared to exports, China remains Mongolia's largest import source, accounting for 34.7 percent of total imports in 2023.

***Figure 2**. Total Imports, Imports from China and Share of Imports from China (Billion USD, Percentage)*



Source: National Statistics Office

Imports, which had been on the rise, experienced a decrease of 0.8 billion USD in 2020 compared to the previous year due to the pandemic. However, import volumes rebounded from 2021 onwards.

The percentage of goods imported from China in total imports increased during the epidemic but declined as the situation improved.

Foreign direct investment

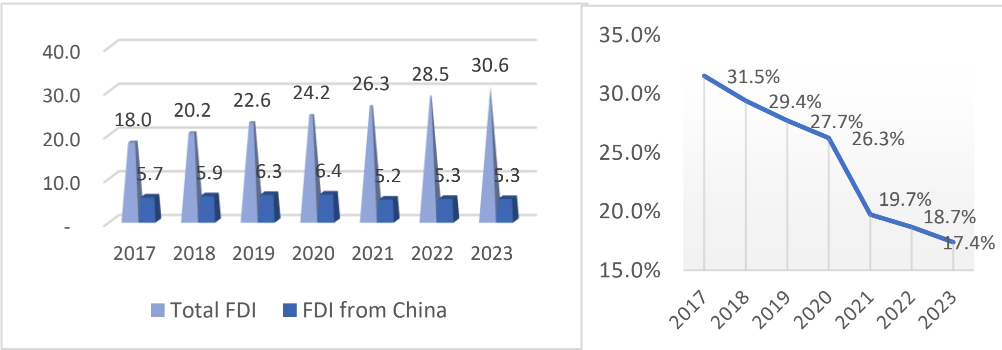
The impact of foreign direct investment (FDI) on economic growth varies across countries, with studies indicating negative, neutral, or positive effects depending on factors such as income levels and institutional environments.

For Mongolia, research by (N.Batsaikhan 2002), (D.Gan-Ochir & L.Davaajargal 2019), and (B. Enkh-Amgalan and E. Toğaldur 2023) suggests that FDI has a positive effect on economic growth.

China's FDI plays a significant role in Mongolia's economic growth, with approximately 87% allocated to the mining sector, 5% to trade, 5% to construction, 2% to industry, and 5% to other sectors.

However, China's share of total FDI has been declining since 2017 due to increased investments from other sources, particularly driven by projects like the Oyutolgoi Agreement. Despite the decrease in China's share, the total amount of FDI steadily increased pre-pandemic, reaching 6.4 billion USD by 2020, before dropping to 5.3 billion.

Figure 3. *Total FDI position , FDI position from China and Share of China's FDI in total FDI position (in billion USD, percentage)*



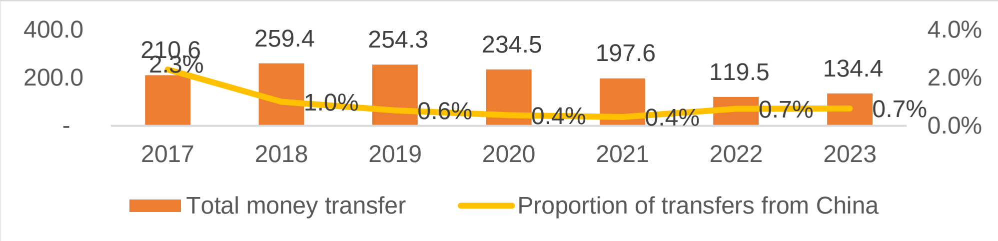
Source: Bank of Mongolia

While China maintains a substantial share of foreign trade, including exports and imports, its trend in foreign direct investment (FDI) is declining.

Remittance

As countries develop, citizens often seek opportunities abroad to enhance their living standards. In developing nations, there's a notable flow of highly educated individuals migrating abroad for work, a phenomenon often referred to as brain drain. These expatriates typically send a portion of their earnings back to their home country. Consequently, there's an international method that utilizes remittances to gauge the impact of external migration.

Figure 4. *Total personal remittances received and the Share of personal remittances received from China (Million USD and Percentage)*



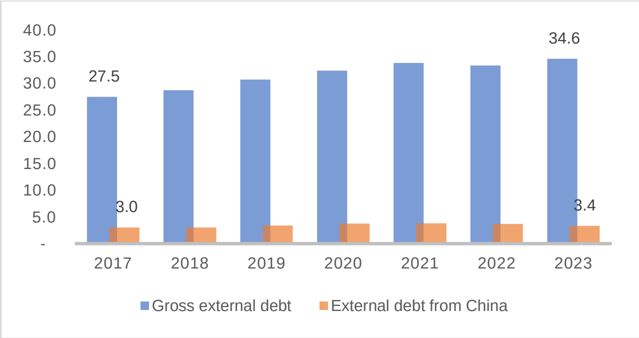
Source: Bank of Mongolia

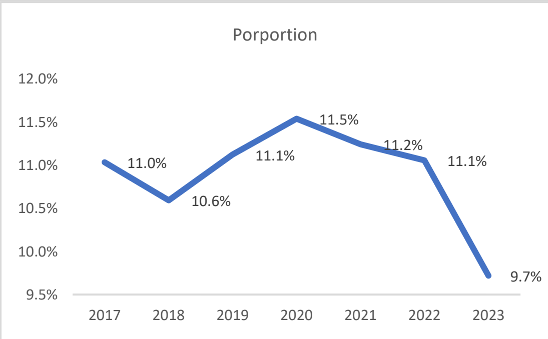
The amount of money transferred by Mongolian citizens from abroad experienced a decrease between 2018 and 2022, followed by a 14.9 million USD increase in 2023. This decrease in remittances aligns with the limited employment opportunities for Mongolian citizens in China. In the past two years, remittances from China accounted for only 0.7 percent of the total transfers, totaling 973 thousand USD in 2023. The majority of remittances originated from South Korea, comprising 36 percent of the total remittances.

External debt

Mongolia's external debt, as reflected in the balance of payments, comprises five components: Government, Central Bank, Savings Institutions (excluding the Central Bank), Other Sectors, and Direct Investment (Intercompany Loans). To maintain debt stability, the government has adhered to the principle of not increasing its external debt in recent years. However, despite this principle, the overall external debt continues to grow due to increases in other debt categories.

Figure 5. *Mongolian gross external debt and External debt from China (Billion USD, percentage)*





Source: Bank of Mongolia

Mongolia's external debt surged to 34.6 billion USD in 2023 compared to previous years. Despite this increase, the share of total foreign loans from China decreased by 1.4 percentage points from the previous year, accounting for 9.7 percent. However, the loan from China still constitutes 16.7 percent of Mongolia's GDP.

In summary, Mongolia exhibits high dependence on China concerning both exports and imports, as well as significant reliance on foreign direct investment (FDI) and foreign debt. Conversely, the country shows less dependence on remittances.

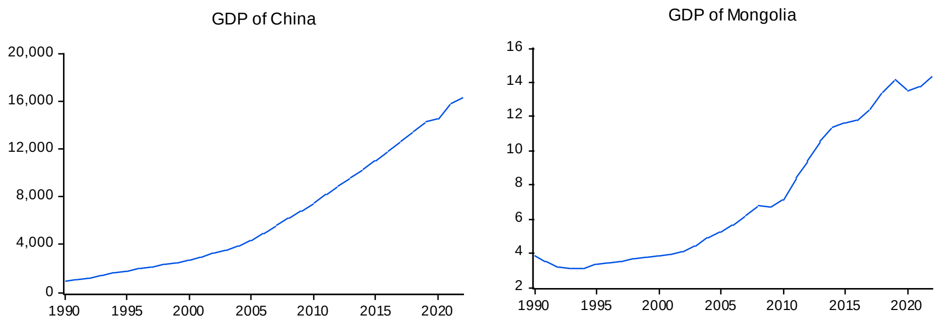
4. *Determining the long-term relationship between Mongolia and China*

All five foreign economic indicators discussed above are intricately linked to Mongolia's economic growth. Let's hypothesize that China's robust economic growth influences Mongolia's economy through these indicators. If confirmed, it's crucial to ascertain whether this effect is short-term or long-term.

In the case of a long-term relationship, we'll calculate an integrated index representing Mongolia's foreign economy and determine the level of dependence on China.

To do this, we'll utilize real GDP data for both countries expressed in constant 2015 USD from the World Bank database. Our analysis spans 33 years from 1990 to 2022, covering the period when Mongolia began its transition to a market economy.Observing the general trend of GDP for both countries, we note that while China's GDP exhibits relatively low volatility, Mongolia's experiences high fluctuations.

Figure 6. *GDP of China and GDP of Mongolia (Billion USD)*



Source: World Bank

To ascertain the long-term and short-term relationship, it's imperative to assess stationarity using a unit root test. As depicted in the graph, both series exhibit an upward trend. Therefore, we'll conduct a unit root test employing a model incorporating a constant and a trend.

Table 1. *Unit root test*

	ADF				PP			
	I(0)		I(1)		I(0)		I(1)	
	t-Stat	Prob	t-Stat	Prob	t-Stat	Prob	t-Stat	Prob
GDP of China	-1.317	0.864	-0.789	0.807	-1.282	0.874	-6.843***	0.000
GDP of Mongolia	-2.172	0.487	-3.206**	0.029	-2.558	0.300	-3.094**	0.037

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant

According to the test results, China's GDP is found to be neither I(0) nor I(1) based on the ADF test. However, it becomes stationary after taking the first-order difference, according to the PP test. On the other hand, Mongolia's GDP exhibits I(1) characteristics according to both the ADF and PP tests. For consistency, the PP test results were utilized, as both series show stability at the same order.

Given the findings, let's now determine whether a long-term relationship exists between the economies of the two countries using the Johansen Cointegration test.

Table 2. *Johansen cointegration test*

	Hypothesized no. of CE(s)	Statistics	0.05 Critical value	Prob
Trace test	None *	22.082	18.397	0.014
	At most 1 *	3.850	3.841	0.049
Max eigenvalue test	None *	18.232	17.147	0.034
	At most 1 *	3.850	3.841	0.049

Trace test indicates 2 cointegrating equation(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level

The results indicate the presence of cointegration or a long-term relationship between the GDPs of both countries, as evidenced by both the Trace test and the Max Eigenvalue test.

In light of this long-term economic relationship, let's employ the Granger Causality test to ascertain whether the two economies mutually influence each other.

Table 3. *Pairwise Granger Causality test*

Null Hypothesis:	F-Statistic	Prob.
MGDP does not Granger Cause CGDP	0.2826	0.7561
CGDP does not Granger Cause MGDP	5.4263	0.0107

Based on the calculation results, the hypothesis that Mongolia's GDP does not cause China's GDP is not rejected. Conversely, the hypothesis that China's GDP does not cause Mongolia's GDP is rejected at the 5 percent significance level. This suggests that the economic relationship between the two countries exhibits a one-way effect, wherein China's economy influences Mongolia's economy.

In summary, considering the outcomes of the aforementioned calculations, it can be concluded that Mongolia's economy depends on China's economy in the long run.

5. Calculation of foreign economic dependence index

Given the conclusion that China's economy has a lasting impact on Mongolia's economy, we anticipate that Mongolia's foreign economy, represented by exports, imports, foreign direct investment (FDI), remittances or transfers, and foreign debt, will be influenced accordingly.

To quantify this dependency, we utilize the Foreign Economic Dependency Index (FEDI) calculated following the methodology outlined by the ICC of Georgia. This involves the following steps:

1. Calculate the sum of indicators representing each country's foreign economic activities.
2. Aggregate the country-specific indicators to obtain a total.
3. Compare the results from step 1 to the total from step 2 to derive a percentage-weighted index.
   Alternatively, the total value from step 2 can also be compared to nominal GDP.

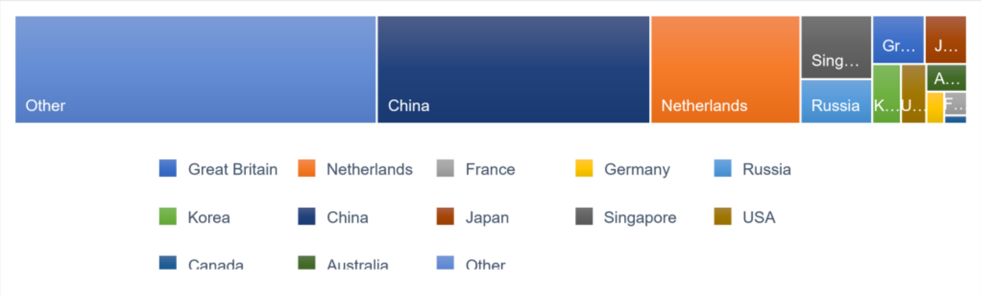
The Foreign Economic Dependency Index ($FEDI_i$) for a country i in relation to its foreign economy is expressed as follows:

$$FEDI_i = \frac{x_i}{\sum_{i=1}^{n} x_i} \times 100$$

As of 2023, 34.7 percent of Mongolia's imports, 91.2 percent of exports, 1.1 percent of remittances, 17.4 percent of FDI, and 9.7 percent of total foreign debt are attributable to China.

Using these main indicators, we have calculated the Foreign Economic Dependency Index ($FEDI_i$) for 13 countries and other countries influencing Mongolia's foreign economy as of 2023.

Figure 7. *Foreign economic dependence index (2023)*

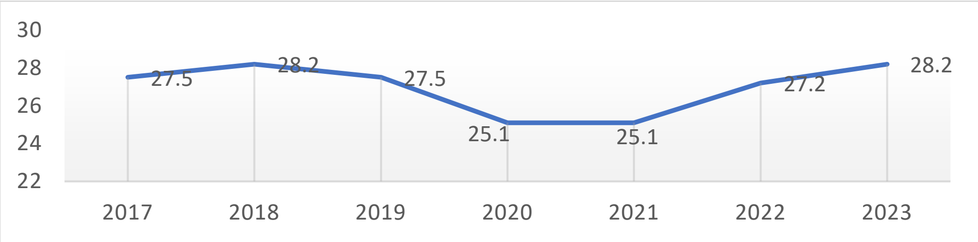


Source: author

Observing the index values, China leads with 28.7 percent, the highest among other countries. The Netherlands follows closely, with significant FDI contributions despite modest foreign trade, contributing 15.8 percent to the index. The gap between China and the Netherlands stands at 12.9 percentage points.

These findings indicate that Mongolia's dependency on China surpasses that on other countries. Notably, this dependency has increased from 27.2 percent in 2022 to 28.7 percent in 2023.For comparison, consider Georgia, where Russia held the highest index at 18 percent in 2022. Contrasting with Mongolia, this suggests a lower level of dependency on a single country.

Figure 8. *The dynamics of foreign economic dependence index (2017-2023)*



Source: author

Examining the dynamics of the Foreign Economic Dependency Index (FEDI) calculated for China from 2017 to 2023, it showed an upward trend until 2018 followed by a decline in 2019. During the pandemic years, the index hit its lowest point, with subsequent increases observed in 2022 and 2023. Notably, the average FEDI value over this period stands at 26.97, with a variance of 1.77, indicating high volatility.

Looking ahead, it's crucial to annually assess the Foreign Economic Dependence Index and implement policies to maintain a balanced and diversified economic landscape, lessening dependence on any single country. This entails a focus on sectoral diversification, expanding global trade networks, and reducing reliance on singular sources for FDI and foreign debt.

Conclusion

China stands as Mongolia's primary foreign economic partner, a relationship defined by five key indicators: exports, imports, foreign remittances, foreign credit, and foreign direct investment (FDI).

Through our research, we've found that while Mongolia's GDP does not influence China's GDP, the reverse is true with statistical significance at the 5 percent level. This suggests a one-way effect, where China's economy profoundly impacts Mongolia's.

As of 2023, China accounts for 34.7 percent of Mongolia's imports, 91.2 percent of exports, 1.1 percent of remittances, 17.4 percent of FDI, and 9.7 percent of total foreign debt. These indicators culminate in a Foreign Economic Dependence Index of 28.2 percent, indicating a substantial degree of reliance.

Looking ahead, it's crucial to annually assess the Foreign Economic Dependence Index and implement policies to maintain a balanced and diversified economic landscape, lessening dependence on any single country. This entails a focus on sectoral diversification, expanding global trade networks, and reducing reliance on singular sources for FDI and foreign debt.

References:

1. Avisha Malik and Ash Narayan Sah (2024) "Does FDI Impact the Economic Growth of BRICS Economies? Evidence from Bayesian VAR" Journal of Risk and Financial Management, Vol17(1), 10
2. Bassam Jouny (2017) "Economic Dependence", *Republic Of Lebanon Ministry of Industry Research paper*
3. EBRD (2023) "TRANSITION REPORT 2023-24 TRANSITIONS BIG AND SMALL Country Assessment Mongolia"
4. D.Gan-Ochir & L.Davaajargal (2019) "External shocks to business cycle fluctuations in Mongolia: Evidence from a Large Bayesian VAR", *International Economic Journal* , vol. 33(1), pp. 42-64
5. Fathimath Musthaq (2021) "Dependency in a financialized global economy" *Review of African Political Economy* Vol. 48, Iss: 167, pp 15-31
6. Prasad A., et al (2023) "Global Economic Diversification Index 2023" *Dubai: Mohammed bin Rashid School of Government. Available at www.EconomicDiverisification.com*
7. Tamar Baiashvili and Luca Gattini (2020) "Impact of FDI on economic growth: the role of country income levels and institutional strength" *European Investment Bank, working paper series*
8. Tapan Mishra (2023) "Narrowing Mongolia's trade-led development gaps and tapping into its export potential" UN https://mongolia.un.org/en/237343-narrowing-mongolia%E2%80%99s-trade-led-development-gaps-and-tapping-its-export-potential
9. The ICC Georgia (2023) "Foreign Economic Dependence index"
10. UN ESCAP (2019) "China's economic transformation: Impacts on Asia and the Pacific" *United Nations Publications*
11. N. Batsaikhan (2002) "Foreign Direct Investment"
12. B. Enh-Amgalan, E. Toghaldur (2023) " The analysis of determinants influencing the value added n Mongolia's economic sectors" *Journal of Business Innovation Vol9(4)* , pp 4-18

World bank database