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Contents

• Basic Macro-economic Data Analyses for the Project to Formulate the National Comprehensive Development Plan of Mongolia.....	3
• Sustainable Mining Development.....	6
• Study of Developing Corporate Bond Markets in Mongolia	9
• Study of Developing Corporate Bond Markets in Mongolia Workshops	11
• Commodity Market Studies: Update	12
• Economic Diversification Beyond Mining.....	17
• Marketing and Trading: Possibilities of Establishing a Mineral Commodity Exchange in Mongolia	20
• Study on Macro Economy of Mongolia	22
• Revenue Management: Mongolia's Sovereign Wealth Funds and Their Economic Impact.....	24
• Annual Conference 2019	27
• Annual Performance Assessment of Soums' Local Development Fund, 2019.....	28

Basic Macro-economic Data Analyses for the Project to Formulate the National Comprehensive Development Plan of Mongolia

This study was conducted by ERI according to a request by JICA and the Ministry of Construction and Urban Development of Mongolia.

The main objective of this study was to analyze historical macro-economic data and create a long-term outlook of the economy under different development alternatives for the Project to Formulate the National Comprehensive Development Plan of Mongolia. To produce the long-term macro-economic projection, we developed and employed an in-house Dynamic CGE model, an accepted simulation tool for impact assessments of development alternatives.

Since 2000, the Mongolian economy increased rapidly from USD 1.1 billion to USD 13.0 billion in current USD (blue bar in Figure 1). Accordingly, GDP per capita increased dramatically from USD 474 in 2000 to USD 4104 in 2018 (yellow bar). However, the past growth (green line) was very unstable due to fluctuations in the world price of mineral commodities such as copper and coal as well as sudden changes in foreign direct investment (FDI) inflow.

FIGURE 1. GDP, GDP PER CAPITA AND ECONOMIC GROWTH, 2000-2018

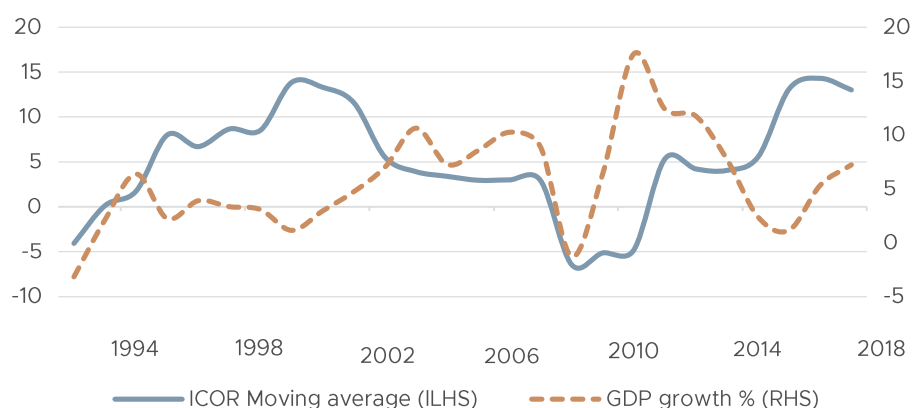


Source: World Development Indicators, World Bank

Before the 2000s, the key sector driving the Mongolian economy was the traditional agriculture and livestock sector. Since then, the economic reliance on the agriculture and livestock sector has decreased as the mining and quarrying sector expanded rapidly with significant FDI into mining mega projects such as Oyu Tolgoi (OT). Gradually, the economy became highly reliant on the mining sector. In 2018, the mining sector (especially coal and copper) accounted for 86.7 percent of total export, 23.7 percent of the budget revenue and 24.3 percent of total GDP (National Statistical Office, 2018).

The major cause of unstable economic growth in recent years was sudden changes in FDI. This can be seen from Incremental Capital-Output Ratio (ICOR) analysis. *ICOR indicates the amount of additional capital that is required to produce an additional unit of output. As the following figure shows, ICOR's volatility trend is observed in GDP growth with time lags. In particular, this shows that investments have an effect on output with a time lag.*

FIGURE 2. ICOR AND GDP GROWTH



Source: Estimation based on data of NSO

In order to determine whether recent economic growth was efficient, we analyzed economic growth by production factors and determined the average sectoral Total Factor Productivity (TFP) using the Constant Elasticity Substitution (CES) function.

TABLE 1. GROWTHS OF VALUE ADDED, PRODUCTION FACTORS AND TFP, PERCENT (AVERAGE BETWEEN 2010 AND 2018)

	Value Added	Labor	Capital	TFP
Agriculture	9.4	-0.5	10.5	9.2
Mining	8.3	6.8	9.3	1.4
Manufacturing	8.4	5.7	7.9	7.4
Infrastructure	4.9	1.7	5.4	2.8
Construction	12.4	5.8	19.2	3.1
Sales services	7.7	4.6	13.4	2.1
Financial and business services	10.9	6.8	10.8	4.1
Public Services	1.3	2.3	0.4	-0.4
Other services	2.7	1.8	2.3	0.9
Total	7.9	1.9	7.3	3.4*

*estimated weighting sector TFP growths by GDP share

Source: Researchers' estimation

In order to formulate effective development policies, policy makers must be knowledgeable about historical macro-economic conditions, the impacts of implemented policies, mid and long-term outlooks and the possible impact of expected shocks on the economy.

The research team produced macro-economic projections until 2040 under three different alternatives using an in-house Dynamic CGE model. The CGE model is an accepted simulation tool for impact assessments of development alternatives. It is a

general equilibrium model where a change in one side of the system affects all other parts of the system. In other words, Walras Law is applied in this model. The main database of CGE models is the Social Accounting Matrix (SAM). Our model is calibrated to a 2017 Mongolian SAM which we built for this study using 2017 Supply and Use Tables, Balance of Payments and government budget data.¹

¹ We followed the same approach in Galindev et al., (2019) which complied with the 2014 Mongolian SAM.

Sustainable Mining Development

This study assessed mining contributions towards sustainability along the following four major avenues as suggested by the International Institute for Environment and Development:

1. Economic sphere (impacts on the macro-economy, foreign trade, public finances, etc.)
2. Social sphere (impacts on education, employment and technology)
3. Environmental sphere (impacts on the supply chain of the mining sector and its assessment)
4. Governance sphere (impacts on the policy field and corporate governance)

The mining sector continues to have a strong influence on the Mongolian economy through both internal and external factors. There were three major mining development milestones in Mongolia.

- Milestone 1 was the 2006 amendment to the Minerals Law, creating state-owned mining companies and laying the foundation for strategic planning based on mining revenue.
- Milestone 2 was the Oyu Tolgoi Investment Agreement which greatly expanded Mongolia's economy and created a large number of institutional changes. The agreement opened Mongolia up to international financial markets and resulted in a more complex financial system that continues to rapidly develop in order to meet the needs associated with accelerated economic growth. There were also large improvements in the quality of human resources, training and investment systems.
- Milestone 3 was the adoption of the United Nation's Sustainable Development Goals by the Long-term Sustainable Development Vision of Mongolia 2030 and the strengthening of its planning system by explicit inclusion of long-term planning in the Constitution with the goal of diversification. It is increasingly clear that the country will need a new system for diversifying its economy and creating reserves as mineral commodity prices are inherently unstable.

Currently, mineral commodities dominate Mongolian export and changes in commodity prices fluctuate government revenues. Thus, Mongolia needs to develop its non-mining sectors and focus on export diversification. To prevent the economic risks associated with commodity price fluctuations and to manage mining revenues properly, the Parliament adopted the Fiscal Stability Law and established the Fiscal Stability Fund and the Future Heritage Fund. Accomplishments of the Fiscal Stability Fund and the Future Heritage Fund will depend on establishing context-appropriate rules and broad-based acceptance of the rules governing the funds.

Allocating mining revenues effectively between the central government and local governments is essential to promote local development. In Mongolia, mining revenues are allocated to local governments through the Local Development Fund. In addition to obtaining legally required licenses to operate from the government and other regulatory agencies, a "social license" is also becoming increasingly necessary. There have been several instances where mining developments have

been delayed, interrupted or even shut down due to opposition from the public and/or local communities. Thus, in order to avoid these costly conflicts, mining companies need to obtain and maintain a “social license” to operate from local communities. Some of the most commonly cited means of maintaining a civil and respectful relationship with the public is through ongoing communication with stakeholders, transparent disclosure of information and community development agreements.

Another controversial issue in the mining sector is the issue of human rights. Mining activities sometimes violate human rights to own property, land and free movement. Small artisanal mining is another important human rights issue. Artisanal and small-scale miners are also included in local communities in the informal sector. This informal sector has the same adverse impacts on the local environment and communities, perhaps worse in some cases. As such, they should be formalized without penalizing these miners and their livelihoods.

Although there are legislative requirements set in the Minerals Law and concession agreements, mining companies should strive to go above and beyond to assist in the advancement of the economy as a whole. One of the key areas where mining companies can assist is in healthcare and education. Mining operations have significant adverse effects on the employees and surrounding communities so the companies should utilize a case specific approach to address each need and communicate and collaborate with local health officials and authorities. Another is to contribute to the national educational system and work with local universities and schools to offer courses in specialized areas so as to help the companies meet the local employee requirements and to help the country produce qualified and skilled individuals.

The environmental side of the mining sector is the most crucial sphere of sustainable development. If environmental issues are ignored, other benefits from the mining sector would wane eventually. In Mongolia, while mining activities continue to grow, the legal environment for environmental issues concerning mining continue to be underdeveloped. Furthermore, the implementation of existing environmental regulations is not sufficient.

Most critically, as a result, the mining closures are not made properly and many environmental and social issues such as informal artisanal mining, pasture degradation, legacies of environmental hazards and community health problems continue to persist.

Mongolia has legislation in place to encourage and enforce good governance in the mining sector. However, despite the existence of these policies and laws, the largest issue remains their implementation and usage in real life. In addition to the general lack of transparency regarding purchasing agreements and mining activities, it is hard to say that the general public is fully integrated into the mining sector as a stakeholder.

Another major drawback that hinders the efficient sharing of mining revenue and sustainable development is corruption. Although, Mongolia is improving its legal framework for fighting corruption by adopting important laws and establishing an independent agency, the implementation of these laws are still insufficient. The

mining sector in particular, is vulnerable to corruption and numerous studies have shown that corruption risks are high in the Mongolian mining sector.

BASED ON THE RESULTS OF THIS STUDY, THE RESEARCHERS HAVE PUT FORTH THE FOLLOWING POLICY RECOMMENDATIONS AND SUGGESTIONS:

- The necessity to “balance” the mining with the rest of economy through more linkages, based on sustainable development – that is, to address the issues of water usage, illegal mining and management of environmental damage.
- The country needs to have a better understanding of mining resources, should pay more attention to studying the price fluctuations, competition and changes on minerals market, and should have better facilities to correctly predict mineral prices as now they are such an important part of the economy.
- The country needs to truly support mining by developing further soft and hard infrastructure for the industry itself. Currently, there is lack of infrastructure and educated personnel.
- FDI is an important part of the mining development. Further supporting and improving foreign direct investment is crucial for sustainable growth of the mining and the country itself.
- As Mongolia’s economy is at the beginning stage of transformation into a truly mining-based economy, diversification is an increasingly important long-term goal. Studying examples of many mining economies, such as the United Arab Emirates, Saudi Arabia, Norway and Australia, is a good way to find ways of managing revenues from the mining sector for diversification goals. This requires further studies of possible diversification projects and their sustainability.
- Economic sustainability itself is an important issue, as the country needs to create better fiscal, monetary and financial systems to cope with the instability of revenues from the mining sector. Again, examples of the Norway’s pension fund and other sovereign wealth funds are important for optimal resource management as the resources themselves are exhaustible.

Study of Developing Corporate Bond Markets in Mongolia

The financial system in Mongolia is predominated by commercial banks and even among the banking sector, there is high level of concentration as the top three banks account for around 68% of the sector's total assets. The bond market, especially the corporate bond market, is still underdeveloped. Since 2001, a total of 16 corporate bonds have been issued on the two stock exchanges – Mongolian Stock Exchange and Mongolian Securities Exchange. Most of these public corporate bond issuances have had a maturity of one year.

TABLE 2. CORPORATE FINANCING BY TYPE, BILLION MNT

	2015	2016	2017	2018
Bank loan for business	5548	6126	6293	11773
NBFI loan for business	251	307	394	625
IPO and FPO	19.6	6.3	1.3	30.4
Public corporate bond	0.5	0	0.6	1.0

Source: MB, NSO, FRC

The aim of this study is to analyze the role that the corporate bond market could play in further promoting and developing the Mongolian financial sector. The research team collected information and data concerning the financial sectors, macroeconomic conditions and short-, medium-, and long-term financial policies. Then based on an analysis of the current status and developmental challenges, the set of recommendations were made to improve the pathway to developing the corporate bond market in Mongolia.

During the study, the research team found out that a large majority of the corporate bond market in Mongolia resided in private placements. However, private placement bonds are not regulated except in a broad scope by the Securities Market Law (SML) and Financial Regulatory Commission (FRC) regulations regarding debt securities. Therefore, currently, there is no consolidated database or complete record of private placement issuances. The only guidance provided by the SML and FRC is that private placement bonds cannot be advertised, or else, it has to be registered as a public bond and go through the required procedure of approval, and that the number of investors must be less than 50 (Article 4.1.21).

Based on interviews with relevant professionals and collection of any willingly publicized information by companies, the total value of private placement bonds is estimated to be around MNT 20 billion in 2018. In recent years, private placements have been becoming a popular method of raising funds in the short-term. The process of issuing private placement bonds is faster than getting bank loan approval or issuing a public bond which can takes several months, by which time the financial conditions may change. However, due to the riskiness of these bonds, the annual coupons range from 16-20%.

Based on observations of the procedure and process of issuing corporate bonds, both public and private placement, the following impediments and lack of building blocks were noted. Some of the issues noticed were a lack of institutional investors, tedious and long approval procedure for public bond issuance, competition with

high bank deposit rates, and insufficient regulation and guidelines by the FRC regarding corporate bonds, especially private placement.

Study of Developing Corporate Bond Markets in Mongolia Workshops

The FRC in partnership with the Japan International Cooperation Agency (JICA) has been implementing the Capacity Building of Capital Market in Mongolia project. The first phase was conducted from 2014-2017 and aimed to “improve the environment of the Mongolian capital market for vitalization of IPOs and realization of dual-listings through enhance of the market credibility.” The second phase will be implemented from 2019-2022 and will be more focused on the development of the corporate bond market in Mongolia. Additionally, the project will continue to assist the FRC, the Mongolian Stock Exchange (MSE) and other relevant organizations to enhance their market credibility through developing capacity for regulation and monitoring as well as improving understandings of market participants.

Thus, within the framework of capacity building, two dissemination workshops were organized for the Corporate Bond Market study. The first workshop took place on 5 December 2019 at the FRC. The participants in this closed workshop were relevant FRC officials and heads of related organization such as the MSE, Mongolian Central Securities Depository (MCSD), Mongolian Securities Clearing House (MSCC), etc.

The second workshop was held on 16 January 2020 at the Best Western Tuushin Hotel's Soyombo Hall. During the workshop, three presentations were given. The first one was by the director of the Economic Research Institute, Dr. Tuvshintugs Batdelger, on the current situation of Mongolia's corporate bond market. The second presentation was given by Mr. Noritaka Akamatsu on the issues facing the development of the corporate bond market and recommendation and instructions on how to resolve these issues were given. The third presentation was by the Securities Department of the FRC about the regulatory environment around the corporate bond market. These presentations were followed by a panel discussion featuring members of the FRC, Mongolian Association of Securities Dealers (MASD), MSE, MCSD and an underwriting company.

Commodity Market Studies: Update

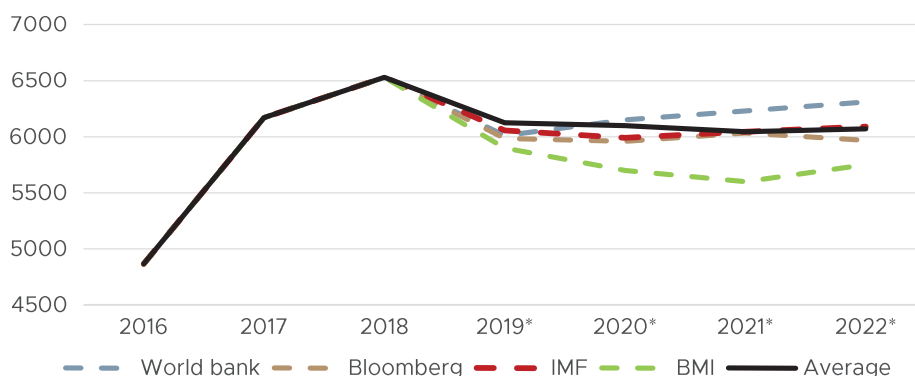
COPPER MARKET STUDY-2019²

Global refined copper usage increased about 3 percent in 2018 and was stable in the first half of 2019. Global refined copper consumption is expected to steadily grow over the coming years, driven by demand from the power industry, and rising electric vehicle production. Infrastructure development in major countries such as China and India and the global trend towards cleaner energy will continue to support demand.

On the supply side, in 2018, the total global mining production of copper grew 2.3 percent and dropped 2 percent in the first half of 2019. Reduced output in two major copper producing countries, namely Chile and Indonesia, more than offset growth in other countries. Global copper production is expected to decline by about 0.5 percent in 2019 and then rose by around 2 percent in 2020. As such, in the long term, global copper production is expected to display steady growth.

In 2018, copper prices declined despite looming supply disturbance in Chile arising from labor disputes at Escondida. International organizations modified their copper price forecasts in 2019 as the worsening macroeconomic environment, spurred by the escalating trade war between the United States and China, has lowered Chinese consumption levels and loosened the global copper market. However, copper prices are expected to increase in the long term as the high demand for copper will lead to a supply deficit that will drive prices up again.

FIGURE 3. COPPER PRICE PROJECTION, USD PER TONNE



Source: World Bank, IMF, BMI Research, Bloomberg

Refined copper production grew by 2 percent in 2018 and fell 2.7 percent in the first half of 2019. As reported by ICSG, world refined production is expected to plateau in 2019 and grow 4 percent in 2020. The increase in production of China, Australia, Brazil, Indonesia, and Poland will more than offset declines in other countries.

² See the Copper market baseline study and its update from ERI website

As for the Mongolian market, the Chinese demand for Mongolian copper concentrate is also likely to be strong in the mid and long term due to the government's ban on importing copper scraps and global increasing electric vehicle demand. On the supply side, refined copper production is expected to be steady and copper concentrate production is anticipated to decrease due to Oyu Tolgoi's delayed underground mine development and forecasted grade decline in short term. However, in the long term, copper production is expected to increase due to new projects such as the Tsagaan Suvarga and Kharmagtai projects.

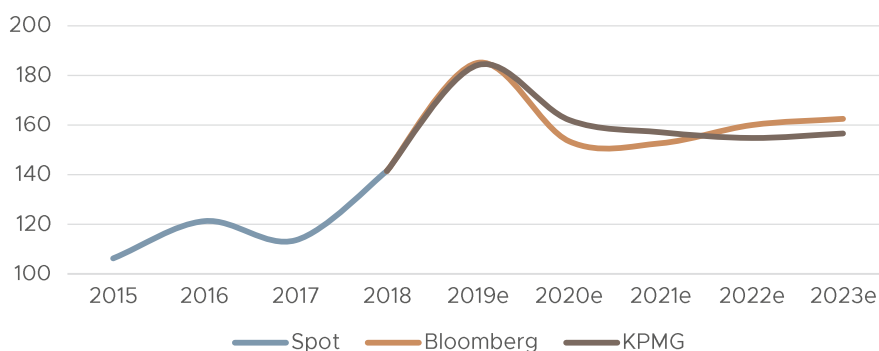
COAL MARKET STUDY-2019³

World crude steel production was 1,808 million tonnes (Mt) in 2018, an increase of 4.5 percent from the previous year. The Chinese steel industry has observed a boosted production in 2019 due to government stimulus measures to promote infrastructure. However, this trend may not continue into the future as the Chinese environmental policies outweigh short term programs implemented by the government.

Global supply of coking coal is expected to increase over the year with Australia driving the bulk of the growth. In Australia, the mixture of restarts, brownfield additions and one greenfield project led to a 6 Mt increase in 2019 from 2018. However, even Australia's coal exports are heavily swayed by Chinese policies as observed in Feb, 2019 when it took over a month for Australian coals to clear Chinese ports and customs and due to this, prices of Australian coal dropped.

In the third quarter of 2019, price of coking coal was 177.66 USD per Mt. In the figure below, experts are estimating that the price of coking coal will decline further in the fourth quarter (to 158 USD per Mt) and maintain price levels around 150 USD per Mt.

FIGURE 4. COKING COAL PRICE FORECAST



Source: Bloomberg, KPMG

Between 2016 and 2018, the strong demand and high prices drove up thermal coal trades; however, this growth is expected to reverse in the next couple of year. Imports from developed countries are in a decline as governments are phasing out

³ See the Coal market baseline study and its update from ERI website

coal-fired power generation and instead have been opting for other sources of energy generation such as hydro, nuclear and renewables. In the long-term, China is expected to boost its domestic production further to decrease its reliance on imports. Also, environmental policies fosters risk in consumption of thermal coal.

Demand for Mongolia's coking coal is largely dependent upon the Chinese market. Mongolia exported 31.5 Mt of coking coal in 2018 and 25.1 Mt of coking coal as nine months of 2019. China is expected to be more reliant on coking coal imports of high-quality grades which is difficult to source domestically. With favorable quality grade coking coals, there are speculations that Mongolia may surpass Australia as China's number main importer in the future.

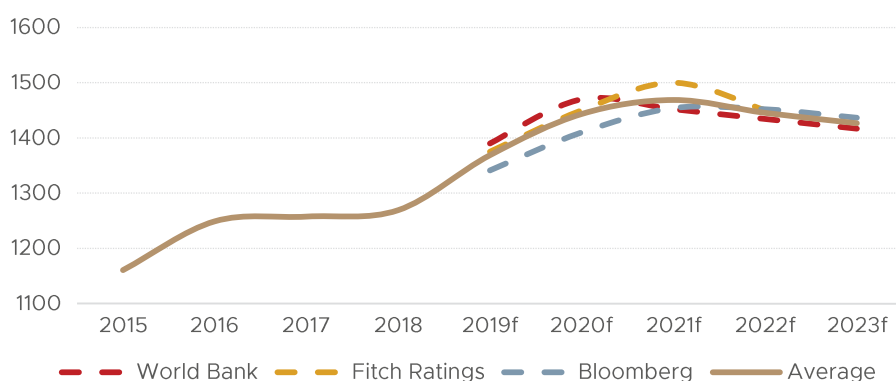
GOLD MARKET STUDY-2019 ⁴

World gold demand increased 8 percent year-on-year in the first half of 2019. This increase was supported by an increase in the demand for jewelry as well as an increase in the demand for gold for investment and central bank purchases. Continued global uncertainty is expected to keep gold demand for investment and central bank purchases elevated.

World gold supply, consisting of mining production, net producer hedging and recycled gold saw a 2 percent increase in the first half of 2019. This was largely due to a 7 percent year on year increase in recycled gold. Overall gold supply is slated to increase as production in major gold producing countries ramp up and a steady project stream is expected.

In light of uncertain global economic conditions, the price of gold is expected to remain elevated around the 1350 USD per ounce mark for the rest of 2019. Moreover, this is supported by monetary policy easing in several countries with the policy rate cuts by the US Federal Reserve playing a particularly important role in keeping gold prices up.

FIGURE 5. WORLD GOLD PRICE FORECASTS, USD PER OUNCE



Source: World Bank, Fitch Ratings, Bloomberg

⁴ See the Gold market baseline study and its update from ERI website

Mongolian gold demand is expected to drop as the increased gold royalty rate effective since January 2019 increases the cost of producing gold and dampens gold purchases made by the Bank of Mongolia. On the supply side, while Oyu Tolgoi's underground development has been delayed, Mongolia's overall project stream, its increase in gold reserves as well as the planned establishment of a gold refinery plant all support increased gold production in the future.

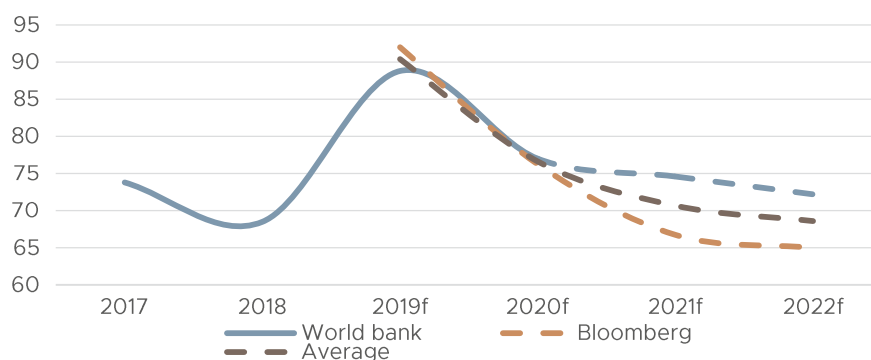
IRON ORE MARKET STUDY-2019⁵

The steel industry is the main driving force of iron ore demand as iron ore is a major element utilized in the steel making process. In the first half of 2019, crude steel production was 926 Mt, an increase of 5.3 percent year-on-year due to the increase in China's steel production. This growth was mainly driven by increased steel demand spurred by local governments' investment in infrastructure projects. However, the end of the Chinese government stimulus program and stricter environmental regulations will limit the steel production in China.

On supply side, world iron ore supply and production are dependent on Australia and Brazil. In 2018, world iron ore production reached 2.5 billion tons, an increase of 2.8 percent year-on-year. Production increases in Australia and Brazil were offset by declines in Chinese iron ore production. Australian iron ore production is expected to increase by 6 percent and 2.2 percent in 2020 and 2021, respectively. Also, Brazilian production is expected to pick up and grow steadily in the near term.

Iron ore price is forecasted to be 88.8 USD per tonne in 2019 and decline to 72.2 USD per tonne in 2022. . In 2019, the combination of supply disruptions in Australia and Brazil and increased Chinese demand for iron ore will likely lead to higher iron ore prices. However, this elevated level of price will not sustain. Recovery in iron ore production of Brazil and large planned iron ore projects in Australia will likely increase iron ore production from 2020 and on.

FIGURE 6. IRON ORE (62%) PRICE PROJECTION, USD PER TONNE



Source: Bloomberg and World Bank

⁵ See the Iron ore market baseline study and its update from ERI website

Mongolian iron ore mines export a large majority of its products to China. In 2018 and during the first half of 2019, the iron ore exports sharply increased due to higher price. However, China's iron ore imports will likely decline due to the decrease in steel production and stricter environmental regulations. Considering expected domestic steel plants projects, there is a possibility to generate extra iron ore demand in the domestic market.

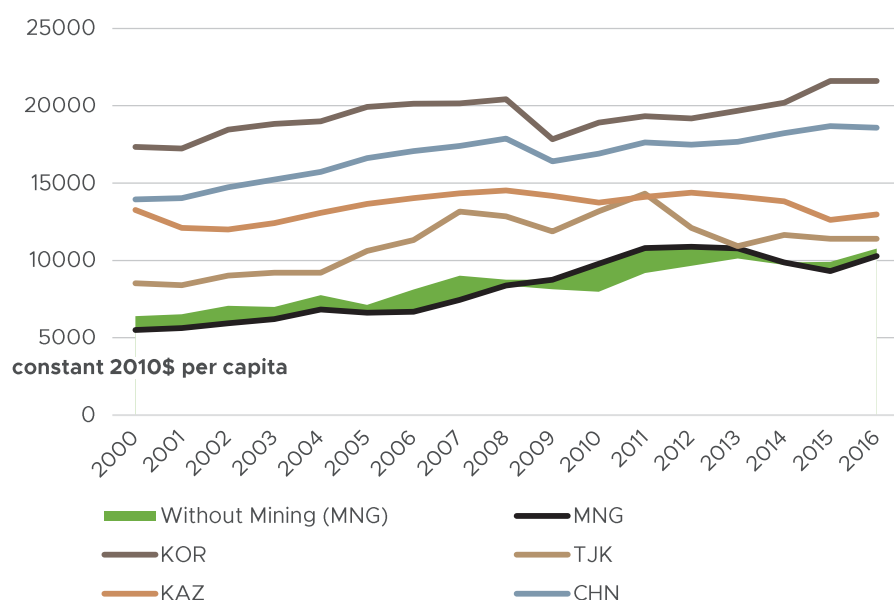
Economic Diversification Beyond Mining

Strong economic growth since 2000 shows the economy is undergoing a significant transition from an agriculture-based economy to one dominated by mining. However, Mongolia's inherently volatile economy is a source of great uncertainty for businesses, investors, and policy makers. One way to overcome this is to diversify the economy to make it less susceptible to commodity price fluctuations or negative shocks in the mining sector. The government has long recognized the need to diversify the economy, and this has been at the forefront of economic policy for many years.

This study, done at the request of the Asian Development Bank (ADB), looks at Mongolia's current state of export diversification and possible factors that may be hindering economic diversification. This information was then supplemented by in-depth interviews done with successfully exporting small medium enterprises (SMEs) in Mongolia. Analyzing both quantitative and qualitative data, the study offers practical policy recommendations on how to diversify Mongolia's economy beyond mining.

The research team found that Mongolia's non-mining exports show little diversification, with the share of non-mining exports to total exports falling from about 50% percent in the early 2000s to 11% in 2018. Furthermore, using the PRODY index to calculate a country's export sophistication index (EXPY), the research team found that Mongolia's exports are less sophisticated compared with China, South Korea and Kazakhstan. This suggests that Mongolia exports comparatively less value-added products, which highlights the need for structural transformation to diversify the economy. As the figure below shows, Mongolia's export sophistication stagnated from 2000 to 2006 when copper made up the majority of exports, but increased significantly from 2006 to 2012 as Mongolia started exporting more coal, which has a higher PRODY classification than copper.

FIGURE 7. EXPORT SOPHISTICATION OF SELECTED COUNTRIES, 2000–2016



Source: Estimates based on data from World Bank, *World Development Indicators*; *Atlas of Economic Complexity*

Many factors are behind the lack of diversification, but the two most important are a poor conditions for doing business and weak institutions (and the pervasiveness of corruption caused by weak institutions). As a result, the private sector has less opportunity to innovate and diversify. The problem is made worse by a lack of good infrastructure and a poor transportation network.

Moreover, according to the in-depth interviews done with successfully exporting companies, it is difficult to break into export markets since the marketing cost is prohibitive for these small scale companies. Depending on the nature of the products, it is common for companies to experience difficulties with the transportation and logistics bottlenecks, which forces some of the companies to use much costlier mode of transportation to meet the product delivery deadlines. They mentioned a lack of government support for their export efforts. The companies interviewed however, did not expect financial assistance from the government, although many small businesses do lack access to affordable credit. Instead, they wanted the government to improve the business climate by, among other things, easing tax and customs compliance, and making it easier to trade across borders.

Most importantly, a public entity (e.g. the government or industry association) should play a key role in overcoming the coordination failure that is commonplace in all industries. These may include support in building more reliable agricultural supply chains, information sharing and common platforms or forums related for existing and potential exporters. This is especially important if SMEs are to develop and contribute to economic diversification, even if as import substitutes.

Ultimately, the political situation and policies are undermining Mongolia's export potential. Interventionist policies, as have been used by some countries in the region, are not the solution to diversifying the economy and increasing exports. These policies, especially large public investments without the participation of the private sector, could lead to inefficiencies and waste, especially given the country's weak public institutions. The government should rather use policy to create a more favorable business climate and tackle coordination failures—and for the latter, chambers of commerce and industrial associations can play an important role.

Marketing and Trading: Possibilities of Establishing a Mineral Commodity Exchange in Mongolia

According to the previous “Marketing and Trading in the Mining Sector” study (ERI, 2018), one of the problems associated with the export of mineral commodities is the fact that there are neither commodity trading platforms nor any organized mineral commodity exchanges in Mongolia. As a result, depending on the specific characteristics of the commodities and their market development, commodity exporters face numerous problems finding buyers, negotiating prices, crossing borders, etc. For instance, mining companies operating at the same basin and extracting the same commodities set different contract prices for direct sales. This means that producers are less informed about their relative share of the end market price and cannot collectively bargain with buyers for higher prices. Intermediaries may capture a disproportionate share. From the tax office side, it is difficult to use actual selling prices when imposing taxes due to a lack of transparency in sales contracts in the mining sector.

In such cases, establishing a commodity exchange, trading commodities on the exchange and using exchange prices could be an effective solution for these issues. Mineral commodity exchanges fulfill important marketing, financial and risk management duties. According to a study conducted by the Mongolian Exporters’ Association (2013), it is possible to establish a mineral commodity exchange in the country. While the production volumes and quality of Mongolian coal, iron ore and copper concentrate attract significant attention from potential buyers, the country’s weak transportation infrastructure poses a challenge. For a mineral commodity exchange to be viable, Mongolia must heavily invest in warehouses, logistics centers and transportation infrastructure. Moreover, Mongolia’s current level of financial services development and its macroeconomic environment is lacking when compared to its neighboring countries.

In addition, Mongolia’s legal environment and government policy on the development of a mineral commodity exchange is unclear and unstable. While there have been numerous attempts to establish a mineral commodity exchange, none have been successful. A provision on the establishing a mineral commodity exchange using private investment is included in the State Minerals Policy 2014-2025. Nonetheless, Erdenes Mongol, a state-owned enterprise, is currently working to establish a mineral commodity exchange. This should ideally be avoided as many international studies have found that state-owned mineral commodity exchanges have limited success.

In the case of establishing a new mineral commodity exchange, in addition to ensuring the availability of factors such as trading programs, networks and the technical infrastructure needed to operate an exchange, numerous regulations, guidelines and legislations have to be either amended or ratified to oversee the operations of a mineral commodity exchange. Likewise, a new exchange would require a qualified workforce in addition to well-informed buyers and suppliers. Activities to increase the capacities of all participants must therefore be regularly

conducted. As these necessities all require ample investments, detailed feasibility studies of establishing a new mineral commodity exchange must be conducted and compared with other viable options.

An alternative option entails expanding the current operations of the previously established Mongolian (Agricultural) Commodity Exchange (MCE) to include mineral commodity trading. The exchange was established in 2013 for trading cashmere, wool, live cattle and wheat. Its operations are regulated by the Law on Agricultural Products and Raw Materials Exchange. The experiences of the operations of the MCE hopefully provide important lessons to learn from when establishing a mining commodity exchange. With this option, completely new trading programs and technical infrastructure aren't needed. The existence of relevant laws and regulations also cut down costs significantly. The MCE has expressed an interest in beginning with coal trading and adding other mineral commodities afterwards in order to mitigate risks. However, adding mineral commodity trading requires significant logistics investments such as warehouses, logistics centers, laboratories and financial infrastructure. Moreover, as the MCE is a state-owned enterprise, its operations may be susceptible to political influences and risks.

Another alternative option is making use of already established foreign mineral commodity exchanges. In light of the country's economic and geographic circumstances, Mongolia can potentially work with China's Shanghai Futures Exchange, Zhengzhou Commodity Exchange and the Dalian Commodity Exchange. By doing so, Mongolian companies can directly trade their commodities on the aforementioned exchanges or establish either a representative's office or branch in Mongolia. In such a case, Mongolia would be able to significantly cut back on the time and costs associated with establishing a new commodity exchange while still being able to trade its commodities at more favorable prices. However, establishing connections with and cooperating with internationally renowned commodity exchanges may prove time consuming and challenging. Moreover, Mongolia would potentially be subject to the foreign mineral commodity exchange's standards.

When choosing any of the three main options for establishing a mineral commodity exchange mentioned above, it is important to note that Mongolia's economic, business and legal environments are lacking in many key respects. As such, Mongolia's policies towards establishing a mineral commodity exchange must invariably be connected with policies to improve Mongolia's overall economic and business environment.

Study on Macro Economy of Mongolia

This study was commissioned by the Japan International Cooperation Agency (JICA). Its main objective was to review the current state of the Mongolian macro economy, to analyze causes of the changes and make forecasts. On a quarterly basis, a detailed report is prepared where macroeconomic indicators are updated and its quarterly and annual changes and trends are analyzed. Additionally, on a monthly basis, a brief newsletter is prepared for the client on current news which impact the economy and policies. The study covers three key areas: the current state of the economy, policy issues and potential economic risks.

For the current state of the Mongolian economy, data on economic growth, performance of sectors, loans outstanding of commercial banks and balance of payments is collected quarterly and summarized. In addition,

The current state of the Mongolian economy covered topics such as economic growth, performance of sectors, loans outstanding of commercial banks, balance of payments, average monthly household income and expenditure, salaries, and exchange rate. In addition to collecting these data and analyzing its quarterly and yearly changes, the study covers in-depth the impact of rising meat prices and income distribution.

The overheating index calculates how active the Mongolian economy is on a quarterly basis. Although the economy has been “cooling down” and economic instability risks have decreased, the likelihood of decrease in economic activity, delay in export, depreciation of local currency, disruptions to the budget revenue and increase in budget expenditure due to the upcoming elections still pose a significant risk.

FIGURE 8. ECONOMIC OVERHEATING INDEX
(0 – 100)

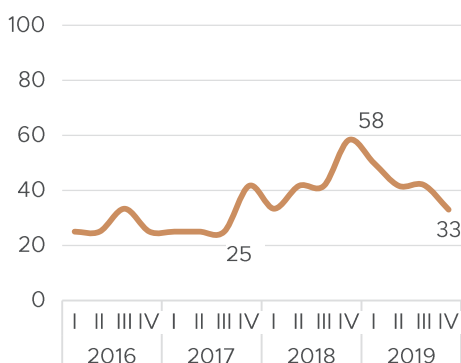
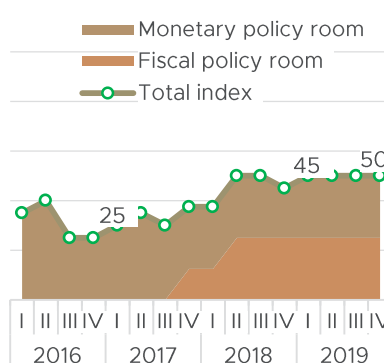


FIGURE 9. POLICY ROOM INDEX
(0-100)



Source: research team's calculations

On policy issues, the main focus is on the state budget, government debt and money supply. For instance, the implementation of monetary policies, state budget plan and performance, and the performance of wealth funds. The research team also make forecasts about short-term economic growth utilizing an econometric

model. Another assessment calculates the possibility of implementing expansionary policies as economic risks arise. As the index approaches 100, the greater the opportunities for expansionary policies and as it approaches 0, the more limited the opportunities for implementing expansionary policies. The total policy index is the summation of the fiscal and monetary policy room indices, each with a value of 50. As seen in Figure 6, there were little to no changes in fiscal and monetary policy room during 2019.

One of the main objectives of macroeconomic study in Mongolia is to assess the future risks to the economy. Within this context, the risks which were explored in detail were: volatility in commodity prices, trade war between the US and China, banking sector risk, political instability, possibility of a dzud (severe winter), and the impact of the coronavirus disease (COVID-19).

Revenue Management: Mongolia's Sovereign Wealth Funds and Their Economic Impact

The main objective of this study is to assess the impact of the Fiscal Stability Fund (FSF) and the Future Heritage Fund (FHF) on the economy. The FSF was established in 2011 when the FSL was implemented. The purpose of the FSF was to mitigate fiscal expenditure fluctuations caused by swings in mineral commodity prices and to encourage sustainable economic growth. In addition to the FSF, the Government of Mongolia (GoM) established the Future Heritage Fund (FHF) in 2016 to allocate mineral wealth across future generations.

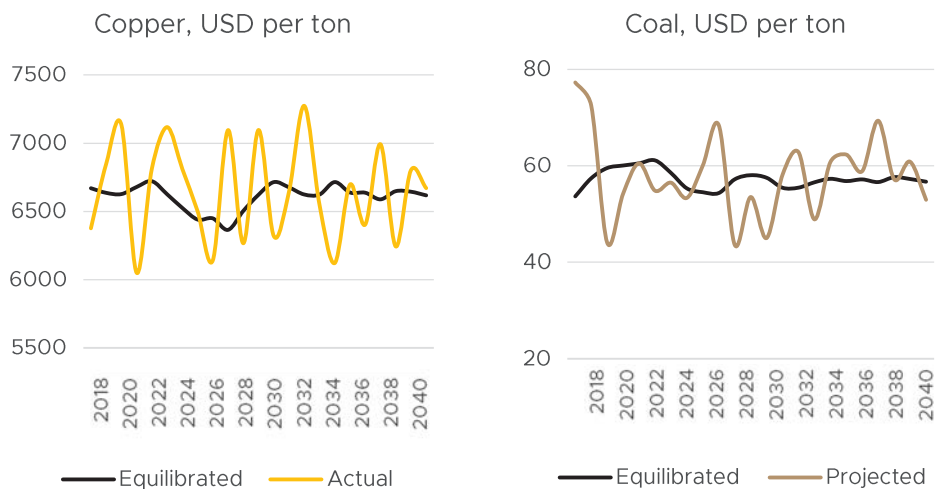
To assess the impact of the wealth funds, we developed an in-house dynamic computable general equilibrium (CGE) model which is used to simulate the economy for the next 23 years (2019-2040) under the following four scenarios:

- Baseline scenario : Both FSF and FHF are absent;
- Scenario 1: FSF is present, FHF is absent;
- Scenario 2: FSF is absent, FHF is present; and
- Scenario 3: Both FSF and FHF are present.

To calibrate the model, we built a 2017 Mongolian Social Accounting Matrix using the Supply and Use Tables and other necessary data. Our model is a general equilibrium model where a change in one side of the system affects all other parts of the system – i.e., the Walras Law is applied in this model.

To illustrate the impact of the wealth fund during the mining sector's boom and bust cycle, we considered arbitrary series for main commodity prices. Coal and copper prices are assumed to fluctuate around their equilibrated prices as shown in Error! Reference source not found.. Equilibrated prices are calculated as the average of historical prices of the last 12 years and expected prices of the following 3 years.

FIGURE 10. COAL AND COPPER PRICE PROJECTION



Source: NSO, Authors' calculations

Main results:

- When the FSF is operating, the fluctuations of the budget revenue is lower as the FSF absorbs the price fluctuations. (Figure 11)

The FSF could play a crucial role in counteracting and mitigating economic fluctuations by accommodating budget expenditures. (Figure 12 and

TABLE 3. MACROECONOMIC VARIABLES

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The FHF has a decreasing economic growth impact; however, it also helps allocate revenue from the mining sector across current and future generations by restraining budget expenditure growth. (Figure 12 and

TABLE 3. MACROECONOMIC VARIABLES

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FIGURE 11. EQUILIBRATED BUDGET REVENUE, TRILLION MNT

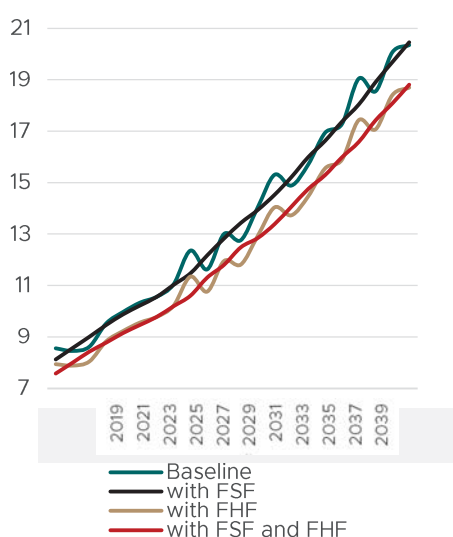


FIGURE 12. TOTAL BUDGET EXPENDITURE, TRILLION MNT

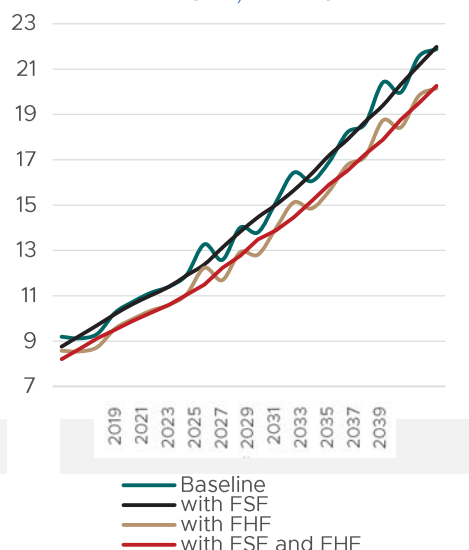


TABLE 3. MACROECONOMIC VARIABLES

Macro variables	Average growth					Standard deviation				
	Baseline	FSF Scenario	FHF Scenario	FSF & FHF	&	Baseline	FSF Scenario	FHF Scenario	FSF & FHF	&
Real GDP	4.38	4.37	4.16	4.15	0.64	0.57	0.54	0.50		
Non-mining GDP	4.21	4.24	4.10	4.13	3.36	2.35	3.31	2.37		
Household consumption	4.22	4.23	4.07	4.07	3.76	3.64	3.80	3.70		
Government consumption	3.87	3.83	3.93	3.90	2.92	2.32	2.88	2.33		
Total Investment	3.77	3.77	3.59	3.58	7.18	3.58	7.04	3.61		
Export	4.41	4.41	4.34	4.35	6.87	7.20	6.99	7.29		
Import	4.15	4.16	4.08	4.09	5.02	3.43	4.95	3.46		

Policy recommendation: The GoM should stringently implement these funds to counteract the economic fluctuations generated by volatility in mineral commodities prices.

Annual conference 2019

The Economic Research Institute (ERI) in collaboration with the Bank of Mongolia successfully organized the “Current State and Perspectives of the Mongolian Economy” forum. 2019 marked the third time this forum has been held. The forum is supported by international organization such as Japan International Cooperation Agency (JICA) and Partnership for Economic Policy (PEP).

ERI presented on topics such as degradation of livestock and the impact of the livestock taxation as well as a risk analysis of the International Monetary Fund’s Extended Fund Facility program in Mongolia. A representative from JICA’s Japan office presented on resource contracts. Other presentations by ERI were commissioned by JICA under the “Capacity Building on the Natural Resource and Mining Sector in Mongolia” project. The topics from this project presented at the 2019 forum were: revenue management, specifically related to the Fiscal Stability Law and its requirements, contracting in the mining sector, a comparative study of foreign direct investment inflows, and taxation and financial reporting in the mining sector. The Bank of Mongolia gave two presentations: analysis of Mongolian economic growth and inflation and the connectedness of Asian countries. Gerege Partners presented on the application of semi-structural macroeconomic model and its short- and medium-term forecast. All the presentations are available in both Mongolian and English on the ERI website: www.eri.mn.

Annual Performance Assessment of Soums' Local Development Fund, 2019

Under the “Sustainable Livelihood-3” project, ERI assessed the annual Local Development Fund (LDF) performance of 98 soums in 6 provinces in the western region of Mongolia, including Bayan-Ulgii, Zavkhan, Uvs, Khovd, Khuvsgul and Orkhon. ERI has conducted this assessment for 4 consecutive years and travelled to all 21 provinces and 330 districts of Mongolia. As for the assessment of the implementation of the LDF in 2018 and 2019, the following indicators were used: ensuring citizen participation, planning and preparation of the budget funded by the LDF, informing the public about the planned budget transparently and the monitoring, evaluation and auditing of budget performance.