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MONGOLIA CONSTRAINTS ANALYSIS

A diagnostic study of the most binding constraints
to economic growth in Mongolia

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Glossary of Terms

<u>Term</u>	<u>Meaning</u>
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
3G	third generation mobile phone technology
ADB	Asian Development Bank
AES	Altai-Uliastai Electric system
<i>aimag</i>	province
BOP	balance of payments
BOT	build-operate-transfer
CA	constraints analysis
CDMA	code division multiple access mobile phone standard
CEO	chief executive officer
CES	Central Electric System
CHP	combined heat and power plant
CHP5	Combined Heat and Power Plant No. 5
CRC	Communications Regulatory Commission
CWWTP	Central Wastewater Treatment Plant
DALY	disability-adjusted life year
DBM	Development Bank of Mongolia
EBRD	European Bank for Reconstruction and Development
EES	East Electric System
EPCRC	Economic Policy and Competitiveness Research Center
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FSL	Fiscal Stability Law
FTZ	free trade zone
GDP	gross domestic product
<i>ger</i>	traditional Mongolian home
GNI	gross national income
GOM	Government of Mongolia
GSM	Global System for Mobile Communications
gWh	gigawatt-hours
HIV	human immunodeficiency virus
HRV	Hausmann, Rodrik and Velasco
ICT	information and communications technology
IFC	International Finance Corporation
IMF	International Monetary Fund
IPOM	Intellectual Property Office of Mongolia
IPTV	Internet protocol television
ITU	International Telecommunications Union

JPY	Japanese yen
<i>khashaa</i>	land plot
km	kilometer
LTE	Long-Term Evolution mobile phone technology
m ³	cubic meters
MCC	Millennium Challenge Corporation
MED	Ministry of Economic Development
MIAT	Mongolian Airlines
MMC	Mongolian Mining Corporation
MNT	Mongolian tugrik
MOF	Ministry of Finance
Ms	surface-wave magnitude
MSE	Mongolian Stock Exchange
MW	megawatt
NCD	non-communicable diseases
NDI	National Development Institute
NDIC	National Development and Innovation Committee
NGO	non-governmental organization
NSO	National Statistical Office
OT	Oyu Tolgoi
PM ₁₀	coarse particulate matter (2.5-10 micrometers in diameter)
PM _{2.5}	fine particulate matter (<2.5 micrometers in diameter)
PPP	public-private partnership
PwC	PricewaterhouseCoopers
RMB	Chinese renminbi
SEFIL	Strategic Entities Foreign Investment Law
SME	small and medium enterprise
SOE	state-owned enterprise
<i>soum</i>	district
TB	tuberculosis
UB	Ulaanbaatar
UMIC	upper middle income country
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Emergency Fund
US	United States
USD	United States dollar
USUG	Water Supply and Sewage Authority of Ulaanbaatar City
WASH	water, sanitation and hygiene
WEF	World Economic Forum

WES	West Electric System
WHO	World Health Organization
WTO	World Trade Organization

1. Executive Summary

Country context

With three million people in a country approximately the size of Alaska, Mongolia famously has the lowest population density in the world. Mongolia is landlocked between China and Russia, and it is over 1,000 km from the nearest seaport. Despite the low overall density and apparent remoteness, Mongolia's population is largely urban (71%) and increasingly concentrated in the capital of Ulaanbaatar (45% of the total population).¹

The People's Republic of Mongolia was founded in 1924, following the Revolution of 1921, and maintained close relations with the USSR until 1990. This history colors Mongolia's relations with its powerful neighbors and contributes to a strong sense of Mongolian nationalism. These relations also greatly affect Mongolia's economy, as 89% of exports are shipped to China, and a majority of imports comes from either China or Russia. This has also led Mongolia to pursue a "Third Neighbor" policy with other countries, such as Japan, South Korea and the United States.

Following the transition to democracy and free market policies in 1990, Mongolia experienced a period of adjustment that saw living standards fall, with gross domestic product (GDP) growth averaging -4.4% through 1994. The economy began a period of slow, steady growth in 1995, finally recovering to 1990 GDP per capita levels in 2003. Mongolia's GDP grew an average of 6% per year between 2000 and 2009, as Mongolia opened several large mineral deposits to development.² This culminated in 2010 with the beginning of construction of Oyu Tolgoi (OT), a massive copper and gold mine which could account for as much as a third of Mongolia's GDP by 2020, according to estimates. Between 2000 and 2012, the total value of Mongolia's exports increased tenfold, and the mineral sector's share of exports increased from 10% to 89%³ increasing the economy's dependency on minerals. With the development of OT, foreign direct investment spiked to 45% of GDP, and economic growth accelerated. Mongolia became the world's fastest growing economy, averaging 11% per year between 2010 and 2014, with a peak of 17.5% in 2011. This expanded GDP to an estimated \$12 billion and gross national income (GNI) per capita to \$4,320 in 2014, pushing Mongolia into the World Bank's upper middle income country (UMIC) classification this year. However, economic growth began to slow in 2012 due to a combination of slower growth in China, lower global mineral prices, and a sharp decline in foreign direct investment (FDI). Mongolia currently faces serious balance-of-payments pressures, and the Asian Development Bank projects that Mongolia's GDP will grow 3% in 2015, which would be the lowest rate since 2009.⁴

Poverty declined significantly during the boom years, with the percentage of Mongolians below the national poverty line declining from 39% in 2010 to 22% in 2014. While poverty has declined overall, it remains higher in rural areas (26%) than in urban areas (19%). Although recent data is limited, there is a public perception of increased income inequality and access to jobs, education, healthcare and basic public services.⁵ Between 2003 and 2011, Mongolia's Gini index averaged 0.33,⁶ which shows

less income inequality than Russia, China and the United States.⁷ According to UNDP's 2013 Inequality-Adjusted Human Development Index, Mongolia has less inequality than average for its region. More recent data on inequality is expected later this year.

The country's rapid urbanization and migration of citizens to Ulaanbaatar (UB) have created economic opportunities, but also pockets of vulnerability. Many of those who have risen above the poverty line in the past few years remain near it, implying vulnerability to negative economic shocks.⁸ UB's population nearly doubled between 2000 and 2014, and 45% of Mongolia's population now resides there. During that same time period, UB's economy grew from 50% of Mongolia's total GDP to 64%. Many of these migrants settled in informal communities of traditional *ger* dwellings around UB. As a result, approximately 60% of UB's population – and 27% of Mongolia's population – lives in these unplanned “ger districts” with more limited access to public services. Women's groups have noted that the inflow of migrants to UB has increased vulnerability to exploitation and trafficking.

Unemployment, living standards and inflation are major concerns of the Mongolian population today. In a recent survey, 32% of respondents cited unemployment as the largest problem in Mongolia, followed by standard of living (17.8%) and inflation (15.3%).⁹ As of July 2015, inflation is 6.9%, although it averaged 10.9% from 2010-14. Employment is shifting from agriculture to services. In 2000, agriculture accounted for 49% of employment, while services accounted for 18%. Today, agriculture accounts for 35% of employment, and services accounts for 26%. Despite the recent mining and construction boom, the share of employment in construction (6%) and mining and energy (6%) remained relatively flat, and these sectors tend to create fewer employment opportunities for women. Despite higher rates of educational attainment than men, the female labor force participation rate has decreased in recent years and female earnings are on average lower than those of their male counterparts in similar professions. Females are also under-represented among managers and executives, as well as business owners. In a 2013 Enterprise Survey of 360 firms, firms ranked access to finance, tax rates, and political instability as the major concerns of the business community.¹⁰ During initial private sector consultations in March 2015, while access to finance remained a concern, tax administration and policy consistency appeared to have supplanted concerns about tax rates and, to some degree, political instability.

Summary of binding constraints to growth

The growth diagnostic methodology used to conduct the constraints analysis seeks to identify aspects of the economy that are holding back growth and investment. Because Mongolia recently experienced high growth rates, it is a little more difficult to identify these binding constraints. The recent slowdown can be explained largely by one major binding constraint (3.1), while several other sectors present serious problems that are impeding economic activity. With this in mind, the Government of Mongolia (GOM) and Millennium Challenge Corporation (MCC) teams have identified four binding constraints to growth and investment:

1. A weak and unstable macroeconomic environment

Although Mongolia's medium term outlook is promising, the weak and unstable macroeconomic environment appears to be the most binding constraint to economic growth in Mongolia in the short-

term. Mongolia's economy grew on average 11% per year between 2010 and 2014, driven by a major expansion of extractive industries, particularly copper and coal. This expansion was financed by a large increase in foreign direct investment, reaching levels of 45% of GDP in 2011. Mining has quickly come to dominate Mongolia's economy, with minerals accounting for 89% of all exports, and 89% of those exports bound for China. Although it coincided with significant reductions in poverty and increases in per capita income, a reliance on mining, concentrated trade with a single partner, and lack of diversification in other sectors of the economy has left Mongolia vulnerable to external shocks. During the boom years, Mongolia's government also borrowed substantially from international markets, with external debt totaling 54.9% of GDP in 2014. The economic slowdown has created a budget deficit equal to 11% of GDP with debt service looming in 2017. The government plans to issue sovereign bonds to refinance the debt, but debt service remains high, at 27.9% of exports.

2. Inconsistent laws and policies, resulting in an unpredictable business environment

During consultations with the private sector, businesses complained about the inconsistency and poor quality of government interventions in the economy. On a high level, their concerns centered on wholesale turnover of the civil service following each election and conflicts of interest among policy makers. At a working level, their concerns focused on competition from state-owned enterprises (SOEs), the current procurement law's focus on cost over quality or value, and the capacity of the civil service to implement policy and enforce laws. Frequent changes in laws and their selective enforcement increases the administrative burden on businesses, a concern that small and female-owned firms noted as a particular barrier during consultations, which may impose high costs on them. The significant presence of SOEs may also add further obstacles to competition and investment. These actions lead to an unstable investment climate that dissuades both domestic and foreign investment. The government has also been involved in several high-profile disputes with foreign companies, especially in the resource extraction sector, which has contributed to a fear of expropriation among foreign investors.

3. Health impacts of air pollution in Ulaanbaatar

Air pollution, caused primarily by the burning of coal for heat, imposes a significant burden on the health and economy of UB. A 2013 study estimated that 29% of cardiopulmonary mortality and 40% of lung cancer deaths in UB are attributable to ambient air pollution, representing almost 10% of total mortality in UB. Studies have concluded that the economic impacts of air pollution range from 18-28% of UB's GDP and 8-13% of Mongolia's GDP. Among for children under five, per capita deaths attributable to ambient air pollution is several times higher than its comparators, although the per capita deaths attributable to ambient air pollution for the total population of Mongolia is not higher than comparators, perhaps due to the geographic concentrations of pollution in UB.

4. Costly access to water and sanitation in productive sectors and poor communities

Although Mongolia has relatively good access to improved water and sanitation sources in urban areas, access is lower among the poorest communities, such as in rural communities and urban and peri-

urban ger districts. Costs are significantly higher and consumption significantly lower in these ger districts. This imposes financial, time, health and environmental costs on these communities. These problems are exacerbated by underlying water scarcity issues, driven by an uneven natural distribution of water resources and a semi-arid climate, which is most notable in water intensive industries such as textiles, mining, and minerals processing, the latter two located primarily in the Gobi Desert.

Detailed description of binding constraints

1. A weak and unstable macroeconomic environment

As discussed above, Mongolia's economy has grown increasingly reliant on mining and trade with a single partner. Over the past 25 years, Mongolia's economy has not diversified, and in fact has actually grown more concentrated. According to the Export Diversification Index, Mongolia's export basket is the least diverse among its comparators.¹¹ Exports have steadily focused on mining since 2006, with textiles dropping from 60% of exports in 2001 to 5% of exports in 2012. The correlation between budget income and the price of copper is 0.71, and it is 0.46 for the price of coal.¹² This lack of diversification has left Mongolia vulnerable to external shocks, such as shifts in global commodity prices, a sharp decrease in FDI or slowing growth in China.

Unfortunately, the Mongolian economy has experienced several shocks simultaneously within the past few years. Global copper prices declined by 41%¹³ and coal prices also fell by around 40%¹⁴ since 2011, as demand from China slowed. Amidst political debates about whether Mongolia was receiving a fair share of mining royalties, the Parliament passed the Strategic Entities Foreign Investment Law in 2012, which restricted foreign ownership of assets in sectors deemed essential to national security, including natural resource extraction. This precipitated a drop in FDI of 44% in 2013¹⁵, which had been the primary source of financing for Mongolia's current account deficit. Although the law was repealed the next year and a new Investment Law passed, the Government became embroiled in a two-year dispute with the foreign sponsor of Oyu Tolgoi (OT), the largest copper and gold mine in Mongolia. FDI declined an additional 60% in 2014, and the dispute was finally resolved in May 2015.

Additional concerns about the macro risks relate to the external debt position of Mongolia. During the boom years, Mongolia's government implemented a procyclical fiscal policy and borrowed substantial sums from international markets, including debut issues of sovereign bonds US\$ denominated in United States dollars and Japanese yen. When the economy began slowing in 2012, this additional spending initially acted as a stimulus and kept domestic demand high. However, it also created bubbles in the real estate and construction sectors, while government revenue began to taper. The economic slowdown has created a large budget deficit with debt repayments looming in 2017. According to the International Monetary Fund (IMF), Mongolia's total public debt was 76.5% of GDP in 2014, and external debt totaled 54.9% of GDP. Although the government has discussed structural measures and policy adjustment, it has yet to improve the situation. The authorities are hoping that a sovereign bond refinancing will enable them to pay down existing debt.

The most recent IMF consultation report indicates that Mongolia's medium term outlook is promising given its large mineral resource endowment and pending and active projects in the mining sector. However, in the short term, Mongolia currently faces serious balance-of-payments (BOP) pressures,

the Asian Development Bank projects that Mongolia's GDP will grow 3% in 2015, which would be the lowest rate since 2009.¹⁶

These macroeconomic difficulties have imposed a heavy cost on private enterprises. Over the last decade, Mongolia has had higher average annual inflation (11.4%) than comparator countries. Inflation has also been volatile - fluctuating in a wide range between a low of 5.1% in 2006 and 25.1% in 2008.¹⁷ Mongolia's real effective exchange rate has also been relatively volatile, appreciating by 30% between March 2009 and June 2012, with symptoms of Dutch disease due to mineral exports, before declining 15% by mid-2014.¹⁸ Mongolia's external position is weak, with a current account balance averaging around -26% of GDP from 2011-13, with a trade balance of -11% during the same period.¹⁹ Mongolia is also running a substantial budget deficit, estimated officially at 4.25% of GDP in 2014, although the IMF has identified off-budget spending that brings the total deficit to 11% of GDP. As mentioned previously, this deficit was financed by government borrowing, and Mongolia's ratio of debt service to export ratio is relatively high at 27.9%.²⁰

Lenders and borrowers are resorting to foreign currencies to circumvent this instability. Foreign currency accounted for 23% of all loans and 30% of all deposits in 2014.²¹ FDI has been slow to rebound partly due to concerns about macroeconomic risks, with many investors seeing the resolution of the OT dispute as a bellwether for the economy.

In the short-term, these macroeconomic problems may be solved by the expansion of OT and more prudent fiscal policies. In the long-term, the constraint will linger unless Mongolia reduces its reliance on the mineral sector. Driven by strong growth in the exploitation of minerals, Mongolian businesses are not innovating or diversifying into new products. Many of Mongolia's socialist-era industries declined following the democratic transition in 1990. Similarly, Mongolia exported more than US \$350 million of textiles in 2005, but only around \$170 million in 2012.²² However, many firms in those industries likely were artificially competitive due to the distortions of the Soviet system and the former Multi Fiber Arrangement's quota system, which gave Mongolian textiles preferential access to US and European markets.²³

The low levels of diversification into new products, even when examined at granular levels, indicates a lack of innovation and little movement to new, more complex products. With reductions in trade barriers and decreases in transportation costs, firms have chosen to expand production in existing product lines, rather than diversify into new ones. Mongolia has a high intensive margin among comparators, which indicates that quantities traded by the same firms increase as trade becomes less costly. However, Mongolia has a low extensive margin, which is a measure of the extent to which more firms trade as trade becomes less costly. Mongolia is not diversifying because of a lack of incentives to allow firms to move into new product spaces. The causes of low diversification will be explored more deeply during root cause analysis, but they could include ability to identify new sectors and coordinate inputs, low investment in applied research, low or nonexistent product standards, poor quality control, a low level of risk capital, lack of skills necessary for innovation, or a legacy of central planning.

2. Inconsistent laws and policies, resulting in an unpredictable business environment

Over the past few years, foreign investors in Mongolia have expressed concerns about the inconsistency and poor quality of government interventions in the economy. The AmCham survey of 2014 found out that “bad policies that do not attract foreign investment” is one of the five most crucial economic issues.²⁴ These concerns range from wholesale turnover of the civil service following each election, conflicts of interest among policymakers, and low capacity of the civil service to implement policy and enforce laws. The government has also been involved in several high-profile disputes with foreign companies, especially in the resource extraction sector, which has contributed to a sense of “creeping expropriation” among foreign investors.²⁵

During consultations with the private sector, businesspeople frequently pointed to government policy execution as detrimental to private enterprise. They said that Mongolia’s laws and regulations were good on paper, but the capacity to implement and enforce is low. For instance, an Air Pollution Law that required penalties for excess air pollution did not provide for any grace period and was not implemented or enforced. Inconsistent recordkeeping and audit procedures by the tax authorities contribute to tax disputes, and some businesspeople claimed that enforcement of laws and regulations is arbitrary and possibly driven by political patronage or corruption. Another area of concern is that laws and regulations change frequently, with little consultation with the private sector, leading to uncertainty and investment risk.²⁶

This weak policy implementation and enforcement add to the cost of doing business in Mongolia. Mongolian firms experience more meetings with tax officials than firms in comparator countries, and their managers spend more time dealing with the requirements of government regulation.²⁷ In consultation, firms indicated that incentives for audit administrators are distorted so that they are rewarded for increasing the tax burden, sometimes in areas of the tax law that are subject to interpretation. These tax bills are costly to dispute, in terms of legal counsel and relationships with government officials. In addition, a number of firms consulted indicated significant time and rework cost associated with full-scale turnover of Ministry staff at all levels following a general election. These concerns may be exacerbated for micro and small enterprises and female-owned firms who might lack the connections, financial resources, or executive experiences that would otherwise assist them in navigating these systems. The government does not routinely collect or analyze statistics on MSMEs, many of which are female-owned enterprises, and is thus not able to adequately understand potential issues or solutions to help improve their performance. In consultations, female entrepreneurs in particular noted lack of access to networks or key relationships with government officials perceived as necessary to success.

As of 2014, Mongolia has over 395 state-owned enterprises (SOEs) in a variety of sectors,²⁸ including energy production, mining and transport. Although private entities are allowed to operate and compete against SOEs, there is a belief among investors that the interests of SOEs are favored over those of private enterprises.²⁹ Mongolia’s procurement law, which requires least-cost selection, is believed by the business community to favor SOEs and city-owned enterprises (COEs) in any

competition in which quality is not a factor. Although Mongolia has many SOEs and COEs, their share of subsidy from the government budget is relatively small. From 2011 to 2015, subsidies to public enterprises averaged 3.1% of current government expenditures, 2% of total expenditures and net lending, and 0.8% of GDP.³⁰ The indirect costs of SOEs and COEs are more likely to stem from reduced competition in the affected sectors, but they are difficult to quantify.

Over the past decade, influenced by a complex geopolitical and regional security environment, there has been a vigorous public debate in Mongolia about the proper size and role of foreign investment in the mineral sector. Public sentiment has shifted multiple times during this period, resulting in changes in governments and laws. In 2012, Parliament passed the Strategic Entities Foreign Investment Law (SEFIL), which restricted foreign ownership of assets in sectors deemed essential to national security, including natural resource extraction. After a negative response from foreign investors, the law was replaced the next year by a new investment law that repealed many of the restrictions. However, several other high-profile developments contributed to foreign investors' perception of government expropriation. These examples include protracted negotiations over a new underground development at Oyu Tolgoi, (Mongolia's largest copper mine), cancellation of a Canadian firm's uranium mining license due to national security concerns, and exit bans enforced against three American and Filipino business executives who were accused, convicted and eventually pardoned of tax evasion. Similarly, a 2011 deal to mine Tavan Tolgoi, the country's largest coal mine, was rejected on national security grounds and subsequently granted to a new consortium of firms. That deal was cancelled in April 2015, and the government is now considering selling a portion of its stake in the mine.³¹

The costs of perceived expropriation may be direct or indirect. As mentioned earlier, an international arbitrator ordered the government to pay a uranium mining company \$104 million as a result of the revocation of its mining license. This direct cost represents a large opportunity cost to the government. The indirect costs may be larger but more difficult to quantify. As concern grew among foreign investors in 2012-13, foreign direct investment, which had been one of the drivers of Mongolia's double-digit growth, began to dry up. As discussed in the Section 3.1, Mongolia's macroeconomic position represents a binding constraint to growth, and the microeconomic issues identified in this section certainly contributed to it. Similarly, the re-tenders of two other prominent projects, Tavan Tolgoi and Combined Heat and Power Plant No. 5 (CHP5), which coincided with changes in government, in addition to a complete site change on the latter, have also proven costly to both the public and private sector.³²

Mongolia's current elected leaders acknowledge that these actions have provided a disincentive to investment, and the government has taken steps to modify many of them.³³ Parliament has passed transparency laws aimed at providing more timely information to the public about proposed laws and regulations. The government is considering privatizing or selling partial stakes in several SOEs.³⁴ The OT dispute was resolved in May 2015, and many speculate that it may revive foreign investment.³⁵ The business executives were pardoned by President Ts. Elbegdorj shortly after their conviction for tax evasion in 2015,³⁶ and Prime Minister Ch. Saikhanbileg has said that Mongolia will pay the \$104 million judgment from an international arbitrator related to the uranium mining case.³⁷

3. Health impacts of air pollution in Ulaanbaatar

Air pollution in UB, caused primarily by burning coal in household stoves, is a highly visible problem. During the coldest months, a coal-scented haze hangs over the city, and levels of nitrogen dioxide, sulfur dioxide, carbon dioxide and particle matter in the air are several times higher than the WHO's air quality standards. The population-weighted exposure in UB in 2008-09 was 427 $\mu\text{g}/\text{m}^3$ for coarse particulate matter (PM_{10}) and 260 $\mu\text{g}/\text{m}^3$ for fine particulate matter ($\text{PM}_{2.5}$).³⁸ The World Health Organization (WHO) standards are compared to 20 $\mu\text{g}/\text{m}^3$, and 10 $\mu\text{g}/\text{m}^3$ respectively. For comparison, Beijing's PM_{10} concentration is around 125 $\mu\text{g}/\text{m}^3$. Nearly 40% of PM_{10} and 60% of $\text{PM}_{2.5}$ emissions come from burning raw coal in ger areas, with additional emissions from coal-fired heat and power plants, vehicle exhaust, and dust from UB's relatively dry climate.³⁹

Studies have shown that air pollution is associated with lung cancer and cardiopulmonary deaths.⁴⁰ A 2013 study by Allen et al concluded that 29% of cardiopulmonary mortality and 40% of lung cancer deaths in UB are attributable to long-term exposure to outdoor air pollution, representing almost 10% of total mortality in UB. Because UB contains 45% of the population of Mongolia, it also represents about 4% of the total mortality for all of Mongolia, and it exceeds the number of deaths attributable to other factors, such as suicide, homicide and transportation accidents.⁴¹

A 2011 report by the World Bank estimated the economic impacts of air pollution range from 18-28% of UB's GDP and 8-13% of Mongolia's GDP. Although a single estimate of economic costs is difficult to pin down due to methodological differences in air pollution modeling and statistical value of life estimations, most of the costs result from increased hospitalization, cases of chronic bronchitis and lost productivity due to premature deaths. In addition, they observed that exposures to high levels of $\text{PM}_{2.5}$ and PM_{10} on certain days were estimated to increase daily hospital admissions for cardiovascular disease by around 9% over the normal level of hospitalizations.⁴²

Children under five years of age are especially susceptible to the effects of air pollution, as particulate can impair lung function and neurodevelopment and contribute to asthma.⁴³ According to WHO statistics, Mongolia's total number of deaths per capita attributable to ambient air pollution for children under five is several times higher than its comparators, although the per capita deaths attributable to ambient air pollution for the total population of Mongolia is not higher than comparators, perhaps due to the geographic concentrations of pollution in UB. Studies have shown that air pollution can have a deleterious developmental impact on cognitive deficits and delays in children information available for UB.⁴⁴

In addition to treatment costs and missed workdays due to illness, air pollution affects economic growth and investment by shortening lifespans and decreasing productivity. The WHO uses a statistic called the disability-adjusted life year (DALY), which is the number of years of life lost due to disability or premature death, to measure the burden of overall disease on a society. Each of these DALYs represents an additional year that could have been spent opening a business, working a job or investing in the local economy. In 2012, Mongolia's overall age-standardized DALYs per capita was higher than average among comparators, indicating a higher burden of disease. The highest percentage of Mongolia's DALYs came from non-communicable diseases (NCD), and Mongolia had the highest

NCD burden among its comparators.⁴⁵ Although NCDs encompass a wide range of diseases and causes, it is notable that Mongolia had higher DALY rates for cardiovascular disease, acute respiratory disease and throat and lung cancers than would be expected for a country with a similar GDP per capita.⁴⁶ Despite a lack of data on DALYs attributable to household air pollution, the DALYs per capita attributable to household air pollution was also higher than comparators. Together, these disease burden figures suggest a high burden of disease from air pollution in terms of lost productivity.

4. Limited and costly access to water in productive sectors and poor communities

Access to water and sanitation in Mongolia are both low for the region. According to the WHO and the United Nations Children's Emergency Fund (UNICEF), in 2015 64.4% of Mongolians had access to improved water sources and 59.7% to improved sanitation.⁴⁷ These figures have improved steadily in the past decade, but Mongolia is short of achieving key Millennium Development Goals,⁴⁸ and there are wealth disparities in access in addition to the regional disparities. Access to water in urban areas is below average for urban centers in comparator countries with 66% access to clean water, either via piped water or public wells, and the percentage is steadily declining as infrastructure struggles to keep pace with the rate of urbanization. Rural access is slightly lower, with just 59% of rural residents having access to improved water sources, although the percentage is rising. Access to improved sanitation facilities also has notable urban/rural and wealth disparity, with 69% of the urban population having access to improved sanitation as opposed to 39% of the rural population.⁴⁹ Only 19% of those in the poorest quintile enjoy access to clean water, compared to 99 percent of the wealthiest fifth.⁵⁰

The major water distribution utility in Mongolia is the Water Supply and Sewage Authority of Ulaanbaatar City (USUG), which provides water at a price of US\$ 0.28 per cubic meter (m³) for those connected to the network, one of the lowest prices in the region.⁵¹ However, these rates are subsidized, as the unit cost of water and wastewater is approximately US\$ 0.40/m³, which is average among comparators, and USUG reported US\$ 4.6 million losses in 2012.⁵² Approximately 29% of households were connected in 2011, connection charges increased from \$50 to \$333, and public water points declined from 47% to 39% from 2005-2011. Water and sewer service coverage declined approximately 10% from 75% in 2005 to approximately 67% in 2011.⁵³ Improvements to the network infrastructure have been almost entirely donor funded.

Households in ger districts, especially in UB, have no direct connections to the piped water network. More than 600 kiosks have been developed across the ger areas of UB, and over 80% are managed by USUG, with the balance managed by the private sector. For those without piped water, the costs are much higher. The World Bank reports ger district kiosks charge US\$ 0.71 per cubic meter, roughly 2.5 times the cost paid by apartment dwellers connected to the piped system. This is somewhat lessened by the fact that their consumption is around 5-10 liters/person/day, below the WHO-recommended level of 20 liters/person/day, leading to water costs encompassing only 3% of the average household budget in ger districts.⁵⁴ While bottled water use is not known, 43% of ger district households boil water before drinking.⁵⁵ Public bath houses of varying condition are also prevalent.⁵⁶ There are no sewers in ger areas, and most people use unventilated pit latrines, which contribute to localized water and soil pollution and associated odor and health issues. Improper disposal of waste

(grey water) to the soil via pit latrines and soak pits in ger areas results in high risk of nitrates and phosphates entering the ground water.

Although Mongolia's water-related disease footprint is low for the region, ger district residents face higher disease risks due to water and sanitation issues. A 2012-13 analysis of water quality in ger areas found that 36% of household storage containers were contaminated by *E. coli* in the winter, which rose to 56% during the summer.⁵⁷ Rates of Hepatitis A, a water borne disease, is seven times greater in UB than the global average.⁵⁸ The under 5 mortality rate is 2.5 times greater in the poorest households than in the richest,⁵⁹ and the rate of stunting in rural areas is 20%, almost double that of urban areas⁶⁰.

The distance to the nearest water source also imposes a time cost on households, with 17.3% of Mongolians spending 30 minutes or more collecting water.⁶¹ This cost is higher in rural regions, where 16% of the rural population spends more than 30 minutes collecting water from an improved source and 19.8% from an unimproved source.⁶² A 2006 study found that water collection times ranged from 18 minutes to 40 minutes due to the distance to the wells. "Urban residents spent 36 minutes per round trip on average...largely because they were forced to wait in lines at tap stands." Due to the size of storage containers and the frequency of collection by hand, most families require several trips per week; sometimes households collect daily. In urban areas, "men represent the majority in all forms of water collection. Rural Mongolian men are significantly involved in water collection...but when it comes to water collection by hand or hand cart, rural women share this task. Similar to global data, as technological requirements for collecting water increase, men ...are more often involved in water collection. This is likely due to the use of motorcycles and animals being considered a male responsibility."⁶³

The issue of water access is exacerbated by underlying water scarcity issues, driven by an uneven natural distribution of water resources and a semi-arid climate. While Mongolia's total water resources are in line with comparators, 76% of the surface area contains only 36% of all water resources, and one-third of Mongolia's provinces fall below the 600 m³ per capita that defines water scarcity.⁶⁴

Although Mongolian businesses presently report few water shortages,⁶⁵ there have been warnings both by USUG and independent studies that given current consumption rates, UB will begin suffering water shortages in 2020.^{66,67} Indeed, USUG reported that they will begin to draw surface water, in addition to ground water, for the first time this year. However, this is complicated by ineffective wastewater treatment, under-enforcement of industrial effluent standards, and seasonal variation that reduces groundwater levels in the spring. In the South Gobi, where water is scarcer and several large mines operate, a recent Asian Development Bank (ADB) report concluded that there was no immediate water shortage in the aggregate. However, it noted that the pumping of groundwater could create water conflicts by decreasing the amount of water available for local agriculture and increasing the risk of desertification.⁶⁸ Even so, the shortage of water may limit Mongolia's ability to process or exploit its mineral wealth. As an example, the planned Industrial Park at Sainshand has been stalled due to insufficient access to water for minerals processing.

Other constraints considered

The following sectors were not deemed to be binding constraints, but the team recognized significant challenges in each:

5. Education

Mongolia ranks in the middle of its comparator countries on the UNDP's Education Index and has relatively high levels of primary, secondary and tertiary enrollment and attainment. However, returns to education are below the global average, showing that employers are not paying a premium to recruit educated workers. This could either indicate that educated workers are not in high demand, or that people with degrees from Mongolian universities are not in high demand (signaling a quality constraint). There seems to be little difference in unemployment rates among people with different levels of education, with the exception of post-graduate education, where unemployment is much lower, and certain gender-based differences. Despite having higher rates of educational completion at primary, secondary and tertiary levels, across all women have lower labor force participation rates. Female unemployment rates are higher than those of males, with the problem most significant among the opposing spectrums of those with either no education or the highly educated. Although international education assessments indicate Mongolia's human capital is competitive, the number of firms offering formal training for their employees is higher in Mongolia than most comparators. Some firms may be trying to circumvent the constraint by bringing in foreign workers with the necessary skills. However, Mongolia has a negative net migration rate, and a higher number of Mongolians go abroad for tertiary education than the number of foreign professionals entering Mongolia.

6. Finance

In Mongolia, banks pay high real deposit interest rates to acquire funds, and Mongolian firms often need government guarantees to access international bond markets. Mongolia also has a low sovereign credit rating, reflecting a higher cost of borrowing, and the stock market is underdeveloped. Despite these challenges, bank assets and liquidity are relatively high, and Mongolia's level of borrowing from international markets is near the cross-country average. However, it is noted that a high interest rate on foreign currency loans, adjusted for inflation, may cause burden on firms and companies that require large loans, such as construction or mining exploration firms.

7. Energy

Mongolia's electricity consumption per capita is slightly above average for a country with Mongolia's GDP per capita and growing, although the quality of the aging electricity infrastructure is below average. The cost of electricity per kWh, including subsidies, is similar to neighbors, and the electricity tariff for economic entities, adjusted for inflation, has remained flat since 2007. The average hours of power outages per month is slightly above comparators, although the losses (as a % of sales) due to electrical outages is slightly below average. The percent of Mongolian firms owning or sharing a generator is near the average among comparators, although they used them more intensively. Most importantly, electricity production has expanded over the years to meet growing demand, with only a small percentage of imports to cover periods of peak demand. Coal is subsidized, leading to a

widespread use in ger stoves and a large negative externality in the form of air pollution and its associated health constraint.

8. Transport

Mongolia has improved its roads dramatically since 2010, with the total length (km) of improved roads increasing 40% and the percent of improved roads with a hard cover rising from 45% to 69%. A 2013 enterprise survey reported a relatively high proportion of products lost due to breakage or spoilage during shipping, although the percent of firms that identified transportation as a major constraint was about average for among comparators. Interestingly, exporters and foreign firms are more likely to identify transportation as a major obstacle to their business, but non-exporters and domestic firms report higher levels of breakage and spoilage. This suggests that the infrastructure problems lie away from the export corridors. Mining companies in the south are constructing their own private roads and rails, and the rail network may pose a constraint to mining sector operations, which typically prefer rail for efficient transport of bulk materials.

9. Property Rights

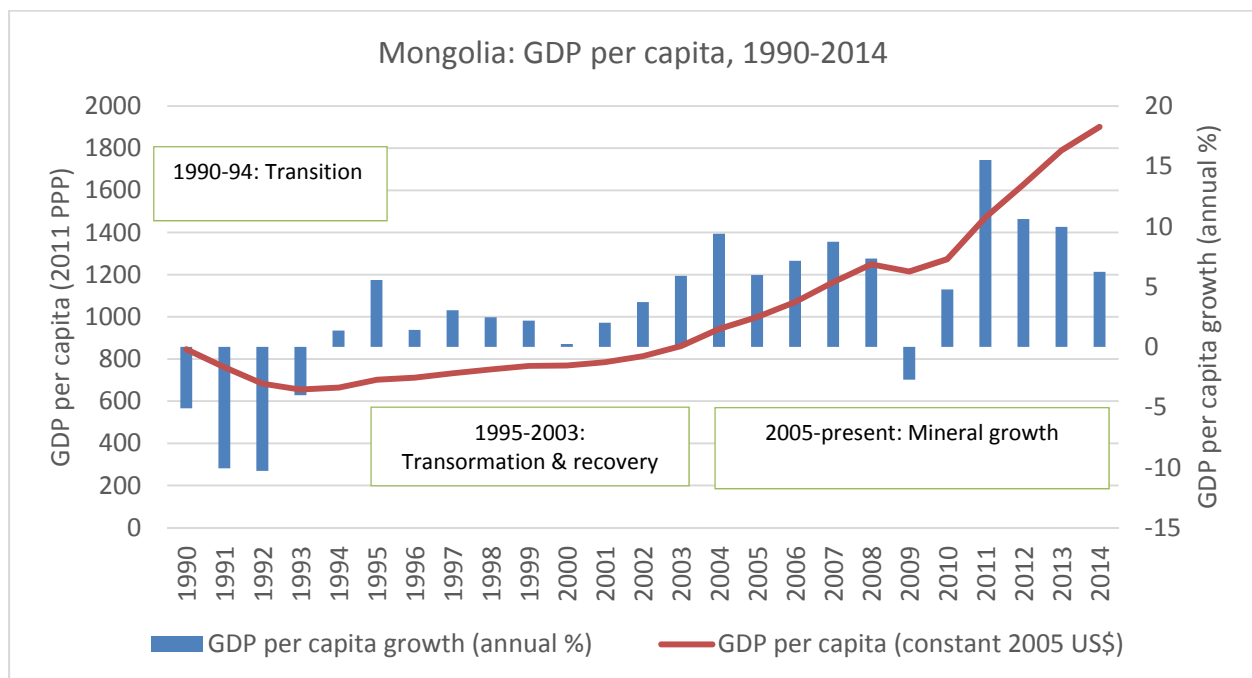
Mongolia's property rights and land policies contribute to a variety of social and economic problems, including the cost of finance, land degradation and the concentration of poverty in ger districts. In UB, urban planning regulations and approaches are outdated and contribute to sprawl, land market distortions and the growth of large low-density ger districts. Land policies have contributed to the cost of finance due to collateral requirements, and poor land management in rural areas has contributed to overgrazing, land degradation and water scarcity. Despite these challenges, Mongolia is similar to its peers in terms of property rights protections, according to several international property rights benchmarks, and growth has been strong in land-intensive sectors, such as mining, construction and real estate.

2. Background

Macroeconomic context

Mongolia has a unique history and it is important to understand the socio-economic background of the country to identify challenges and opportunities it faces. Since early 1990's Mongolia has made a political and economic transition from a one-party political system to a free, democratic system, and from a planned economy to a private sector-led, market economy. Mongolia's economic transition has been viewed as quite successful compared to most other countries that were in similar circumstances.⁶⁹ The transition period Mongolia has experienced can be divided into three distinctive phases (Figure 1).

Figure 1. Mongolia's economic growth history



Source: World Development Indicators, 2015

The initial transition phase occurred between 1990 and 1994. During this period, the country shifted from a socialist regime with a centrally planned economy toward a democratic multi-party system and market economy. As almost all imports (which composed the major part of total consumption), and aid and loans from Russia stopped, the economy experienced commodity shortage, deteriorating foreign investment and a large budget deficit. The economic structure collapsed almost entirely, as the economy disintegrated from regional economic links. Mongolia experienced a period of adjustment that saw living standards fall. Unemployment reached an historical high of 9% in 1994 and inflation skyrocketed to triple digits as high as 325.5% in 1992. The GDP of the country declined from MNT 2.2 trillion in 1990 to MNT 1.8 trillion in 1993 (in 2005 prices) with GDP growth averaging -4.4%

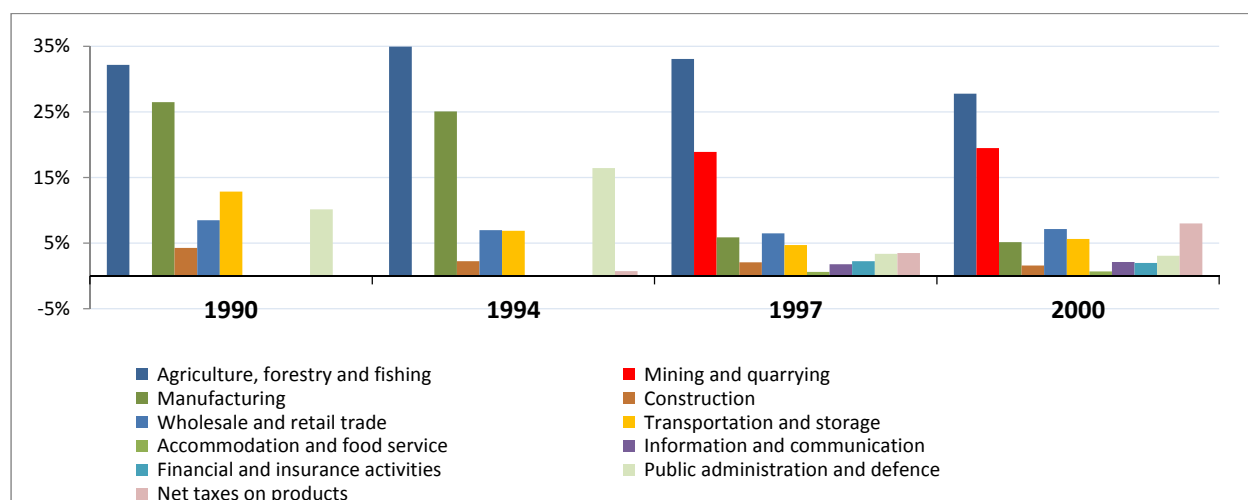
through 1994.⁷⁰ GDP per capita decreased from MNT 1,047.5 thousands in 1990 to the historic low level of MNT 825.3 thousands in 1993 (2005 prices).⁷¹

However, the government of Mongolia liberated most prices and privatized state owned small- and medium-scale enterprises as well as restructured political institutions to implement structural reforms in the economy. In order to accelerate the initial transition while minimizing disruptions, the government shifted to a floating exchange rate and opened up borders accompanied by easing passport issuance for citizens. A two-tier banking system that consisted of the central bank (Bank of Mongolia) and commercial banks was established to promote market economy functions.

During the second phase between 1995 and 2003, the government implemented a structural reform program under the guidance of the IMF and the World Bank. Private sector development took off as the financial system started to function in a more competitive market environment. In the initial stages of privatization, the secondary capital market started to develop in mid-1990s, and stocks of listed public companies began to be freely traded at the Mongolian Stock Exchange (MSE). The commodity shortage was eliminated lowering of non-tariff barriers, breaking the state monopoly on trade, and later accession to the World Trade Organization in 1997. Businesses began to expand, but many privatized factories could not survive in a competitive environment given their inefficiency resulting from big size, outdated technology and equipment, and poor managerial skills. Some banks also went bankrupt due to their poorly managed loan disbursement and weak liquidity position. Thus, the central bank implemented stricter regulations to ensure acceptable prudential conditions. The Government's policy to welcome foreign investment in mining in the late 1990s contributed to the development of the mineral sector, with 31% of all FDI as of 2001.⁷²

Since 1995, the economy began a period of slow, steady growth, finally recovering to 1990 GDP per capita levels in 2003. Mongolia's economic structure started transforming so that a number of economic activities took shape in the economy. The service sector began expanding, triggered by wholesale and retail trade, followed by transportation and storage. The mining industry started taking off in 1995, accounting for 18% of GDP, while the manufacturing sector shrunk to 5% from 26%. Throughout the transition, the agriculture sector was dominant with an average share of 33%, followed by manufacturing (15.1%), mining (10.3%), trade (6.7%) and transportation (7.0%) as shown in Figure 2.

Figure 2. GDP by divisions (1990, 1994, 1997 and 2000)

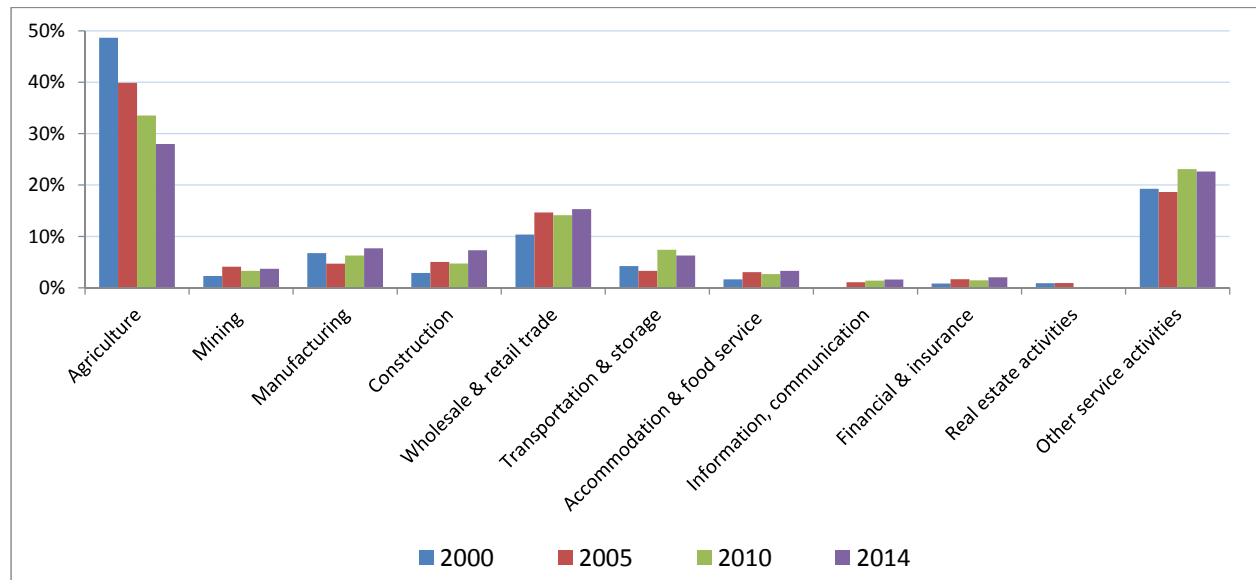


Source: National Statistical Office (2015), *Gross Domestic Products, by divisions 1990-2014*

The third phase consisted of years of mostly high economic growth between 2005 and 2014, with the mining sector booming due to favorable global mineral prices, a drastic increase in foreign direct investment and the start of major mining projects in Southern Gobi, such as Oyu Tolgoi copper-gold mine. During the first decade of the 2000s, Mongolia's economy was growing at an average annual rate of 6%. The mining sector's share of GDP increased substantially, and mining accounted for 89% of total exports and two-thirds of tax revenue. Aside from the mining industry, other important sectors were agriculture, trade and service and construction.

An average rate of the labor force participation was at 63.2% annually while unemployment rate was averaging 4.3% per annum. The agriculture sector employed 41% of the labor force on average, while trading and other sectors were each hiring 14% and 20%.⁷³ However, agriculture sector output was severely hit by harsh winter conditions, referred to in Mongolian as a *dzud*, in 2001 and 2009, and 14% and 26% of the total livestock were lost, respectively. Due to these large losses in livestock, poverty headcount in countryside reached 42.7% in 2003 and 56.1% in 2010.⁷⁴ People who lost the livelihood in rural areas because of dzud migrated to urban areas for better economic opportunities. As a result, the workforce employed by the agricultural sector decreased from 49% of total employment in 2000 to 28% in 2014 while the service sector employment increased relatively (Figure 3).

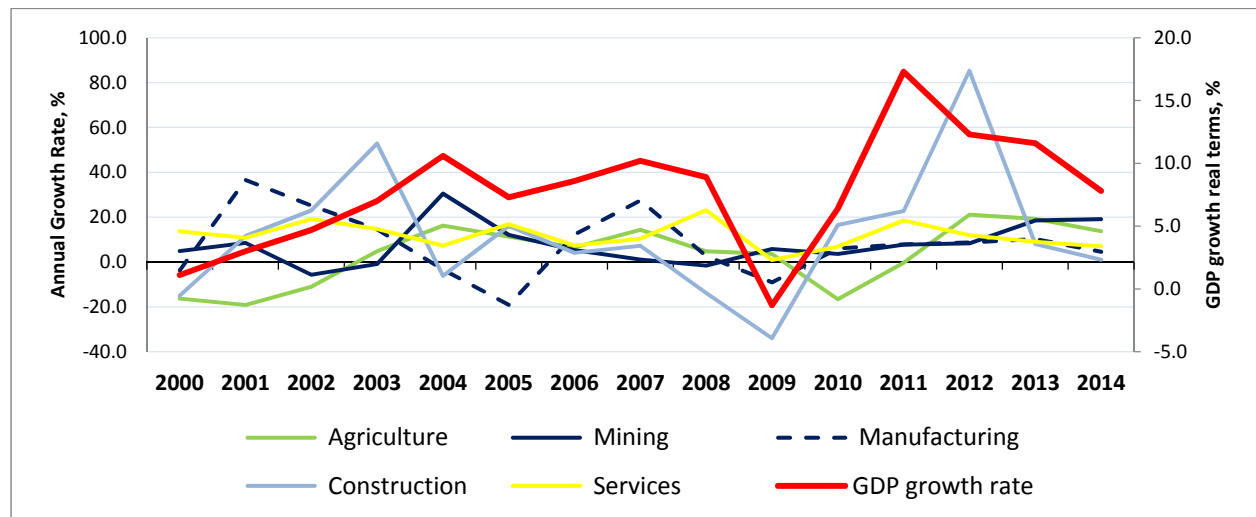
Figure 3. Employment by sectors, (2000, 2005, 2010 and 2014)



Source: National Statistical Office (2015), Employees population aged 15 and over, by divisions 2000-2014.

With the development of Oyu Tolgoi (OT) and other mining projects such as coal and gold, Mongolia’s economic growth significantly accelerated and was boosted by global commodity price appreciation. The average growth rate averaged at 11.1% per annum between 2010 and 2014 and reached to its record-high level at 17.3% in 2011, fueled by the foreign direct investment that spiked to 45% of GDP (Figure 4).

Figure 4. Growth Rates: Selected sectors and GDP real terms, 2000-2014



Source: National Statistical Office (2015), Gross Domestic Products, by divisions 1990-2014.

As a result, the growth pushed Mongolia into the World Bank’s upper middle income (UMIC) classification in 2015 as the GDP estimated \$12 billion and GNI per capita to \$4,320. However,

economic growth began to slow in 2012 due to a combination of slower growth in China, lower global mineral prices and a decline in foreign direct investment.

Mongolia's mining boom also fueled another boom in domestic construction sector as investors sought opportunities to reinvest profits from the minerals sector. Since 2011, real estate developments have been boosted by rapid growth in the mineral exploitation, affected by the FDI flows and expansionary business activities. Construction sector growth reached to the peak of 85.3% in 2012. A number of new speculative commercial and residential buildings have been supplied to the market and created oversupply.

Moreover, during years when minerals prices were high, Mongolia's government borrowed substantially from international markets, with external debt totaling 54.9% of GDP in 2014. The economic slowdown has created a budget deficit equal to 11% of GDP with debt service looming in 2017.

According to the World Bank projections as of December 2015, growth is expected to slow to 2.3 percent in 2015, further downward to 0.8 in 2016 before recovering to 3.0 from 2017 and 6.4 in 2018.⁷⁵ Although mining GDP growth will likely remain in double digits in 2015, non-mining GDP growth is expected to further slow in the second half as investment and consumption demand remains subdued and FDI stays weak as it has been since 2012. A continued drop in mineral exports due to lower global commodity prices is expected to substantially increase the deficit in the current account in the next couple of years. Causing further external vulnerability is the first large repayment of public external debt in 2017 amounting to around US\$ 1,080 million, which is expected to pose significant challenges to the fiscal and external accounts, unless the Government succeeds in mobilizing further external financing.

Productive Sector Analysis

Based on available data on GDP segmentation, contribution to employment, and level of exports, the agriculture and mining sectors are the backbones of Mongolia's economy. Due to a size of population, country's internal growth opportunity is limited. However, its geographical location, landlocked between China and Russia, facilitates access two enormous markets which provides a vast growth opportunity via export. Since Mongolia has vast untapped land and a sorts of cosmopolites and plants, the country can benefit from a development of value added cosmetic and biological add-on products which can become a prospective export oriented growth industry. As Mongolia is strategically located close to the highly developed countries such as South Korea, Japan, and other Asian countries with high purchasing power, the country can potentially be trading partners for sustainable and organic products.

An analysis of Mongolia's productive sectors has identified several key obstacles to private investment in growth sectors, shown in Figure 5.

Figure 5. Key obstacles to private investment in growth sectors

Sector/ Industry	Infrastructure			Policy/ Enabling Environ.	Land Rights	Corporate Governance	Inputs/Sup ply Chain	Access to Finance	Labor Capacity	Worker Health	Environ/Soci al Risks
	Energy	Water	Transport								
Agriculture											
Crop			Transport cost/access to market	Phytosanitary constraints			Supply chain inefficiency, weak marketing				Weather shocks, climate change
Livestock		Water Tenure Rights		Low animal and feed research, vet and breeding services	Pasture Tenure Right		Insufficient feed production	Financial risk (balance between costs of production and sales income)			Environmental risk (weather and climate factors)
Food & Beverages											

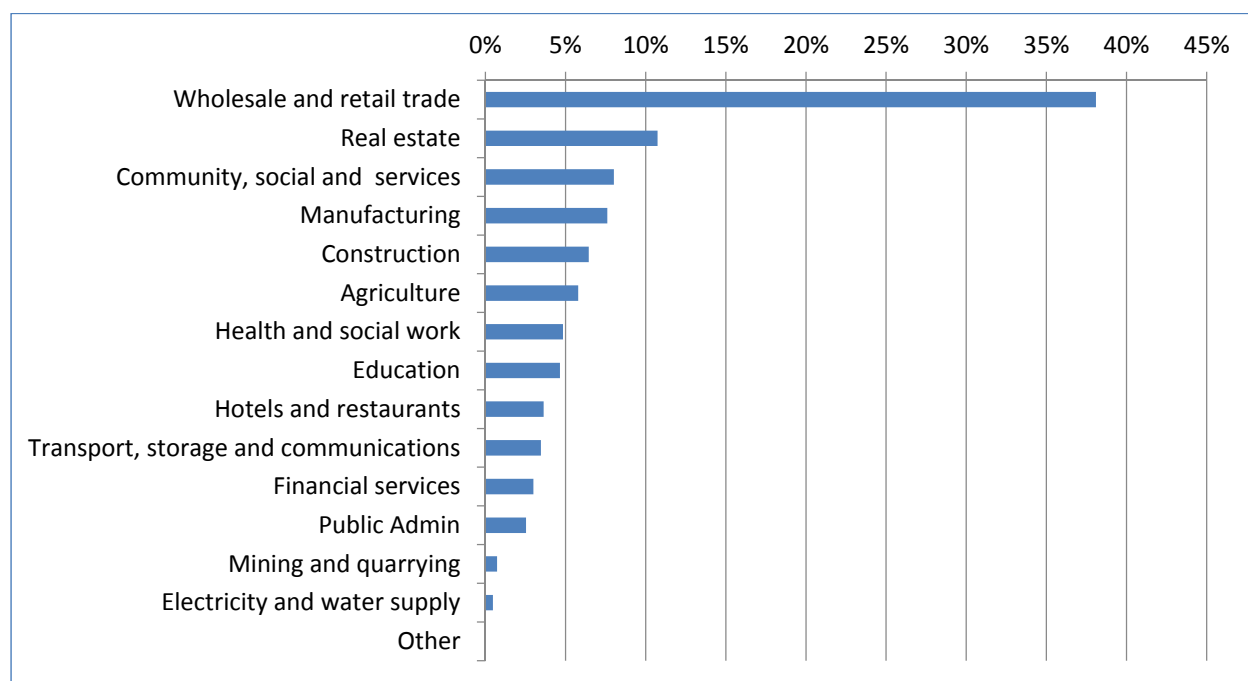
Source: Authors' analysis

The government has identified the following as its primary sources of competitive advantage:

- Undeveloped productive land
- Livestock volume and know-how
- Physical proximity to large markets
- Improvement on doing business indicators
- High literacy level
- Homogeneous society

According to the National Statistics Office, in 2014, over 35% of active enterprises were in trading sectors (Figure 6). Most agricultural activity is performed at a household level; active enterprises in agriculture amount to just over 5%, but it accounts for the highest sector by employment, employing over 300,000 people. In contrast, mining employs just over 50,000 people, but represents the largest share of GDP (about 18%). The construction sector is the fastest growing sector.

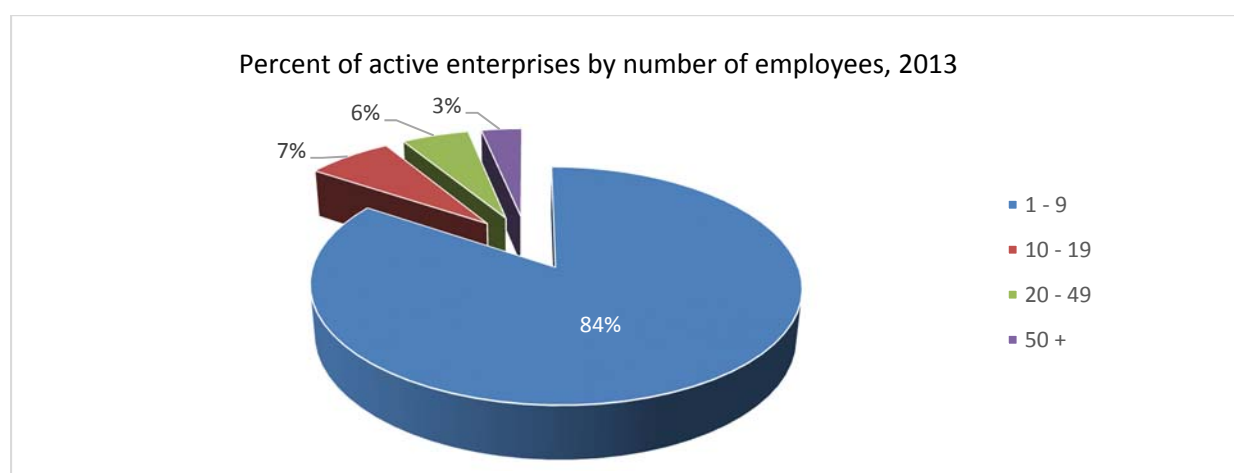
Figure 6. Active enterprises by sector, 2014



Source: National Statistical Office, Number of active establishments, by divisions of economic activities (2015)

As of 2013, more than 53,000 small and medium enterprises (SMEs) were active in Mongolia, representing 97% of all enterprises (Figure 7). 61% of employees operated in rural areas. However, there has been a notable decline employment in rural areas since 2012. Growth rates in the number of enterprises in both rural and urban areas are similar. While data on women-owned enterprises is not systematically collected, they are estimated to comprise up to 60% of microenterprises and SMEs. Women owned businesses tend to be smaller, have lower turnover and fewer employees.⁷⁶

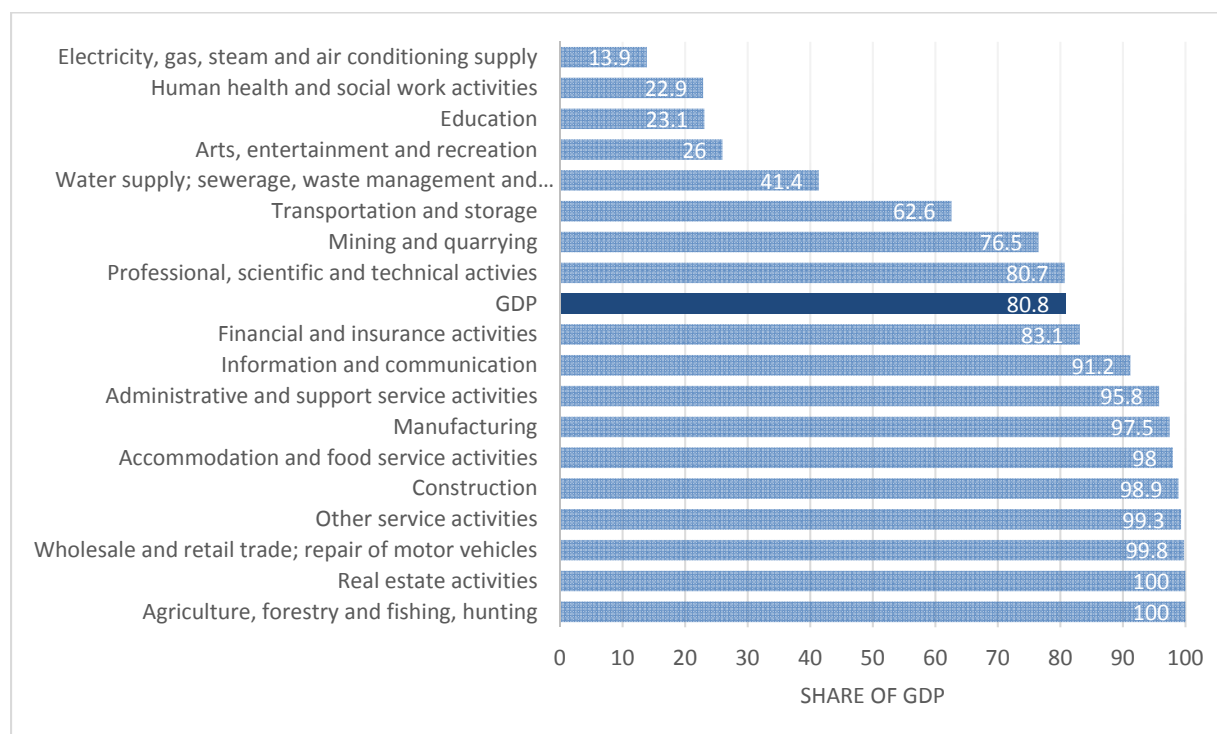
Figure 7. Active enterprises by firm size, 2013



Source: National Statistical Office, Number of Active Establishments, by employment size class (2015)

Since the transition to a market economy in the early 1990s, the private sector's share of the economy has grown. Although certain sectors remain dominated by the government, namely water (41% private), arts (26% private), education (23% private), health (23% private), and electricity (14% private), private sector value added accounts for 81 percent of GDP (Figure 8).

Figure 8. Private sector value added by sector, 2015

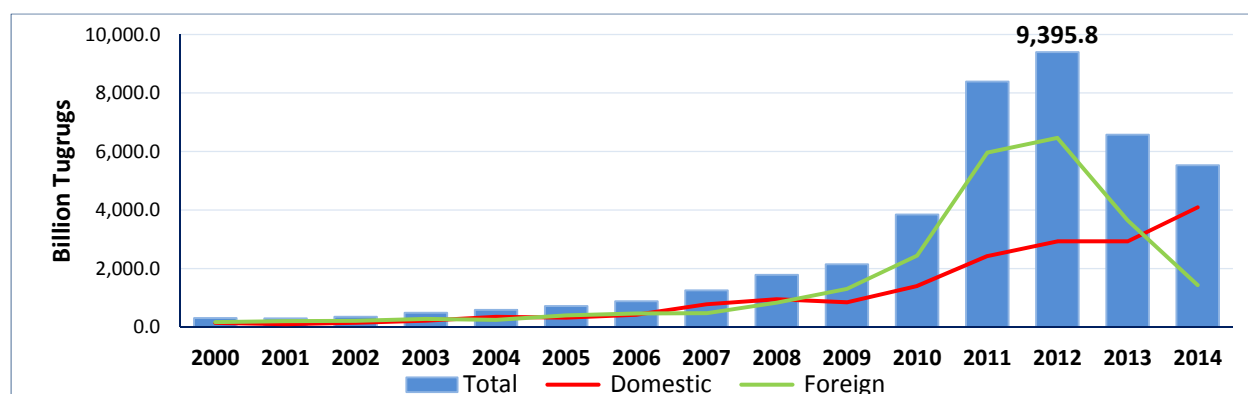


Source: National Statistical Office, Private sector value added share to GDP, by divisions (2015)

Foreign Investment

Since early 2000s until 2015, a value of Mongolia's total investment increased eighteen-fold from MNT 0.3 trillion to 5.5 trillion (Figure 9). In 2012, the total investment reached to its peak of MNT 9.4 trillion where foreign direct investment (FDI) was 69% of total investments or MNT 6.5 trillion (50% of GDP) while domestic investment accounted for 31% of total investment, which was MNT 2.9 trillion or equal with 22.8% of GDP. Since 2012, FDI was significantly decreasing from 50.3 to 9.3% in terms of a percentage in GDP while domestic investment was increasing from 20 to 26%.

Figure 9. Investment by financial sources, 2000-2014

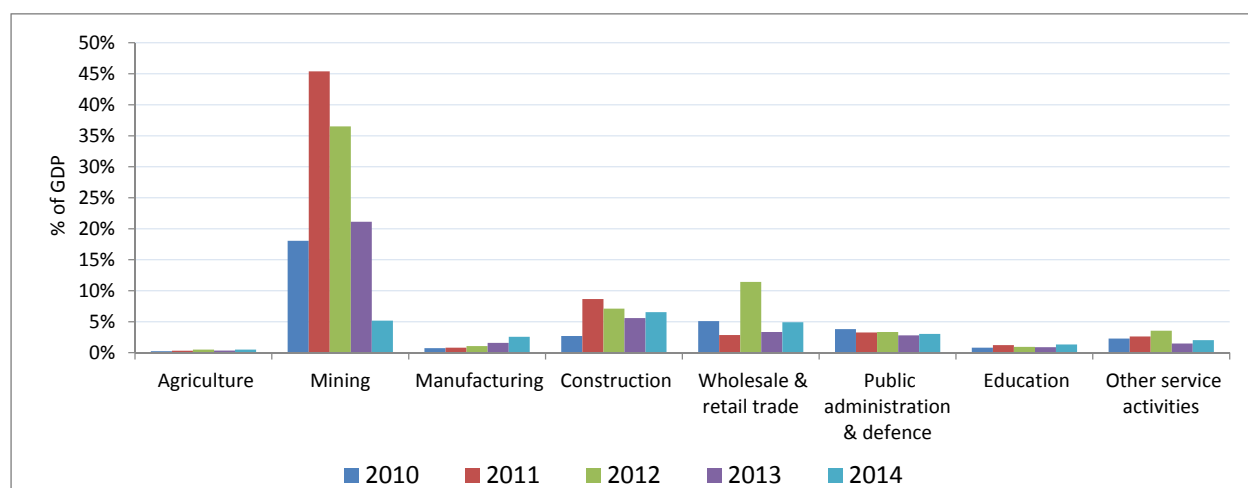


Source: National Statistical Office (2015), Investment by financial sources 2000-2014.

Between 2010 and 2013, gross fixed capital formation doubled, from MNT 3.4 to 7.5 trillion at current prices, and fixed assets accounts for 96.4% while the rest accounts for the intellectual property products. As of 2013, 1.8% of fixed assets accounted for dwellings while 46.0% for other buildings and structures, 40.7% for machinery and equipment, and 11.4% for cultivated biological resources in terms of classification for fixed capital formation. During the period, a capital formation of other building and structures increased from MNT 882 million to MNT 3.3 trillion by 279% while machinery and equipment formation increased by 68% from 1.7 trillion to MNT 3 trillion.

Between 2010 and 2014, the mining sector accounted for the largest share of foreign direct investment followed by construction, trade, information and technology sectors, among others. In 2011, 61.9% of total investments directed mining sector alone, 11.8% for construction while 11.7% accounted for the cumulative sum of trade, transportation and public administration investments (Figure 10). The rest of the total investment (14.4%) accounted for other sector investments including manufacturing and agriculture sectors.

Figure 10. Investment by sectors, 2000-2014



Source: National Statistical Office (2015), Investment, by divisions 2009-2014.

Since 2011, the mining and construction sector investment is in descending trend in terms of a percentage of GDP while manufacturing and agriculture sector investment is in upward trend. The agriculture sector investment is growing slowly for the last five years. The composition of financing sources for investment since 2010 shows that Mongolia's investment heavily depends on FDI, and a sharp drop in foreign investment has dampened fixed investment since 2013. FDI financed 65 percent of gross investment in Mongolia on average in 2011-12, accounting for around 40 percent of GDP.⁷⁷ With the end of the first phase of the Oyu Tolgoi mining project, FDI-financed investment, dropped to 17 percent of GDP in 2013 and further declined to only 4 percent of GDP in 2014.

As of 2014, the state budget investment was MNT 1.0 trillion, 12.8% of GDP while local budget investment was MNT 508 million which is 3.9% of GDP.⁷⁸ Between 2011 and 2014, the state budget investment ranged between MNT 0.9 to 1.0 trillion where the weight in GDP, as a % of GDP, varied between 6 and 9%. In the same period, a weight of the local budget investment in GDP increased from two to 3% where the total value increased from MNT 176 to 508 million by 189%.

Public Private Partnership (PPP) is an increasingly common means to mobilize foreign investment for infrastructure development. In Mongolia, a Law on Concessions was introduced in 2010 and a PPP Unit was established in the State Property Committee and donor-funded training was provided. The PPP Unit shortly after was shifted to the Ministry of Economic Development (MED) and then to the Ministry of Industry in 2014 when the MED was dissolved. At present, several Ministries and UB City maintain PPP Units, with varying levels of experience. The Office of the Prime Minister hosts InvestMongolia, an investment promotion and investment agency that also pursues PPP. The UB City government established the UB City Development Corporation, an investment promotion and investment agency that also pursues PPP. The Cabinet established Erdenes Mongol as an investment holding company that also pursues PPP. Completed transactions have been few. Perhaps most notably, an on-grid wind farm structured as a PPP successfully reached financial close in 2013, but later suffered payment problems. Negotiations for Combined Heat and Power Plant #5 (CHP5) were successfully concluded in 2014 pursuant to public tender as a build-operate-transfer (BOT), but the project has not yet achieved financial close. A BOT for the Central Wastewater Treatment Plant in UB was solicited by InvestMongolia in 2016, but canceled the same year.

The Integrated Budget Law of 2011 strengthened the PPP framework by requiring concession projects to be listed on the budget, along with information on government guarantees and contingent liabilities. It also assigned responsibility to the Ministry of Finance (MoF) for decisions on financing mechanisms and assessment of fiscal risks related to PPPs. However, these requirements have not been consistently implemented, and PPP selection is not fully integrated into public investment planning. According to a European Bank for Reconstruction and Development (EBRD)-sponsored Assessment of the Quality of the PPP Legislation and of the Effectiveness of its Implementation dated 2011, Mongolia was given an overall score of 82% equating to "high compliance/effectiveness". According to the EIU's 2014 Infrascope for Asia, Mongolia was ranked #15 out of 21 Asian countries and classified as "Emerging" with respect to its environment for public private partnership (PPP). It scored higher

than in 2011, but its rank remained unchanged. The report measures the legal and regulatory framework (25%), the institutional framework (20%), operational maturity (15%), investment climate (15%), financial facilities (15%), and a sub-national adjustment factor (10%). Mongolia ranked lowest in the areas of financial facilities and operational maturity. Implementation of project selection and monitoring requirements has been hampered by a lack of skills, manpower and cross-ministerial coordination, as well as frequent institutional changes.

Foreign Trade

Since its accession to the World Trade Organization (WTO), Mongolia has embraced the open and liberal trade policy and bound all its tariffs, most of them at 20%, although the applied rate is, in most cases, much lower. The trade deficit has repeatedly hit new highs over the past several years as imports have surged before the most recent economic slowdown in 2014 and early 2015. In 2012 and 2013, the trade deficit widened to over US\$ 2 billion up from US\$ 0.3 billion in 2010. Exports, consisting mostly of mineral resources and agricultural products, reached US\$ 4.3 billion in 2013, which is four times higher than the 2005 level. However, imports increased 5.3 times since 2005 and thereby resulted in an increased trade balance deficit. Compared with the 2005 level, the trade deficit reached US\$ 2.1 billion, which is 18 times higher than in 2005.

At the end of 2014, the total cumulative trade turnover increased by 3.6% (US\$ 384.3 million) from the previous year and reached US\$ 11,011.2 million. The increase in the trade turnover was due to the increase in exports by US\$ 1,505.5 million.⁷⁹ In 2014, Mongolia traded with more than 130 countries. The structure of the trade flows with the neighboring trade partners is as following: (i) trade with China: 61.8% or US\$ 6.7 billion and (ii) trade with Russia: 14.6% or US\$ 1.6 billion. The trade volume between Mongolia and China increased by 23.9% and the trade volume between Mongolia while Russia decreased by 0.8%.

Mongolia's exports remain heavily concentrated in a few items; the share of mineral exports in total exports increased by 0.4 percentage points from that of the previous year and reached 89% at the end 2014. Exports of coal, copper concentrate, iron ore and concentrate and crude oil account for nearly 78% of total exports and 88% of mining exports. In addition, these four products' share in mining exports increased by 2.1 percentage points from that of the previous year, and their share of total exports increased by 2.2 points. According to Mongolia's Foreign Trade Overview prepared by Bank of Mongolia, as of Nov 2015 the total cumulative trade turnover decreased by 22.8% (US\$ 2,285.0 million) from that of the previous year and reached US\$ 7,737.5 million. The decrease in the trade turnover was mainly due to the decrease in imports by US\$ 1,337.5 million. During the 11 months of 2015, even though the total exports decreased by 18.3% from that of the previous year, imports decreased by 27.7% from that of the previous year, thus the trade balance improved by US\$ 390.0 million.⁸⁰

Demography

The population of Mongolia reached three million in January 2015, following a constant growth rate of around 1.8% annually in the previous years.⁸¹ The crude birth rate once stood at a peak of 44 in

1970, but it declined to 22.9 in 2012 while the life expectancy rose from the 1970 level of 55.4 years to 67.3 as of 2012.⁸² The total fertility rate was 2.6 births per woman in 2011, which is a sharp decline from 7.5 from the 1970s. The high fertility rate of 1970s was itself the result of the government policies to support population growth. During the transition from early 1990s, the birth and fertility rates declined and picked up again in late 2000s. Between 2011 and 2014, the fertility rate increased again to 3.1.⁸³ For the population age structure, the group of 15-64 years is the highest or 69% of the total population, followed by 27.3% for 0-14 years and 3.7% for 65 and above.⁸⁴ Accordingly, as of 2014, the age dependency ratio was 47 dependents per 100 working age population.

Urbanization is taking place at a rapid pace. As of 2010, 45% of the population is concentrated in Ulaanbaatar, and another 8.9% resides in the other large cities of Erdenet and Darkhan.⁸⁵ There is a high level of poverty in rural areas, triggered by harsh winters that affect herders' livelihood, is a driving force for the rapid urbanization. Since 2000, the population in other regions dropped simultaneously while the population in Ulaanbaatar keeps increasing. During the national census of 2010, over 107,000 individuals were living abroad while 16,000 foreign citizens were residing in Mongolia for over six months of period⁸⁶ with a net migration of -15,000.⁸⁷

With respect to the labor force participation rate, there were 43,600 registered unemployed people as of September 2015 and 24,200 of whom were women. Of the registered unemployed people 46.6% have had secondary education, 29.7% have had tertiary education with a bachelor's degree, 7.1% have had technical or vocational education, 6.2% with pre-school education, 6.1% with secondary education in vocational training, 2.2% with primary education, 1.1% with no education and remaining 1.0% with postgraduate education.⁸⁸ It remains one of the main concerns that 64.2 percent of registered unemployed people at national level are youth aged 15-34. Despite higher rates of educational achievement across the spectrum of educational levels, women have lower labor force participation rates, and their participation rate has experienced a slight decline in the most recent time period for which data is available.⁸⁹ Women are less likely to face unemployment at primary, secondary, and initial technical vocational levels but more likely at higher levels of education including the high school, technical and tertiary levels. Particularly in the latter, differences are pronounced, with 32% of unemployed women holding BAs relative to only 18.8% of men with the same degree of educational attainment.⁹⁰

The legal basis for the protection of disadvantaged groups is relatively strong across Mongolian legislation. With regards to international legislation, Mongolia is signatory to all the major instruments relevant to internal migrants, gender equality and women's rights, the rights of the elderly, people with disabilities and children. However, the Expert Evaluation of Conformity of Mongolian Legislation with International Human Rights Treaties in 2011 rated the nation's compliance with these laws as medium, highlighting the need for greater efforts to domesticate national laws protecting the vulnerable.

Poverty

As Mongolia has seen rapid economic growth, it has made significant progress in reducing poverty, partly due to the policies to expanding social welfare, labor markets, food supply and maternal and child health.⁹¹ According to the Household Income Expenditure and Living Standards Survey, by the National Statistics Office and World Bank, the poverty rate dropped from 38.8% in 2010 to 21.6% in 2014, representing a 5.8 percentage point decline in poverty⁹² but still short of the rate of 18% aspired to under the Millennium Development Goals. (Table 1)

Table 1. Poverty Headcount, 2010-2014

	2010	2011	2012	2014
National Poverty Line (MNT, per person per month)	92,072	99,729	118,490	146,650
Poverty Rate (percent)				
National Average	38.8	33.7	27.4	21.6
Urban	33.2	28.7	23.3	18.8
Rural	49.0	43.2	35.4	26.4
Region				
Western	52.7	40.5	32.3	26.0
Northern	51.9	49.1	38.5	25.3
Central	29.9	28.1	28.2	22.2
Eastern	42.3	40	33.4	31.4
Ulaanbaatar	31.2	25.8	19.9	16.4
Location				
Ulaanbaatar	31.2	25.8	19.9	16.4
Aimag centers	37.3	34.6	30.4	23.8
Soum centers	39.7	35.8	27.5	24.7
Countryside	56.1	47.2	39.6	27.9

Source: World Bank staff estimates

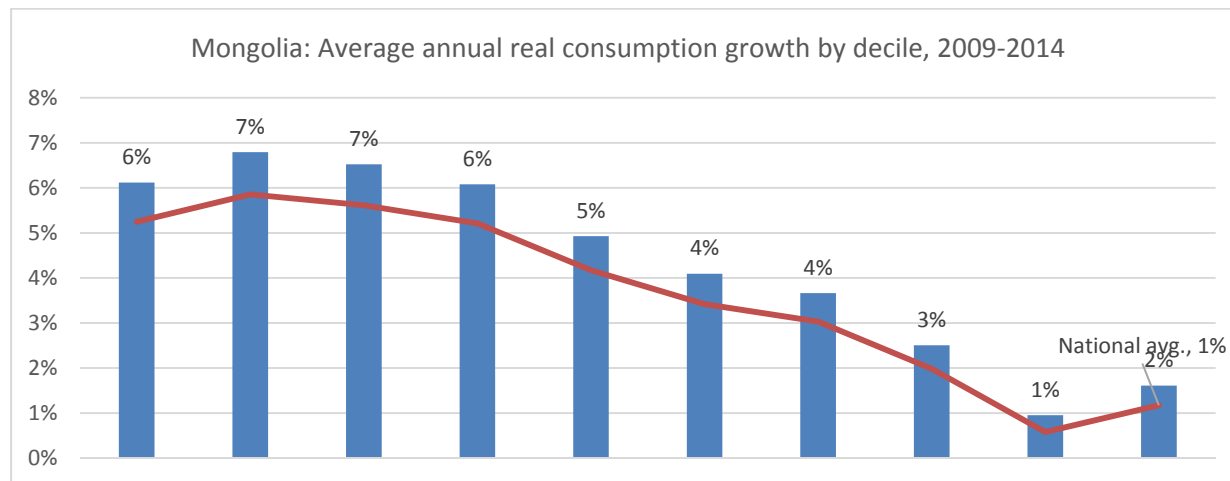
Still, poverty is widespread in the rural areas compared with urban and varies across different regions. In 2010, the western and northern regions had the highest poverty level while central regional and Ulaanbaatar had the lowest rates. Rural residents were poorer than urban people, at 56.1%, in 2010, which dropped drastically to 27.9% in 2014 owing to the increased income from livestock. However, the highland region experienced the sharpest decline in poverty (13.2 percentage points) while Ulaanbaatar had the slowest decline, at just 3.5 percentage points. While there is a promising trend of poverty reduction, many of those lifted from poverty remain close to the poverty line, implying their vulnerability to negative economic shocks. The most vulnerable include households where the head of household is unemployed, has an education that does not exceed the primary level, is a herder, or in Ulaanbaatar, where the household head is a woman.⁹³ Other factors include families with fewer livestock, those with many children, those with disabilities, the elderly, household heads associated

with criminal behavior and rural to urban migrants.⁹⁴ Moreover, the poverty rate is decreasing in numbers, access to jobs, education, healthcare and basic public services remained limited among vulnerable groups.

In 2008, Parliament established the Human Development Fund to be funded from the profits, taxes, and royalties generated by the mining industry as a whole, including large, medium and small scale projects and to distribute mining revenues to the citizens of Mongolia in the form of social benefits. According to a recent World Bank study, the government spent 2.8% of GDP on social welfare transfers in 2013, which is higher than the developing- and emerging-country average of 1.6%. More than half of these transfers were a result of the Child Money Program, which provides cash of 20,000 tugriks per month (approximately \$10) to all under children under 18 years old, regardless of socioeconomic status. In addition, the government sponsors several other social welfare programs, including pensions, food stamps, disability benefits, allowance for elderly citizens and allowances for mothers and children.

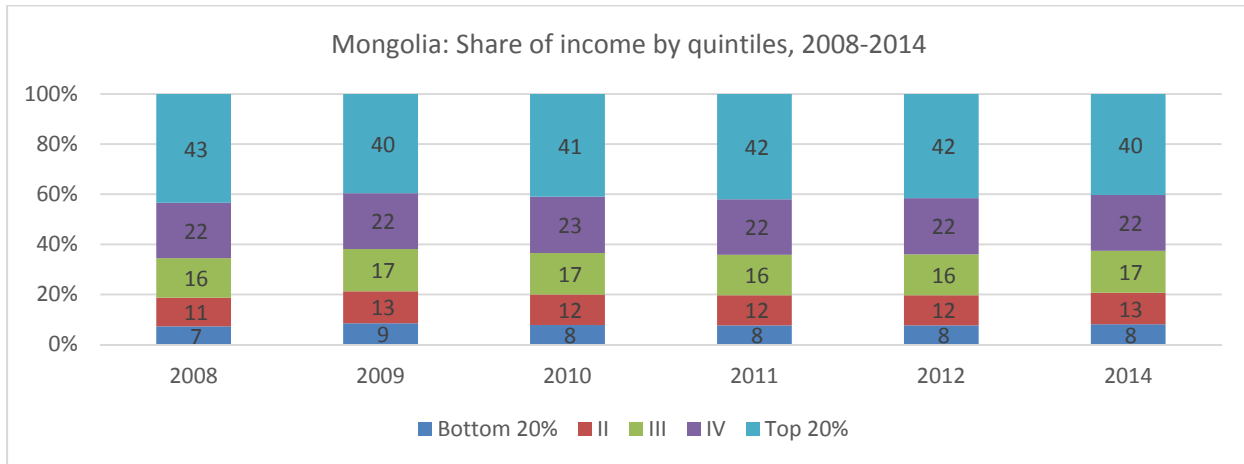
As poverty declined dramatically between 2010 and 2014, household consumption increased faster for the poorest households than it did for the wealthiest households (Figure 11). In addition, the overall income distribution in Mongolia remained virtually unchanged between 2008 and 2014. The bottom quintile received 7% of income in 2008 and 8% in 2014, while the top quintile received 43% of all income in 2008 and 40% of all income in 2014, despite a reliance on mining (Figure 12).

Figure 11. Consumption growth by decile, 2009-14



Source: Authors' calculations based on data from National Statistical Office, 2015.

Figure 12. Mongolia's income distribution, 2008-2014



Source: Authors' calculations based on data from National Statistical Office, 2015

The reductions of inequality since 2009 with Gini index averaged 0.33 between 2003-2011 which shows less income inequality than Russia, China and the United States.⁹⁵ Despite promising aggregate figures, vulnerability of certain segments of the populations remains significant, particularly among households where the head of household is unemployed, has an education that does not exceed the primary level, is a herder, or in female-headed household.⁹⁶

3. Methodology

Background

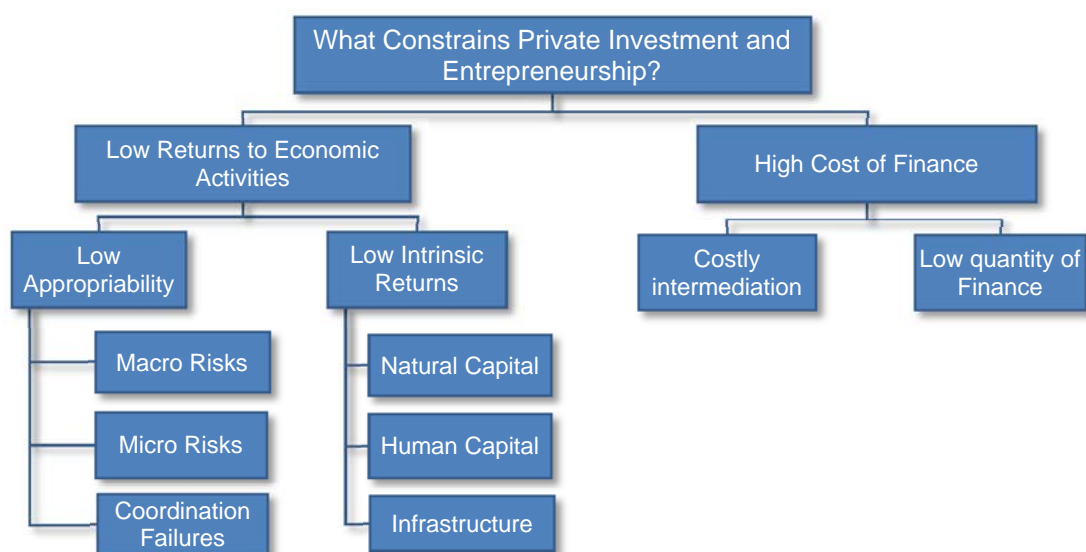
During the first phase of MCC compact development, eligible countries conduct a constraints analysis (CA), which is a diagnostic study that seeks to identify the binding constraints to economic growth and private investment. All developing countries face numerous economic and development challenges, but not all these challenges equally restrict growth. The CA aims to evaluate those factors in which investment would likely have the greatest impact on economic growth in Mongolia. Prioritizing is important since implementation capacity, political space and financing to address these challenges are scarce and valuable. In addition, the CA includes business climate assessment, productive sector analysis, and social and gender analysis to uncover opportunities to mobilize private investment for development and foster inclusive and equitable social development on the basis of available data and evidence. This “integrated CA” constitutes a solid foundation for the development of a compact that addresses Mongolia’s most binding constraints to broad-based economic growth and is consistent with MCC’s quality standards.

This constraints analysis for Mongolia was conducted between March and September 2015 by a team from the Government of Mongolia (GOM), led by the National Secretariat for the Second Compact Agreement between the Government of Mongolia and the Millennium Challenge Corporation of the USA. The National Development Institute (NDI) provided research and analytical support, and an interdisciplinary team from the MCC provided guidance and technical assistance. While the CA primarily is a data-driven study, the teams sought to “ground truth” their analysis by consulting with a diverse range of stakeholders including government, business associations, local and international non-government organizations (NGOs) and international donors. These consultations provided essential context to help the team properly place their data and analysis within the Mongolian context. Following several months of analysis, the GOM and MCC agreed on the four binding constraints in September 2015 and reaffirmed them in May 2016. The teams then reconvened with stakeholders in September 2015 to validate their findings and conduct deeper problem analysis on the four binding constraints. The data and analysis contained in this report was current when it was collected in 2015, and the team has avoided updating it.

The HRV Method

The CA uses the “growth diagnostic” method developed by Hausmann, Rodrik and Velasco, which MCC often refers to as the “HRV Method.” The HRV Method builds on the premise that private investment, both domestic and foreign, represents the primary engine of economic growth.⁹⁷ The CA focuses on the fundamental question: “What constrains private investment and entrepreneurship in Mongolia?” Successfully undertaking a CA involves posing and answering a sequence of diagnostic questions that highlight the factors that most constrain investment.

Figure 13. The HRV Diagnostic Tree



Source: Adapted from Hausmann, Klinger and Wagner, 2008

Incentives for private investment fall into three broad categories:

1. The overall expected return on an investment,
2. The share of the return an investor can expect to keep, also known as “appropriability,” and
3. The cost of financing the investment.

The CA investigates the influence of each of these three factors in a country-specific context. The diagnostic tree shown in Figure 13 visualizes this investigation, with factors affecting investor returns on the left branch and factors affecting financing costs on the right. At each node of the tree, analysts select and formulating the diagnostic questions to test whether it is constraining investment. Then they research and marshal key evidence and data that shed light on those questions and answer them based on the balance of such evidence.

The Four Tests

Only in cases of low supply and strong demand is a factor considered a binding constraint to investment and growth. To assess whether a particular branch or factor within the diagnostic tree is a binding constraint, CA looks for signals that the economic factor of production is poorly supplied, while simultaneously in high demand. For example, the quantity of credit in a country can be low, but this alone does not indicate a constrained supply of finance. The low quantity of credit may result from low demand because potential borrowers are constrained by other factors, like lack of infrastructure or an unsupportive business environment.

Supply and demand dynamics can be difficult to disentangle. To help identify when the supply of a factor is low relative to demand, the CA asks poses four key questions, also referred to as the “Four Tests”:

- 1. Is the shadow price of the factor high?** The shadow price of the constraint is “the fundamental principle for identifying binding constraints to growth.”⁹⁸ A low quantity of a particular input is not necessarily an indication of a binding constraint. If the shadow price is also low, it is likely that there is a low demand for that input, and it is not a binding constraint. In a situation where the quantity is low and the shadow price is high, there is a supply shortage relative to demand.
- 2. Have changes in the factor’s availability been correlated with changes in investment or growth?** If a factor is truly a binding constraint, we would expect to see significant changes in investment and private sector activity would occur as the constraint changed over time.
- 3. Are economic agents incurring costs or risks to circumvent the constraint?** When people confront a constraint in their daily lives, they will often come up with costly or less efficient ways to achieve their goal and mitigate the effects of the constraint. For instance, if crime is a problem, a business may hire a private security guard to protect its property. This ‘circumvention’ measure invariably increases the operating costs of the business, thereby hindering its growth.
- 4. Are economic agents that rely heavily on the constraining factor unable to thrive?** A given economic climate favors certain types of business, similar to the way a natural climate favors certain organisms. A hippopotamus will not survive in the Gobi Desert because there is not enough water, while camels thrive because they do not rely as heavily on the binding constraint (water). In an economy, businesses that use less of the binding constraint will thrive, while others will die or never form.

The integrated CA considers the overall investment climate as experienced by the private sector including how certain climatic issues affect productive sectors and to what extent private capital, markets, and other solutions could be mobilized to address these problems. The CA also incorporates data and information about social and gender inequalities that may characterize the economy or shape policies and institutions. Because MCC considers the distributional and social impacts when deciding which projects to fund, the CA notes whether particular constraints affect some groups more strongly than others.

Comparator Countries

When conducting the four tests for each branch of the diagnostic tree, it is necessary to have benchmarks to determine whether shadow prices or economic outcomes are high or low. Looking at Mongolia’s economic data alone does not tell us much about the types of outcomes that might be expected given its range of socioeconomic inputs. For example, Cote d’Ivoire’s 56% electrification rate might be high for similar countries in Africa, but it would be low for Mongolia. Therefore, it is necessary to select a handful of countries that are “similar” to Mongolia in several key characteristics to provide benchmarks for the analysis.

For this report, the analytical team considered several key characteristics that might make a country similar to Mongolia: location in Asia, no seacoast, small population and economy, high recent economic growth, similar poverty rates, socialist past and large mineral exports. Ideally, comparator

countries will be similar to Mongolia on multiple dimensions. Mongolia's geographic neighborhood includes several countries that meet these criteria: the Russian Federation (socialist past, mineral exports), China (high recent economic growth, largest trading partner), Kazakhstan (landlocked, socialist past, mineral exports) and Kyrgyz Republic (landlocked, socialist past). It is possible that all of Mongolia's neighbors may be constrained by similar market forces, which would make benchmarking difficult. Therefore, several more distant countries were chosen because they met multiple criteria: Botswana (landlocked, small population and GDP, mineral exports), Bulgaria (small population, socialist past, mineral exports), Georgia (small population, socialist past, mineral exports), Lao PDR (small population and GDP, high growth, mineral exports), Moldova (landlocked, small population and GDP, socialist past), and Paraguay (landlocked, small population and GDP, high growth). Table 2 below shows the selected comparator countries with key socioeconomic data.

Table 2. Key Comparator Country Data, 2013

Country	Population (mil)	Land-locked	GDP, PPP (bil current intl \$)	GDP per capita, PPP (current intl \$)	GDP growth (%)	Poverty Headcount (%), 2013	Socialist past?	Ores & Metals Exports
Botswana	2.0	yes	32	15,752	5.8	19.3	no	9.2
Bulgaria	7.3	no	114	15,732	1.1	21.0	yes	16.0
China	1,357.4	no	16,162	11,907	7.7	N/A	yes	1.2
Georgia	4.5	no	32	7,176	3.3	14.8	yes	7.5
Kazakhstan	17.0	yes	395	23,211	6.0	2.9	yes	10.1
Kyrgyz Rep.	5.7	yes	18	3,213	10.5	38.0	yes	5.3
Lao PDR	6.8	yes	33	4,822	8.5	23.2	yes	50.0
Moldova	3.6	yes	17	4,670	8.9	12.7	yes	4.1
Mongolia	2.8	yes	27	9,435	11.7	27.4	yes	47.0
Paraguay	6.8	yes	55	8,093	14.2	23.8	no	0.8
Russian Fed.	143.5	no	3,460	24,114	1.3	11.0	yes	4.7

Source: World Development Indicators, 2015

4. Cost of Finance

Background

In the growth diagnostic methodology, the first question the analytical team must answer is whether economic growth, investment and entrepreneurship are being constrained by low returns to investment or the cost of finance. As described by Hausmann et al:

“In the case of the HRV decision tree, the question is what is constraining private investment and entrepreneurship. The idea is that if the country was growing faster than it is at present, there would be more private investment and entrepreneurship. Why are we not seeing it? The first node in the decision tree tries to differentiate between stories based on low investment demand – lack of projects that can pay a reasonable private rate of return – from problems associated with the inability to acquire the financial resources to invest in such projects at a reasonable rate.”⁹⁹

By examining key financial indicators and applying the CA’s four diagnostic tests, the analytical team assesses whether the cost of finance is high relative to a similar group of “comparator countries.”¹⁰⁰

In a 2013 enterprise survey, 20.6% of Mongolian firms named access to finance as their biggest obstacle to doing business (Table 3) – the highest percentage for any single obstacle in the list – and the CA team heard similar sentiments during consultations with private sector.¹⁰¹ In addition, a 2013 Survey of Mongolian chief executive officers (CEOs) conducted by PricewaterhouseCoopers (PwC) found that more than 2/3 of respondents plan to finance future growth from internally generated cash flows or shareholder equity. Within the same survey 68% identified “inability to finance growth” as the most significant threat to the growth of their business. However, complaints about access to finance are not unique to Mongolia. In enterprise surveys around the world, firms cite access to finance as their biggest obstacle more than any other potential obstacle.¹⁰² To account for that fact, it is better to compare financial data in the context of financial obstacles in similar countries.

Table 3. Businesses' perceived largest obstacle to doing business (% of firms citing)

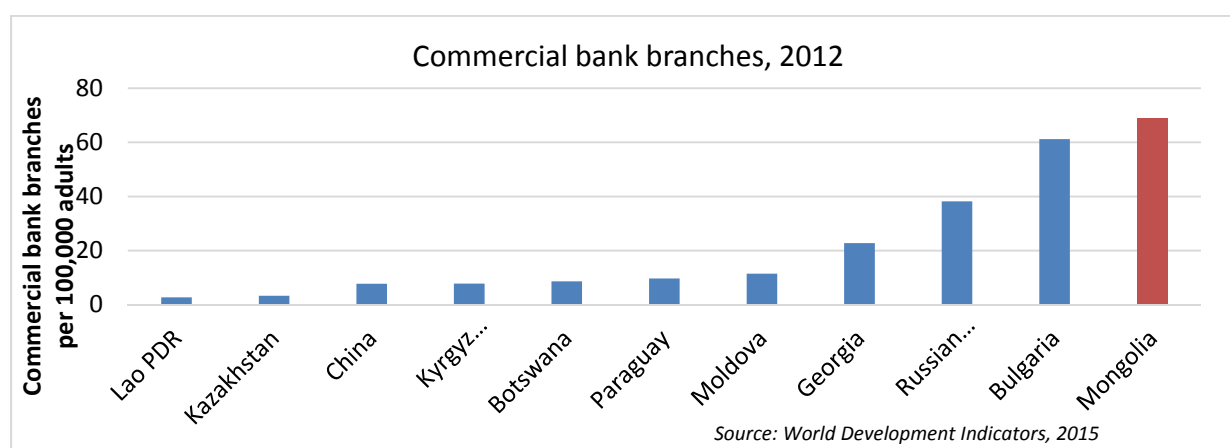
	Mongolia 2013	Regional Average	Comparator Average
Access to finance	20.6	16.5	13.1
Tax rates	12.9	9.4	12.2
Political instability	11.3	8.2	12.5
Business licensing and permits	9.4	2.8	3.6
Corruption	8.5	5.1	10.5

Source: World Bank Enterprise Surveys

The cost of finance is also relative to the size of the potential returns. Interest rates of 15% will not deter investors if their expected return on investment is 25%, but it would deter them if the expected return was 5%.

The Mongolian financial system is dominated by the banking sector. At the end of 2014, the banking sector accounted for the 93% of the entire financial industry in Mongolia. The banking system has grown rapidly from a small base, with yearly average asset growth of over 30 percent from 2006–09. In 2010, the ratio of total bank assets to GDP was 7 percentage points higher than in 2007. The non-bank financial sector, including insurance and the stock market, is small. During our private sector consultations, a local banker described Mongolia’s financial system as a “community banking” model, in which banks are often the only source of finance. Indeed, the five largest banks – all private Mongolian firms – account for 87% of assets.¹⁰³ Non-bank financial institutions (NBFIs) and savings and credit cooperatives (SCCs), which mainly serve MSMEs and low income and rural households, remain small and underdeveloped although both Khan Bank and Xac Bank offer some products to serve these markets.

Figure 14. Commercial bank branches per capita



Mongolia has a higher number of bank branches and depositors per capita than comparator countries (Figure 14). Domestic credit to the private sector (59% of GDP in 2014) is higher than would be expected for a country with Mongolia’s level of GDP per capita, and it has grown steadily since 2000.¹⁰⁴

The World Economic Forum’s Global Competitiveness Report 2014-15 ranks Mongolia #124 out of 144 countries in Financial Market Development, underperforming its peers in “Emerging and Developing Asia”. “Access to financing” is identified as the 6th most problematic factor for doing business. “Ease of Access to Loans” and “Venture Capital Availability” are ranked #143 and #141 respectively, out of only 144 countries. Consultations with private businesses revealed concerns about preferential treatment as influencing the former and a lack of viable exit opportunities (namely initial public offering) as influencing the latter. Indeed, “Regulation of Securities Exchanges” was ranked #128. The Mongolian financial system lacks large pension and insurance endowments which often serve as foundational elements for long term domestic bank finance, such as for example, long term mortgages. As a consequence, the Bank of Mongolia largely plays this role, but it is limited. The few

firms accessing international capital markets have done so either through the Hong Kong Stock Exchange or on the credit of an international strategic partner, sometimes giving rise to a currency mismatch as might arise with US\$, JPY, or RMB denominated financing of a business based in Mongolia.

The Government of Mongolia has established benchmarks through their issuance of a limited number of foreign currency-denominated sovereign bonds. Moody's rates the sovereign at B2 negative, a below investment grade rating, which influences the cost of debt. The negative outlook is in part a result of the Government of Mongolia's pro-cyclical policies which has resulted in a rather large debt overhang as the macroeconomy has deteriorated. Refinancing at higher rates beginning in 2017 would appear likely.

Access to finance remains challenging for SMEs. According to an International Finance Corporation (IFC) survey conducted in 2014, 95% of SME executive respondents said that their businesses required loans, of which a quarter of loans are required by women SME owners. However, despite the fact that small enterprises account for 98% of all enterprises, they only receive 16% of total loans.¹⁰⁵ Part of the reason for the lack of accessibility is the credit information system in Mongolia, which does not disclose the financial histories of SMEs. Commercial banks are perceived by this group to have high collateral requirements and less attractive loan conditions, including high interest rates and short maturities. Even for those SMEs that did access loans, they believe that the loan size was not commensurate with their needs¹⁰⁶. Unfortunately, there are relatively limited sources of alternative financing outside of the banking sector and currently four financial institutions are dedicated to microfinance: Xac Bank, Credit Mongol, Vision Fund, and TransCapital Financial Services.¹⁰⁷

While financial institutions do not report sex-disaggregated data on SMEs, IFC estimated that almost 60% of micro-scale, family, and sole-entrepreneur owned businesses are owned by women. Despite their numbers, they face steeper challenges than male-owned businesses in accessing finance. For one, their businesses tend to be smaller, have lower turnover and fewer employees, which could inhibit their attractiveness for loans. Second, among women, the reasons cited for not accessing loans included a reluctance to apply due to the perception that the loan process would take a long time and require bureaucratic processes they are ill-equipped to navigate. They also have less access to assets that can be used as collateral, and it has been suggested that banks perceive women as an investment risk due to their caregiving burdens.¹⁰⁸

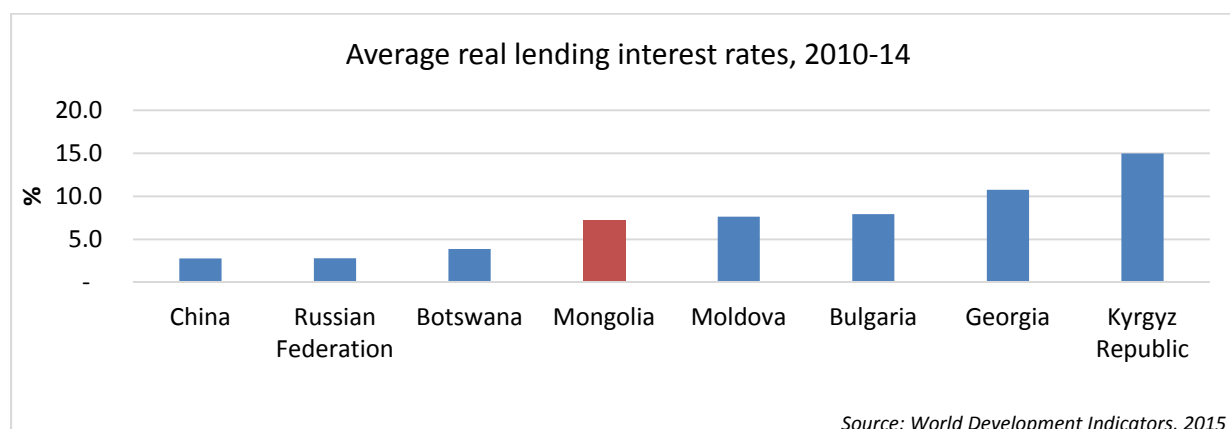
At the same time, data from MCC impact evaluations in Mongolia showed that a relatively high share of females compared to many other countries are able to obtain bank loans. Moreover, when they do apply for bank loans, they are more likely to be successful. Female-headed households among the population surveyed for the khashaa plot registration activity had an 11% unsuccessful rate for obtaining loans, compared to a 14% unsuccessful rate for males. However, females were more likely to indicate that their household income was insufficient to obtain a loan (24%),¹⁰⁹ and their average loan amounts were lower.¹¹⁰

Analysis

The Constraints Analysis tested whether the cost of finance is constraining economic growth in Mongolia.

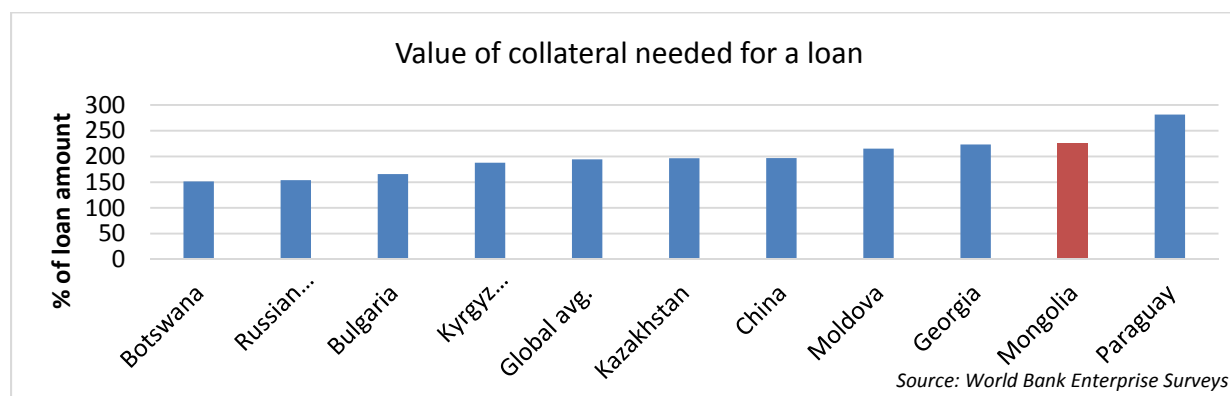
Test 1: Is the shadow price of finance high? The lending interest rate is one of the main indicators of the cost of finance, which have averaged 18.5% from 2010-14. With inflation averaging 11.2% over the same period, the average real interest rate was 7.2%, which is below average for the country's comparators (Figure 15) and indicates a low shadow price.¹¹¹

Figure 15. Average real lending interest rates, 2010-14



However, in a 2013 enterprise survey, Mongolian firms reported that 100% of loans that required collateral, and the required value of collateral (225% of the loan amount) was the second-highest among comparator countries (Figure 16), which suggests a high shadow price.¹¹²

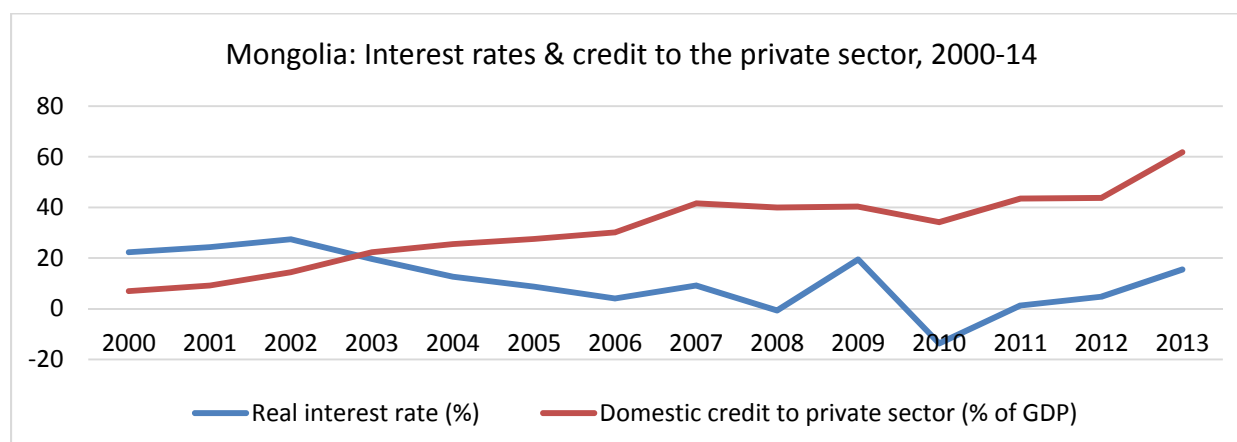
Figure 16. Collateral requirements for loans



Test 2: Do changes in key financial indicators correspond with changes in investment?

Interest rates have been declining in Mongolia for over a decade, from a high of 37% in 2001. During this time, credit to the private sector has increased from 9% of GDP to 59% of GDP, with a strong correlation between them (Figure 17).¹¹³

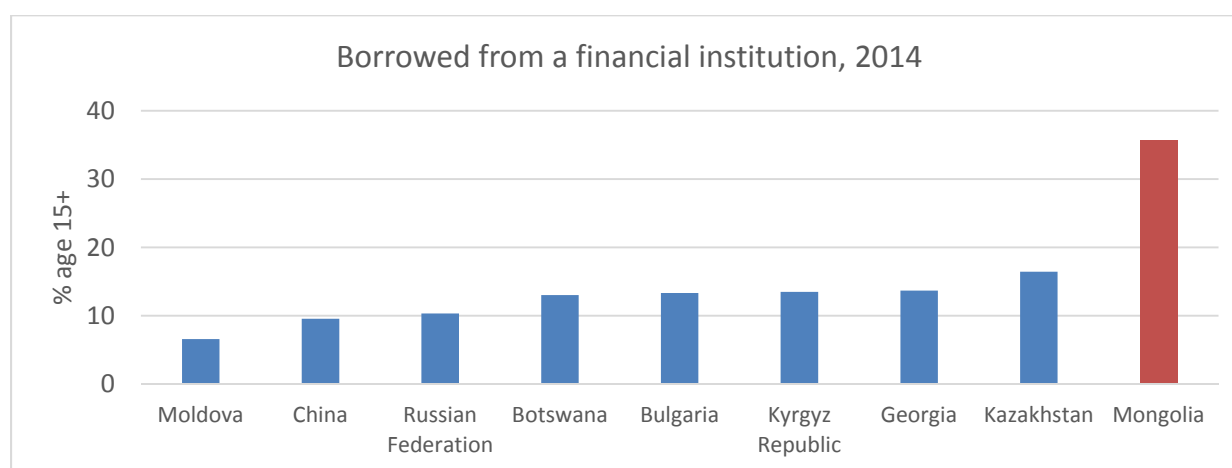
Figure 17. Interest rates & credit to the private sector



Source: World Development Indicators, 2015

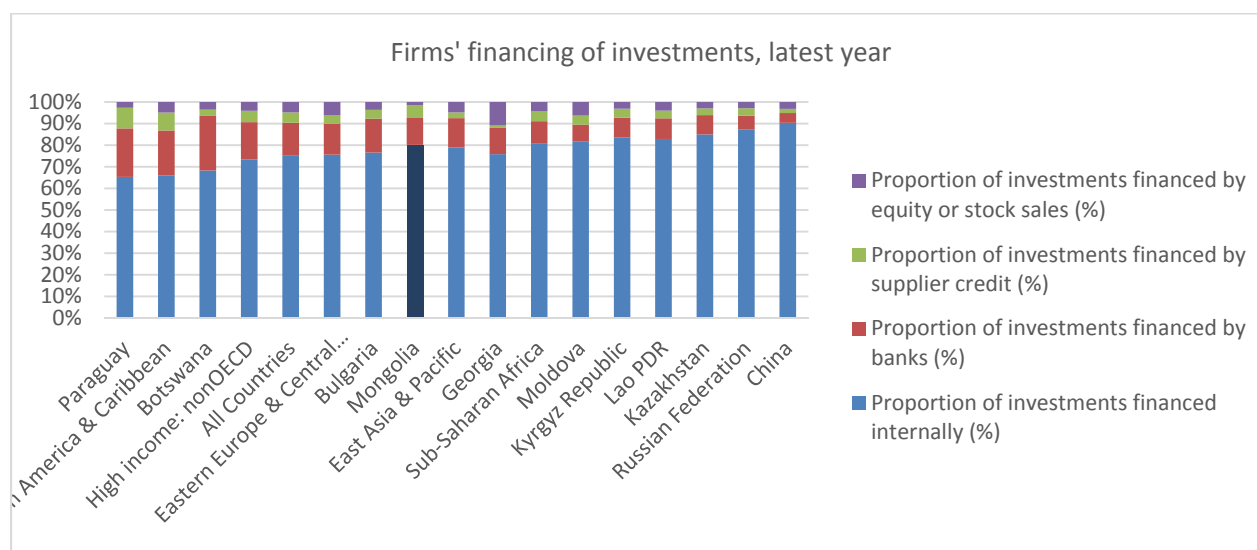
Test 3: Are firms circumventing the constraint by seeking finance from sources outside the financial system? Mongolia has a relatively high percentage of firms with a bank loan or line of credit (48% in 2013)¹¹⁴, and 35% of individuals above 15 years of age have borrowed from a financial institution, which is more than double the nearest comparator (Figure 18).¹¹⁵ Mongolian firms are also slightly less likely to finance investments internally¹¹⁶ (Figure 19), although Mongolians borrow from informal lenders and family/friends at slightly higher rates than the average for comparators.¹¹⁷ Finance remains more difficult for SMEs and female entrepreneurs in particular. An IFC survey noted that SME loans remain at just 16% of total loan books,¹¹⁸ and female owned enterprises consulted as part of the constraints analysis process consistently noted access to finance as a problem.

Figure 18. Individuals borrowing, 2014



Source: Global Financial Inclusion Database, 2014

Figure 19. Firms' financing of investments



Source: World Bank Enterprise Surveys

Test 4: Are capital-intensive firms surviving in Mongolia? In recent enterprise surveys, the percent of Mongolian firms that say they do not need a loan (29.6%) is the lowest among comparators¹¹⁹, and a relatively high percentage of adults, both males and females, report borrowing to start, operate or expand a farm or business in 2014.¹²⁰ This indicates that Mongolian businesses do require substantial amounts of capital, which suggests capital-intensive firms are surviving.

Conclusion

Based on this evidence, **the cost of finance does not appear to be a binding constraint to economic growth**, so low returns to economic activities likely are more constraining. Real interest rates are not particularly high, although collateral requirement suggest a higher shadow price. However, Mongolian households and firms obtain loans from financial institutions at higher rates than their counterparts in comparator countries, and they are less likely to turn to informal sources of financing. Capital-intensive firms also appear to be able to survive in Mongolia. Although the cost of finance is not a constraint, some of the remaining problems in financial system, such as higher collateral requirements, may be indicative of legal or regulatory constraints.

5. Quantity of Finance

Background

Mongolia has experienced a large inflow of foreign direct investment (FDI) over the last decade, but incoming FDI has declined each year since 2012. Mongolia's capital and financial account surplus dropped from 40% of GDP in 2012 to 7% of GDP in 2014. The economic boom fueled by the mineral sector enabled the government to borrow from international capital markets, such as the \$1.5 billion Chinggis Bond in 2012 and Samurai Bond in 2013, but many domestic firms have not. The ones that have been able to borrow from international bond markets, such as Trade and Development Bank, have done so only with a guarantee from the Government of Mongolia.¹²¹ Other large firms have been able to list on the Hong Kong stock exchange or borrowed longer term in foreign currency from the EBRD or the IFC.

Domestic sources of capital are largely limited to the banking system, and those sources of finance are mostly deposits, including a relatively low level of core deposits, which together with the absence of a long term treasury market, limits local currency lending to short tenors (generally less than 3 years). Long term depositors/investors such as insurance companies, securities firms and pension funds make up less than 1% of all assets in the financial system.¹²² Although Mongolia's stock exchange has experienced some reform in recent years, it is still underdeveloped, as evidenced by a total value of stock trades of only 0.3% of GDP in 2012.¹²³

The low level of long term capital and the lack of a secondary financial market means that banks bear much of the risk from lending. During consultations, some larger businesses complained that access to capital was limited by the size and risk tolerance of the banks. This situation has led the government and the central bank to undertake activities that might normally be handled by the financial markets. One prominent example is the Bank of Mongolia's mortgage loan program, which provided the central bank with credit to commercial banks at 4% interest rate which was then on-lent to households at 8% interest rate with up to 20 year maturity. This is less than half of the current prevailing rate and double the tenor for commercial mortgages in the country. Some of these subsidized mortgages are securitized into mortgage backed securities and purchased by the Bank of Mongolia to allow banks to make further housing mortgage loans.¹²⁴ Non-strategic private investors bear much of the risk on an off-market exit, a deterrent we heard vocalized by would-be private equity investors.

Analysis

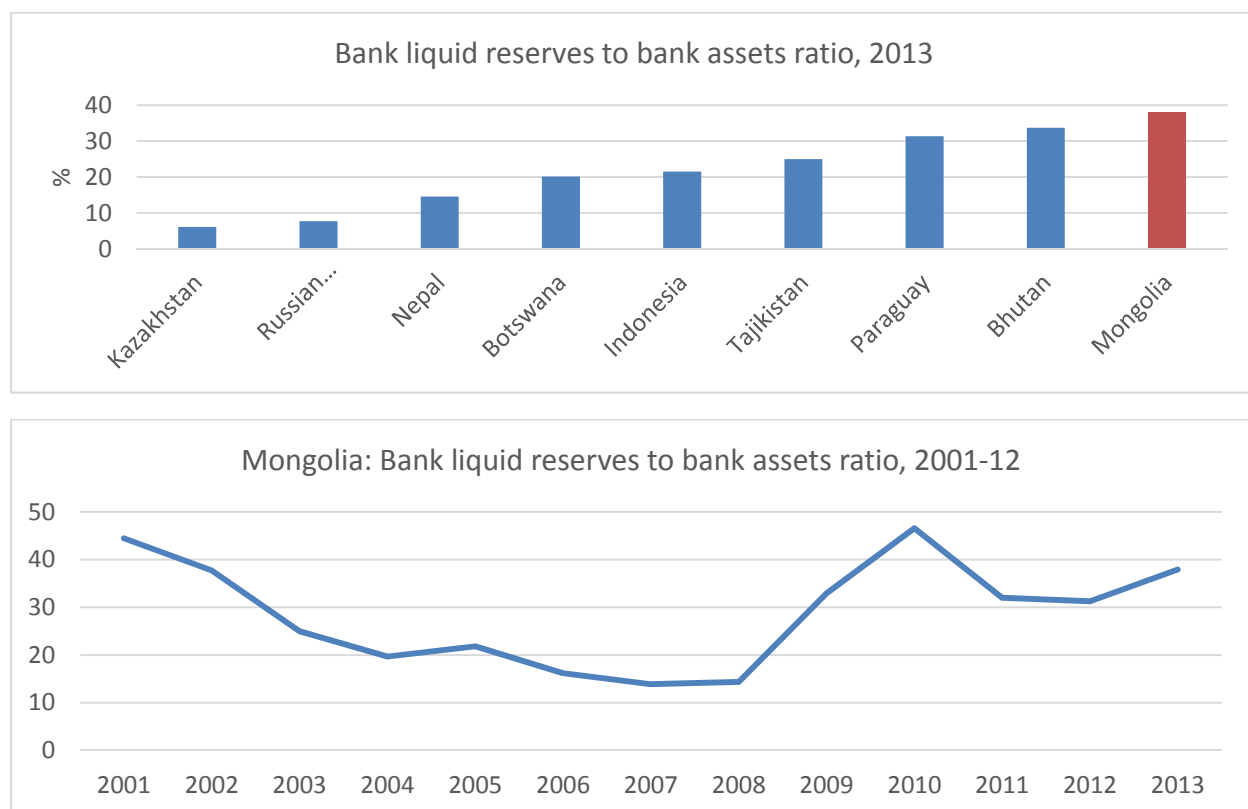
The Constraints Analysis tested whether the economy-wide quantity of capital available to finance investments is constraining economic growth in Mongolia.

Test 1: Is the shadow price of acquiring capital high for financial institutions? If the overall quantity of finance is low, banks will find it difficult to acquire capital, and they are then more likely to pay a higher interest rate for deposits. Over the past five years, Mongolia's banks paid an average interest rate of 11.6% on deposits. Although this appears high, the average inflation over the same

period was 11.2%, leading to a real interest rate of 0.3%, which is slightly above average among comparator countries.¹²⁵

If the quantity of finance was a constraint, we would expect to see low liquidity and assets among banks, and costly international borrowing. However, as shown in Figure 20, banks' ratio of liquid reserves to assets is high among comparators,¹²⁶ and the ratio of total assets to GDP is increasing,¹²⁷ suggesting that the quantity of finance in the economy is adequate.

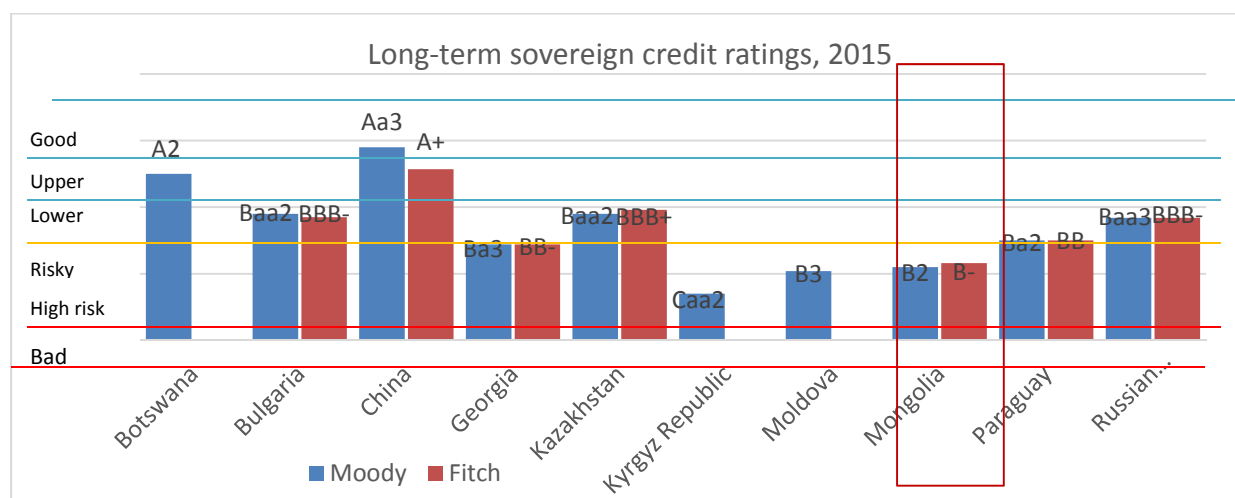
Figure 20. Ratio of bank liquid reserves to bank assets



Source: World Development Indicators, 2014

Mongolia's outstanding international debt securities are similar to those of countries with similar GDP per capita, indicating that Mongolian firms have access to international borrowing.¹²⁸ However, as shown in Figure 21, Mongolia's long-term credit rating is in the High Risk category,¹²⁹ meaning that Mongolia pays higher costs on any borrowing.

Figure 21. Long-term sovereign credit ratings, 2015



Sources: moody.com, fitchratings.com

Test 2: Do movements in the cost of capital correspond with changes in investment?

Mongolia's current account balance is negatively correlated with the GDP growth rate, indicating that Mongolia's economy grows faster with larger current account deficits.¹³⁰ This is likely because those years corresponded with high levels of FDI. More recently, reduced levels of FDI have led to balance of payments pressure and liquidity pressures for the country.

Test 3: Are firms trying to circumvent a lack of capital in the financial system? As described above, Mongolian firms appear to need government guarantees to borrow from international capital markets. Aside from the Government's Chinggis and Samurai bonds and Trade and Development Bank's bond issue in recent years, there are not many private companies accessing foreign markets for debt capital. However, the Mongolia Mining Corporation has twice successfully raised capital from international markets largely on the basis of its large coking coal deposits in the Southern Gobi region, a number of Mongolian firms have successfully listed on the Hong Kong stock exchange, and international financial institutions such as the European Bank for Reconstruction and Development and International Finance Corporation have long term debt and equity investments in a number of projects in Mongolia in sectors like mining, renewable energy and beverages. Thus, it could be concluded that the firms are not trying to bypass formal financial system or a lack of capital.

Test 4: Are firms with better access to external markets doing better? The general evidence is not conclusive that few firms that had access to external markets are doing better than the ones that do not have. In a 2013 enterprise survey by World Bank, only 5% of firms in Mongolia with more than ten percent foreign ownership reported access to finance as a major obstacle to their business (Table 4). In contrast, 34% of wholly domestic firms cited access to finance as a major obstacle. Similarly, 7% of firms that export more than ten percent of their products reported access to finance as an obstacle, while 33% of non-exporting firms reported access to finance as an obstacle. Although better access to finance could be a characteristic of firms with access to foreign markets, it could also be simply a characteristic of large firms. According to the survey, only 3% of large firms cited access

to finance as a major obstacle, compared to 26% of small businesses and 42% of medium-sized businesses.

Table 4. Firms identifying access to finance as a major constraint

SIZE	Percent of firms identifying access to finance as a major constraint
Small (5-19)	26%
Medium (20-99)	42%
Large (100+)	3%
EXPORTER TYPE	
Direct exports are 10% or more of sales	7%
Non-exporter	33%
OWNERSHIP TYPE	
Domestic	34%
10% or more foreign ownership	5%
ALL FIRMS	32%

Source: World Bank Enterprise Surveys, 2013

Conclusion

Based on this evidence, **the quantity of finance in Mongolia is not a binding constraint to growth**. Banks and domestic deposits are comparatively strong, although there are few other sources of capital in Mongolia, especially for firms that focus on the domestic market or with wholly domestic ownership. Firms with access to foreign markets have fewer complaints about finance. However, the Mongolian government has been able to access international markets at average rates, even though it has been somewhat more costly to do so. Large firms, who identified the quantity of finance as a problem during consultations, actually seem to be the least impacted, because many have access to sources of finance outside the banking sector. Finance remains a concern for small and medium enterprises, but it is more likely that they are constrained by low returns or financial intermediation than the overall quantity of finance in Mongolia. Given that a previous chapter found that the cost of finance is less binding than low returns, the quantity of finance does not appear to be one of the most binding constraints to growth

6. Financial Intermediation

Background

Despite the conclusion that the overall cost of finance is not a constraint to growth in Mongolia, the cost and quality of financial intermediation is still relevant to inform the mobilization of existing capital within the economy is inefficient, it effectively imposes a tax on financial transactions that can constrain businesses and households.

The Mongolian financial system is dominated by the banking sector. At the end of 2014, the banking sector accounted for 93% of the entire financial industry in Mongolia. The banking system has grown rapidly from a small base, with yearly average asset growth of over 30 percent from 2006–09. In 2010, the ratio of total bank assets to GDP was 7 percentage points higher than in 2007. The non-bank financial sector, including insurance and the stock market, is small. In 2014, the total assets of banking sector reached MNT 22.6 trillion (US\$ 13.6 billion), up 8.1% from MNT 20.9 trillion (US\$ 12.5 billion) the previous year.¹³¹

Instruments available for long-term investment remain limited, and the growth of both the retail and institutional investor bases have lagged. The Mongolia Stock Exchange (MSE) was established in 1991, following the privatization of 475 state-owned enterprises. Some 337 companies are now listed on the MSE and the ratio of stock market capitalization to GDP was merely 16 percent at its peak in 2010, with entire market capitalization amounts to less than US\$2 billion.¹³²

The commercial insurance market is still in its infancy, since the Government of Mongolia was the sole and direct provider of insurance for many years. The non-life insurance industry has been growing following the passage of a new Insurance Law in 2004. The insurance market is concentrated among the seven nonlife insurers in Mongolia. The largest and successor of the former state insurance company, Mongol Insurance, has a market share of about 30%. National Life, the only life insurance company in Mongolia, has yet to turn a profit since it operated in 2008.¹³³ The insurance sector as a whole accounts for only about 1% with around MNT 153 billion.¹³⁴

Mortgage market and practices developed in Mongolia less than a decade ago. The Mongolian mortgage market has exhibited strong growth, with portfolio outstanding increasing by 190 percent to MNT 656 billion (US\$482 million) between 2009 and end-2011. Mortgage loans now account for more than 20% of total private sector loans, as a result of boost from the housing mortgage program provided by the central bank. This program lent funding to commercial banks at 4% interest, which will be on-lent to households at 8 percent interest rate with up to 20 year maturity. The program started in June 2013, and as of second quarter of 2015, there are in total 724 thousand mortgages worth MNT 3.1 trillion (about US\$ 1.5 billion at exchange rate of Q2 2015). During consultations with civil society in 2015, several observers cited concerns that subsidized house lending programs have largely benefitted upper income-groups. The inability to secure adequate housing impacts the

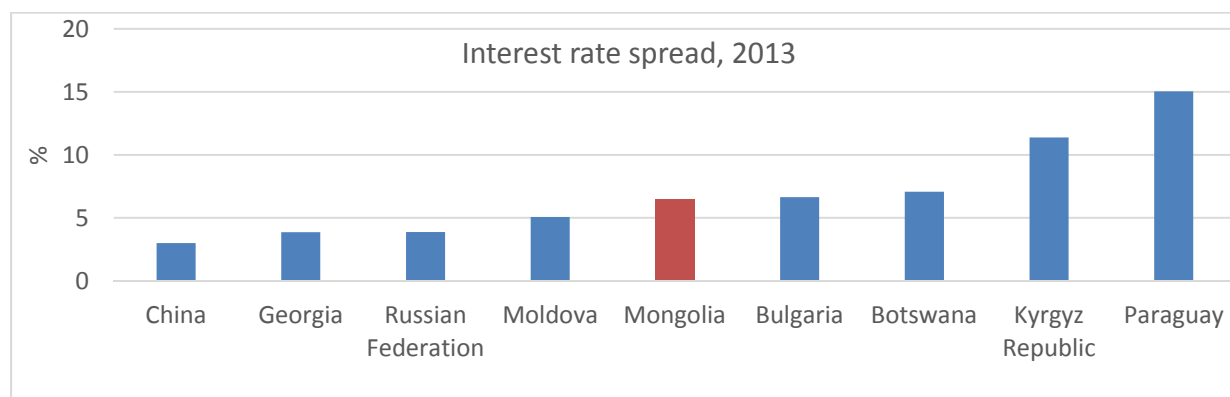
poor more than rich, and women more than men, due to greater time-burdens, health impacts and safety concerns associated with sub-standard dwelling.

Analysis

The Constraints Analysis tested whether the cost of financial intermediation is a constraint to economic growth in Mongolia.

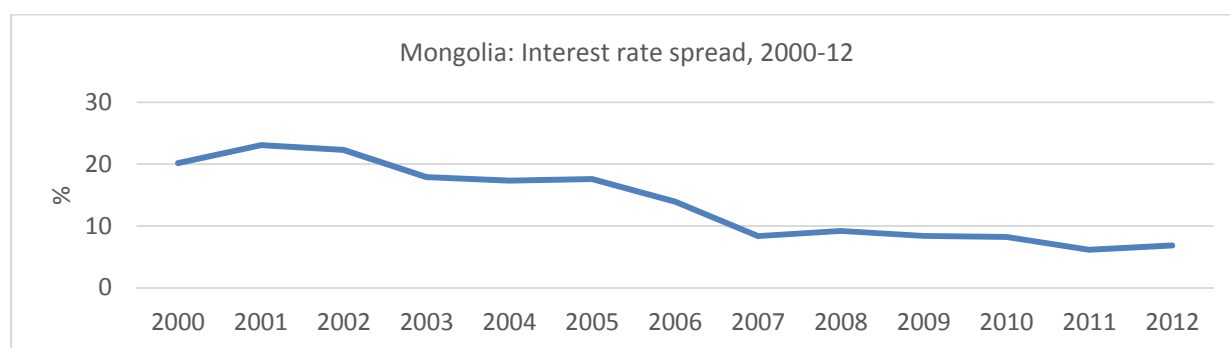
Test 1: Is the cost of financial intermediation high? Interest rate spreads, the difference between the lending and deposit rates, help to indicate the price of financial intermediation. As shown in Figure 22, the interest rate spread in Mongolia is at the median for its comparator group. It also has been declining for the past decade (Figure 23). According to the 2013 Global Financial Development Database, Mongolia's banks also have lower overhead costs and cost to income ratios than comparator countries. These facts suggest the shadow price of local financial intermediation is not high.

Figure 22. Interest rate spreads



Source: World Development Indicators, 2015

Figure 23. Mongolia interest rate spreads

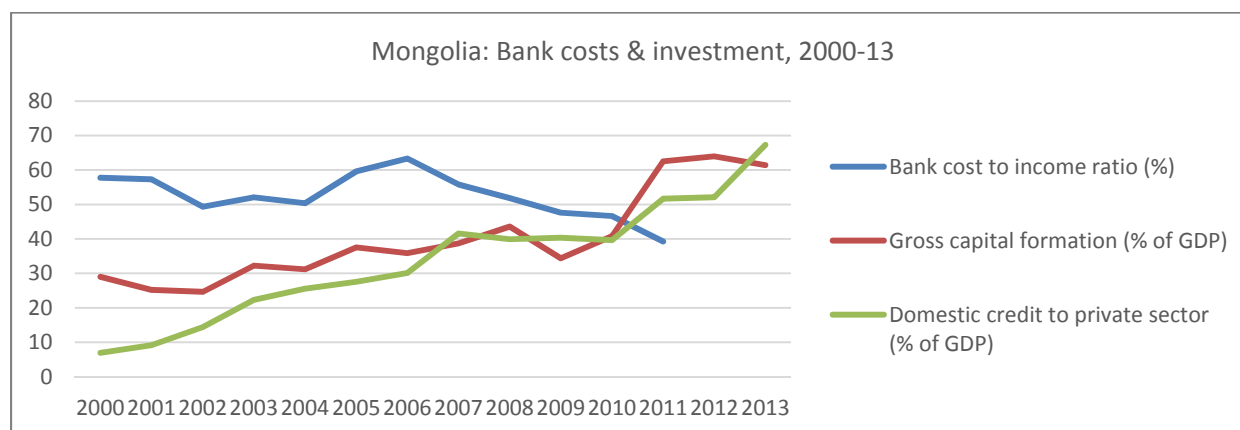


Source: World Development Indicators, 2015

Test 2: Do changes in key financial intermediation indicators correspond with changes in investment and growth? Since 2000, bank costs have generally declined, while investment increased (Figure 24), as expected. Although this could be consistent with a binding constraint, the high levels

of investment and credit in the Mongolian economy suggest that any intermediation constraint has been relieved.

Figure 24. Bank costs and investment

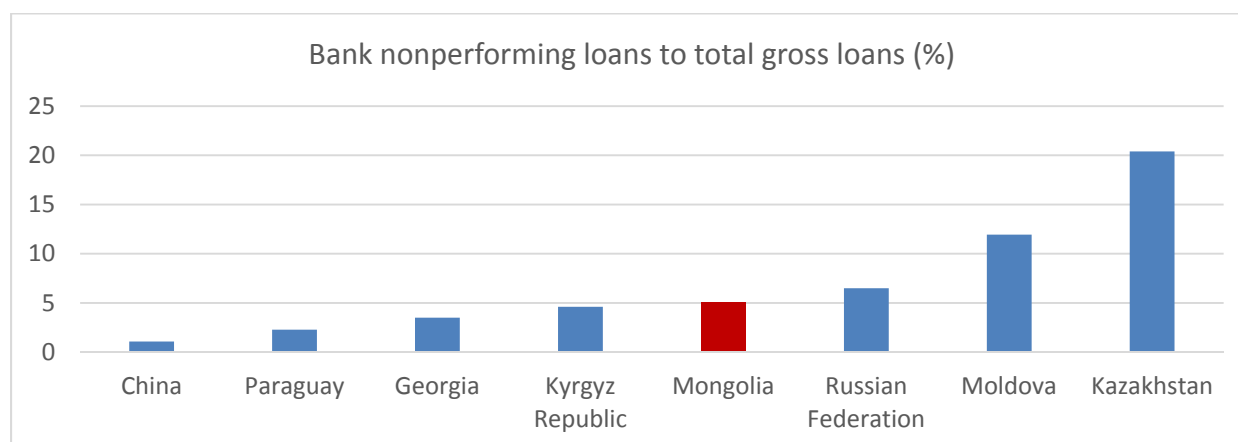


Source: Global Financial Development Database, 2013; World Development Indicators, 2015

For the most part, bank lending to both households and firms/SMEs has been growing rapidly since 2000. According to the latest comprehensive financial sector analysis, about a third of total loans were made to households, which have increased by about 80 percent year-on-year in 2011. Corporate loans account for 66 percent of total loans and the value of these loans has increased by more than 70 percent annually, since 2011. The bulk of bank lending is concentrated in Ulaanbaatar and in five sectors of the economy—trade, construction, real estate, mining, and manufacturing—that account for 65 percent of total lending. By December 2011, 19 percent of total bank lending was made to entrepreneurs and SMEs. Bank credit to SMEs has more than doubled from 2008 to 2011, to about US\$735 million at end-2011.

During the recent downturn, some signs of stress are beginning to appear. The loan to deposit ratio of Mongolia's banks has been rising since 2013 from 108% to 122% by the end of second quarter of 2015, which indicates that commercial banks may now be relying on the central bank credit as a result of monetary easing programs.¹³⁵ Over 60 percent of policy loans were supplied to construction and housing sector through the Price Stabilization Program and the housing mortgage program, so banks became more vulnerable to construction and property market cycle. Non-performing loans have also increased, although the rate remains average for the group of comparators (Figure 25).

Figure 25. Non-performing loans



Source: World Development Indicators, 2015; Bank of Mongolia, 2015

Test 3. Are firms trying to circumvent the domestic financial system? Given the high rates of banking penetration in Mongolia, firms do not appear to be circumventing the domestic financial system.

However, accessing a loan remains problematic for SMEs because their operation and activities are often seasonal and more sensitive to an unstable macroeconomic environment, characterized by high inflation and exchange rate fluctuations. Bank loan terms and conditions for SMEs are characterized by high interest rates, short maturities of loans that are inadequate to meet investment needs, relatively small loan sizes, and predominantly immovable collateral-based lending requirements.

Commercial banks perceive that lending to SMEs risky because smaller firms have lower capitalization and lack immovable assets. This is also partly due to the lack of capacity at commercial banks to implement cash-flow based lending mechanisms. The situation is exacerbated by the ineffectiveness of the existing credit-information system, which covers less than 15% of all enterprises in Mongolia.¹³⁶

There are also limited financial instruments for SMEs in Mongolia. Mongolian banks predominantly offer loans, deposit and savings products, and some trade financing to SMEs. Loan sizes for SMEs are relatively small. For small enterprises, loan sizes range from US\$600,000 to US\$700,000. For medium firms, loan sizes range between US\$700,000 - US\$ 2 million. On average, the largest banks report SME loan sizes in the amount of US\$ 50,000 - US\$200,000.

Banks rely primarily on collateral-based lending, which can indicate high financial intermediation costs. Most bank lending is secured by real estate collateral. Banks report that 70-80 percent of loan value is secured by immovable assets, although for an SME typically the entire loan needs to be secured by immovable assets. On average, the value of collateral needed for an SME loan is about 190 percent of the loan amount. Although moveable assets (such as accounts receivables, inventory, vehicles, equipment) can in principle be accepted as collateral, banks are reluctant to accept them, because there is no effective registration and enforcement mechanism for security interests over moveable assets.¹³⁷

Test 4. Are firms that are less reliant on domestic financial sector thriving? Both large and small firms rely more on formal financial institutions for their funding needs than firms in comparator countries. According to the latest comprehensive survey done by the Bank of Mongolia, about half of MSMEs were able to receive loans in 2011 and about 70 percent of MSMEs need further financing to expand their businesses. According to the survey, a majority of MSMEs see the unfavorable macroeconomic environment with double-digit inflation and foreign exchange fluctuations as a major constraint to their operations and growth. The double-digit inflation increases the cost of funding, and volatility in the MNT value creates instability for SMEs, as imports and foreign exchange credit become more expensive when the MNT suddenly depreciates. This suggests the financing problems of SMEs may be related to a macroeconomic constraint, rather than a financial intermediation constraint.

Conclusion

Local financial intermediation is not a binding constraint because the interest rate spread is not high when measured against comparator countries, and credit growth has been increasing. In addition, tests indicated that low returns and appropriability are more binding. Recent economic difficulties have led to some concerns about banking sector vulnerability issues, resulting from massive capital injections by the central bank designed to increase growth and investments. SMEs often cite access to finance as major constraint and the banks typically require immovable property as collateral, but this could also point to problems with the legal system, suggesting a problem with appropriability. There is also no evidence that firms are actually trying to circumvent the formal financial institutions. In Mongolia higher number of companies indicate that they need funding from financial institutions, therefore, financial intermediation is not a binding constraint to growth.

7. Natural capital

Background

Historically, Mongolia's economic activities were dependent on natural and cultural factors, including vast territory with sparse population, pastoral livestock adapted to its harsh climate, and household-centered nomadic lifestyle. The terrain is mostly semi-desert and desert plains in the central, southern, and eastern parts of the country and the major mountain ranges stretch from the west to southwest. Agricultural and arable land is estimated at 73% and 0.4%, respectively, while forest is around 7% of the territory located mostly at the mountainous areas in the north. Groundwater provides 90% of the water consumption for the country, with a reserve of 10 km³/year and the total reserve of surface water is estimated at 535 km³ consisting from rivers, lakes, springs, and glaciers.¹³⁸

Mongolia has a dry continental climate with wide ranges of daily and seasonal temperatures. It has a short growing season of three months in June and September when the precipitation is the highest ranging between 36 mm and 59 mm and the average temperature is around 16C-18C, as measured for the period of 1990-2012.¹³⁹ Winters are cold and -40C is common in most years and -50C or lower are recorded in the coldest parts of the country.



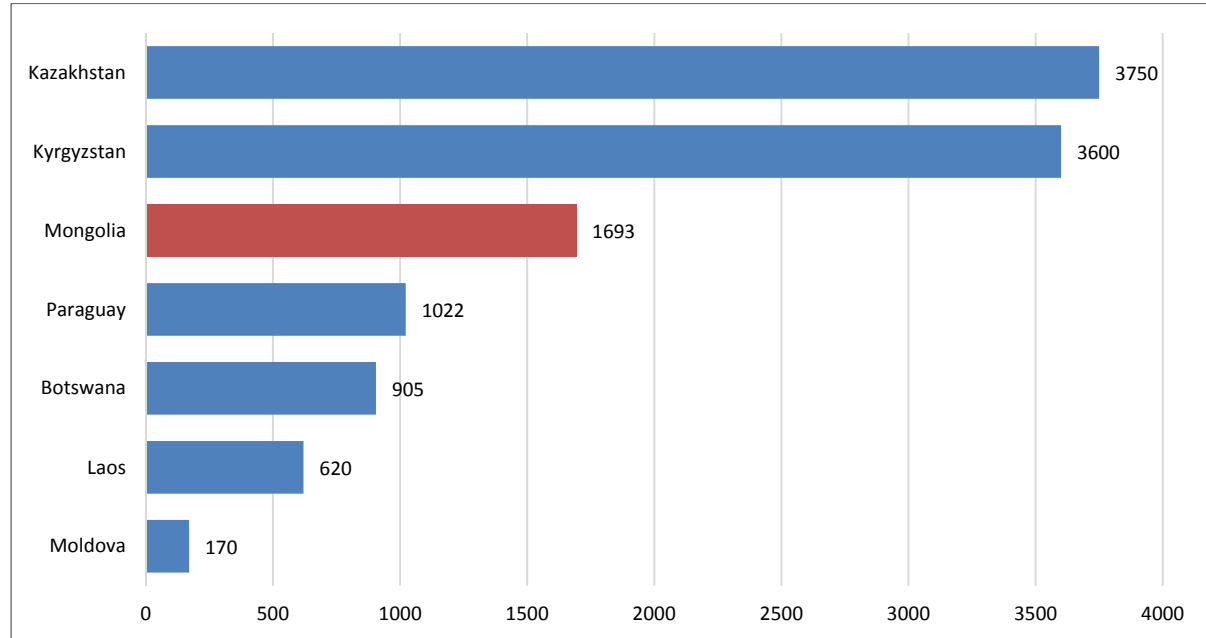
Source: CIA World Factbook, 2016

Mongolia's geographic location, size of the territory, terrain, water resources, and climate bring challenges and opportunities for the country's growth.

Size and location: The territory of Mongolia is 1.5 million km² with one of the lowest population density of 1.8 person/per sq. km and is ranked second worldwide. The nearest sea port to Mongolia is in Tianjin, China at 1,693 km, as compared with the benchmark countries (Figure 26). The lack of access to sea has led the country to rely heavily on relations with its neighbors. Also, the scarce

population spread over a large territory makes the cost of transport and social service delivery relatively high.

Figure 26. Distance to nearest seaport, Tianjin, China, is comparable among benchmarking landlocked countries

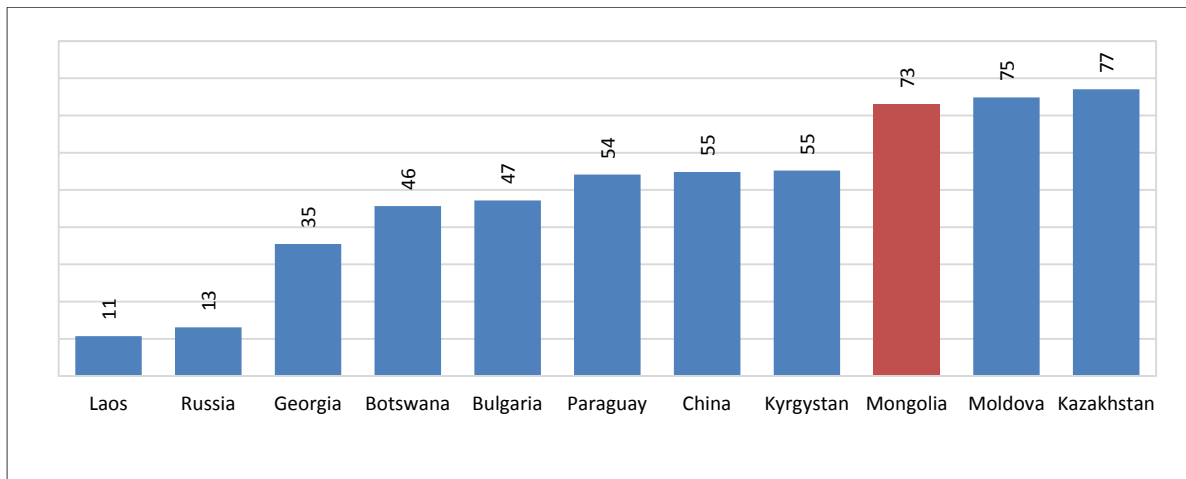


Source: Faye M. et al., *The Challenges Facing Landlocked Developing Countries*, 2004

Terrain: Out of 1.5 million km², 73% of the total land area is used for agricultural purposes, which is significant as compared with the benchmark countries (Figure 27). Of the agricultural land, 97% is pastureland, although there are constraints with respect to space available for carrying out economic activities. A large percentage of the total land (77.8%) is degraded to some extent: 40% due to natural causes and 60% due to human activities, such as overgrazing.¹⁴⁰

Geological surveys show Mongolia to be abundantly endowed in mineral resources, including copper, gold, iron and oil. Because exploitation is capital intensive, only a fraction of these national resources have been exploited. Mongolia is also abundantly endowed in solar and wind resource with studies demonstrating ample resource for exploitation that is only just beginning and constrained primarily by the economics of transmission distance to market and challenges around cross-border power trade. Mining activities, including artisanal mining that illegally uses mercury, have become a growing concern for the environment. In addition to degradation and erosion, mining activities and infrastructure have reduced the amount of land available for agricultural pursuits. Thus, mining and herding are in competition for suitable land, and the potential for increased land conflict is growing as each industry expands.

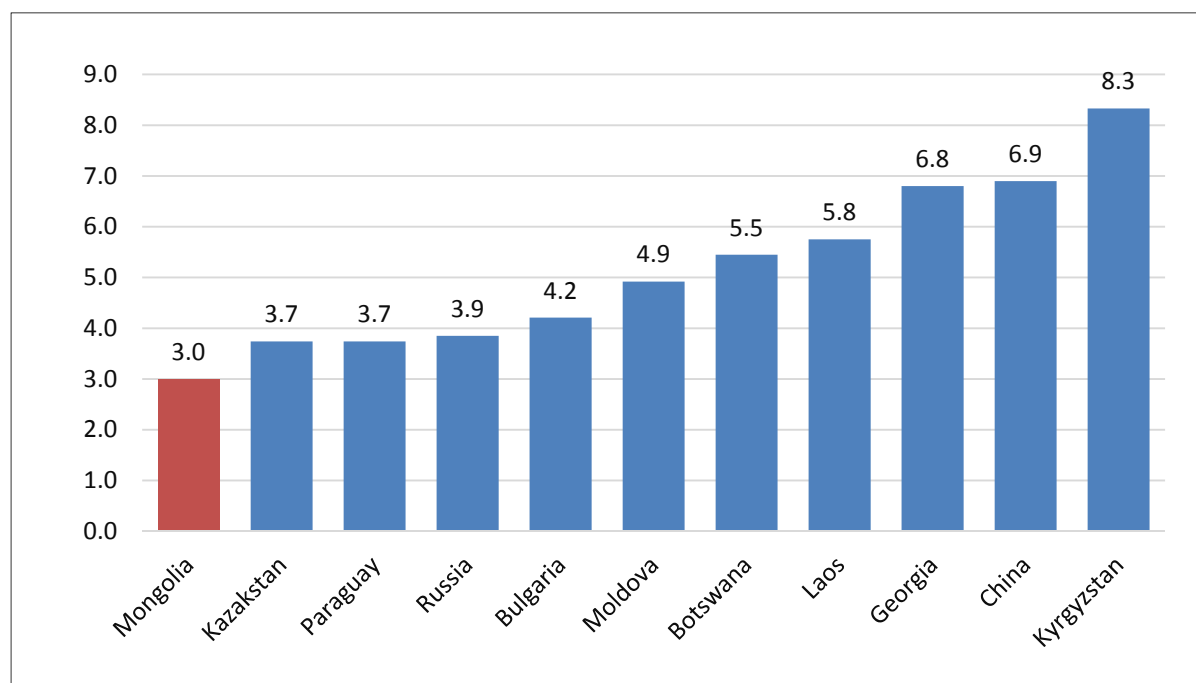
Figure 27. Share of agricultural land, %



Source: World Development Indicators, 2015

Mongolia has a low risk of exposure to natural disasters and is the lowest among the comparators (Figure 28), including earthquakes, storms, floods, droughts. Given its geographic location, the country is not prone to catastrophic hurricanes or sea level rise. However, western and central Mongolia is situated in a moderate-to-high-risk zone of seismic activity. Mongolia has experienced four major earthquakes with surface-wave magnitude (M_s) greater than 8.0 ($M_s > 8$), and many more moderate earthquakes (M_s 5.3-7.5) since 1900. The historical records of seismicity show a high concentration of seismic activity along the mountain ranges stretching from the west to the south, as well as in the north western border with Russia. Ulaanbaatar, the economic and urban hub where almost 50% of the population is living, sits on the boundary between low to high earthquake risk. Since 2005, the western part of the city has witnessed many smaller magnitude (up to M_s 5) seismic activities.

Figure 28. World Risk Index of natural disaster, 2013



Source: United Nations University for Environment and Human Security (UNU-EHS), and the World Risk Index, 2014

Climate: Due to climate change, incidences and intensity of climate related hazards have increased. Forest fires, strong wind storms, thunderstorms, flash floods, drought and dzud are the most common disasters. Livestock and, in some cases, human lives are vulnerable to dzuds, which usually occur in 10-12 year cycle. Two of the most severe dzuds took place in 1999-2002 and 2009-2010. In the latter case, around 8.5 million animals died, 20% of the entire livestock population, and it affected 769,000 herders or 28% of the population.¹⁴¹ Thus, the economic and social costs of these disasters are enormous, affecting livestock growth and livelihood of herders.

Across generations, herders have extensive experience of managing the risks and consequences of dzuds that are predictable and have a relatively slow onset, but the ability to cope has changed. Today's dzud happens in a context of economic volatility, climate change, and institutional transformation, changing the nature of required adaptation.¹⁴² Due to limitations on pasture and water resources, some herders have relocated to pasture where existing herders continue to work, diminishing community's collective resources.¹⁴³ This could be exacerbated in future years by the high increase in livestock head since 2010. Smaller herders tend to lose a greater percentage of their herds in dzuds¹⁴⁴, because of their inability to acquire adequate stocks of fodder or migrate to more amenable pasture, among other factors. Furthermore, dzuds stretch local government budgets and the capacity to manage other social services, threatening critical services such as maternity care.¹⁴⁵ Relief aid has also been implicated in fostering complacency to threats of dzuds among herders and local governments.¹⁴⁶

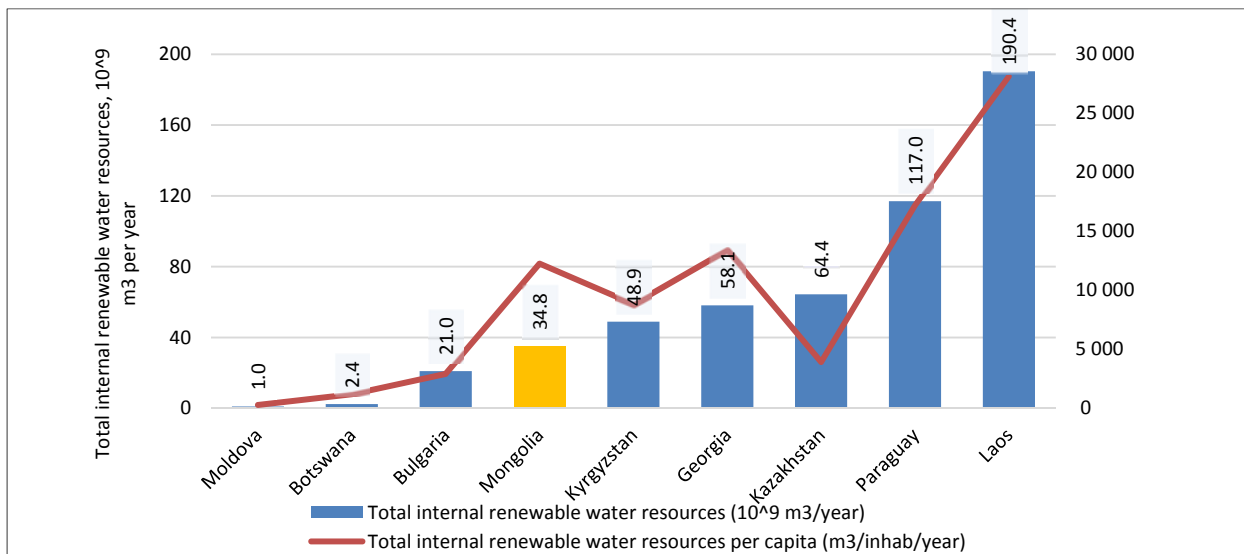
For drought, annual mean temperature has risen and precipitation has decreased during the last 70 years. There is significant volatility in the annual, monthly, and regional distribution of rainfall. Although droughts do not kill livestock in large numbers like dzud, they drastically reduces their

chance of survive normal winters and dzud. For example, during 1999-2002, droughts followed by dzud in the same year killed around 30% of the livestock.¹⁴⁷

Water: Mongolia sits on three continental water basins: the Arctic Ocean Basin in northern and central Mongolia (covers 20% of the country), the Pacific Ocean Basin in the eastern region (12%), and Central Asian Internal Drainage Basin in southern and western parts (68%).¹⁴⁸ The Arctic Ocean Basin generates almost half of the total river runoff in the country and inhabits around 65% of the population and attracts most of the socio-economic activities.¹⁴⁹

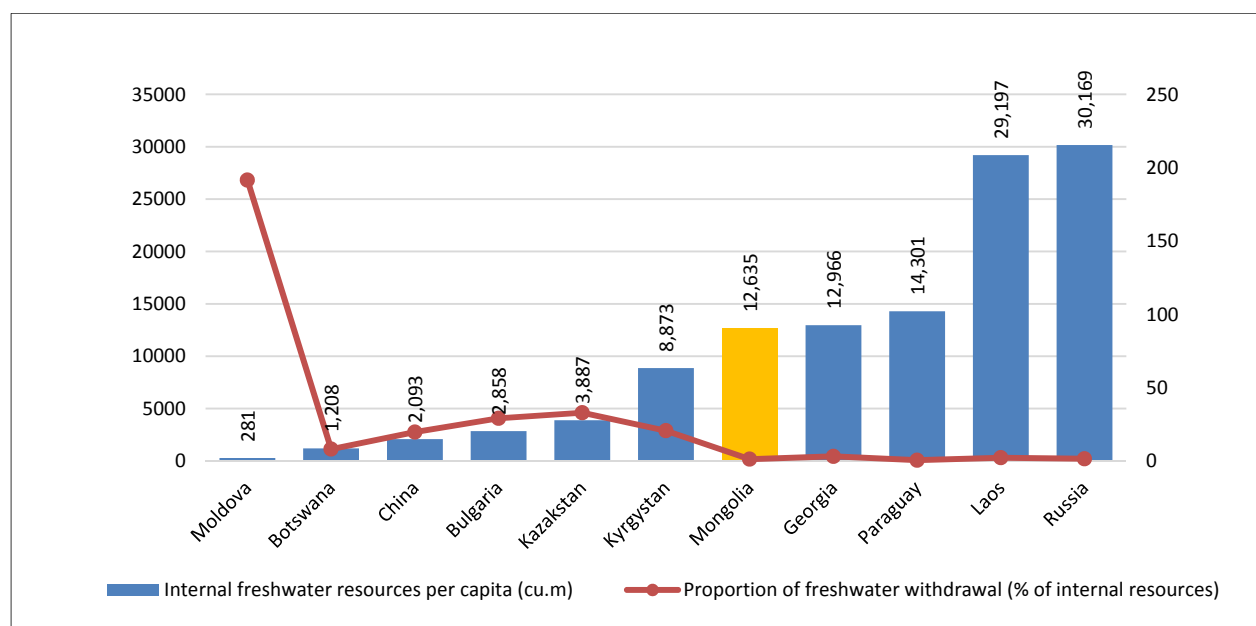
The country’s water resource is scarcer than the global average and that of its comparators (Figure 29). Freshwater withdrawal is very low, comprising 1.2% of its internal water resources (Figure 30). On a national level, 82% of freshwater withdrawal is collected from groundwater resources, while only 18% is met by surface water¹⁵⁰, which is estimated at 535 cubic km.¹⁵¹

Figure 29. Total water resource and internal water resources per capita



Source: Food and Agricultural Organization 2014, Aquastat data, World Bank Environmental data, 2014

Figure 30. Freshwater resource per capita and freshwater withdrawal



Source: Food and Agricultural Organization 2014, Aquastat data, World Bank Environmental data, 2014

Water resources, both ground and surface, are unequally distributed across the country and water scarcity is an emerging issue in two locations – Ulaanbaatar and South Gobi region. Ulaanbaatar inhabits a third of the country’s population and attracts most of the economic activities as the capital city. Water supply is predominantly from groundwater resources and direct use from surface water is less than 1% of the total water usage. Current water demand is estimated to have exceeded its supply capacity: per the 1980 and 1995 hydrological studies, the maximum amount of water that could be drawn from a number of aquifers around Ulaanbaatar is 286,700 m³ per day. The consumption, as of 2015, in Ulaanbaatar is 299,000 m³ per day.

South Gobi region has no surface water resource and depends on groundwater, which is almost non rechargeable. The region has three water basins and two of them have main economic activities with competing demands driven by large mines such as Oyu Tolgoi and Tavan Tolgoi. These mines have launched operations and more projects, including Sainshand Industrial Park, are planned, requiring the development of new water resources.

While water resource decline has been prominent in UB and the South Gobi region, it reflects more generalized water shortage concerns. One oft-cited statistic produced by the Ministry of Nature, Environment and Tourism in 2007 found that in the preceding four years, the number of dried up lakes, streams and springs had increased by 30%.¹⁵² In 2009, consumption was broken down by the following uses: industry (38%), irrigated crops (23%), livestock cleaning and watering (21%), municipalities (13%) and the cooling of thermoelectric plants (5%).¹⁵³

According to the following studies, there are many sources of water shortage, including:

1. **Climate change.** One research estimates that global warming increased the potential evapotranspiration rate by 7-12%.¹⁵⁴ Another study found that from the late 1980s through 2010 the number of lakes with a surface area greater than 1 km² decreased by 17.6%. Annual precipitation changes account for 70.4% of this variation.¹⁵⁵
2. **The mining industry.** Mining relies heavily upon water use. In 2010, the industry consumed 13% of total water in Mongolia, a figure which will rise steeply with the expansion of planned mining operations.¹⁵⁶ While laws are in place to limit the amount of water that mines can extract at the expense of local communities, the mines do not always abide by these restrictions.¹⁵⁷
3. **Extraction for irrigated agriculture.** In 2008, the Mongolian government launched a campaign to expand and intensify agriculture, which is reliant upon irrigation, further exacerbating water resource limitations.^{158,159} Without proper interventions to manage water usage, the sustainability of irrigation expansion is limited. There is also evidence that irrigated agriculture competes with animal husbandry and mining for water resources.
4. **Increase in the number of livestock.** Following the dzud in 2010, there has been a significant increase in the number of livestock, reaching nearly 60 million heads by 2014. Most livestock are sheep and goats, which have increased in herd percentage due to the profit margins of cashmere production, but are also considerably more destructive of pasture than other livestock.¹⁶⁰
5. **Urbanization.** Over the past few decades, herders have become more sedentary due to the desire to stake a claim to property usage rights, to access services in town centers, and to access markets.¹⁶¹ Further, as alluded to above, urban areas have grown rapidly and considerably in size, thus requiring more intense extraction of water resources.

Declining water resources have a significant impact on rural residents and, among them, poor populations. According to the United Nations Development Program (UNDP), “Water stress explains the vulnerability of rural populations engaged in nomadic livestock husbandry and arable farming. It also decreases their resilience and that of the ecosystems on which their livelihoods depend.”¹⁶² In addition, water vulnerability may have gendered effects. As water becomes scarcer, many herders, predominantly men, choose to move their dwelling or travel longer distances to graze herds. The increasing work burdens impact women who might have to spend more time on domestic tasks, on activities that men had engaged in, and on moving their homes. Scarce water also means less water available for use in household production, and polluted water means greater exposure to pollutants and greater burdens to care for family members, and even animals, that fall ill.

Water scarcity affects several key industries, most notably in mining in the South Gobi, agriculture, tanning, and wool washing industries in Ulaanbaatar. While the first two industries are constrained by available groundwater supply, bulk water transfer programs to the South Gobi, are being studied. The beverage, tanning, and wool washing industries are straining the capacity of the central wastewater treatment plant (CWWTP), which was not designed for industrial effluent. In the case of the beverage industry, some like MCS Coca Cola, are sending treated water to the CWWTP. Others like tanning and wool washing are contributing to environmental pollution because the capacity to treat industrial water at pre-treatment plant (Khargia) is insufficient, resulting in effluent that is below standard. In

some rural areas, water pollution has deterred herding activities and required families to purchase water for personal consumption at great expense in terms of time and financial burdens.

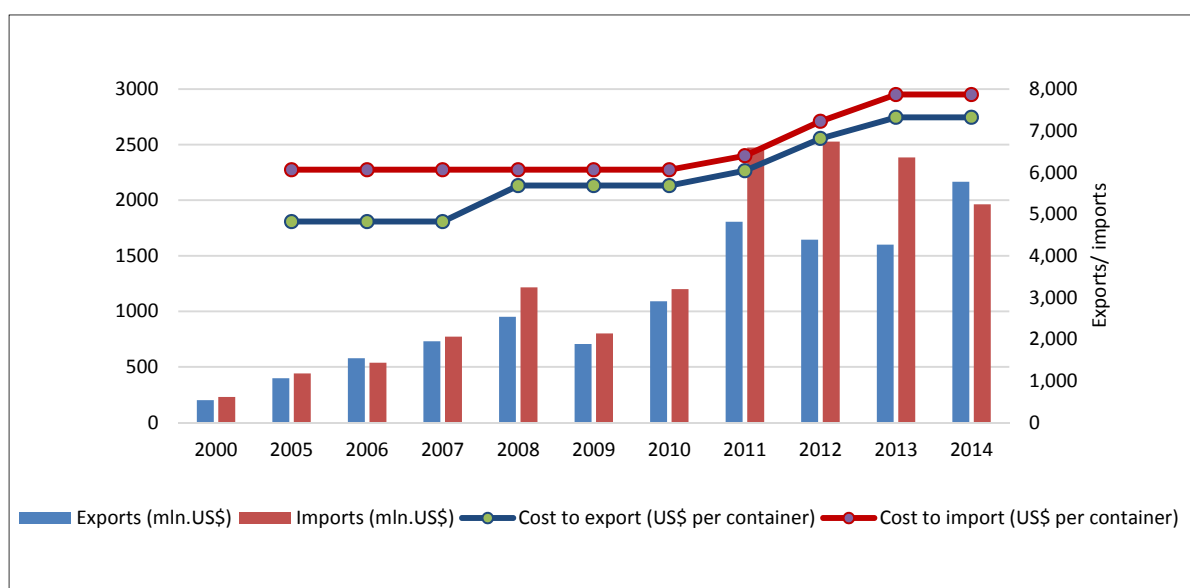
Geological surveys show Mongolia to be abundantly endowed in mineral resources from copper to gold and iron to oil. Because exploitation is capital intensive, only a fraction of these national resources have been exploited. Conflicts have emerged around land and water. Mongolia is also abundantly endowed in solar and wind resource with studies demonstrating ample resource for exploitation that is only just beginning and constrained primarily by the economics of transmission distance to market and challenges around cross-border power trade.

Analysis

The Constraints Analysis analyzed whether natural capital, including size and location, terrain endowment, climate conditions, and water resources were constraining growth.

Size and location: Among the comparators, the ratio of transport cost to the value of export is relatively high for Mongolia at 0.16 (Kazakhstan has the lowest ratio of 0.04, and Paraguay has the highest ratio of 0.17)¹⁶³. This comparatively high cost, however, does not appear to have a negative effect on trade volume and both imports and exports have increased while the cost remains high (Figure 31). However, Mongolia's landlocked location makes it difficult to trade with countries aside from China and Russia. This limitation of potential trading partners has implications for macroeconomic stability.

Figure 31. Transportation cost and total exports/imports



Source: World Development Indicators, 2014

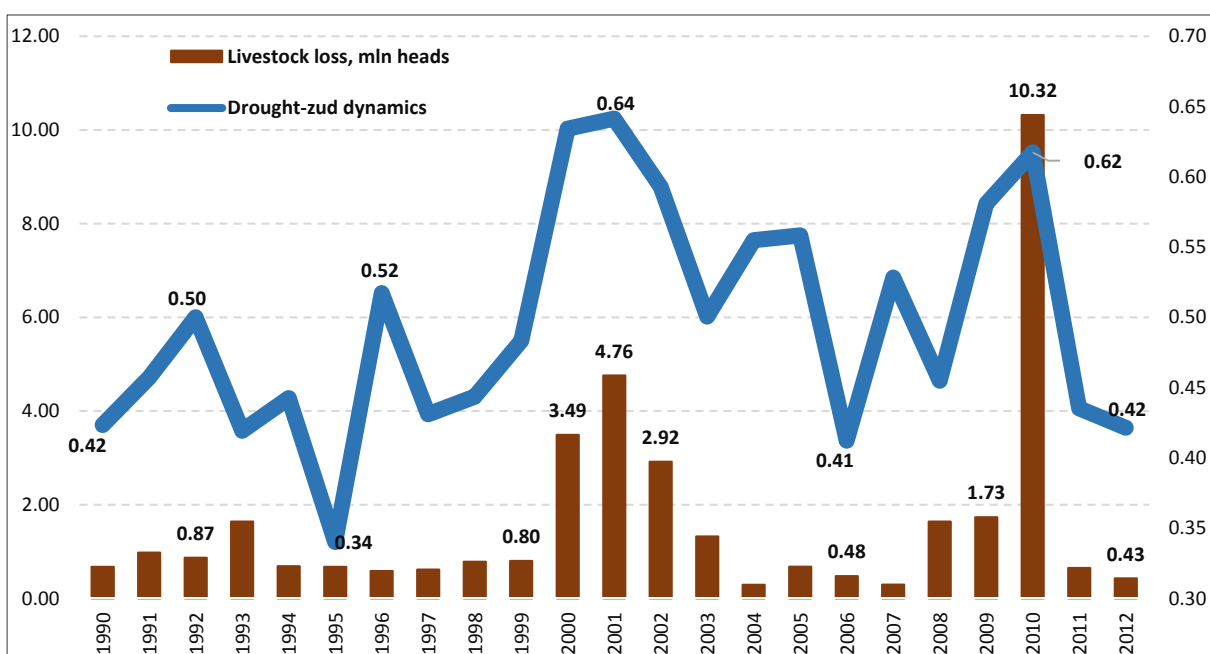
Terrain endowment: As noted earlier, a large percentage of pastureland is degraded due to natural causes and human activities, including overgrazing of pastureland.¹⁶⁴ Exceeding pastureland capacity has become the major cause for the decline in agricultural productivity.¹⁶⁵ As mining activities increase,

the amount of available pastureland shrinks. Approximately 45% of the country is open to mineral exploitation¹⁶⁶ and in 2013 it was estimated that 11.4% of the land was under mining licenses, though the scope of land affected by mining is much larger. Legal and illegal mining industries have altered the landscape, fragmenting previous terrains with paved roads, off-road vehicle usage, infrastructure, and fences. Some mines have also degraded the land through their use and disposal of chemicals and high rates of water extraction,¹⁶⁷ and precipitated overgrazing on available lands and overuse of water resources.

Climate conditions:

Test 1: Is the shadow price of natural disasters high? The shadow price of natural disasters, namely drought and dzud, is high. Over 20 million animals died during two occurrences of harsh winter in 1999-2002 and 2009-2010 (the former was combined with drought), with an estimated economic cost of around MNT 450 billion mostly due to the livestock loss (Figure 32). Migration from rural areas to Ulaanbaatar intensified in the following years of dzud: 82,000 people moved to Ulaanbaatar between 2003 and 2004 and 65,000 people in 2009-2010¹⁶⁸ in search of employment and livelihood. Such migration is one of the contributing factors for the worsening air quality in Ulaanbaatar, due to the expansion of ger districts.

Figure 32. Socio-economic impacts of natural disasters (drought and dzud)

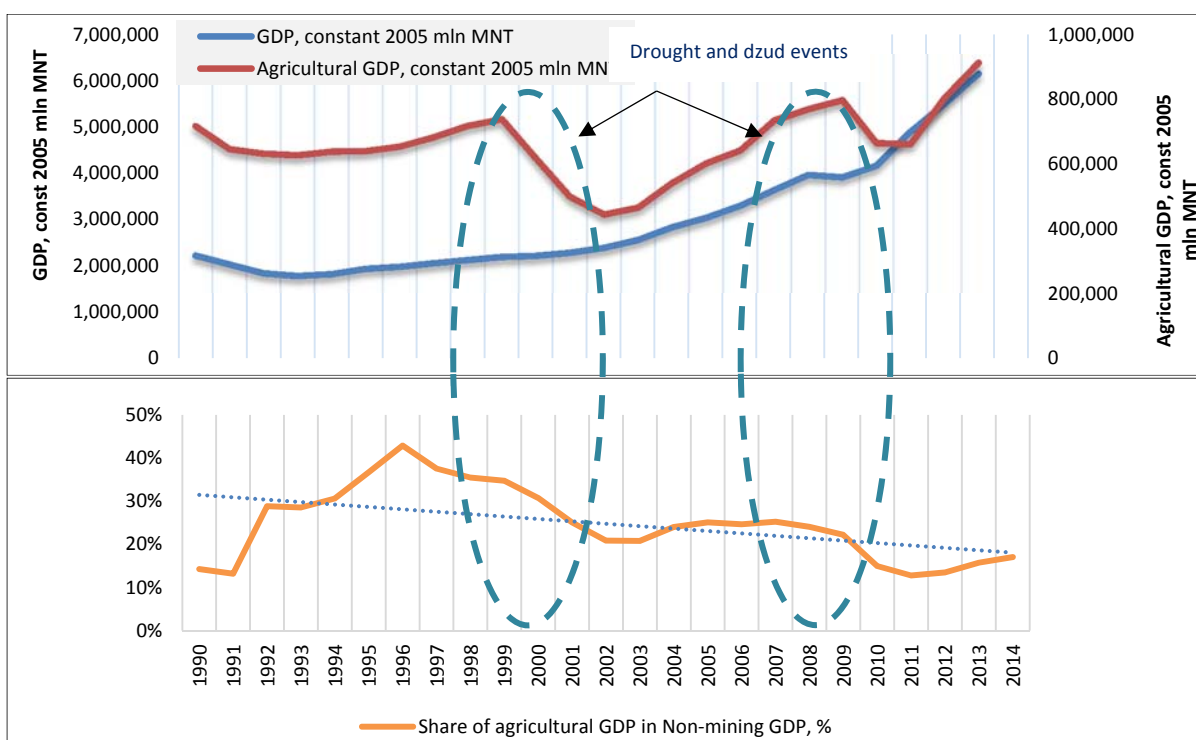


Source: Mongolian Development Institute, Altanbagana M., 2013

Test 2: Does the occurrence of natural disasters have an impact on economic growth? The share of agriculture in GDP around the two incidents of drought and dzud dropped considerably while GDP was growing steadily (Figure 33), leading to a conclusion that there is a negative correlation between natural disasters and economic growth. Herders, who lost their animals to the natural disasters, moved to Ulaanbaatar in the consecutive years following the dzud, as an attempt to

overcome the impacts from natural disasters and the migration numbers were high in these two time periods. However, there is a positive trend lately as a result of government policies to foster intensive agricultural farms. The number of intensive farms has been steadily increasing in the last decade. The number of dairy and beef farms cattle farms was only 197 in 2005 and reached 1,905 as of 2014.¹⁶⁹ Similarly, other farms, such as sheep, poultry, pig, and bee farming, have had strong growth.

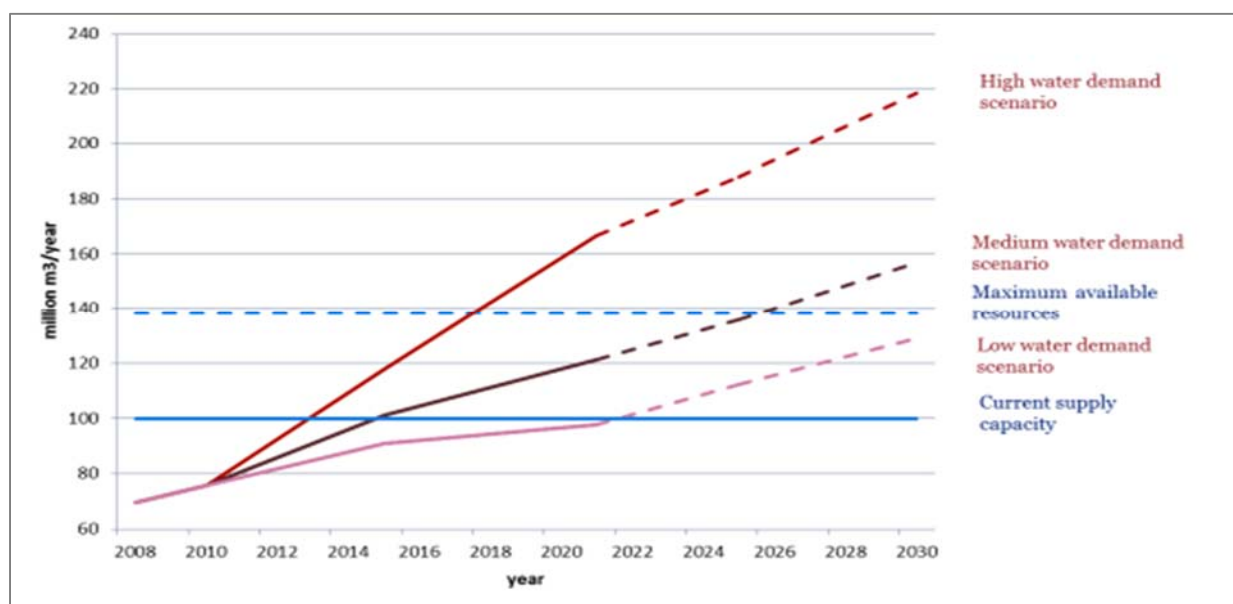
Figure 33. Correlation between natural disasters and economic growth



Source: National Statistics Office of Mongolia, 2014

Water resource: Based on approved groundwater resources, the projected water demand of Ulaanbaatar exceeds current supply capacity in the near future. In case of high and medium water demand scenarios, Ulaanbaatar will experience a serious water shortage within the next 10 years by 2018 and 2025, respectively (Figure 34). A similar projection was completed for the South Gobi region: in the high demand scenario, the water demand is estimated to exceed available water resources between 2021 and 2030 and high water risks, including quality and quantity, are expected locally in low, medium, and high demand scenarios. The shadow price of water will go up as water resources become increasingly scarce. As discussed in the water and sanitation chapter, this underlying water scarcity contributes to costly access to water for productive sectors and poor communities.

Figure 34. Actual and projected water supply and demand gap in Ulaanbaatar



Source: Tuul Water Basin Integrated Water Management Plan, New Ulaanbaatar City Master Plan, PwC/ Deltares

Conclusion

Mongolia's natural capital, namely geographic location and size, terrain, climate, and water resources, creates both opportunities and challenges. Mongolia must deal with long distances to major trade routes, and land degradation and natural disasters have large socio-economic impacts. Although Mongolia is geographically isolated from major international markets and population centers, its overall transport costs are similar to comparators. Mongolia benefits from its natural resource endowment, as there are significant coal and mineral deposits. However, the environment and its usage require careful management to ensure economic and environmental sustainability. The harsh continental climate, along with the frequent dzuds, have imposed a high cost on the agricultural sector and led to large-scale migration to Ulaanbaatar. However, in all of these cases, Mongolia's natural capital is an input to the problem, but not necessarily an underlying cause. For example, the problem of overgrazing is driven more by poor land management than the underlying features of the land. The frequent dzuds are natural disasters that become economic and social disasters through weak insurance and preparedness systems. Similarly, scarce water resources are an underlying factor that contributes to the constraint of costly access to water and sanitation for productive sectors and poor communities. Based on this evidence, **natural capital is not a binding constraint to growth** in Mongolia.

8. Education

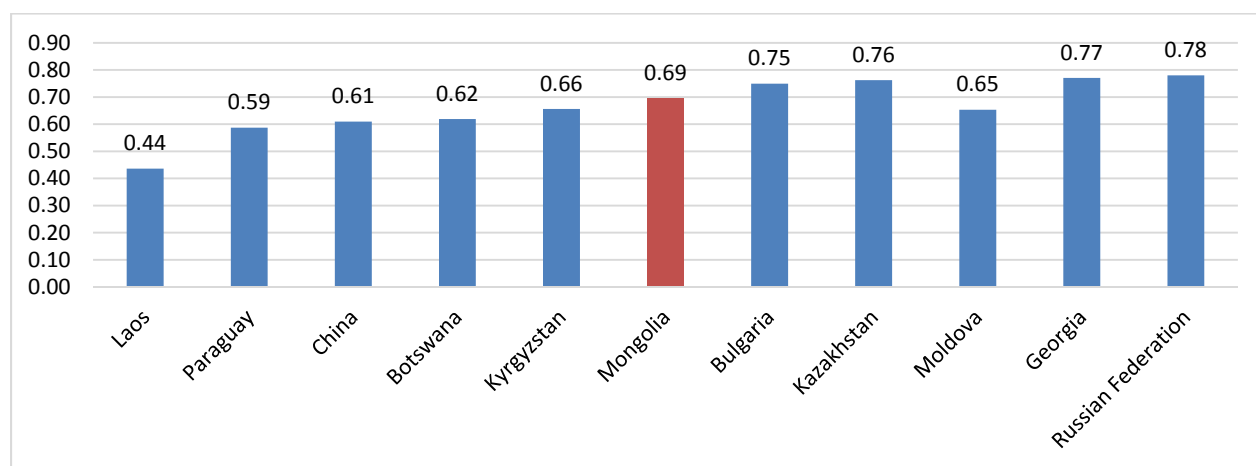
Background

If the economy lacks a sufficient supply of workers with the skills it demands, education could be a binding constraint to growth.

The Human Development Index of Mongolia has been increasing and improving significantly over the recent years in connection with economic growth. However, Mongolia has ranked in line with Maldives and Turkmenistan positioning at 103rd place out of 187 countries in 2014.¹⁷⁰ Comparing to the previous year Mongolia has shifted into the medium human development category country. Generally, Human Development Index is measured by long and healthy life, access to knowledge and gross national income (GNI) per capita provided by decent standard of living.

Mongolia ranks in the middle of its comparator countries on the UNDP's Education Index (Figure 35), and access to education is high with primary and secondary completion rates near 100%. Despite of the high completion rate, the quality has been cited as a concern and rated low by local opinion surveys and international benchmarks such as the World Economic Forum (WEF) Global Competitiveness Report.¹⁷¹ Other studies have found, on the contrary, that education is competitive on an international level, including a case study stating that the returns to education increase for tertiary students.¹⁷² When comparing Mongolian universities to the internationally accepted universities, the National University of Mongolia had been ranked at 3,700 whereas University of Science and Technology ranked at 4,200.¹⁷³

Figure 35. Human Development Index: Education Index, 2013



Source: UNDP Education Index, 2013

Mongolia has the highest pupil-to-teacher ratio (30 students per teacher) in primary schools while the top performer – Georgia – has only 10 pupils per teacher. Among the benchmark countries, Mongolia tops the ranking with public spending at 5.24% of GDP per the average of 2005-2012 and the public expenditure per student in primary schools is 18.9% of GDP per capita, which is comparable with

international average. However, spending on tertiary education is far below the global average and many studies find inadequate quality of tertiary education have direct impacts on workforce.

In its recent study of Mongolia's competitiveness, the Economic Policy and Competitiveness Research Center (EPCRC) found that skill shortages remain an important issue in the labor force. In a survey of executive opinions among 15 countries, Mongolia came last on the availability of skilled labor and financial skills.¹⁷⁴ It scored poorly or third last on whether the education system met the needs of a competitive economy. A 2007 World Bank study indicated that Mongolia was "far from a high skill-intensive economy" due to "the nature of the skills demand towards more general skills that allow workers and firms to "survive" and quickly adapt to changes in demand."¹⁷⁵ Unfortunately, it is still the case and soft skills, such as analytical thinking and behavioral skills, practical knowledge of English and information technology, are increasingly in demand in addition to technical skills.

Rural children more generally face challenges in education. In many rural areas, many children are involved in agricultural work and rural schools do not necessarily accommodate agricultural cycles in their learning. A 2005 study revealed that 71% of male secondary drop outs left school for herding.¹⁷⁶ Secondly, many rural children face difficulties in accessing early childhood education and approximately 25% of them receive a preschool education, compared to 50% of those in urban areas.¹⁷⁷

Additionally, rural schools do not have the same level of educational quality. A 2007 study revealed that rural scores for math and reading were 23.6% and 18.7% lower than those of urban students.¹⁷⁸ Though inequities remain, in recent years the government has made strides in improving primary school attainment among the poor¹⁷⁹, and in 2011 the net secondary school enrollment ratio for rural and urban areas were almost equal.¹⁸⁰

Migrant families also suffer inequities. In 2008, of the 43% of children who are not involved in early childhood education, 30% were children from migrant families.¹⁸¹ Disabled children are perhaps presented with the greatest challenges in securing an adequate education. Only half of individuals born with a disability attend formal schools, and among them a startling 93% have only completed schooling at a primary level, compared to an overall rate of only 0.7% for all Mongolians.¹⁸²

In a 2013 survey of Mongolian CEOs conducted by PwC in Mongolia, "Availability of Key Skills" was ranked by 65% of CEOs as the second biggest threat to business growth, albeit down from 90% the year before. The most challenging group to recruit and retain was "high potential middle managers". 58% strongly agreed with the statement that: "In three years we will have partnered with other organisations specifically to circumvent skills shortages."

The World Economic Forum's Global Competitiveness Report for 2014-15, ranks Mongolia #68 out of 144 countries on "Higher Education and Training" and #67 on "Quality of Primary Education", outperforming "Emerging and Developing Asia", but an "Inadequately Educated Workforce" is rated as the #3 most problematic factor for doing business. Mongolia ranks very well in Secondary and Tertiary Education Enrollment and the Quality of Math and Science Education. However, Mongolia

falls to #132 in the Quality of Management Schools and #137 in the Quality of Research and Training Services.

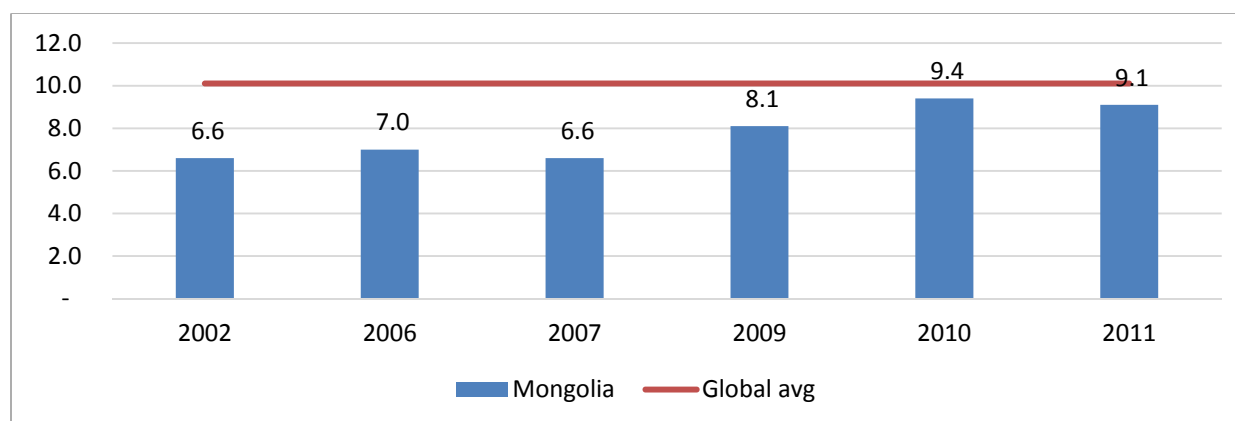
Analysis

Based on this information, it appears that the quantity of education is relatively high in Mongolia, but the quality of education could be a constraint if workers do not have the skills required in the market. **The Constraints Analysis tested whether the availability of workers with a quality education is in low supply but high demand in Mongolia.**

Test 1: Are employers willing to pay a premium to attract educated workers? One way to measure whether employers are paying a premium for educated workers is to examine the returns to education at various levels. Darii and Suruga (2006) found that rate of returns to an additional year of schooling is 7.2% on wages and the returns to university level education is sizable in comparison to former Soviet Union and Central East European countries. Earnings increased alongside educational attainment, with a rate of returns on university education of 9.5%, compared with 4.2% for general education.¹⁸³ Education lower than high school level has no significant impacts on wage. However, education higher than secondary education increases with educational attainments. For example, earnings of men and women with tertiary education is about 20% and 23%, respectively, higher than those of men and women with vocational education with one more year of schooling raises wage rate by about 10%.¹⁸⁴

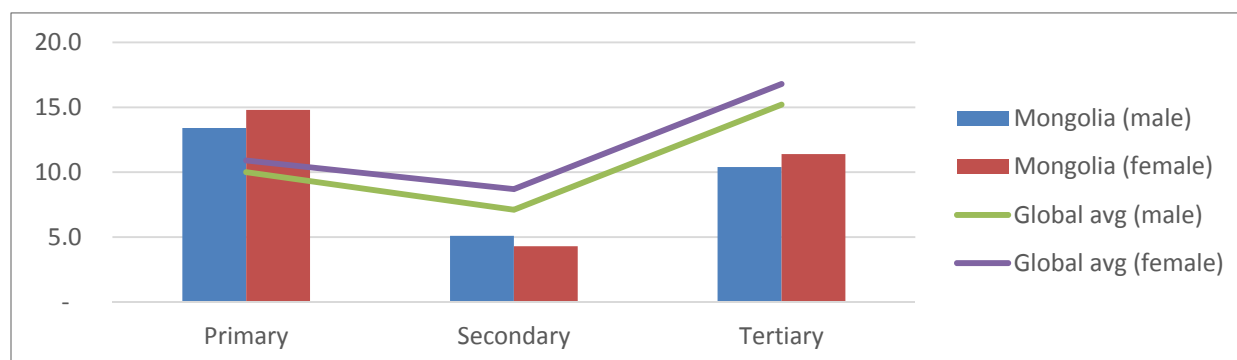
Per Mincer regression estimates assembled by Montenegro and Patrinos (2014), the returns to education for Mongolia have been progressively improving since 2002 and are 9.1% as of 2011. It is just below the global average of 9.7% and compared against 10% for high income countries as indicated in Figure 36. When disaggregated, returns to primary education are above the global average, while returns to secondary and tertiary education are below average (Figure 37).

Figure 36. Returns to education



Source: Montenegro and Patrinos, 2014

Figure 37. Returns to education by level, 2011



Source: Montenegro and Patrinos, 2014

Although the returns of education are lower than global averages, they could still be consistent with a quality constraint. Incremental wage gains may be low because the supply of education is greater than the demand, but they could also be low because firms perceive the quality of education as low and are unwilling to pay more to attract workers with more education.

Unemployment of educated citizens remains high, and the attainment of a bachelor's degree does not decrease unemployment. It is estimated that only 36% of university graduates participate in the labor force compared with 60% graduates from technical and vocational institutions.¹⁸⁵ World Bank research found that 53% of total labor force work in the sectors with less productivity and weak social protection and there is a need for skills in labor market.¹⁸⁶ It is important to note gender disparities in the labor market. Despite higher returns to education and rates of educational achievement for women, men's labor force participation rates exceed women's by 9% at the basic level, 13% at the secondary level, and 5% at the tertiary level.¹⁸⁷

A more recent study also showed that the overall labor force participation of women has been on the decline in recent years, and was particularly low for those between the ages of 15-29 and over 50.¹⁸⁸ At primary, secondary, and initial technical vocational levels, women face less unemployment than men and remain slightly more unemployed among those with high school and technical diplomas. However, at the tertiary level, there are much more pronounced differences, with 32% of unemployed women holding BAs relative to only 18.8% of men with the same degree of educational attainment¹⁸⁹.

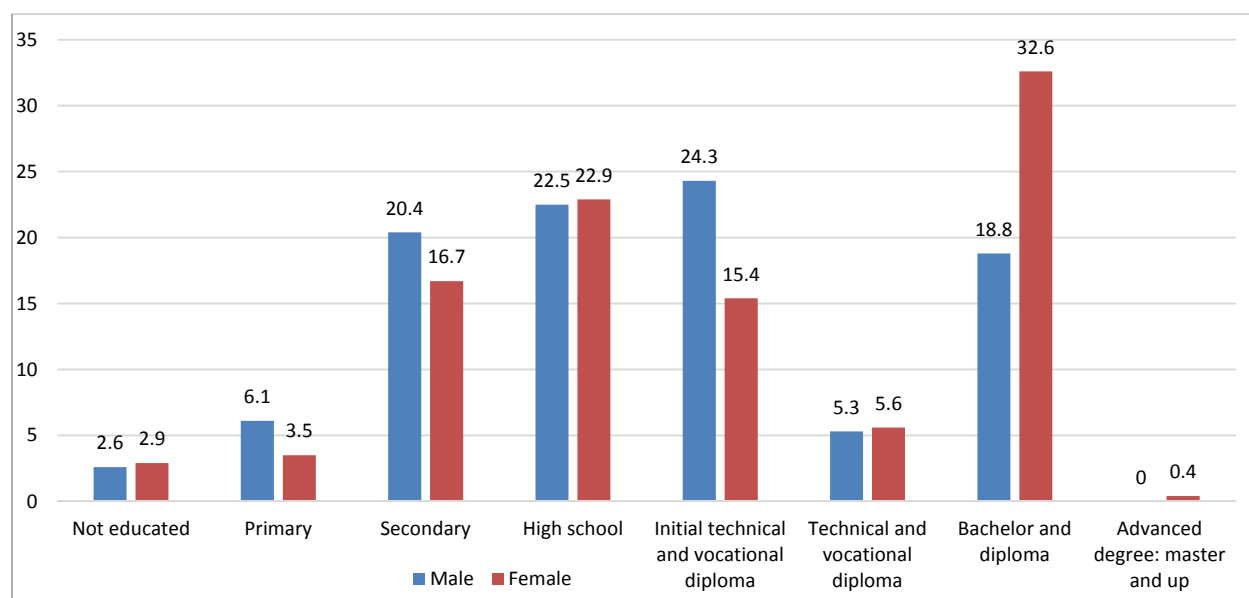
While employers are willing to pay for educated workers, firms are also paying a premium for male workers relative to comparable females. After accounting for such differences as education and experience, the wage gap between women and men ranges from 14-25%.¹⁹⁰ This gap has been increasing over time. While in 2000 women earned an average of 92% of a man's salary, by 2007 it had fallen to 86% and by 2011 it fell even further, to 83%.¹⁹¹ While these findings can be partly explained by occupational segregation, educational choice (in that women chose education in sectors with lower prospective wages), the overrepresentation of women in low-wage jobs, and breaks in employment history for caregiving, even in comparable jobs in the same industry men and women are compensated differently, with the latter making 77-78% of a comparable male's wages.¹⁹²

Discrimination seems to play a role in these discrepancies. For example, according to one survey one third of employer respondents noted that in terms of promotions, they would chose men over women. Further, women’s role as childbearers and caregivers has been shown to result in their devaluation in the marketplace. There is additional evidence that male employees, by virtue of being male, are assessed more highly at their jobs than comparable women.¹⁹³ These trends might contribute to the fact that, despite meeting or exceeding performance expectations relative to men, women were less likely to seek promotions. Further, they were less likely to negotiate their starting salary, they had lower expectations regarding salary, and they were willing to work for lower wages than men.¹⁹⁴ These trends point to problematic exclusions for women, who lack of full and equitable participation in the labor market.

Test 2: Do shifts in education lead to shifts in output? Educational completion rates have been increasing steadily in the past decade while returns have remained stagnant. During this time period, GDP and living standards have increased dramatically in Mongolia, which suggests that low education quality is not constraining growth.

In 2013, the proportion of unemployed is highest among people with bachelor degrees or diplomas while it is low amongst those who have postgraduate degrees (Figure 38). The unemployment rate is particularly high for females with bachelor degrees. The labor force participation is higher for those with bachelor/high education diploma (74%) and masters and postgraduate degrees (86.2%) compared with around 50% for those uneducated or with primary level education.¹⁹⁵

Figure 38. Proportions of unemployed persons by gender, classified by education levels, 2013



Source: National Statistical Office, 2013 Workforce Survey

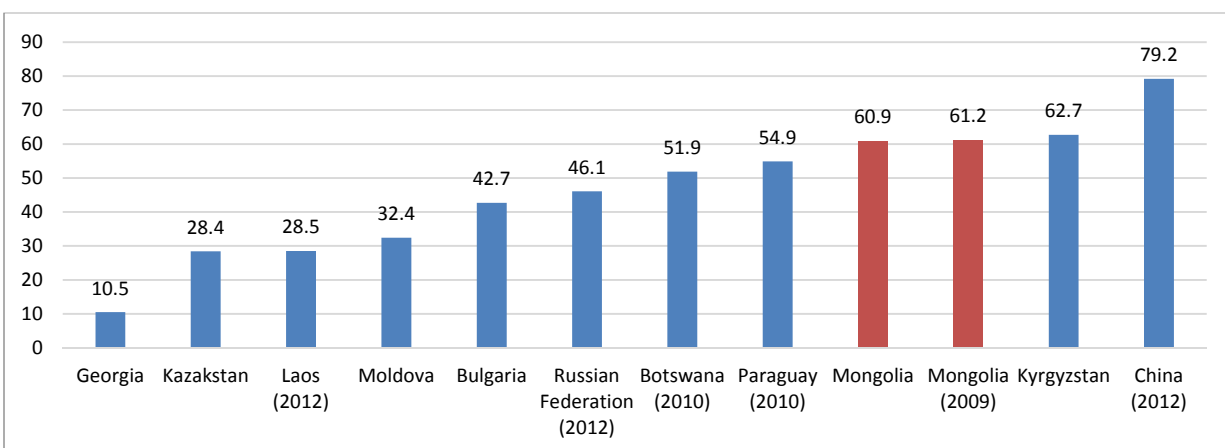
As mentioned above, primary education has no significant impact on wages of men in urban areas, while it has a significantly positive impact in rural areas. On the other hand, the returns to tertiary education are significant and positive, and 30% higher in rural areas than in urban areas. Primary and

secondary education have no significant impact on women's earnings in both urban and rural areas and their wages increase with high school, vocational, and tertiary education. The returns to vocational and tertiary education in rural areas are significantly higher than in urban areas and the differences are 53.4% and 62.4%, respectively.

Test 3: Are firms looking for other ways to acquire educated workers? As measured by the World Bank Enterprise Survey 2013, an inadequately educated workforce is the sixth largest obstacle out of ten biggest business environment obstacles and 22.8% of firms identify an inadequately educated workforce as a major problem,¹⁹⁶ a significant increase from the 2009 figure of 15.2%. This problem appears particularly pressing for medium sized firms, 43.1% of which sited inadequate education among the workforce as a major constraint. However, overall these findings are about equal to the world average.¹⁹⁷

Approximately 60% of firms in Mongolia offer formal training programs, and the proportion of workers offered formal training is 65.8%, which is higher than the regional and international average of 58.9% and 53%, respectively such that the supply of workforce is not adequately educated and private sectors attempt to fill in the quality gap through short-term and on the job training.¹⁹⁸ The share of firms offering formal training is among highest in the benchmark countries and it can be seen in Figure 39 for 2009 and 2013.¹⁹⁹ However, studies have demonstrated that women are less able to access such opportunities.²⁰⁰

Figure 39. The percentage of firms offering formal training programs for their permanent, full-time employees, 2013

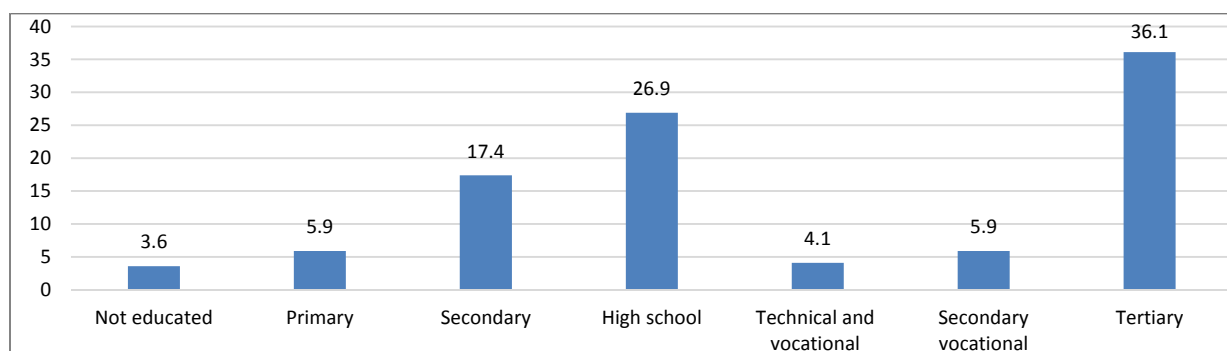


Source: World Bank Enterprise Surveys, 2013

The share of high skilled employment in the total employment has been increasing over time. The share of male with high skills is 17.8% which is the average among the benchmark countries. Both male and female with medium skills have the largest share in the employment 75.2% and 65.3%, respectively.²⁰¹ Another attempt by the private sector to respond to the inadequate quality of education, especially tertiary, is bringing international workforce into the country. Over the past three years, the number of foreigner working in Mongolia has increased from 12,061 in 2010 to 29,705 in

2012 (Figure 40). As of 2010, the majority or 36.1% of the foreign workforce in Mongolia has a tertiary level education and the remaining part has high school, technical, or vocational level education.²⁰²

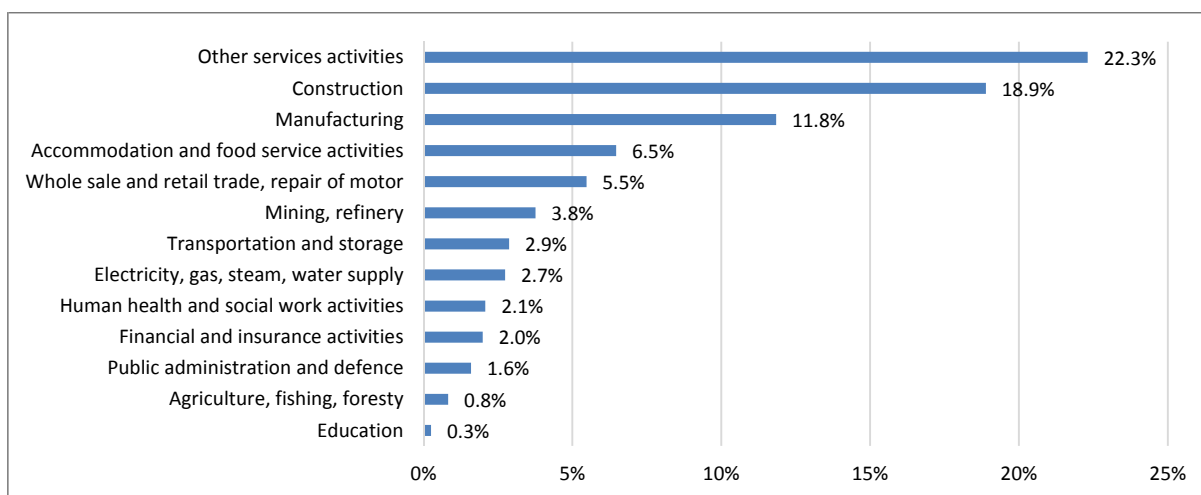
Figure 40. Foreigners (6+ months) staying in Mongolia grouped by their education level, %, 2010



Source: NSO, National Population Census, 2010

Test 4: Are firms that are reliant on educated workers thriving? In recent years, economic growth has been driven by mining and construction industries, while agriculture as a share of GDP has been steadily dropping. According to the 2013 Asian Barometer Survey, occupations in high demand require vocational education, such as carpentry and bricklaying, rather than a bachelor degree. The growth has been focused on those sectors that would not be affected by the poor quality of tertiary education. Apart from lack of skilled workers, economic sectors that require lower specialized skills are prospering in comparison to other sectors that require high skills. Looking from Figure 41, more job vacancies can be seen in sectors that do not require specific qualifications and skills.

Figure 41. Job vacancy number as percentage of total number of employees, by sector



Source: Institute for research on labor and employment, Barometer research, 2013

Conclusion

As the analysis shows, it appears that the quantity of education is relatively high in Mongolia, but the quality could be a constraint for growth. The analysis of the first test reveals that the returns to

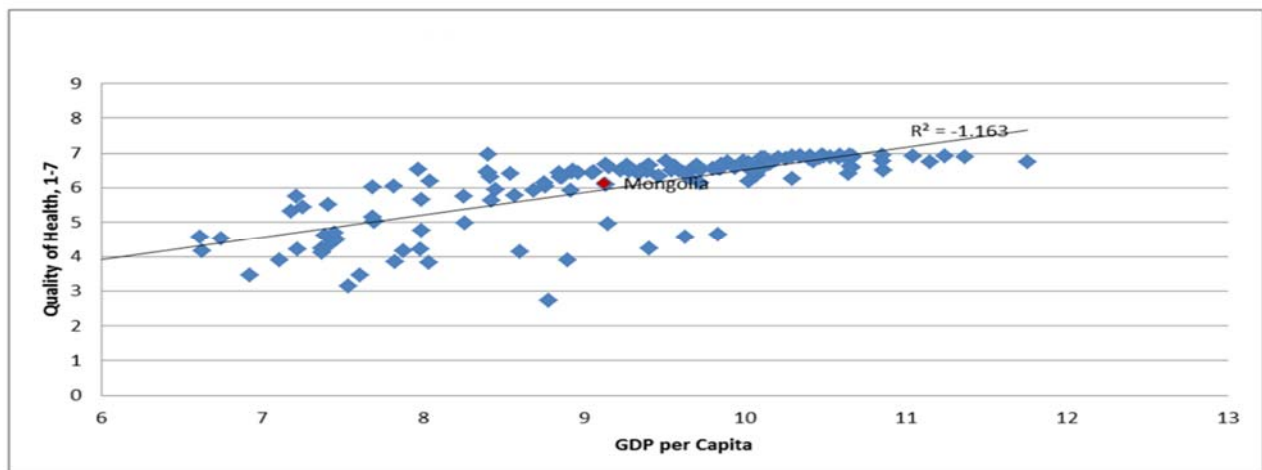
education are slightly below the global average; wage and employment rates increase with the level of education especially in urban areas; most of firms offer formal training to address the inadequate quality of education; and the sectors that do not require highly skilled labor are growing. However, international education assessments indicate Mongolia's human capital is competitive, and low quality education did not appear to impede the recent rapid growth. The supply of tertiary educated professionals are high, and even more of them are living abroad.²⁰³ Although there is some evidence to suggest a constraint, the balance of evidence suggests **that the education is not a binding constraint to growth.**

9. Health

Background

The health situation of the Mongolian population has shown mixed results over the past twenty years. Average life expectancy has increased steadily from 60 years in 1990 to 69 years in 2013,²⁰⁴ although notable gaps persist between male life expectancy (64 years) and female life expectancy (74 years). The male to female life expectancy gap is about twice as high as the world average, and is indicative of male-specific health challenges. The gap is particularly noticeable in the 20-34 year old age bracket wherein, in 2007, male mortality was three times that of women.²⁰⁵ Thirty-three percent of male mortality is associated with cardiovascular disease, 24.9% with injury and other external causes, and 19.4% with cancer²⁰⁶. Mongolia ranks around the international average in quality of health and GDP per capita (Figure 42).

Figure 42. GDP per capita and quality of health



Source: World Development Indicators and Mongolia Household Survey 2011

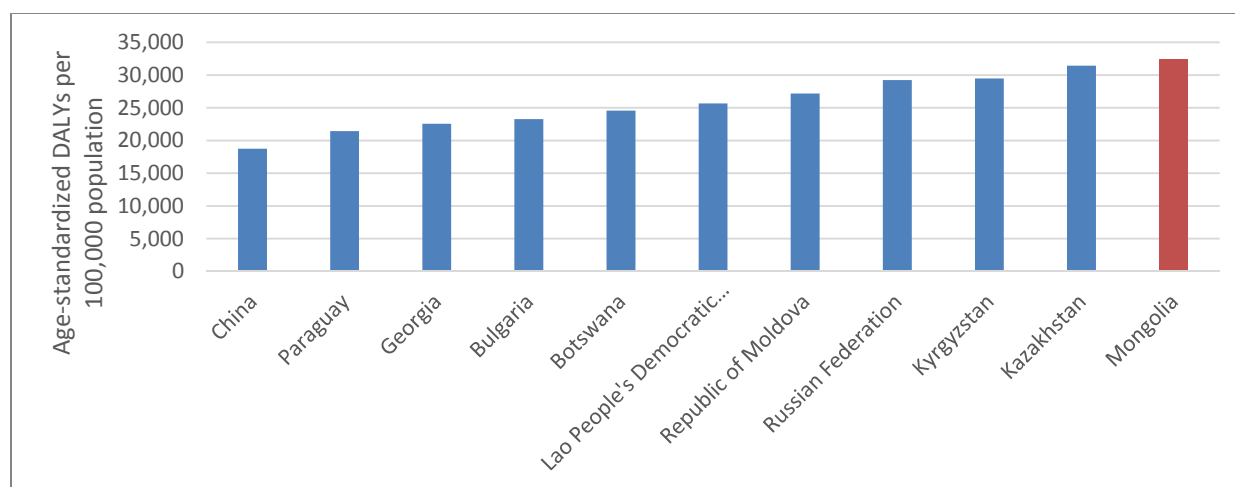
For the Millennium Development Goals, the country was on track, as of 2013, to meet the 2015 target for cutting the number of children with malnutrition and underweight under the age of five, especially in rural areas. The target to reduce child mortality under five per 1,000 live births was met by reducing the deaths from 97.2 in 1990 to 18.9 in 2014. Maternal mortality has been reduced to 51.5 per 100,000 live births. Human immunodeficiency virus (HIV) incidents among adult populations were less than 0.1% in 2012 and tuberculosis (TB) cases were 82 per 100,000 people and these two results already achieved 2015 MDGs targets.²⁰⁷ According to the “Global Competitiveness Index 2014-2015, Mongolia ranks 65th out of 144 countries in Health and Primary Education, slightly better than its peers in Emerging and Developing Asia. It ranks 89/144 in “Business Impact of Tuberculosis” and 53/144 in “Business Impact of HIV/AIDS”. Out of 16 “Most Problematic Factors for Doing Business”, poor public health ranks second to least problematic.

Rural areas show greater negative health disparity. In 2007, the Ministry of Health reported that 40% of maternal deaths are among herder women in remote rural areas.²⁰⁸ In the most remote *aimags*

(provinces), particularly in the west, the maternal mortality ratio is four to six times that of Ulaanbaatar (UB). In urban areas, districts with considerable in-migration, maternity hospitals receive a high number of unregistered migrants leading to impeding on the quality of care.²⁰⁹ With regards to maternal care, while coverage is universally provided, quality varies on the basis of residency, age, and income. Mongolia's fertility rates have risen from 2.6 in 2011 to 3.1 in 2014. All of these women require care in an increasingly stretched healthcare system. Recent data reveals that the adolescent pregnancy rate has increased to 44 per 1,000, with particularly high rates among adolescents in rural areas in the South (at 26.3%).²¹⁰ Separate research has found that girls in this age group were most likely to deliver at home and 57% had birth complications.²¹¹

Non-communicable disease (NCD) incidence is considerable in the country accounting for 80% of deaths, which is the highest among the comparators (Figure 43). The impact of cancer, obesity, and respiratory disease has been on the rise, while every communicable disease except tuberculosis has decreased.²¹² The WHO lists the top ten causes for deaths including ischemic heart disease, stroke, liver cancer, cirrhosis of liver, lower respiratory infections, among others.

Figure 43. Mongolia's non-communicable disease burden among comparators, 2012



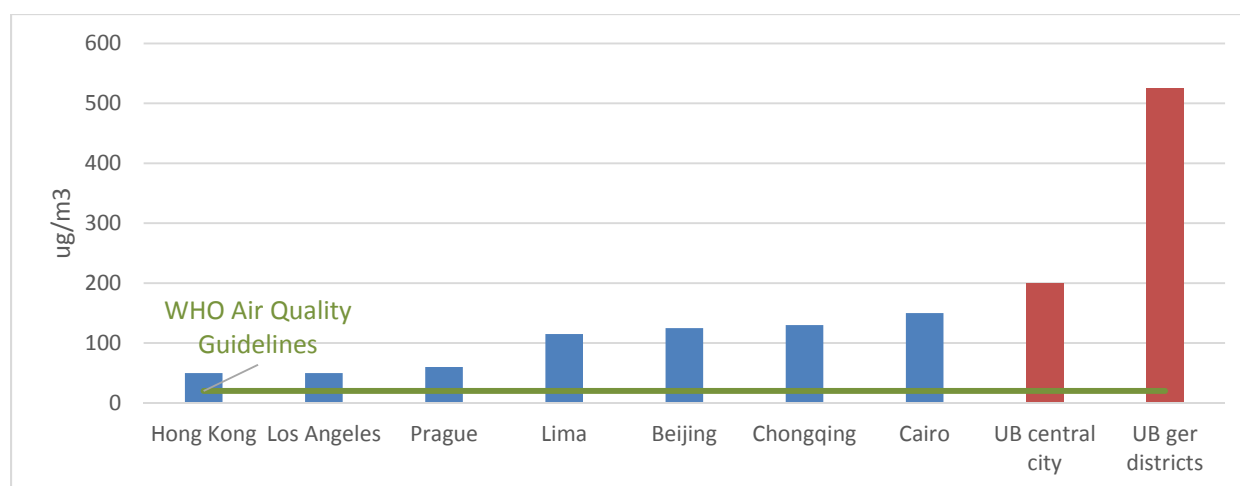
Source: World Development Indicators 2014 and Mongolia Household Survey 2011

The population faces difficulties and burdens to access health services.²¹³ Concerns of service access are particularly noticeable for rural and poor communities. For instance, despite the fact that infant mortality and other health issues are higher in rural zones, the likelihood of visiting a doctor or care center is lower.²¹⁴ There are number of factors for access barriers: the doctor to population ratio is 1.5 times higher for urban areas than rural zones, and the majority of rural care is provided by feldshers, who are trained mid-level health professionals working out of gers. Furthermore, public sector funding can be inadequate in some situations. In the course of a September 2015 MCC visit to a UB ger district, a director of a local non-governmental organization (NGO) explained that state-supported hospitals can run out of coverage and turn away those unable to pay. Other respondents working at the district level mentioned that their facility does not provide free or subsidized care to patients who cannot afford to pay out of pocket. A clinician in charge of this facility recalled a local survey that revealed only 18% of those who need inpatient care receive it.

The health system in Mongolia is entirely state-owned and operated. Private health insurance is not common. Most of the private clinics, including Korean Songdo Hospital, opened in 2007 and Intermed Hospital, opened in 2015, are concentrated in Ulaanbaatar.

UB has become one of the most polluted cities in the world with 50-70% of pollution coming from coal stoves for heating in ger districts with the remainder from wind-blown dust, transportation emissions, three coal-fired power plants and around 400 heat-only boilers.²¹⁵ The particle matter smaller than 10 microns (PM_{10}) in the air causes severe respiratory illness. During winter, the levels of nitrogen dioxide, sulfur dioxide, carbon dioxide, and particulate matter are several times higher than the WHO air quality standards (Figure 44). In 2008-2009, when the country faced one of the harshest winters, population-weighted exposure was 427 micrograms/cubic meter for PM_{10} and 260 microgram/cubic meter for $PM_{2.5}$ compared to the WHO standards of 20 microgram/cubic meter and 10 microgram/cubic meter, respectively.²¹⁶ The pollution in ger areas is 25 times higher than the WHO guidelines. One study “conservatively” estimated that 29% of cardiopulmonary deaths and 40% of lung cancer deaths in the capital city are attributable to outdoor air pollution, a rate that constitutes 10-13% of the city’s total mortality rate²¹⁷ and 4% of that for the country.

Figure 44. Course particulate matter (PM_{10}) air pollution, 2008



Source: WHO, 2014

Children are particularly at risk. In 2008, respiratory disease represented the leading cause of child morbidity and the second leading cause of child mortality. It is estimated that the under-five mortality rate from ambient air pollution is seven times higher than that of comparator countries. Among children, air pollution can also cause life-long health issues and can affect neuro- and cognitive development.

More generally, poor households disproportionately suffer from outdoor air pollution, especially in UB. Not only are the areas in which they live (ger districts) far more likely to have higher levels of air pollution, these households are less likely to be able to afford mitigating technologies. A pneumonia study among children in UB finds that 28-42% of the affected children live gers, 50-60% are from coal burning homes, and 20-30% are from poor families.²¹⁸ Therefore, they are less likely to access

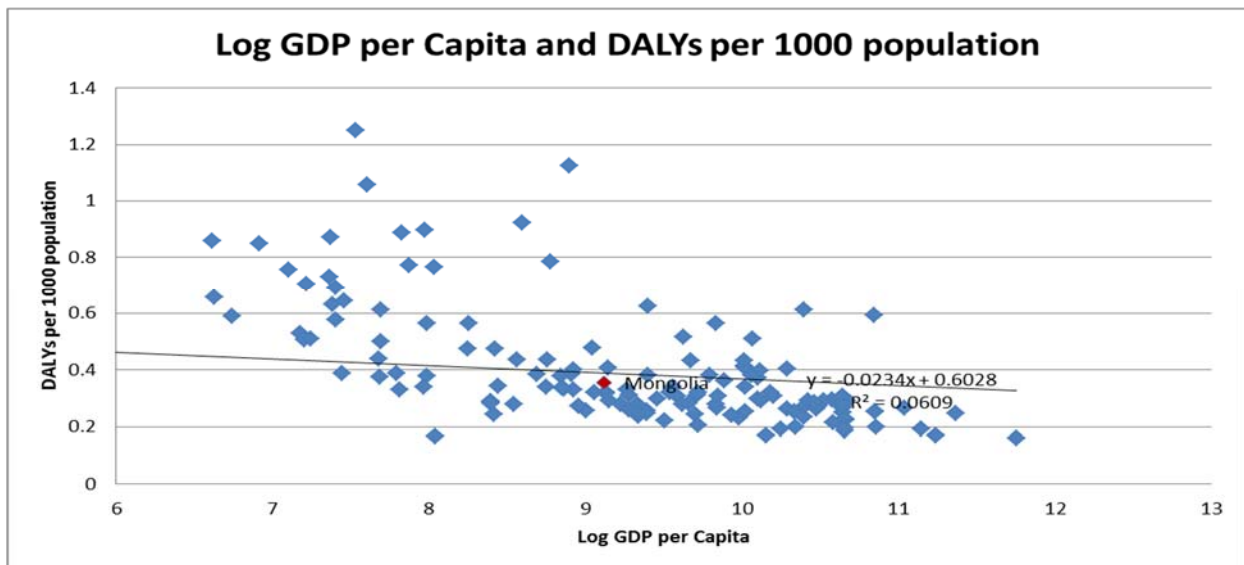
healthcare, and are more likely to find themselves in debilitating debt should burdensome healthcare costs, loss of productivity or employment, or loss of life of a breadwinner occur.

Analysis

The Constraints Analysis tested whether the health of the population is a binding constraint to growth and whether it significantly constrains the size and capabilities of the workforce.

Test 1: Is the economic burden of disease high in Mongolia? Disability Adjusted Life Years (DALYs), a measure of healthy years lost due to disease and accidents, finds that Mongolia loses 42,000 DALYs per 100,000 people as of 2012. It is slightly above the regional average, but an improvement from Mongolia's 63,000 DALYs lost in 2000.²¹⁹ Figure 45 indicates that overall Mongolia's burden of disease to GDP and DALYs per 1,000 population is near average.

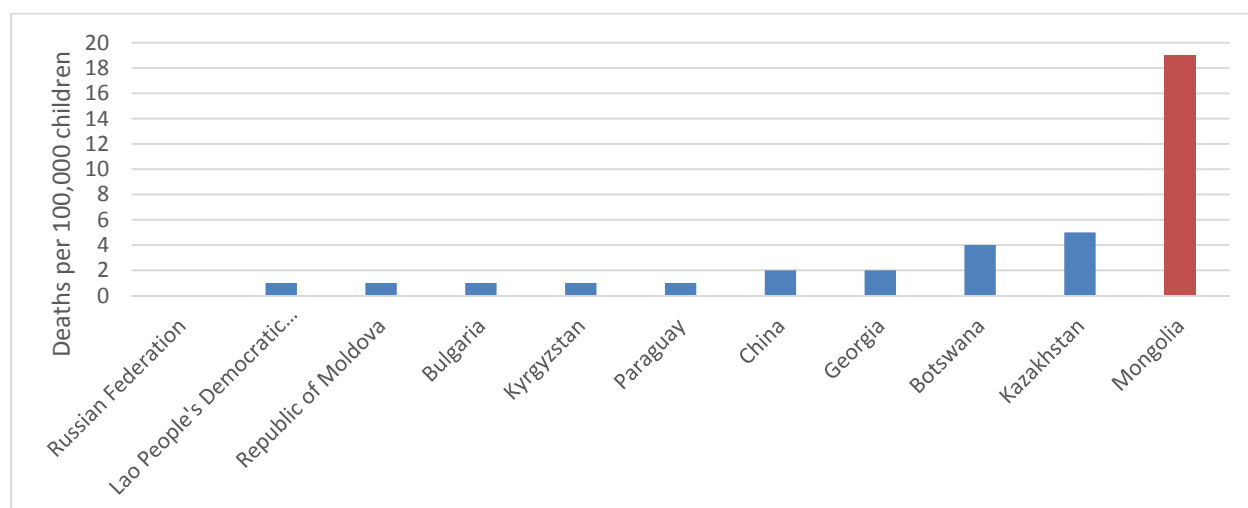
Figure 45. Mongolia's GDP per capita and disease burden



Source: Global Competitiveness Index 2013-2014 and World Development Indicators

In 2012, although Mongolia's overall age-standardized DALYs per capita were lower than the global trend, they were higher than the average level among comparators, indicating a higher burden of disease. The largest portion of Mongolia's DALYs came from NCDs, making the country vulnerable to it among the comparators.²²⁰ Although NCDs encompass a wide range of diseases and causes, it is notable that Mongolia had higher DALY rates for cardiovascular and acute respiratory diseases and throat and lung cancers than would be expected for a country with a similar GDP per capita.

Figure 46. Deaths of children under 5 years due to ambient air pollution, 2008



Source: WHO, 2012

The per capita deaths attributable to ambient air pollution for the total population is not higher than comparators, but is several times higher than its comparators for children under five (Figure 46). A 2013 study estimated that 29% of cardiopulmonary mortality and 40% of lung cancer deaths in UB are attributable to ambient air pollution, representing almost 10% of total mortality in UB.²²¹ Researchers estimated that avoiding 1,000 premature deaths every year is valued at \$221 million annually (using 2012 exchange rate), based on the findings of a 2011 willingness-to-pay study.²²² Due to methodological differences in air pollution modeling and statistical value of life estimations, studies have concluded that the economic impacts of air pollution range from 18-28% of UB's GDP and 8-13% of Mongolia's GDP.²²³ Even if the true impact is half of these estimates, they would represent a major economic burden and impediment to productivity.

Test 2: Do shifts in health outcomes lead to shifts in economic outputs? The core measures of quality (e.g. malnutrition, death rates by disease) are not reported annually, so correlating to the highest growth years is inconclusive. In the WEF Global Competitiveness Index 2013-2014, Mongolian firms demonstrated concerns on impacts from health issues of their employees on business activities, including death, disability, productivity and absenteeism, medical and funeral costs, and how their recruitment and training expenses and revenues are affected. For the business impact of HIV/AIDS, the country is ranked 60th with the value of 5.7 (1=serious business impact, 7=no impact) and for the impact of TB, it is ranked 83rd with 5.3 points. The report gave Mongolia good standing for HIV/AIDS prevalence of less than 0.1% of adults aged 15–49 years (11th out of 148), but inadequate standing in TB incidents (124th out of 148 countries). However, business executives did not see the poor public health as one of the top five most problematic factors for doing business in the country: only 1.1% of survey respondents identified it as a burden and it was listed second to last out of 16 factors.

Test 3: Are firms taking steps to ensure their workforce remains healthy? The health sector is dominated by public financing, with health care provided by the government ranging from completely

free (basic check-ups) to 15% co-pay (hospital trips).²²⁴ Though private options exist, the majority of the population uses the public services, a fact that is constant across income profiles.²²⁵ Some people opt for private sector providers and specialized care services in other countries like China, South Korea and Thailand. No data has been found to indicate that businesses are relying on private health insurance/health providers to keep workers healthy.²²⁶

Employees and employers in the formal sector, representing 28% of the insured population, generate 86% of health insurance revenues. The disparity between the proportion of formal sector workers who are insured (28%) and the contribution to social health insurance revenues (86%) has frustrated employers and made social health insurance unattractive to them. The remaining 5% of social health insurance revenues are contributions paid by self-employed and informal workers.

In Ulaanbaatar, larger companies usually provide an annual medical check-up for their employees through contracts with private hospitals and sometimes discounts for memberships to fitness centers. Government organizations, mostly mines and others with hazardous work environment, provide similar benefits to its employees through arrangements with public hospitals. For instance, Erdenet Mining Corporation, a state-owned enterprise and one of the biggest contributors to tax revenue, paid treatment costs worth MNT 118.5 million for 169 employees, who were in need of long-term treatments.²²⁷

Test 4: Are firms reliant on heavy labor limited by the workforce health? The fastest growing sectors in Mongolia remain mining and construction and three of the largest sectors are again construction, mining, as well as agriculture.²²⁸ A labor barometer study of April 2013 stated the demand for labor in the next 12 months stood at 75,400, which was mostly in the above three sectors.²²⁹ There is no indication that heavy labor industries are constrained by workforce health.

Conclusion

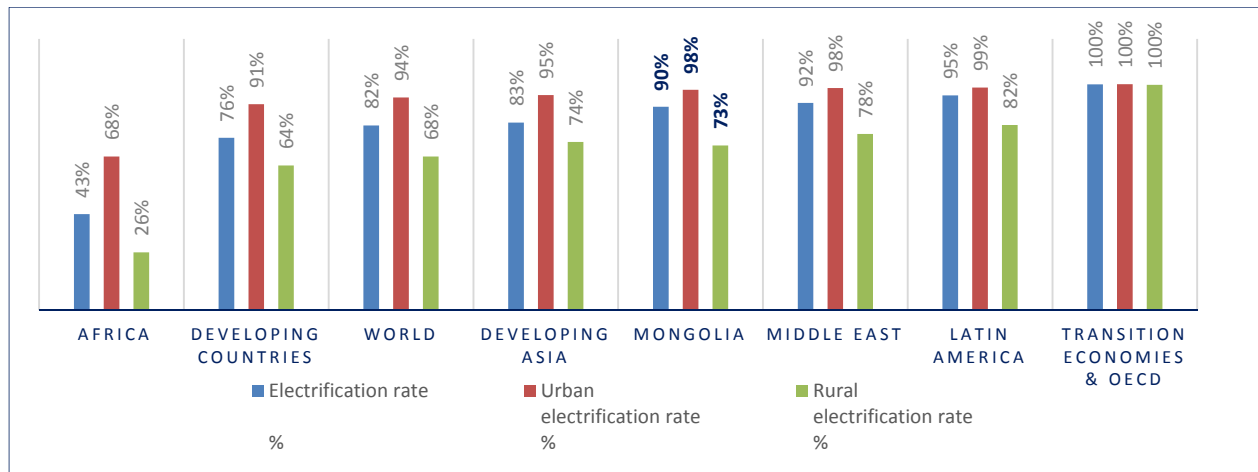
The disease and mortality rates associated with air pollution in UB suggest a significant economic burden, so **we conclude that the health impact of air pollution in UB is a binding constraint to economic growth.** Expenditures on health in Mongolia have remained high for the region, and this is reflected in the decreasing DALY rate, decreasing impact of non-communicable diseases on the population, and increasing life expectancy in the past decade. Health is provided by the public sector with an above-average number of hospitals, doctor's offices, doctors, and nurses to the total population.²³⁰

10. Energy

Background

Energy infrastructure, particularly the electricity network, is a binding constraint to growth if it imposes additional costs on businesses forced to turn to backup or alternative energy sources. Mongolia has abundant energy resources, principally, coal, uranium and oil, at varying stages of exploitation. Access to electricity in Mongolia is above the average for developing countries in Asia, at 90% of the population having access, including 98% in urban zones and 73% in rural zones.²³¹ (Figure 47) Electricity consumption is slightly above average for a country with Mongolia's GDP per capita, and it grew an average of 3.6% per year between 2000 and 2011.²³² Given this availability, fewer Mongolian firms cite electricity as a major hindrance to business than firms in comparator countries.²³³ However, much of Mongolia's energy infrastructure is aging, and the quality of power supply is rated lower than most comparators.²³⁴

Figure 47. Electrification rate, 2014



Source: IEA, World Energy Outlook, 2014

Mongolia's district heating and electric power system provides the heating needs for nearly half of the urban population in one of the coldest climates in the world, and electricity supply for mining activities, and other industrial, public, commercial and household consumers. The electricity network in Mongolia consists of four separate grids, which distributed 6,757 gigawatt-hours (gWh) of electricity and consumed 4,732 gWh in 2014.²³⁵ The largest grid is the Central Electric System (CES), which covers all electricity consumers of the power supply from the electric power system in major cities located in the central region. CES services Ulaanbaatar, Darkhan, Baganuur, Erdenet and six surrounding *aimags*, accounting for about 90 percent of total electricity use and the bulk of the country's district heating. The other systems are East Electric System (EES), West Electric System (WES) and Altai-Uliastai Electric System (AUS).

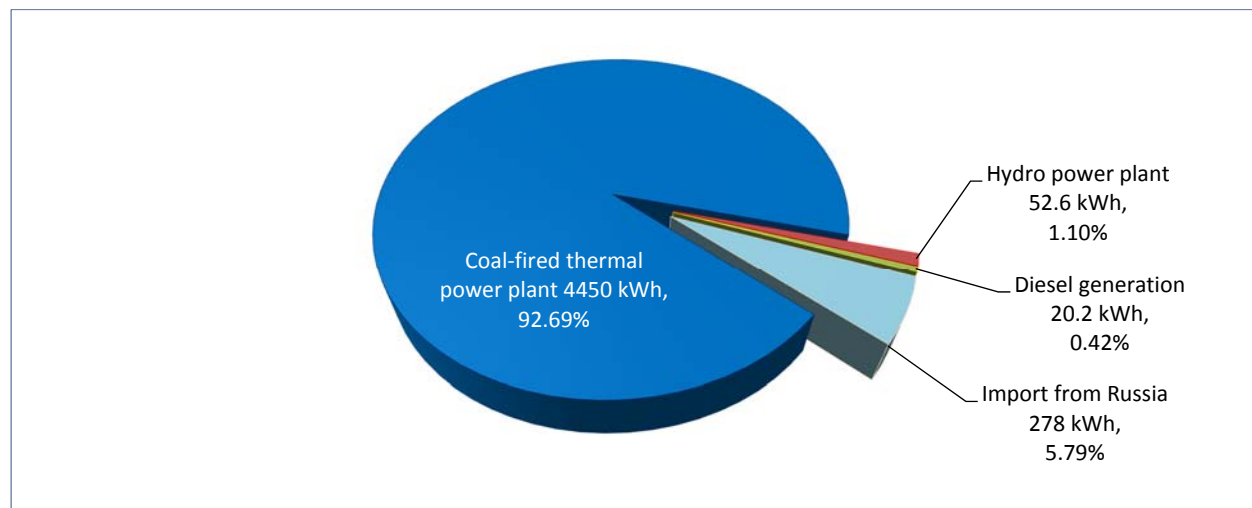
Currently, the grids are not inter-connected; however, all four power systems are connected to the Russian power system where the CES is connected by 220 kV transmission line. As a consequence,

the CES trades power with Russia, buying during the day and selling (to the extent possible) at night. As a result of the Unified National Power System Project all four power systems will be connected into one national power system network by 2022. The largest mining development in Mongolia, Oyu Tolgoi, is currently importing power from China, but is required to purchase 750MW of power domestically by 2017 from a nearby plant planned at the Tavan Tolgoi coal mine site.

The main power generation in Mongolia comes from coal-fired combined heat and power plants (CHP), which are designed to generate the base load heat electricity for the national power system. Four coal-fired CHPs and one small wind farm exist in CES and a fifth CHP is under development. The total installed capacity in CES is estimated as 802 MW. One CHP exists in EES. A pie chart shows the electricity generation sources in Mongolia. (

Figure 48)

Figure 48. Electricity generation sources, 2012



Source: Energy Regulatory Authority of Mongolia

In Mongolia, on-grid electricity generation, transmission and distribution are state-owned. A variety of donor or privately financed off-grid systems are in place or in development, including a solar farm designed to supply power to the new airport, distributed solar panels in rural areas, coal mine mouth power plants, and export strategies designed to export renewable electricity to China and the broader region.

The country's power facilities are being developed to meet the power demands on the national electric power system including CES, EES, AUS and WES from the power demand that is generally classified into general demand and industrial demand, including mining, manufacturing and commerce. The mining sector is constrained by power supply. However, power supply needs in the mining sector in the interim, are imported, under development on an integrated basis with mine development, and/or planned by the Government of Mongolia, for example at the moment, at Tavan Tolgoi. Moreover, the largest mining development in Mongolia, Oyu Tolgoi, is currently importing power from China,

but is required to purchase 750MW of power domestically by 2017 from a nearby plant planned at Tavan Tolgoi.

Energy intensive industries are relatively few in Mongolia, with the largest CHP customers by classification, characterized as residential. Although, electricity consumption increased annually by an average of 8.3% between 2005 and 2014 with the rapid growth of the economy.²³⁶

According to "Doing Business 2015", Mongolia ranks #142 out of 189 countries for "Getting Electricity", however, improving from 2010. (Table 5)

Table 5. Time required to connect to electricity (days)

Comparator countries	2010	2011	2012	2013	2014	2015
Paraguay	67	67	67	67	67	67
Georgia	96	96	71	71	71	71
Botswana	121	121	121	121	121	77
Mongolia	126	126	101	79	79	79
Kazakhstan	88	88	88	88	88	83
Moldova	113	113	113	113	113	113
Kyrgyz Republic	247	247	125	125	125	125
Bulgaria	137	130	130	130	130	130
Lao PDR	134	134	134	134	134	134
China				143	143	143
Russian Federation				175	175	161

Source: Doing Business 2015

With 45% of Mongolia's population living in Ulaanbaatar and the majority of the Ulaanbaatar population, approximately 60%, living in ger districts, electricity provided to ger district households is insufficient to heat dwellings during the long cold winters, necessitating the use of less efficient, coal-fired cooking and heating stoves. Unfortunately, such heating arrangements have been demonstrated to be the largest contributor to Ulaanbaatar's excessive ground level air pollution, and they are costly. In one 2009 report, the average ger area household surveyed spent approximately 20% of their reported income on heating fuels.²³⁷ Aimag centers outside of the central system were either serviced by small coal-fired CHP plants and district heating systems or various combinations of coal-fired heat-only boilers, diesel-fueled power generation sets, and household cooking and heating stoves.

While 95% of Ger area residents in the capital do have electricity, electrical supply capacity in these areas is low as well as household access is not equitable. Non-apartment dwellers suffer frequent power outages and/or limitations on their power usage.

According to the "Global Competitiveness Index 2014-2015", Mongolia's quality of electricity supply is improving. Mongolia ranked #100 out of 144 which moved forward by 3 ranks compared with the previous year rank. (Table 6)

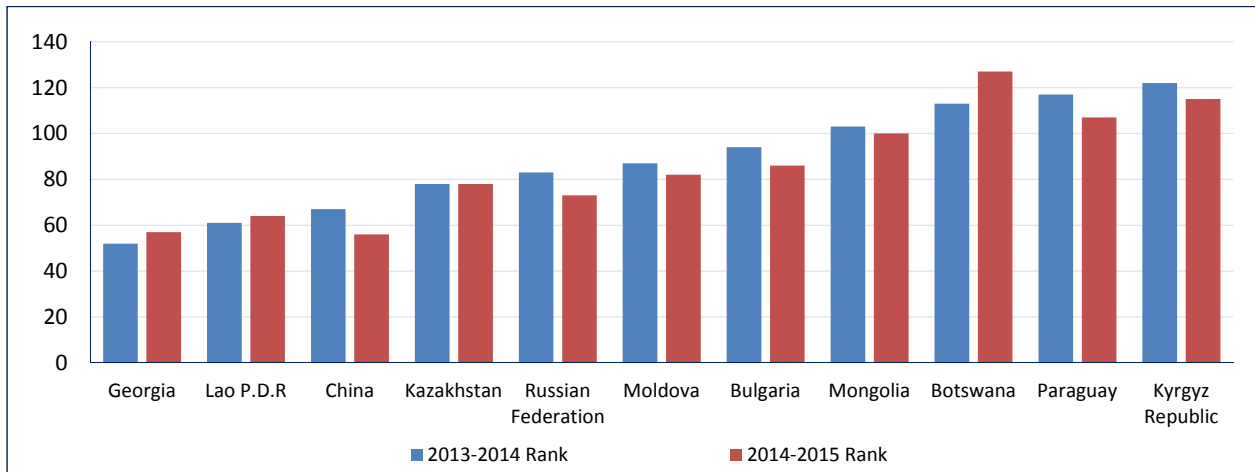
Table 6. Quality of Electricity Supply

Comparator countries	2013-2014 Rank	2014-2015 Rank
Georgia	52	57
Lao P.D.R	61	64
China	67	56
Kazakhstan	78	78
Russian Federation	83	73
Moldova	87	82
Bulgaria	94	86
Mongolia	103	100
Botswana	113	127
Paraguay	117	107
Kyrgyz Republic	122	115

Source: Global Competitiveness Index 2014-2015

Moreover, Mongolia is above the average of benchmark countries for the quality of electricity supply. (Figure 49)

Figure 49. Quality of Electricity Supply



Source: Global Competitiveness Index 2014-2015

The less efficient stoves are fueled with raw coal, purchased in sacks or by truckload. Female-headed households in UB are more likely to be poor and more likely to live in Ger areas, and thus more likely to suffer from the fuel costs, which can have a disproportionately negative effect on women-led families. The lack of Ger area cover to the grid disproportionately impacts women by increasing their financial vulnerability, engendering health risks, inflating time burdens, and threatening their entrepreneurial pursuits. This is particularly pertinent for self-employed women or women micro and small enterprise owners who are more likely to run their small business from their homes.

As of 2013, “electricity, gas, steam, and air conditioning supply” sector was ranked #15 out of 21 sectors in employment with approximately 13,800 workers between 2010 and 2013.²³⁸ The same sector ranked #14 out of 19 growth sectors in Mongolia at an average internal growth rate of 4.5%. Less than 1% of active enterprises are found in the “electricity and water supply” sector.²³⁹

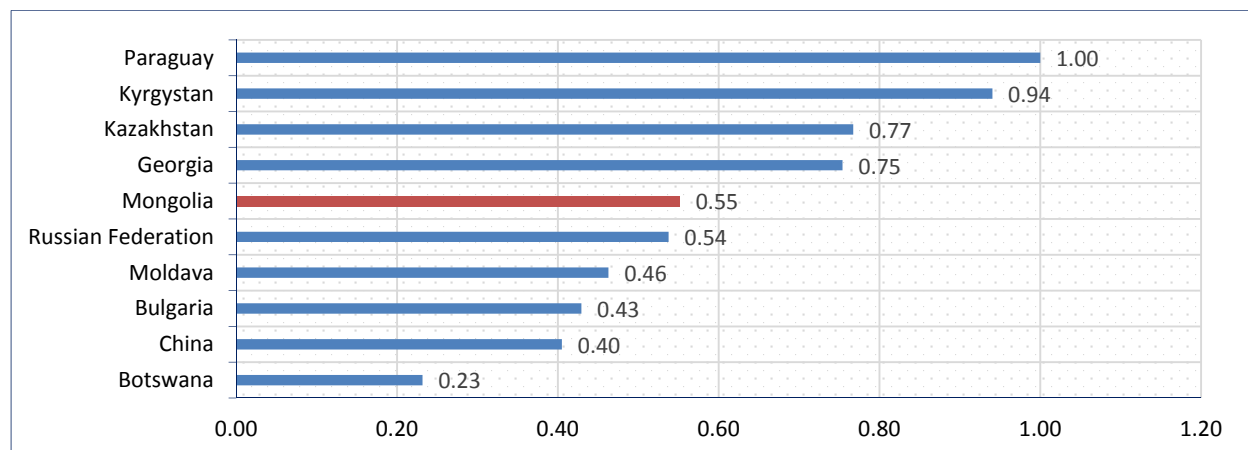
Refined petroleum is imported from Russia and as of 2013, comprises Mongolia’s largest import by value (21.6%). From time to time, sales of refined petroleum products are halted as a result of political disputes, exaggerating Mongolia’s dependence. Low world oil prices will continue to discourage investment in oil and gas exploration and development in Mongolia for the foreseeable future. Domestic gasoline and diesel prices remain below average for the Asia-Pacific region. In Mongolia the Price Stabilization Program has attempted, among other things, to reduce domestic fuel prices by extending favorable loans to oil-importing companies and reducing taxation of petroleum products.

Analysis

The Constraints Analysis tested whether the energy is a constraint to economic growth and investment.

Test 1: Is the economic cost of electricity high? The cost of electricity usually depends on the electricity generating efficiency of the country. The main electricity generators’ efficiency rate²⁴⁰ could be used as a proxy of countries’ electricity generating cost. In case of electricity efficiency rate, Mongolia has ranked about the average of comparators and it could indicate that electricity-generating cost is comparable to average of benchmark countries (Figure 50).

Figure 50. Ratio of total energy input and output of electricity and CHP plants, 2013

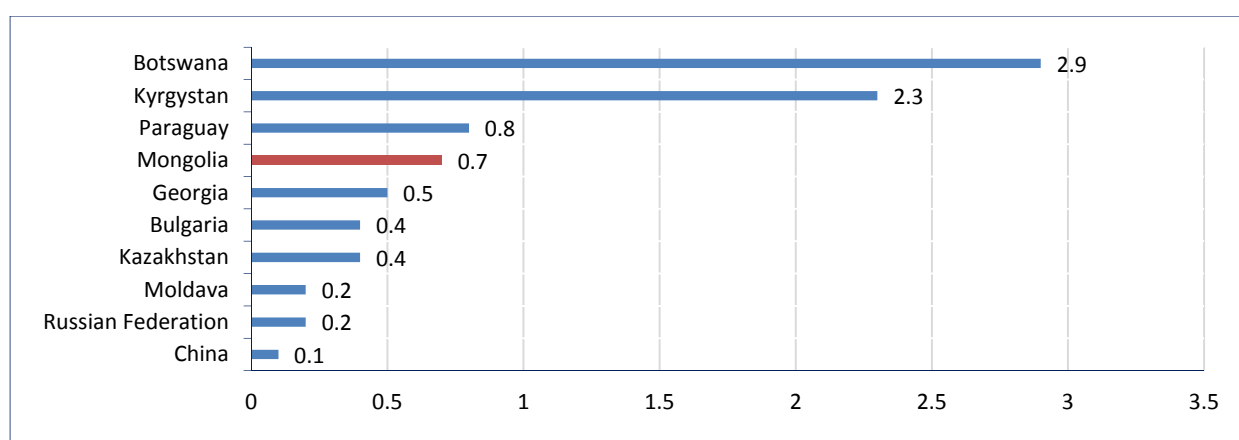


Source: International Energy Agency, 2013

The real cost of electricity is higher than the consumer tariff. An average customer in UB pays US\$ 0.06 for 1kWh electricity. However, the cost of electricity is 9.8 cent per kWh, this is about 30 percent higher than the consumer price.²⁴¹ This cost is average for the region and lower than both northern China (6.9 cents residential, 10.5 cents commercial) and Russia (7.2 cents residential, 9.05 cents commercial). Public opinion of the energy network has improved steadily in the past 5 years, however it remains one of the lowest in the world (ranked 112 out of 144).²⁴²

The cost of energy is also influenced by transmission losses and the frequency and severity of power outages. Transmission losses, at 12% of total costs, are relatively low.²⁴³ The average hours of power outages per month is slightly above comparators, although the losses (as a % of sales) due to electrical outages is slightly above the median for comparators (Figure 51).²⁴⁴

Figure 51. Losses due to electrical outages (% of annual sales)



Source: World Bank, Enterprise Survey, 2013

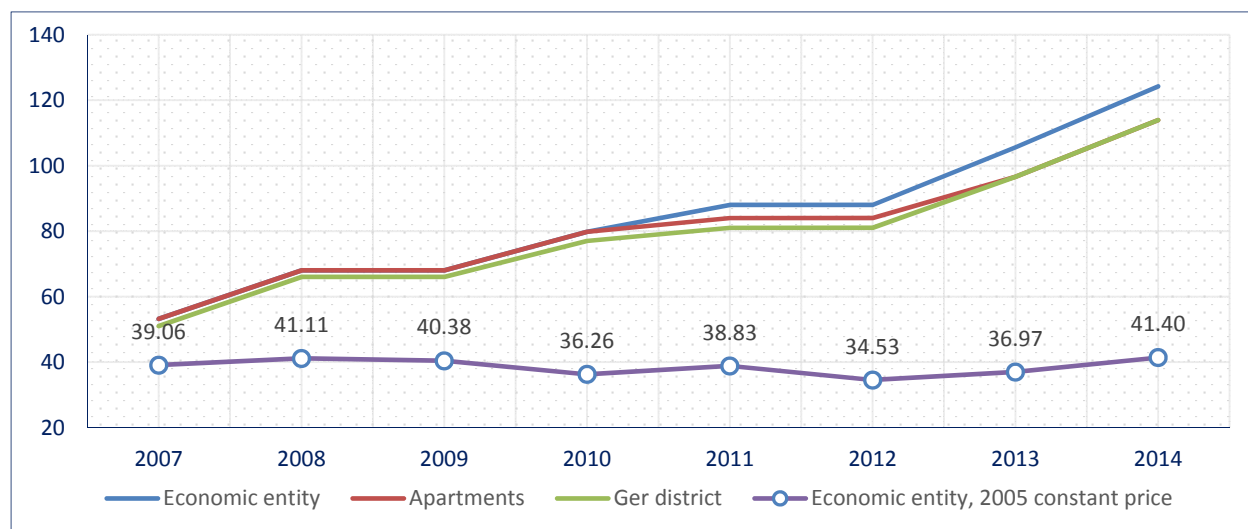
However, reliability of the electricity supply has been increasing in past several years. According to the Global Competitiveness Report, the quality of Mongolia's electricity supply has improved from 112nd in 2010 to 100th in 2015. Technical losses on the grid have slightly decreased from 18% in 2005 to 16-17% in 2012.²⁴⁵ According to World Bank Enterprises survey 2013, only 3.8 percent of firms that participated in the survey identified electricity as a major obstacle (Figure 53). This suggests that the electricity is not constraining economic growth.

Test 2: Do shifts in price of electricity impact growth? Gross capital formation and the price of a kWh of electricity in Mongolia are negatively correlated with a ratio of -0.55 while access to electricity and gross capital formation are positively correlated at a rate of 0.3.²⁴⁶ This indicates that investment increases (decreases) with a drop (rise) in energy prices and supply, but it is unclear whether energy costs are the driving factor of investment or a byproduct of it.

According to the National Statistical Office (NSO), there were 2216 firms actively operating in the manufacturing sector in 2010. This number has increased to 3876 in 2014. It can be said that number of firms in the manufacturing sector has been growing in the last eight years regardless of any increases

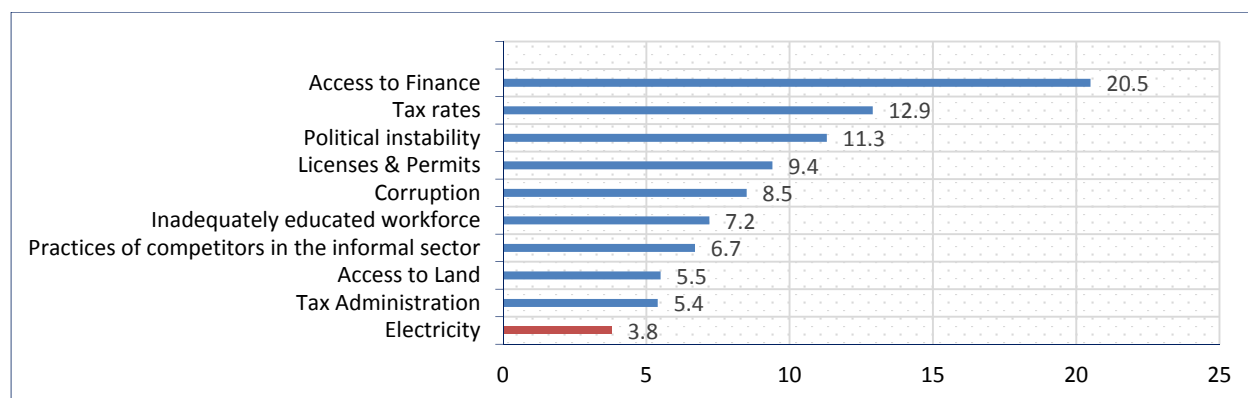
in the nominal price of electricity. The real price of electricity has not been changed during that time. (Figure 52) Therefore, it could be concluded that there were no price burden of electricity on the private sector.

Figure 52. Consumer price of 1kWh electricity, MNT



Source: Energy Regulatory Commission, Energy Statistics 2014

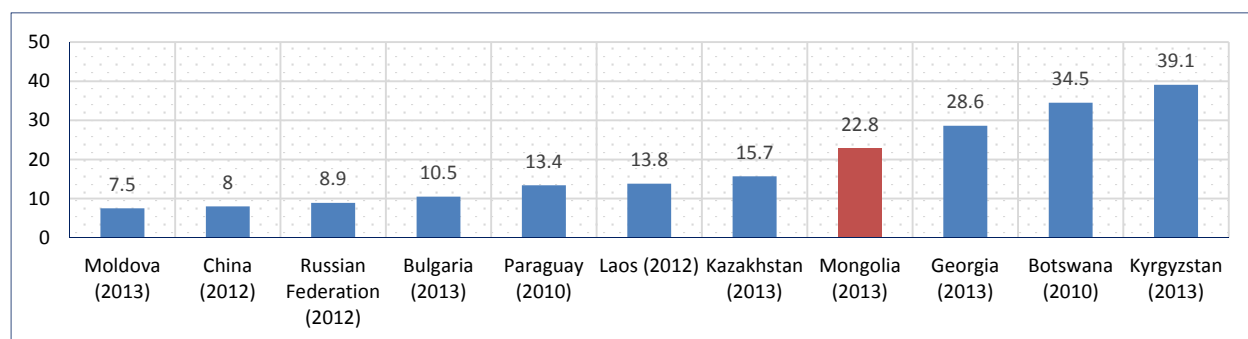
Figure 53. Major obstacles identified by the private business, 2013



Source: World Bank, Enterprise Survey, 2013

Test 3: Are firms taking steps to ensure access to low cost of electricity? A relatively high percent of firms (22.8%) own or share private generators, although it is not highest among comparator countries (Figure 54).²⁴⁷ This is skewed somewhat by the Southern and Western Mongolia regions, with 40% of firms in relying on private generators. Of those firms that do use private generators, 11.1% of their electricity is from private generators (electrogens), which is well above any comparator.²⁴⁸ While this is high, it is not unexpected, due to the prohibitive cost of extending the electricity grid to remote areas. A large commercial bank that recently established a new headquarters in Ulaanbaatar indicated in consultation that they had plans to install 100% back-up generators to enhance power reliability.

Figure 54. Percent of firms owning or sharing a generator



Source: World Bank Enterprise Surveys, 2014

The firms that are most affected complain about electricity the least, while firms that are least affected complain about it the most. Over 65% of large firms identified electricity as a major constraint to their operations, despite small sales losses and generator ownership. Small and medium firms feel the effects more acutely but do not list electricity as a constraint. Similarly, manufacturing is highly affected, but does not identify electricity as much of a constraint.

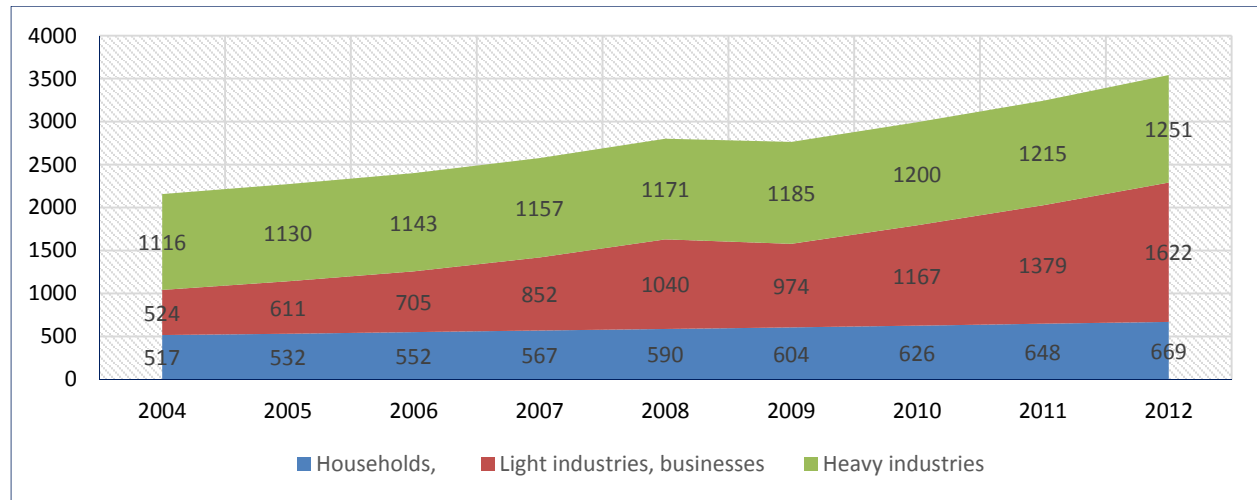
Table 7. Electricity use by enterprises, 2013

	Manu- facturing	Retail	Other services	Small (5-19)	Medium (20-99)	Large (100+)	All firms
Percent of firms owning or sharing a generator	20.6	7.4	27.7	15.6	30.6	3.9	22.8
Proportion of electricity from a generator (%)	8.2	3.4	14.2	9.4	10	0.3	11.1
Losses due to electrical outages (% of annual sales)	0.9	0.4	0.7	0.9	0.6	0.1	0.7
Percent of firms identifying electricity as a major constraint	2.9	3.5	15.6	9.2	9.5	65.3	10.8

Source: World Bank Enterprise Surveys, 2013

Test 4: Are firms reliant on electricity thriving? Between 2004 and 2012, the volume of total electricity usage increased by 1.6 times, with a threefold increase in light industries. Given the increased number of firms in the light industry sector, electricity is not limiting the operation of these electricity intensive firms. (Figure 55)

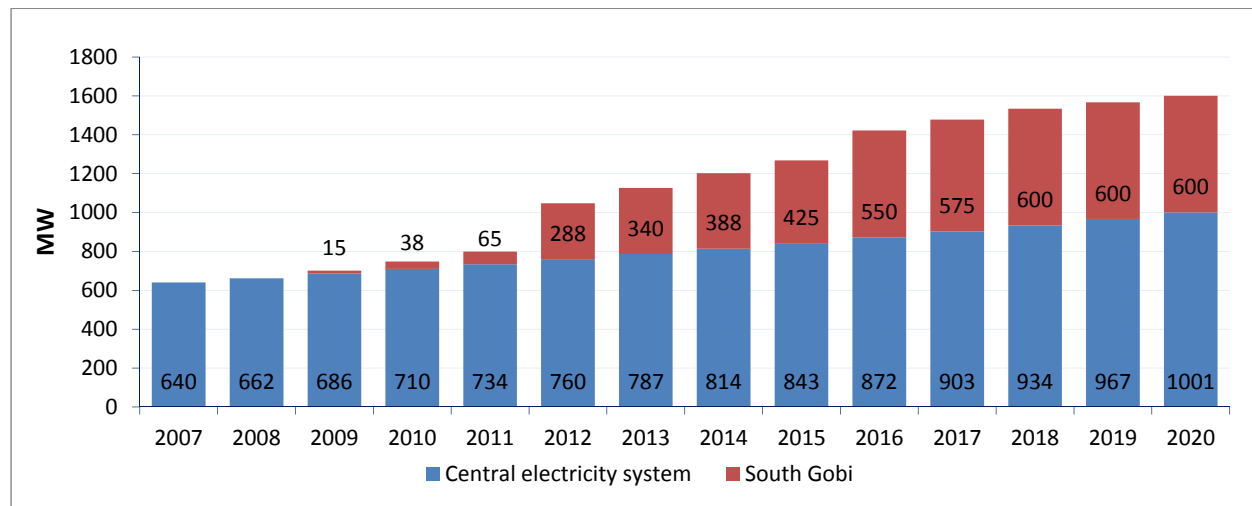
Figure 55. Electricity usage by consumer type



Source: Ministry of Energy and Asian Development Bank, Updating Energy Sector Development Plan, 2013

With the start of major mining exploration projects, such as Oyu Tolgoi copper mine, Tavan Tolgoi coal mine, and others, the energy demand on the CES is expected to reach 600MW (Figure 56) showing at least a 3.5 percentage yearly increase according to the World Bank's forecast. Although present CES installed capacity is 774MW, CES cannot operate at such a high demand mode, due to the specification of coal burning coal power plants and aging equipment, which are starting to depreciate. According to the forecast prepared by the National Dispatching Center, starting in 2014 the current energy system will reach its installed capacity limit and in the case of electricity imports, will need to increase up to 250MW so the system's unmet electricity demand can reach 100MW. The private sector has demonstrated its willingness to participate in the development, finance, and operation of power generation in Ulaanbaatar, in the form of the Salkhit wind farm and CHP5, the south Gobi in the form of wind farm developments for export, and at the mine mouth at Tavan Tolgoi. Both Russia and China maintain the technical capacity to export power to Mongolia as demonstrated by sizeable CES and Oyu Tolgoi imports.

Figure 56. Demand Forecasts 2007-2020 (MW)



Source: Mongolia: Power Sector Development and South Gobi Development, Economic Consulting Associates, 2008

Conclusion

Although electricity availability is above average, the quality of energy infrastructure and reliability appears to be poor in comparison to other benchmark countries. Furthermore, the percentage of firms that own and share electricity generators is above average and proportion of electricity from generator is the highest among comparators.

Despite these challenges, **energy is not a binding constraint to growth in Mongolia.** Electricity production has expanded over the years to meet growing demand, with only a small percentage of imports to cover periods of peak demand. There is power trade and large investments planned to increase the total installed capacity, and electricity-reliant sectors are thriving.

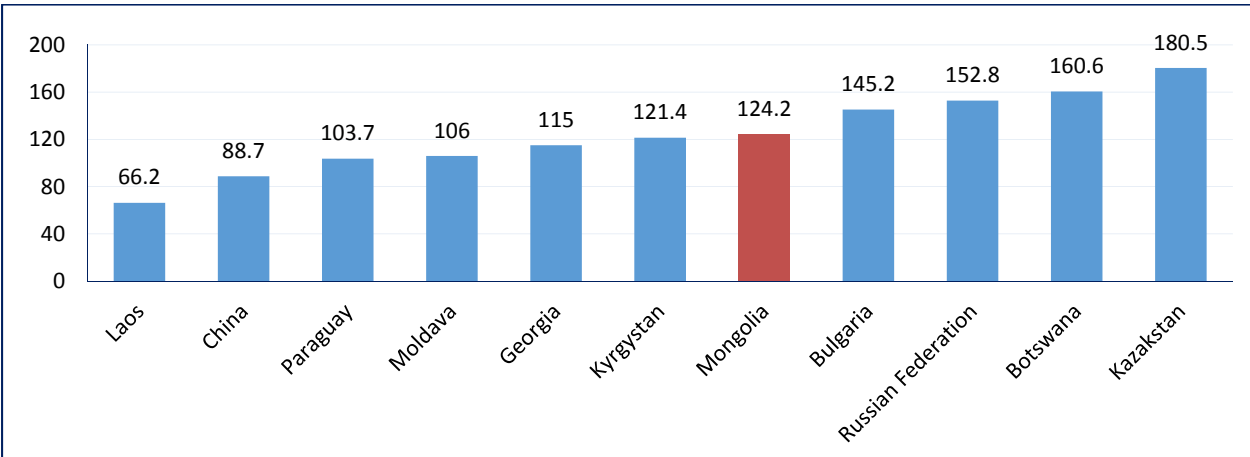
11. Telecommunications

Background

Spurred by the transition to a market-based economy, Mongolia’s telecommunications sector has been constantly evolving. The telecommunications reform program begun in the mid-1990’s starting with the partial privatization of Mongolia Telecom, the first fixed-line telephone operator and established independent regulators. The national policy today aims at creating a competitive telecommunications sector with GSM, CDMA and 3G systems. The government most recently, in 2005 and 2006, approved the licenses for two new mobile telephone service companies - G-Mobile and Unitel. A total of four mobile telephone service companies provide cellular service for 4.9 million users in the domestic market. The Communications Regulatory Commission (CRC) of Mongolia reports that there are 1133 license holders in the communication sector as of 2012, of which 192 licenses are for telecommunication network and infrastructure, 424 licenses for telecommunication services and 517 licenses for content services. Moreover, among the national population of just over 3 million, there are 1.8 million internet users, 4.9 million mobile phone subscribers, and 220,000 fixed line subscribers in Mongolia.²⁴⁹

According to the Global Competitiveness Report 2014-2015, Mongolia ranks 67th out of 148 countries in terms of technological readiness, which is comprised of international internet bandwidth (34th), fixed-broadband internet subscriptions/100 population (77th), individuals using internet (99th), mobile-broad subscriptions/100 population (50th), and mobile telephone subscription/100 population (87th). However, Mongolia is average among the comparator countries in terms of number of mobile telephone subscription per 100 populations. (Figure 57)

Figure 57. Mobile telephone subscription, number of telephone subscription per 100 populations, 2013



Source: The Global Competitiveness Report 2014-2015

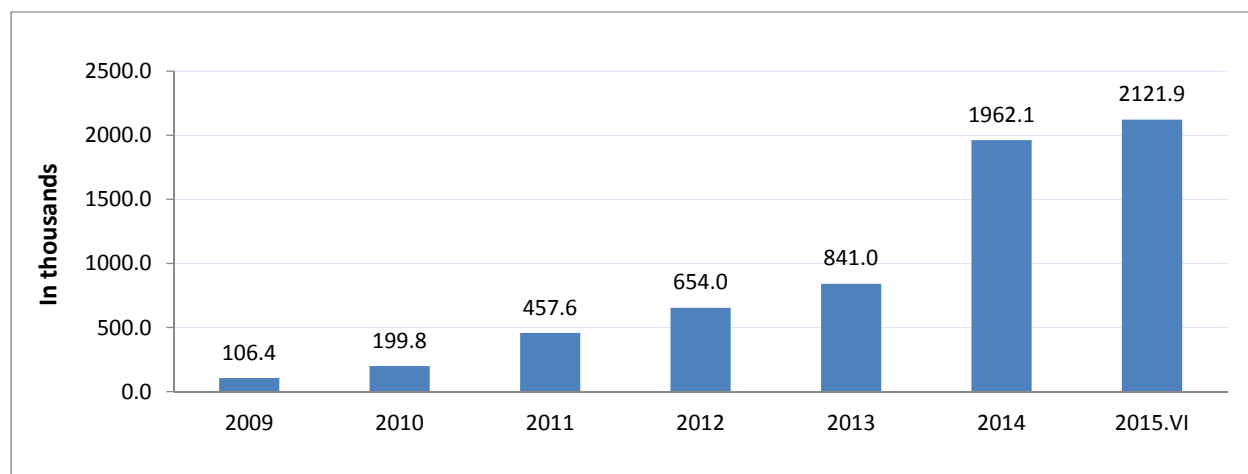
Provincial capitals all have 3.5G access. For internet, Mongolia relies upon fiber optic communications with China and Russia. The internet was established in 1995 in Mongolia and by 2012, 16% of the

population had access, ranking Mongolia 152nd in the world, growing to 27% by 2014. In 2010, the percentage of households with a mobile phone was already 86% and 89% with a television.

The introduction of 3G data networks by Mongolian mobile carriers in 2009 has negatively affected fixed-line networks, similar to other countries around the world. There are only 6.2 fixed telephones per 100 population. With the 3G network, there are now more mobile broadband subscriptions users (26.7/100 population) than fixed broadband internet subscriptions (3.6/100 population). According to the CRC of Mongolia, the country is preparing to launch 4G LTE network in the first half of 2016.

There have been various government initiatives and non-governmental projects that strive to improve information and communications technology. Cabinet approved Mongolia's first satellite in late 2012²⁵⁰, taking the first step towards achieving the ICT 2021 vision of transforming the economy into a knowledge-based economy by the year 2021. The country is planning to launch its first national satellite in 2016. The High Speed Broadband Network Program, which took place from 2011 to 2015, was a government initiative to improve access to inexpensive broadband connections, high speed internet, and television to at least 50% of households, and to provide wireless broadband services to at least 40% of households in rural areas. The overall bandwidth of Mongolia is 30 Gbps as of 2013, which is over 10 times faster compared with 2009.²⁵¹ As a result, the total number of registered internet users grew from 0.1 in 2009 to 2.1 million as of the first of half of the 2015. (Figure 58) Currently, the total length of the fiber optic cable in Mongolia is 34,466 km, of which 50.5% is owned by the state owned enterprises and the rest owned by private companies.²⁵²

Figure 58. Internet user growth



Source: Information Technology, Post and Communication Authority, Internet use, 2015

While rates of usage are relatively high and costs are low, access is not equitable across the country and there are significant regional disparities. The use of computers and use of the internet is highest in urban areas and especially in UB. Young people in urban areas are more than twice as likely to use the internet as those in rural areas. (Table 8). The Western region continues to lag behind. Further, there are gender differences, with women slightly less likely to use computers or the internet than men

in UB, or in urban areas more generally. However, in rural areas, women are slightly more likely to do so.

Table 8. Use of Information/Communication Technology

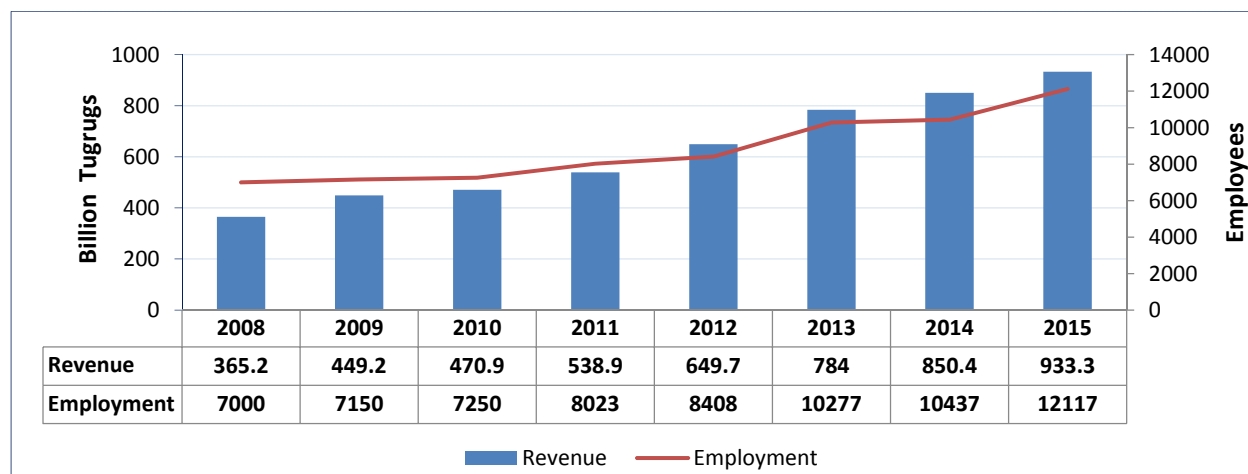
		National	Area		Region					
			Urban	Rural	Western	Khangai	Central	Eastern	UB	
Use of computers	Percentage of young people age 15-24 years who used a computer during the last 12 months									
	(a) Women	80.1	89.0	56.1	56.7	66.7	74.8	69.0	92.2	
	(b) Men	79.0	91.7	52.1	55.9	63.1	69.9	60.6	95.6	
Use of internet	Percentage of young people age 15-24 years who used the internet during the last 12 months									
	(a) Women	74.2	87.2	39.0	37.8	52.0	67.1	64.7	92.2	
	(b) Men	71.6	88.9	34.8	32.0	50.5	61.7	52.4	94.4	

Source: Mongolia Social Indicator Sample Survey (SISS) 2013

According to 2013 enterprise survey data, the percentage of firms using their own website in Mongolia was just under 50%, higher than the East Asia and Pacific Region. The percentage of firms using email to communicate with clients/suppliers was just over 60%, slightly lower than the East Asia and Pacific Region.²⁵³ Information and communications technology (ICT) intensive industries in Mongolia are currently few, and ICT limitations do not emerge in enterprise surveys as one of the “most problematic factors for doing business.”

As of 2014, ICT sector accounts for 2.4% of the country’s GDP. However, the sector revenue was grown by 156% since 2008 till 2015 and reached MNT 933.3 billion meanwhile the employment was grown by 73% (Figure 59).²⁵⁴ According to the ICT development index, Mongolia ranks 84th out of 167 countries in 2015 in comparison of 97th in 2010.

Figure 59. ICT sector revenue and employment, 2008-2015



Source: Communications Regulatory Commission, Annual Report, 2015

Analysis

The Constraints Analysis tested whether telecommunication is a constraint to economic growth in Mongolia.

Test 1: Are the shadow prices of telecommunication high? According to the “Measuring the Information Society Report 2015” by the International Telecommunications Union (ITU), Mongolia has the lowest monthly costs for mobile phone service in dollar terms (3.16\$/month) among comparators.²⁵⁵ (Table 9). As a percentage of GNI per capita, Mongolia’s monthly cost is higher than those of Russia, China and Kazakhstan, but still well below the average among comparators.

Table 9. The monthly cost of running a mobile phone

Rank	Comparator countries	As % of GNI per capita	US\$	PPP\$	GNI per capita, US\$, 2014
26	Russian Federation	0.53	6.09	13.97	13'836
34	China	0.75	4.07	6.65	6'653
41	Kazakhstan	0.89	8.52	16.99	11'538
47	Mongolia	1.01	3.16	8.08	3'766
68	Botswana	1.53	9.89	18.19	7'762
83	Georgia	1.94	5.75	12.67	3'556
106	Lao P.D.R	3.11	3.76	9.70	1'449
122	Moldova	4.44	9.13	22.24	2'468
126	Kyrgyzstan	4.86	4.90	14.17	1'209
128	Bulgaria	5.42	33.22	63.03	7'353

Source: International Telecommunication Union, Measuring the Information Society Report 2015

Test 2: Do changes in communication cost lead to changes in growth? According to the World Economic Forum, Mongolia is one of the lower-middle-income countries with affordable internet price. The International Telecommunication Union ranked Mongolia 73th for fixed-broadband internet cost indicator: it costs \$7.15/month which is 2.28% of the income as percentage of GNI per capita. It indicates that Mongolia’s internet cost is affordable among the comparators.²⁵⁶ (Table 10)

Table 10. Fixed-broadband internet cost

Rank	Comparator countries	As % of GNI per capita	US\$	PPP\$	Speed in Mbit/s	Cap per month in GB	GNI per capita, US\$, 2014
13	Russian Federation	0.68	7.82	17.94	15	100	13'836
30	Kazakhstan	1.12	10.77	21.49	1	10	11'538
63	Bulgaria	1.86	11.40	21.62	15	Unlimited	7'353
73	Mongolia	2.28	7.15	18.26	1	Unlimited	3'766
90	China	3.58	19.53	31.92	1	Unlimited	6'653
104	Georgia	4.78	14.16	31.20	10	Unlimited	3'556
105	Botswana	5.00	32.32	59.45	0.51	Unlimited	7'762
110	Moldova	5.54	11.40	27.76	30	Unlimited	2'468
129	Kyrgyzstan	10.66	10.74	31.07	0.5	Unlimited	1'209
132	Lao P.D.R	11.84	14.29	36.85	0.5	Unlimited	1'449

Source: International Telecommunication Union, "Measuring the Information Society Report 2015"

As internet costs decreased significantly for the past three years, the number of internet users increased from 0.8 to 2.1 million and data consumption increased from 2.5 to 3.2 Tb.²⁵⁷ According to Communication Regulatory Commission data, the telecommunication sector revenue increased from MNT 365.9 billion to 850.4 billion at nominal terms between 2008 and 2014, comprising 45.5% from cellular service, 16.9% from television broadcasting, and 7.24% from internet revenues, among others in 2014. Over the same period, total investment, excluding investment by the state budget, in the telecommunication sector grew from MNT 76.4 billion to 239.2 billion consisting of 51.0% cellular service, 20.7% internet, 10.7% internet protocol television (IPTV), among others²⁵⁸. For the last several years, employment in the sector increased from 7,000 to 11,700.

Test 3: Are firms looking for ways to circumvent the telecommunication cost? Until 2008, public telecommunications service in most rural areas and *soum* centers (district headquarter towns) was inadequate and unreliable. Four mobile operators were providing cellular services in the country's telecommunications market. In the *soum* centers, communication service was available only at Mongolia Telecom offices during the business hours. In order to finance mobile network expansion, the operators contribute a 2 percent levy on their taxable income to the "Universal service obligation fund", which is committed to ensure information and communications services delivery to inhabitants of Mongolia regardless their residing locations and living standards, and extend infrastructures for facilitating services deliveries in remote areas under the Communications Law. Initially, the fund was set up with US\$ 10 million grant aid assistance of the World Bank in 2007. In 2008, World Bank and the Communication Regulatory CRC jointly implemented information and communication infrastructure development projects that aimed to provide public access telephone service to remote herder communities and *soums*.²⁵⁹ As a result of the project, the mobile operators delivered cellular services to around 50000 rural inhabitants in rural areas or 170 communities in 90 *soums* of 17 aimags.²⁶⁰

Test 4: Are firms that use telecommunications frequently thriving? With the increasing popularity of smartphones in recent years, 1.8 out of 4.9 million mobile users (36.7%) use smart phones.²⁶¹ As 55 licensed postal operators are offering posting services in the market including the state-owned enterprise Mongol Post, postal service competition has been intensified. Since internet and cellular services became broadly available, firms and individual businesses that were thriving in the area where communications inadequacy was an advantage of business, have been negatively affected.

Conclusion

Based on above evidence, **the telecommunication sector is not a binding constraint to economic growth**. Some of the problems that occur in telecommunication system can be resolved through legal or regulatory adjustment.

12. Transportation

Background

Mongolia is a landlocked country where the nearest sea port is at 1700 km in Tianjin, China making Mongolia the third most remote location from sea ports, among comparator countries after Kazakhstan and Kyrgyzstan.²⁶² The quantity of transportation infrastructure in Mongolia appears to be adequate: the road density is one of the lowest in the world at 0.04 km of road per 100 km², although the ratio of road density to population density is higher than the most comparators.²⁶³ Mongolia has average numbers of air passengers, freight, and carrier departures per capita.²⁶⁴ However, Mongolia's transport infrastructure, including road, rail and air, are rated lower quality than would be expected in a country with a similar GDP per capita.^{265, 266}

As of November 2015, Mongolia has a primary road network of 12,672 kilometers, of which 5,878 km have a hard cover and 1,257 km are under construction.²⁶⁷ Around 5,535 km of roads are classified as improved. With roughly 45% of Mongolia's population, Ulaanbaatar is the primary markets for domestic goods and services, and the center of economic activities, where 63.8% of GDP is generated.²⁶⁸

Mongolia's roads have improved significantly in recent years, as many of the proceeds from sovereign bond issues have been channeled into road construction. In 2012, only nine provincial centers were connected to the capital city through 2,967 km of paved roads. Since then, the Government invested MNT 2.2 trillion²⁶⁹ in road construction projects. As a result, the total length of paved roads increased by 107% and is now 6,025.3 kilometers, which extended paved roads by 3,180 kilometers and connected the 15 of 21 provincial centers with UB.²⁷⁰

A paved route exists between UB and the main Russian border crossing at Altanbulag, and a route connecting UB and the main Chinese border crossing at Zamiin Uud became fully paved as of November 2010. In Ulaanbaatar, the majority of roads in the city center are paved, and include sidewalks, to varying degrees of quality. In the peri-urban areas which surround the city, the majority of neighborhood roads are not paved or lit and without sidewalks, but are marked by compacted soil, which lacks drainage, but otherwise lie in a distinct right of way.

The Trans-Siberian Railroad traverses the country with a length of 1,110 km, having one core line running from the Russian border near Naushki, Russia through UB to the Chinese border at Zamiin Uud. There is an unconnected additional railroad in the eastern part of the country which makes the total length of railroads 1,815 km. An additional line of railroad to connect the Tavan Tolgoi coal mine to the Chinese border was contracted in 2014, and the construction work for the base has been done. Mongolia's geopolitical realities make rail a sensitive issue. Mongolia currently uses the 1,520-mm "broad gauge" rails used in Russia, while China uses 1,435-mm "narrow gauge" rails. Exporters have called for Mongolia to build a narrow gauge network to ease transportation costs and logistics to China, but the dominant rail company, a 50/50 joint venture with the Russians, has resisted. Ultimately, narrow gauge rail was selected.

As neighboring countries of Mongolia, Russia and China are major trading partners. Since Mongolia's economy has grown increasingly dependent on mining, 89% of total exports of US\$ 5.7 billion accounted for mineral commodity exports, of which 89% (US\$ 5.1 billion) was to China²⁷¹ where rail encompasses 36% of exports.²⁷² The majority of cross border trade takes place by land. The competitiveness of Mongolian minerals trade (the largest contributor to GDP) is closely linked to the cost of transport. Land and sea transport cost is a distinct constraint on minerals sector growth and as a consequence transport routes such as air (for workers), road, trucking, and rail, are often, and increasingly in Mongolia, included in mining project scope and cost. Privatization of transport with in private mine project scope, may limit the economies of scale that might otherwise be realized from a public investment in transportation.

Mongolia's only international airport, Chinggis Khan International Airport, is located near Ulaanbaatar. A new international airport near Ulaanbaatar in the Khoshigt Valley, 32 miles from Ulaanbaatar, is under construction and is scheduled to be completed in 2017. Once completed, the Chinggis Khan Airport, itself recently upgraded, will become a domestic airport. Both airports are state owned. Mongolia's largest airline, MIAT/Mongolian Airlines is state owned but two other Mongolian airlines, Aero Mongolia and Hunnu Air, also provide service. Operationally, local airlines are delivering services to the 15 settlements within the country and transporting 1 million passengers and 5000 tons of cargo annually.²⁷³ The Chinggis Khan Airport is also served by international airlines – Korean Air, Air China, Tianjin Airlines, Aeroflot, IrAero, and more recently, Turkish Airlines. Domestic aviation is more limited with service to 15 smaller cities/towns. Airlines carry approximately 1 million passengers/year and cargo, averaging just under 5 tons/year, is carried on passenger flights.

Public and private buses and private taxis operate throughout Ulaanbaatar within the confines of defined service areas and regulation. Ulaanbaatar city has more recently introduced congestion management laws which provide for bus lanes and alternate day of the week access depending on license plate numbers. Parking is restricted in identified areas and otherwise free. In rural areas, personal transport by pick-up, motorcycle, and horse, off-road remains common.

In the World Economic Forum's Global Competitiveness Report 2014-2015, Mongolia ranks #112 out of 144 countries in Infrastructure and below its peers in Emerging and Developing Asia. More specifically, Roads were ranked #130; Rail #69; Port #143; and Air #125. "Inadequate Supply of Infrastructure" was the #8 ranked most problematic factor for doing business.

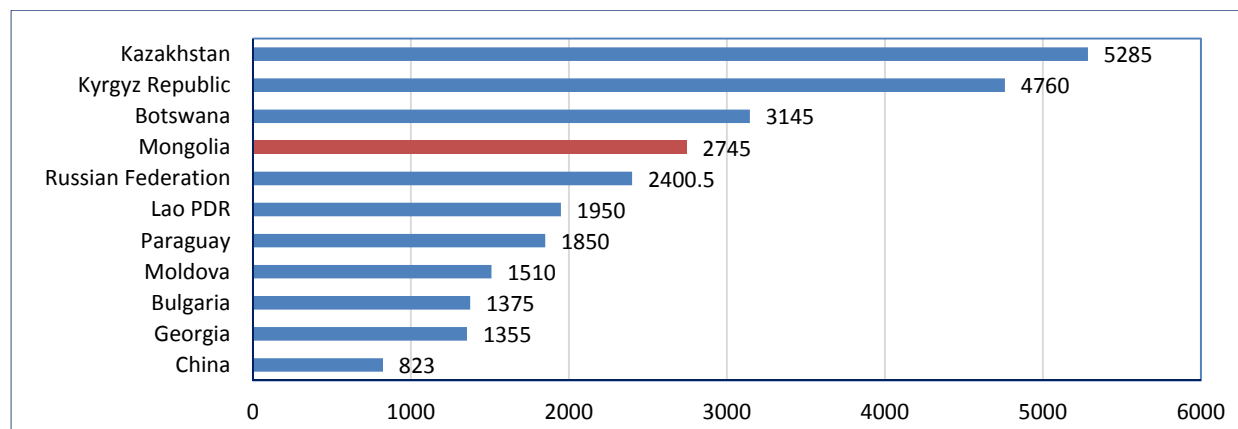
In a 2013 survey of Mongolian CEOs conducted by PwC, "Inadequacy of Basic Infrastructure" was ranked by 55% as the biggest threat to business growth, the third biggest threat overall, albeit down from 67% the year before.

Analysis

The Constraints Analysis tested whether the cost of transportation is a constraint to economic growth and for efficient operation of businesses.

Test 1: Is the economic cost of transportation high? The cost to export is US\$2,700/container and higher than the average of comparator countries (US\$2,400), a proxy for the shadow price of the transportation for exporting goods.²⁷⁴ (Figure 60)

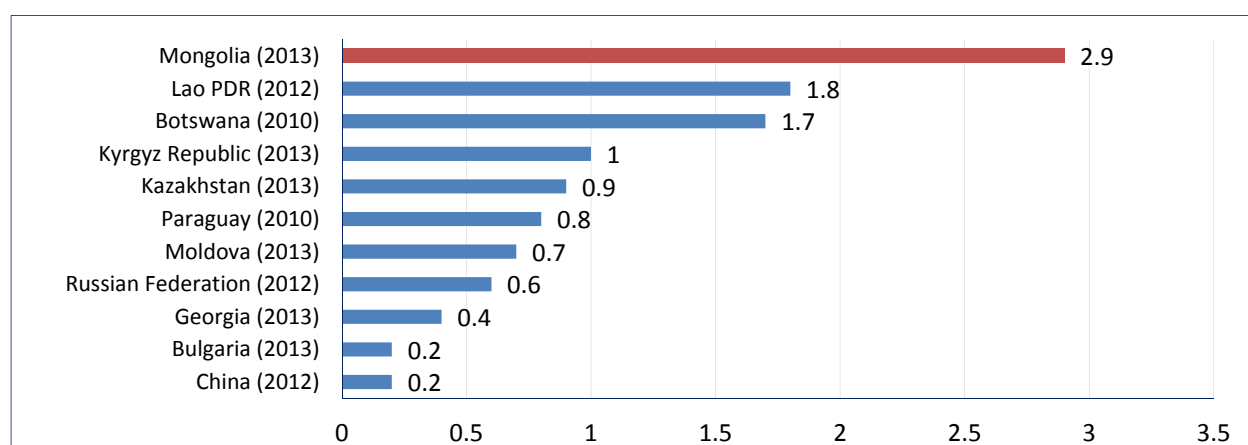
Figure 60. Cost of Export, US\$ per container, 2014



Source: World Development Indicators, 2015

For domestic shipment, losses due to breakage or spoilage during transport are higher than any comparators at 2.9% as of 2013.²⁷⁵ (Figure 61) Exporters and foreign firms are more likely to identify transportation as a major obstacle to their business, but non-exporters and domestic firms report higher levels of breakage and spoilage. This suggests that the infrastructure problems lie away from the export corridors.

Figure 61. Proportion of products lost to breakage or spoilage during shipping to domestic markets (%)

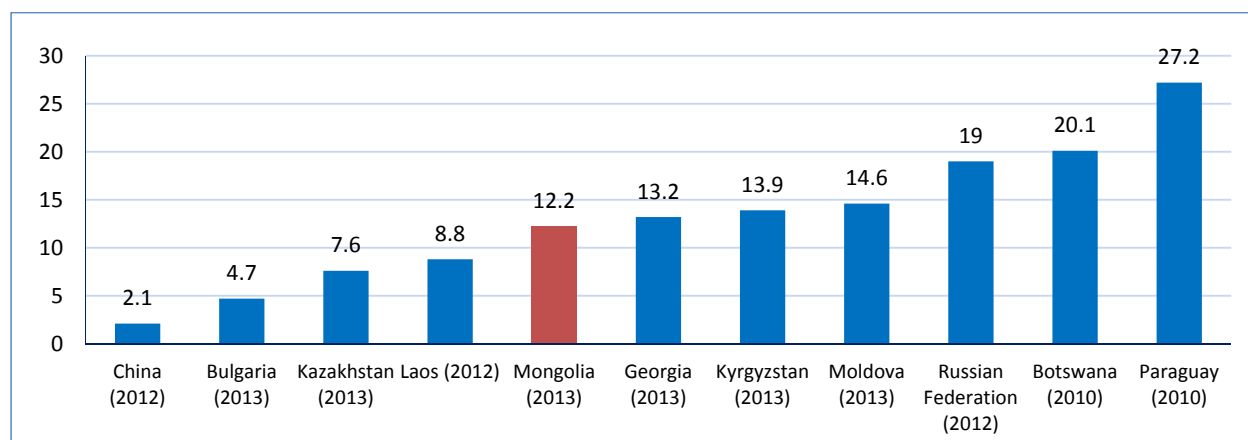


Source: World Bank Enterprise Surveys, 2015

Regardless, the percent of firms identifying transportation as a major obstacle declined from 20.8% in 2009 to 12.2% in 2013 (Figure 62), possibly reflecting recent road improvements.²⁷⁶ As of November 2015, Mongolia has a primary road network of 12,672 kilometers, of which 5,878 km have a hard cover and 1,257 km are under construction.²⁷⁷ Around 5,535 km of roads are classified as improved. The total length of paved roads increased by 107%, which extended paved roads by 3,180 kilometers

and connected the 15 of 21 provincial centers with UB.²⁷⁸ The percentage of firms that identify transportation as a major problem is below average among the comparator countries. Most statistics measuring the cost of the transportation have not been updated following the extensive road construction, but it is assumed to be declining. In terms of opportunity costs, the poor condition of roads in urban ger districts also imposes long commuting times on residents.²⁷⁹

Figure 62. Firms that are identifying transportation is a major problem, by %



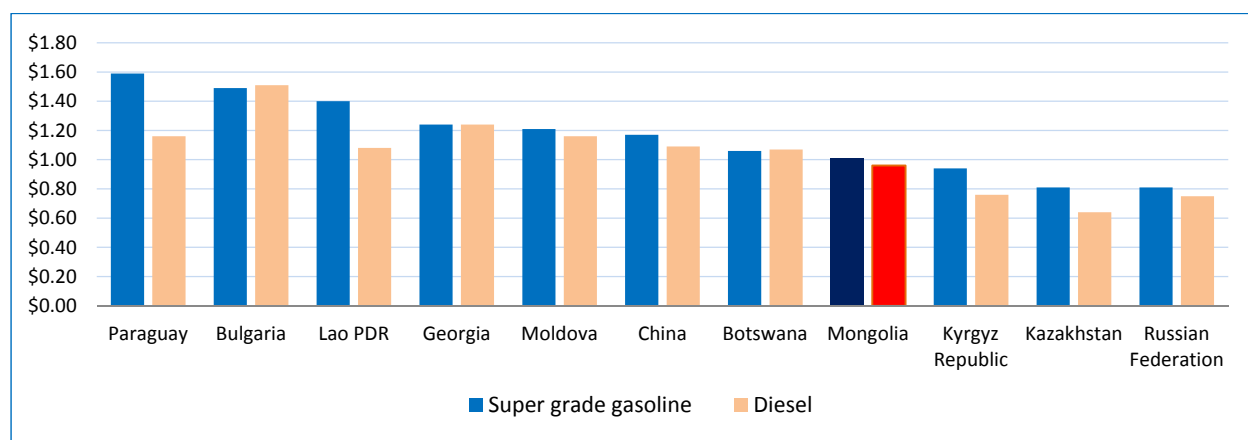
Source: World Bank, Enterprise survey, 2013

Transportation weaknesses can be especially challenging for women who lack the same transportation options as men. They have less usage of vehicles and greater concerns regarding the safety of public transportation, which can limit the types and times of transportation that are used. Further, women might require different types of transportation to accommodate shorter or more frequent trips that might be more convenient to their duties as the primary household managers. Women's specific needs in accessing transport might be overlooked as it is more often the man's job in a household to make decisions regarding settlement and movement.

Test 2: Do shifts in cost of transportation impact economic growth? The quality of infrastructure has improved significantly in the past decade, which experienced strong economic growth, but the causation could run both directions. It is complicated to define the causation of whether the quality of infrastructure lead economic growth or economic growth results in the improvement of the quality infrastructure.

According to the Global Competitiveness Report, Mongolia's ranking, out of 144 countries, quality of overall infrastructure improved from 133rd in 2012 to 107th in 2015 and the quality of roads improved from 141 to 118.²⁸⁰ However, the quality of railroad infrastructure shifted to reversal direction from 66th to 73rd in 2012 and 2015, respectively. Mongolia's fuel cost per liter is lower among the comparators, which suggests the economic cost of road transportation is not high (Figure 63).

Figure 63. Fuel Price as of 2014, US\$ per liter



Source: World Development Indicators, 2015

However, an examination of economic growth in the provinces before and after the construction of paved roads to Ulaanbaatar finds moderate relationship between paved networks on growth. After connecting two provincial centers (Bayankhongor and Dundgobi) to Ulaanbaatar in 2013, the average domestic GDP growth for 2014 was increased by 0.6% and 1.6% relatively compared to the average growth of the previous three years.²⁸¹

Despite great improvements over the years, the lack of adequate road transportation remains challenging for business in rural areas. Key agricultural products such as milk and meat require much convenient transportation avenues to avoid spoilage and account for weight. The lack of transportation has been one contributing factor incentivizing herders to move to the areas surrounding UB, resulting in high livestock concentrations.²⁸² In many areas, even where roads exist, vehicles continue to drive off-road. According to some estimates, unregulated overland travel has degraded anywhere from 1.5 to 1.7 million hectares of land.²⁸³ The consequences include the exacerbation of desertification and dust pollution, which already exist in great measure due to industry.²⁸⁴

Test 3: Are firms taking steps to ensure access to low cost transportation? Mining companies have expanded the road network through private concessions to allow easier export of raw materials to China, although rail is typically less costly for shipping bulk materials. In December 2015, a 35-km railroad was completed with private investment connecting Tumurtei mine site and Khandgait station²⁸⁵ to transport iron ore to the Darkhan Metallurgical Plant. Furthermore, consultations have indicated that the expansion of the rail network to connect Tavan Tolgoi to China's border is due to significant private market pressure. In 2014, 44-km paved road for coal transportation was completed connecting the Nariin Sukhait mine to the Chinese border²⁸⁶, along with 51-km paved road, with private investment, out of 168-km to connect the Tayan Nuur mine to China.²⁸⁷

Test 4: Are firms reliant on transportation thriving? Between 2010 and 2014, both freight turnover and carried freight increased by each type—railway, road, air—indicating that transportation has not significantly constrained economic activities.²⁸⁸ The fastest growing sectors in Mongolia remain mining and construction, and the majority of recent growth has been fueled by mining. The

numbers of entities that actively carry out operations in mining and construction sectors increased for the last four years and firms in transportation sector grew as well.²⁸⁹ The costs of transportation remain high in Mongolia and the need for additional rail links persists. However, the rapid expansion of mining exports from US\$0.4 billion in 2005 to US\$3.4 billion in 2012 indicates that transportation has not significantly constrained the export of heavy goods.

Conclusion

Given continued concerns about the quality of transport infrastructure and slightly high export costs, transportation might limit the development certain industries, such as agriculture and tourism. Despite these, we conclude that **transport is not a binding constraint to growth**. The network has steadily improved in recent years, the major routes are now paved, and transportation-reliant sectors are thriving. Specific mining operations may find transportation costs to be high, but the impact is not notable at a country-wide level. Concerns persist about rail links to the mines and transportation access in far-flung rural areas and urban ger districts.

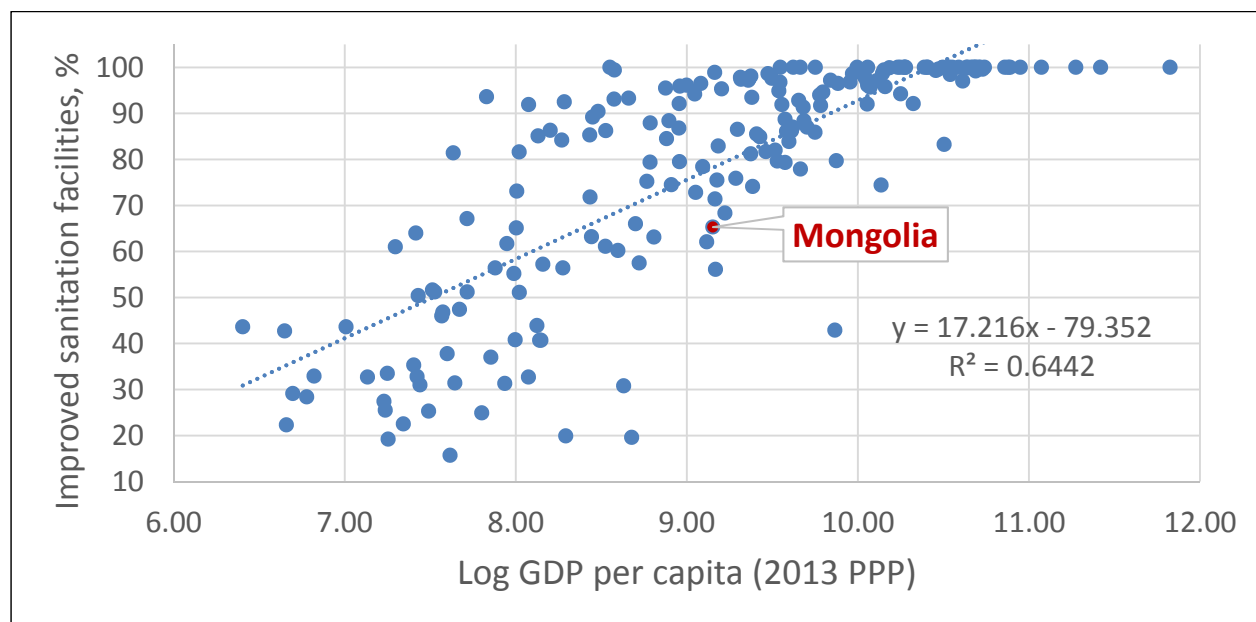
13. Water and Sanitation

Background

As discussed in the Natural Capital chapter, Mongolia has comparatively abundant surface and ground water resources. The total surface water resource of Mongolia is estimated at 608 km³/year in the form of lakes (500 km³/year), glaciers (62.9 km³/year), rivers (34.6 km³/year) and a small amount of renewable groundwater resources (10.8 km³/year).²⁹⁰ Approximately 20% of Mongolia’s water consumption is provided from surface water resources and the rest from groundwater. As of 2010, water usage was assessed as 12.9% for drinking and domestic use, 42.9% for industry, 20.4% for animal husbandry, 23.3% for irrigation and 0.3% for other purposes.^{291,292} Water use for mining activities was estimated at 17%. However, this situation may change, as total water consumption is increasing in Mongolia due to urbanization and economic development.

Access to water and sanitation in Mongolia are both low for the region. According to the WHO and UNICEF, in 2015 64.4% of Mongolians had access to improved water sources and 59.7% to improved sanitation. Both figures have improved steadily in the past decade, but Mongolia is short of achieving its Millennium Development Goals.²⁹³ Access to water in urban areas is slightly above average for urban centers in the region with 95% access to clean water, either via piped water or public wells. Mongolian businesses report relatively few water shortages – currently only 0.1 per month²⁹⁴ – and increasing satisfaction of service provision in Ulaanbaatar (UB) over the past 5 years.²⁹⁵ However, access to improved sanitation facilities is lower than expected given Mongolia’s GDP per capita (Figure 64).²⁹⁶

Figure 64. Access to improved sanitation, urban areas



Source: World Development Indicators, 2015

In general, urban areas have better water access than rural areas. For improved sanitation, the latest data from WHO and UNICEF show that in urban Mongolia coverage is 66%, and for rural areas, 43%.²⁹⁷ Approximately 99.8% of those in the wealthiest income quintile have improved sanitation, while in the poorest quintile, only 41.2% do. In terms of improved access to water, income is also a defining factor, with only 19% of those in the poorest quintile enjoying access to clean water, compared to 99 percent of the wealthiest fifth.²⁹⁸

Due to industrial activity, the disrepair of water infrastructure, and the impact of desertification and high livestock concentrations, rural water sources have also become scarcer and many have been polluted, with negative implications for health and livelihoods. For example, according to a 2013 Asia Foundation study conducted in 12 *soums* of Khuvsgul *aimag*, most residents collect their drinking water, and of these 50% draw on unprotected lakes and rivers. Unfortunately, these water sources were “exposed to significant levels of contamination from proximal human waste, livestock, and seasonal flooding. The survey also found that nearly two-thirds of all households do not treat their drinking water [and].... it is likely that many household containers [for water] are sources of contamination as a result of inadequate cleaning and disinfection.”²⁹⁹

Despite rural area residents’ lower access to improved water and sanitation, their sanitation issues are not perceived to be as dire as that of poor urban residents, particularly due to the very sparse population concentrations in rural areas. In the urban areas, and specifically in Ulaanbaatar, the problems of water and sanitation are largely localized to the ger districts on the outskirts of the city and house approximately 60% of Ulaanbaatar’s population and 27% of the entire country. The major water utility in Mongolia is the Water Supply and Sewage Authority of Ulaanbaatar City (USUG). The agency provides subsidized water for private households and at-cost water to businesses. Although water use is unrestricted, there have been warnings both by USUG and independent studies that given current consumption rates, Mongolia will begin suffering water shortages in 2020.³⁰⁰

The vast majority of residents of ger districts, especially in Ulaanbaatar, have no direct connections to the piped water network. Around 600 kiosks managed by USUG have been developed across the ger areas of UB. More than 50 percent of the USUG kiosks are connected to the water supply network and there are private water kiosks as well extracting and selling water from deep wells. Although the situation is not ideal, a 2010 World Bank report stated that, “Residents are relatively content with the water supply situation, as compared to other more pressing problems such as the lack of solid waste collection, drainage and proper sanitation facilities.”³⁰¹ There are no sewers in ger areas, and most people use unventilated pit latrines. Moreover, there is no comprehensive or planned ongoing effort to build and manage further kiosks despite ongoing in-migration into ger areas that remain reliant on kiosks as their main water source.

A 2012-2013 analysis of water quality in ger areas found E.coli contamination in 36% of household storage containers during the winter, which rose to 56% during the summer.³⁰² Rate of Hepatitis A, a water-borne disease, is seven times greater in UB than the global average.³⁰³ The under-five mortality rate is 2.5 times greater in the poorest households than in the richest,³⁰⁴ and the rate of stunting in rural areas is 20%, almost double that of urban areas.³⁰⁵

The UN Water Country Brief for Mongolia 2013 notes that as of 2009, the industrial sector was responsible for the majority of water withdrawals at 38% or 209 million m³, with irrigated crops (23%) and livestock (21%) second and third. “During 1993 to 2000, the value generated by industry per m³ of water remained constant, during 2000 to 2005 this value increased by 7% annually. In general, water is a driver for industry both from the perspective of securing stable supply sources as well as from the standpoint of enhancing operating efficiency.”

Agriculture contributed some 24% to GDP and employed 40% of the labor force in 2009. In 2012, women accounted for 48% of the economically active population in agriculture. Mongolia is essentially a pastoral livestock-based agricultural system. Water supply to livestock is provided mainly from natural sources, which are not considered constraints to agricultural development. Irrigation (9% of cultivated area and less than 60% of area equipped for irrigation is actually irrigated) is performed only in the summer months and on a small scale to grow potatoes, wheat and fodder. Half of the agricultural water withdrawal is for irrigation of crops, including fodder, and half for livestock watering and cleaning. In 2012, electric power generation accounted for only 5% of water use.³⁰⁶

The rise of mining activity has caused increasing stress in multiple river basins. In particular, the Tuul River Basin in which Ulaanbaatar is located is subject to stress from multiple angles, largely due to industrial and residential pollution. Management of groundwater resources in the Gobi desert, an area of particularly large scale mining activity has gained increasing attention from both the public and private sector. For the moment, the onus is on mining companies making their operations as water efficient as possible. The World Bank-backed International Financial Corporation, for example, recently initiated a water management program with most of the major mining operators in South Gobi. Among its early outputs is a pilot training package for companies on best practices.

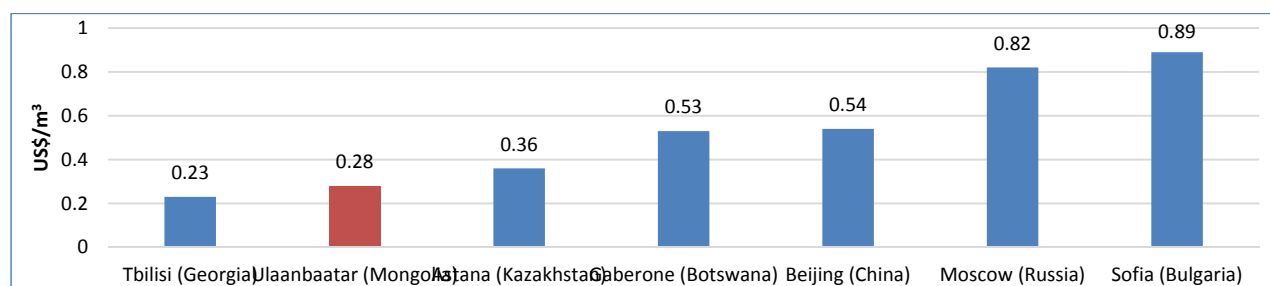
Over the last few years, neither water quality nor water scarcity has specifically emerged as a top concern to private sector businesses in Mongolia, perhaps because it is underpriced. However, access to reliable water may be imbedded in persistent complaints regarding inadequate infrastructure. The relatively low volume of manufacturing activity in Mongolia could be a function at least in part, of technical or bureaucratic difficulties in accessing and treating water, especially outside of Ulaanbaatar, and the lack of incentives to innovate around water re-use and conservation. This is observed in part in the relatively low growth in water-intensive industries outside of mining.

Analysis

The Constraints Analysis tested whether the cost of water and sanitation is a constraint to economic growth.

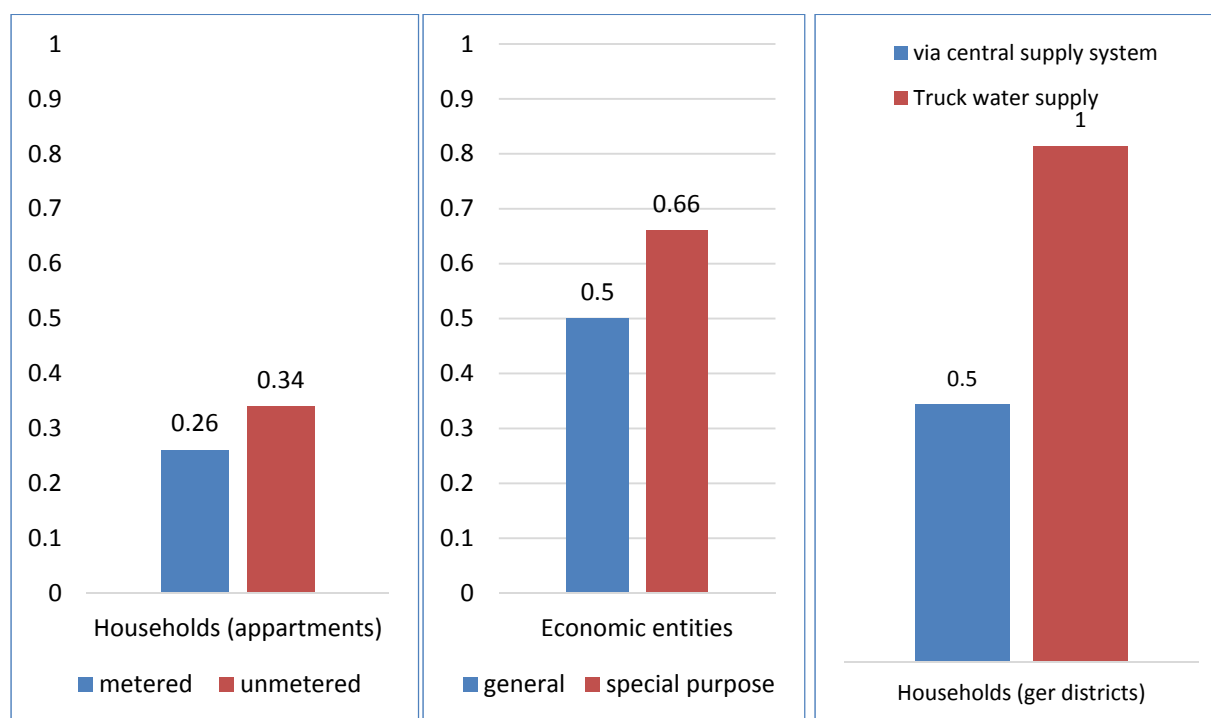
Test 1: Is the economic cost of water and sanitation high? For households with access to piped water, the average price of water in Ulaanbaatar was US\$ 0.28 per cubic meter (m³) in 2008, one of the lowest costs in the region.³⁰⁷ However, these rates are subsidized, as the unit cost of water and wastewater is approximately US\$ 0.40/m³, which is average among comparators, and USUG reports US\$ 4.6 million losses in 2012.³⁰⁸ Figure 65 shows the combined water and wastewater tariff, US\$/m³.

Figure 65. Combined water and wastewater tariff, 2008



Source: IB-NET Country Report

For those without piped water, the costs are much higher. The Water Regulatory Commission of Mongolia reports that residents in UB's ger areas pay at least 1 MNT per liter of water from kiosks, which equates to roughly \$0.50 per m³, and more for water supplied by truck (Figure 66). This amount is far higher than rates paid by households with piped connections and on par with rates paid by businesses and other economic entities. Due to the limited access to the water, sanitation and sewage system, the per capita water consumption of ger area residents (5-10 liters/person/day)³⁰⁹ is far lower compared to apartment dwellers (164.8 liters/person/day in 2014).³¹⁰ In fact, average water consumption in ger areas is near the WHO's definition of "no access" (<5 liters/person/day) and less than half of the definition of "basic access" (20 liters/person/day).³¹¹

Figure 66. Drinking water tariff in Ulaanbaatar city, per US\$/m³

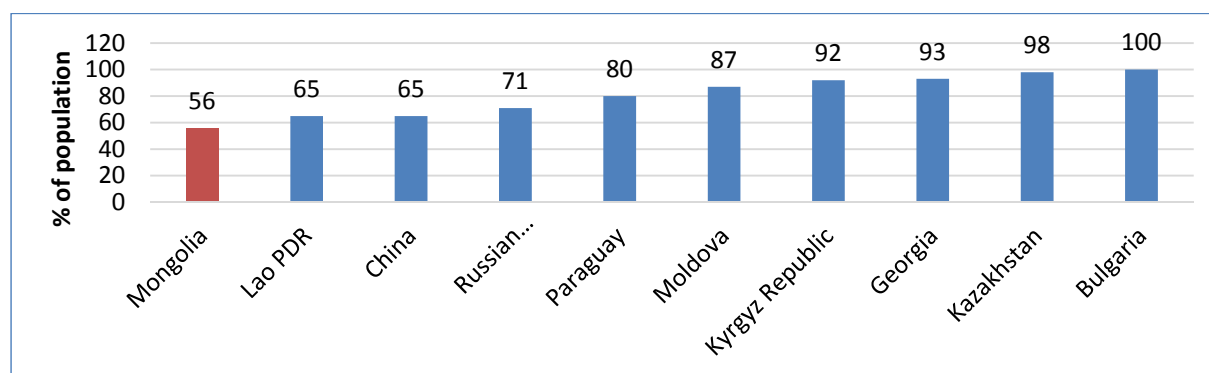
Source: USUG, 2015

While the cost of water remains high in ger districts, water expenditures account for only 3% of the household budget, indicating that the financial cost is not the determining factor of the low use of water.³¹² Consumption may be low due to the inconvenience of kiosk visits in the ger districts' hilly terrain,³¹³ the limited working hours of kiosk facilities, and the cold environment. Another contributor to low water consumption may be the lack of adequate sanitation and sewage facilities. Simply, many families lack flush toilets, which consume large volumes of water, and sufficient room on their land plots to dispose of grey water. The majority of UB's ger area residents use simple, unimproved and unventilated pit latrines for excreta disposal and grey water in soak pits. These latrines and grey water soak pits have number of shortcomings. In particular, they are relatively unhygienic, presenting health hazards including Hepatitis A, the rates of which are seven times higher in UB than globally. However a 2016 rapid assessment commissioned by MCC, along with data from the Mongolia National Statistical Office, do not find a relation between access to piped water (including toilets) and water, sanitation and hygiene (WASH) diseases, stunting, or malnutrition.³¹⁴

From a social perspective, the lack of access to safe water and sanitation facilities throughout Mongolia may present a challenge to ensuring equal access to health among poor residents. A 2012 UNICEF estimate finds that poor WASH conditions cost the Mongolian economy MNT 35.5 billion annually, or 26 million US\$, equal to 0.5% of GDP.³¹⁵ The reasons for these losses include the health effects of poor WASH, the associated costs of healthcare treatments, the related productivity losses, and time spent in accessing WASH services. Further, according to the last available data (2004), in Mongolia an estimated 3.5% of deaths annually were due to poor water and sanitation.

According to the UNDP, "Mongolia's falling standards of water quality are associated with health problems such as diarrheal diseases, which include dysentery, typhoid and Hepatitis A (34% of total infectious diseases registered in 2008), as well as the increased risk of chronic diseases of the kidney and urinary tract as a result of the hardness of the water."³¹⁶ Children have been particularly affected by poor water quality and sanitation deficiencies. In 2011 UNICEF estimated that "nearly 2000 Mongolian children under five years of age suffer from episodic diarrhea each year as a result of poor water and sanitation conditions - diarrhea is closely linked to child malnutrition, morbidity and mortality"³¹⁷ and in 2014 UNICEF reported that diarrhea was then the second greatest cause of under-five mortality in Mongolia,³¹⁸ up from third a few years prior.³¹⁹ The effects are also gendered. As the primary users of household water, women have greater exposure to pollutants and the illnesses that can arise. Further, women may be less likely to receive required medical care than males or children.³²⁰

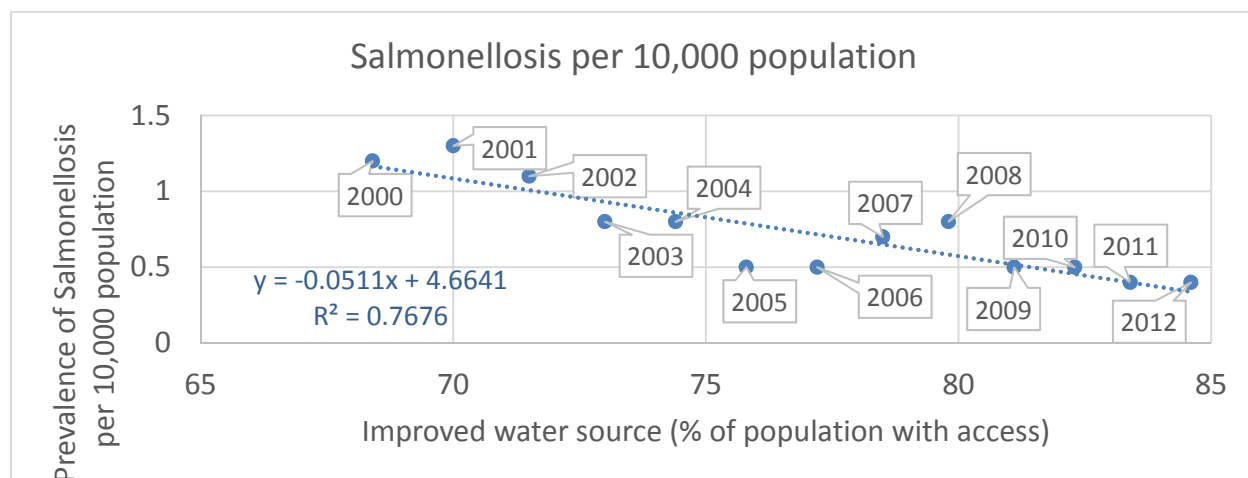
Figure 67. Access to improved sanitation facilities, 2012



Source: World Development Indicators, 2015

Test 2: Do shifts in cost of water have an impact on economic growth? The percent of people with access to clean water in each province is highly correlated with provincial GDP per capita,³²¹ and it is likely that wealth may lead to increased expenditures on water and sanitation infrastructure. Although the prevalence of salmonellosis has been decreasing with increased access to improved water sources (Figure 68), the prevalence of other waterborne diseases do not seem to be correlated.³²²

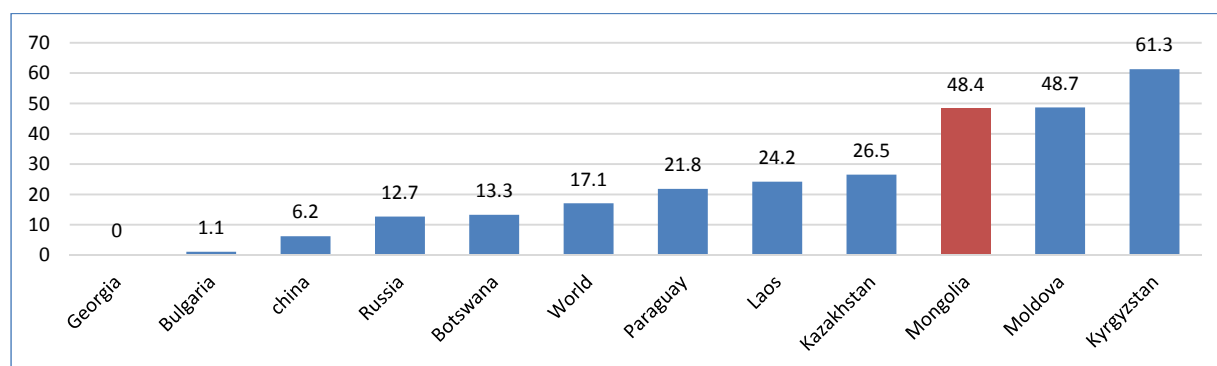
Figure 68. Salmonellosis per 10,000 population, 2000-12



Source: National Center for Infectious Diseases, 2015

Test 3: Are firms taking steps to ensure access to low cost water? A relatively high percent of firms (48%) seeking a water connection feel they must give a bribe to get the connection (Figure 69).³²³ Complaints by businesses are low, however, with water access rarely being mentioned. In regions outside of UB large businesses often use private wells for water, with 41% of firms saying they have a private well outside of UB, indicating that water access may be being bypassed using private funds.³²⁴ Use of private wells is expected to be most prevalent in the Gobi desert, where water intensive mining operations rely on privately dug groundwater sources.

Figure 69. Percent of firms expected to give gifts to get water connection, 2015



Source: World Bank Enterprise Surveys

Most industries have their own water supply, but no existing separate water treatment facilities. However, over the recent years, water treatment and reuse of grey water technologies have been developing and introducing in several domestic industries in UB. Some industries have waste water treatment facilities on site, such as MCS Coca-Cola. They treat the waste water from the factory, reuse a portion and discharge the waste water to the sewer. APU, a beverage company, also recycles some of its water before discharging it. MCS Tiger Brewery (a Heineken Company) is planning investment in wastewater treatment and UB City government is planning a move of the tanning industry to a specialized industrial site at Emeelt, with dedicated water supply and treatment. Many industries however do not have treatment on-site or are not connected to the central waste water treatment plant. Rather than attempts to address water scarcity and water treatment issues, large firms and small enterprises contribute excessive amount of pollution.

Test 4: Are firms reliant on water access thriving? Mining, particularly in the Gobi desert, is operable and profitable, although there is concern that they are tapping aquifers at rates that are unsustainable.³²⁵ Large mines, such as Oyu Tolgoi and Tavan Tolgoi, have started operations, along with planned value adding industries (Sainshand Industrial Complex) all of which require the development of new water resources.

USUG reported that they will begin to draw surface water, in addition to ground water, for the first time this year. However, this is complicated by ineffective wastewater treatment, under-enforcement of industrial effluent standards, and seasonal variation that reduces groundwater levels in the spring. In the South Gobi, where water is scarcer and several large mines operate, a recent ADB report concluded that there was no immediate water shortage in the aggregate. However, it noted that the pumping of groundwater could create water conflicts by decreasing the amount of water available for local agriculture and increasing the rate of desertification.³²⁶ Even so, the shortage of water may limit Mongolia's ability to process or exploit its mineral wealth. As an example, the planned Industrial Park at Sainshand has been stalled due to a feasibility study that demonstrated concerns about insufficient access to water for minerals processing (electric power, washing, smelting, rolling, etc.).

Anecdotal information collected by MCC during site visits reveals that limited access to the piped water and sanitation network might be hindering business development in UB, though further research is needed on this issue.

Conclusion

Although Mongolia has relatively good access to improved water and sanitation sources in urban areas, access is lower among the poorest communities, such as in rural communities and urban and peri-urban ger districts. Consumer costs are significantly higher and per capita consumption are significantly lower in these ger districts. This imposes time, health and environmental costs on these communities. These problems are exacerbated by underlying water scarcity issues, driven by an uneven natural distribution of water resources and a semi-arid climate, which is most notable in water intensive industries such as wool and leather, mining, and minerals processing, the latter two located primarily in the Gobi Desert. Based on the current evidence, **costly access to water and sanitation in productive sectors and poor communities is a binding constraint to economic growth.**

14. Macro Risks

Background

Mongolia's general macroeconomic environment could constrain investment and growth if uncertain conditions create costly risks for firms and entrepreneurs.

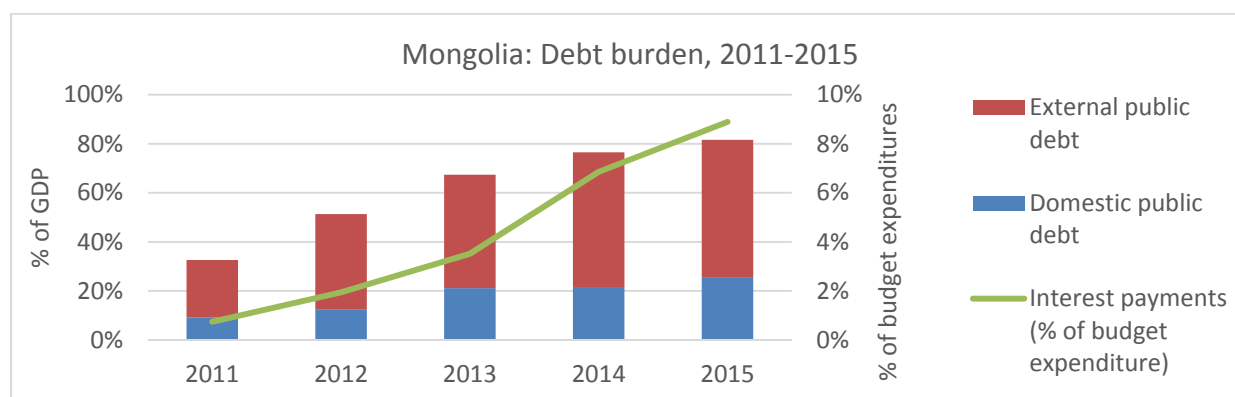
Mongolia's economy grew on average 9.9% per year between 2005 and 2014,³²⁷ driven by a major expansion in mining, particularly copper and coal. This expansion was financed by a large increase in foreign direct investment, reaching levels of 45% of GDP in 2011.³²⁸ Mining has come to dominate Mongolia's economy, with minerals accounting for 89% of all exports, and 89% of those exports bound for China.³²⁹ Although it coincided with significant reductions in poverty and increases in per capita income, a reliance on mining, concentrated trade with a single partner, and lack of diversification in other sectors of the economy has left Mongolia open to external shocks. Unfortunately, Mongolia experienced several shocks simultaneously within the past few years. Global copper prices declined by 41%³³⁰ and coal prices around 40%³³¹ between 2011 and 2015, and demand from China slowed during the same time period. Amidst political debates about whether Mongolia was receiving a fair share of mining royalties, the Parliament passed the Strategic Entities Foreign Investment Law in 2012, which restricted foreign ownership of assets in sectors deemed essential to national security, including natural resource extraction. This precipitated a drop in FDI of 44% in 2013³³², which had been the primary source of financing for Mongolia's current account deficit. Although the law was repealed the next year, the Government became embroiled in a two-year dispute with the foreign operator of Oyu Tolgoi (OT), the largest copper mine in Mongolia. FDI declined an additional 60% in 2014, and the dispute was finally resolved in May 2015.

Additional concerns about the macro risks relate to the external debt position of Mongolia, resulting from a procyclical fiscal policy implemented during the boom years. The windfall from expanded mineral exploitation created political pressures to increase spending to improve social welfare and economic development. Although the Government is working with the World Bank to establish one or more sovereign wealth funds, political timelines led the Government to spend immediately, often with borrowed funds.

Between 2011 and 2014, the Government of Mongolia borrowed substantial sums from international markets. In 2011, Parliament created the Development Bank of Mongolia (DBM) for the explicit purpose of financing major infrastructure projects and support for export-oriented industries, such as cashmere processing, railways, power, and petroleum processing. In 2012, the Government issued a \$1.5 billion sovereign "Chinggis Bond" to fund the DBM. Over the next two years, the Government guaranteed additional debt incurred by DBM, including a US\$580 million euro bond, a JPY 30 billion samurai bond, a \$162 million loan from China Development Bank, and a \$300 million syndicated loan from Credit Suisse. Although much of DBM's spending is not included in official government budget tallies, nearly all DBM financing is either directly provided by the government or obtained through government-guaranteed debt.

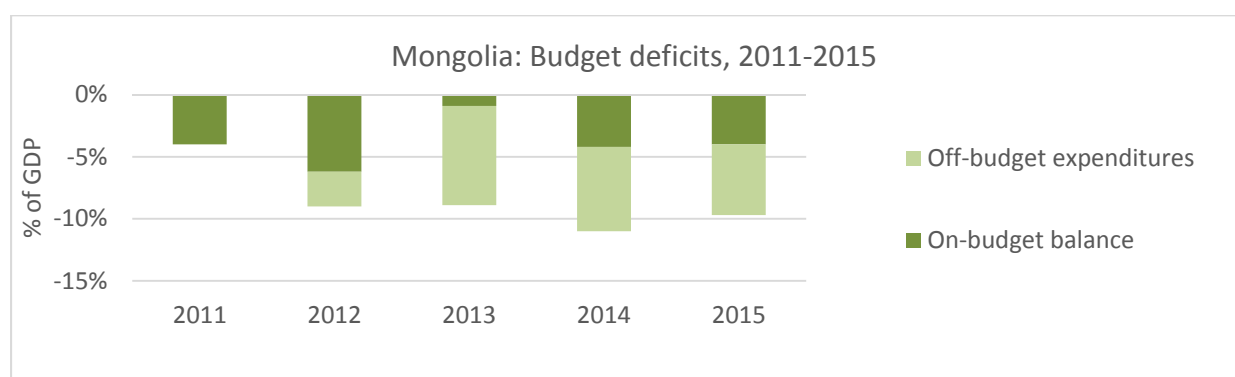
As long as mineral prices and FDI were high, the debt could be easily managed. However, the recent economic slowdown created a large budget deficit. According to the IMF, Mongolia's total public debt was 76.5% of GDP in 2014, and external debt totaled 54.9% of GDP (Figure 70). Parliament passed a Fiscal Stability Law (FSL) in 2010, which limited the structural deficit to 2% of GDP, established a stabilization fund limiting expenditure growth to the non-mineral GDP growth rate, and set a debt ceiling at 40% of GDP. However, these limits proved to be insufficient to control spending. Government spending increased before the FSL took full effect in 2013, expanding by 61% in 2011 and 57% in the six months leading up to elections in June 2012.³³³ After the FSL took effect, deficits have routinely exceeded 2% of GDP, and they have hovered near 10% if the DBM's off-budget spending is included (Figure 71). The debt ceiling was also exceeded during this period. In 2015, Parliament amended the FSL to provide temporary increases in the deficit and debt limits as part of a planned path back toward fiscal stability.³³⁴

Figure 70. Mongolia's debt burden



Source: Asian Economic Outlook, 2015

Figure 71. Mongolia's budget deficits



Source: IMF, 2015

Even with its slowing economy and debt management issues, Mongolia's medium term outlook is promising, according to the most recent IMF consultation report, given its large mineral resources and pending and active projects in the mining sector. However, Mongolia currently faces serious

balance-of-payments (BOP) pressures, the Asian Development Bank lowered its projection of Mongolia's GDP growth to 2.3 from 3% in 2015,³³⁵ which would be the lowest rate since 2009.

The "Global Competitiveness Index 2015-16" ranks Mongolia 133rd out of 144 in macroeconomic environment, underperforming all comparator countries. Within this category, Mongolia ranks highest on Gross National Savings as of % of GDP at 44/144 and lowest on Government Budget Balance as a % of GDP at 138/144 and Inflation at 135/144. The same report notes "Foreign Currency Regulations" as the second, "Inflation" the fourth, and "Political Instability" the fifth, most problematic factors for doing business, confirming that the macroeconomic environment is making business difficult.

The top 5 sectors for total FDI (and number of companies) are: 1) Mining, exploration, petroleum (415), 2) Trade, catering services (8,796), 3) Others (1,562), 4) Banking and financial services (64), and 5) Transport (132).

The United Nations Conference on Trade and Development's (UNCTAD) Investment Policy Review 2013 characterizes Mongolia as "a small market characterized by a few large conglomerate family businesses and a small universe of SMEs. A lack of competition culture and the concentration of economic ownership and control in a small number of hands are combined with the fact that many members of Parliament and Government hold key business positions. This blurs the lines between the public and private sector, produces systemic conflicts of interest and leads to (informal) barriers to the entry of both domestic and foreign investors." Within the framework of the 2008–2012 Action Plan, the GOM published a list of 26 top priority projects to be implemented by 2015/16. This list of large projects was prepared by the National Development and Innovation Committee (NDIC), and focused on four sectors: 1) Mining and heavy industry, 2) Agriculture and industrialization, 3) infrastructure, and 4) human capital and environment.

The macroeconomic environment, and instability in particular, was mentioned frequently during consultations as a problem for doing business, most notably in the mining and financial services sectors, which benefit from a relatively high level of FDI.

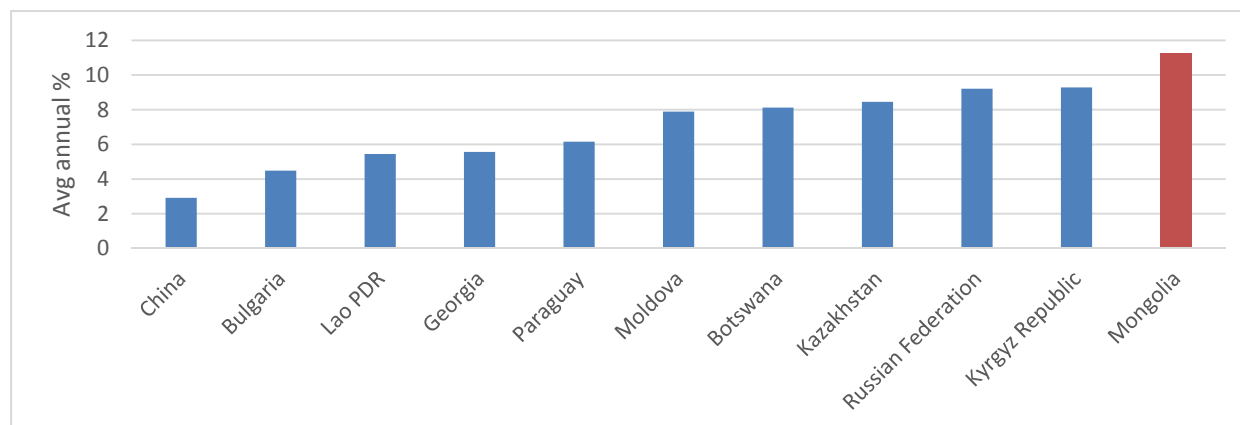
Analysis

The Constraints Analysis tested whether the weak and unstable macroeconomic environment is constraining economic growth in Mongolia.

Test 1: Is Mongolia's macroeconomic environment weak or unstable? Over the last decade, Mongolia has had higher average annual inflation (11.4%) than comparator countries (Figure 72.). Also, inflation has been volatile - fluctuating in a wide range between a low of 5.1% in 2006 and 25.1% in 2008.³³⁶ An analysis of data from the Bank of Mongolia revealed that money supply has weak influence in inflation, and thus inflation is largely affected by imports and other factors. The combined variation of M1 growth and import growth explains 45% of total variation of inflation. It seems that import inflation is the main source of inflation. The relationship between inflation and FDI is weak, and there is a weak positive correlation (0.23) between fuel imports and inflation. Exchange rate and non-mineral export has relatively weak relationship, hence gain from inflation is low. Mongolia's real

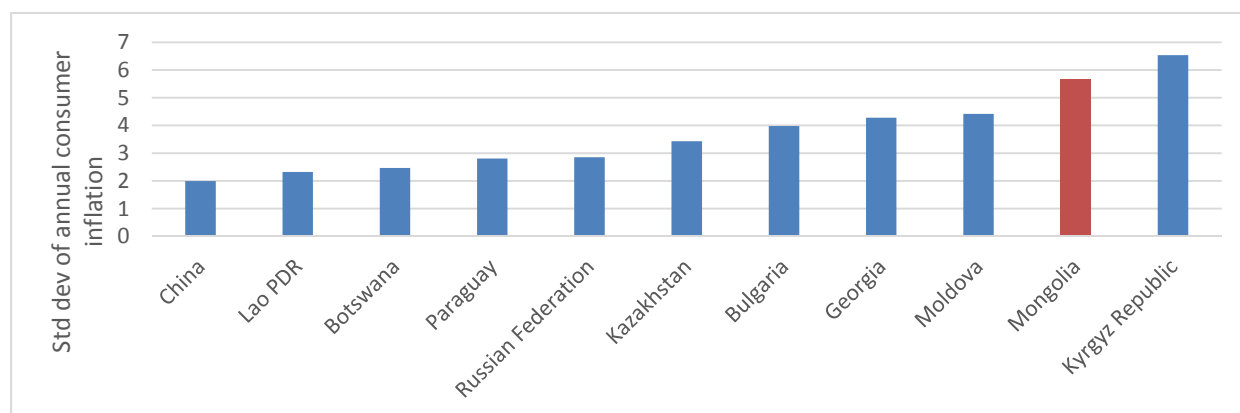
effective exchange rate has also been relatively volatile (Figure 73), appreciating by 30% between March 2009 and June 2012, with symptoms of Dutch disease due to mineral exports, before declining 15% by mid-2014.³³⁷

Figure 72. Inflation, consumer prices, 2005-14



Source: World Development Indicators, 2015

Figure 73. Inflation volatility, 2005-14



Source: World Development Indicators, 2015

The uncertainty surrounding inflation makes it riskier for banks to lend and businesses to make investments. This is evident in interest rates by currency type, as interest rates offered by local banks are on average twice as high for loans in tugriks³³⁸. These dynamics also affect the poor, whose ability to purchase essential commodities becomes threatened. The extent of the effect might be underappreciated as many of those who have risen out of poverty in the past few years have only done so to a marginal extent, implying vulnerability to negative economic shocks.³³⁹

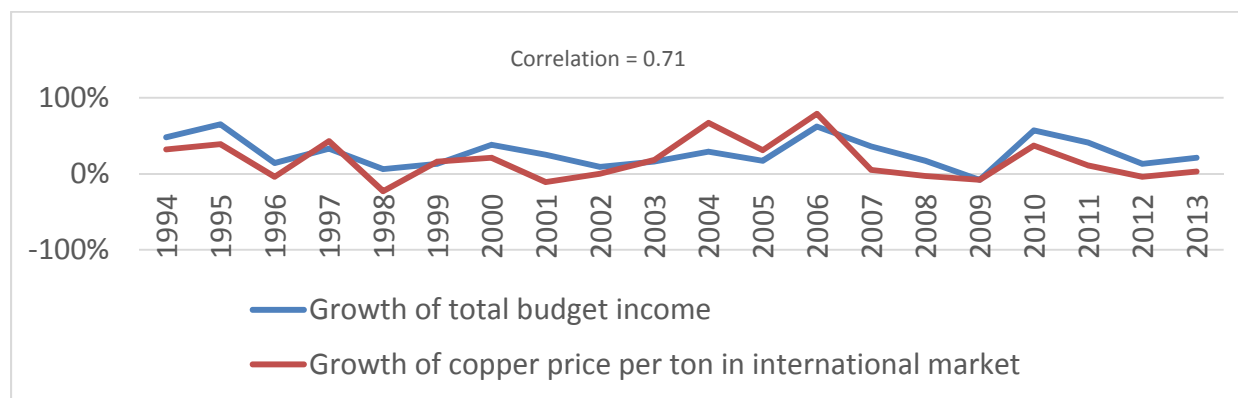
The estimation by the NDI revealed that between 1990 and 2013 taxes remained comparatively low among its comparators, budget income increased due to growth in global commodity price fluctuation, FDI and investment in mining. The share of budget as a share of GNI is increasing with an increase of 50% in 2011. Despite the mining boom, the share of budget deficit in GDP has increased since 2000, and Mongolia has the highest budget deficit as a share of GDP among its comparators. The

worsening budget deficit leads to higher government debt, which becomes another burden the economy. According to the estimation, one unit deficit in budget balance causes 2.2 unit increases in external government debt. Mongolia's total public debt was 76.5% of GDP in 2014, and external debt totaled 54.9% of GDP. Thus, it results in relatively high debt service to export ratio accounting for 27.9%³⁴⁰ which is the highest among other countries.

Mongolia's external position is weak, with a current account balance averaging around -26% of GDP from 2011-13, with a trade balance of -11% during the same period.³⁴¹ With volatile changes in trade balance, achieving sustainable growth is difficult in year after year and correlation between trade balance change from previous year and GDP growth is 11.36%. According to the calculation, the correlation between changes in trade balance and foreign investment is 28.9 and it supports the assumption that weak trade balance negatively affects foreign investment. Average trade balance between 2003 and 2013 was negative US\$ 843 million, which was third lowest among eleven comparators and its dimension become significantly large since 2008.³⁴² Mongolia ranked the lowest among its comparators due to its large current balance deficit (-3.2 billion US\$), and only 8% of the deficit was covered by remittances.

Test 2: Do movements in key macroeconomic indicators lead to movements in growth? Over the past 15 years, GDP growth and investment have been weakly correlated with inflation. However, Government revenues are closely correlated with the international prices of key mineral exports. The correlation between budget income and the price of copper is 0.71, and it is 0.46 for the price of coal (Figure 74).³⁴³ Despite this, the government budget balance is negatively correlated with the GDP growth rate, suggesting that on average the government is running deficits when the economy is doing well and surpluses during downturns. Budget expenditures also seem to increase in the years prior to an election.³⁴⁴

Figure 74. Copper prices and budget income, 1994-2013



Source: National Development Institute

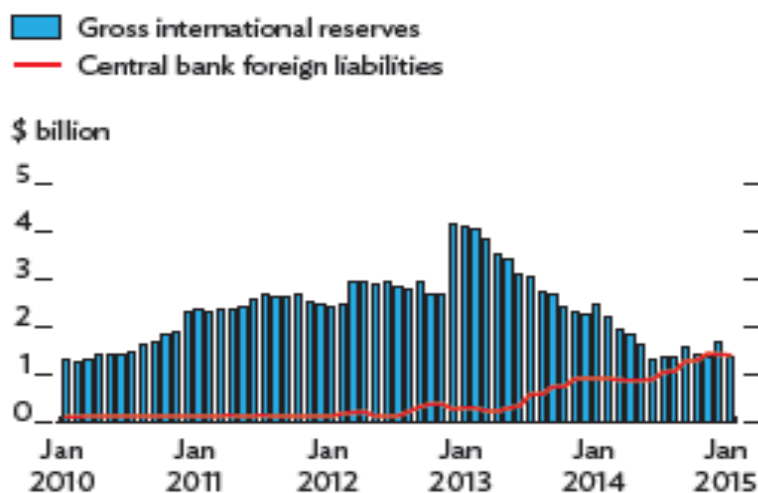
Investment to the mining sector has continually increased since 2004. Positive relations of growth with inflation seems to be related to mining sector investments with the correlation coefficient of 0.44 between growth of the mining share and inflation. During 2004-2014, Mongolia's average annual growth rate was 9.1% in which mining sector development was the main driving force. The mining

sector contributed 22.8% of GDP and 75.2% of exports. However, FDI dropped by 80.7% following the completion of the first phase of Oyu Tolgoi, reflecting uncertainty over the economic viability of projects in light of lower commodity prices, as well as over the broader investment climate. Gross capital formation contracted by 33.5%, dragging GDP growth down by 18.4 percentage points. Domestic consumption increased by 8.6% and contributed 6.0 percentage points to GDP growth, with private consumption accounting for nearly all of the increase. As exports grew by 51.4% in real terms and imports by only 4.9%, the trade deficit shrank by 82.7% and the contribution of net exports to GDP growth expanded to 20.3 percentage points.³⁴⁵

The central bank has taken a combination of tight and loose monetary policies since 2009 in order to balance its dilemma to curb inflation and to expand the economy. When the monetary policy tightened between 2010 and 2013, it was pro-cyclical policy and contributed to shrink all sectors in economy except agriculture. In the economic environment with high inflation, deposit and loan interest rates remains still high and thus negatively affects businesses to expand.

Since late 2012 the Bank of Mongolia has taken a number of unconventional policy measures to spur economic growth and provided exceptionally large monetary and quasi-fiscal stimulus in the face of declining FDI. Partly as a result of these measures, the gross international reserves fell to \$1.6 billion—cover for 2.9 months of imports—from \$4.1 billion in 2012, and are increasingly financed by short-term foreign liabilities, including a 3-year currency swap arrangement with the central bank of the People’s Republic of China. As capital inflows ebbed, the Mongolian tugrik depreciated by 13.8% against the US dollar, having already depreciated by 19.2% in 2013.³⁴⁶

Figure 75. Gross international reserves and foreign liabilities



Source: Bank of Mongolia, 2015

Due to an expansionary budget, the growth of the budget deficit is higher than the GDP growth. This suggests that government intervention in the economy has not significantly declined to promote competitive market environment. In terms of inflation, it is not strongly related to expansionary fiscal policy. Despite economic downturns, the increased budget deficit directly relates to poor fiscal

management and forecasting ability. There are relatively big gaps between budget income projection and performance. Another reason for expanded budget deficit relates to politics as budget spending a year before the election and second year after election is 33% and 34% respectively. This phenomenon proves that political promises of political parties cause even higher budget deficits.³⁴⁷

Test 3: Are firms looking for ways to hedge against macroeconomic risks? Lenders and borrowers are resorting to foreign currencies for stability. Foreign currency accounted for 23% of all loans and 30% of all deposits in 2014.³⁴⁸ FDI has been slow to rebound partly due to concerns about macroeconomic risks, with many investors seeing the resolution of the OT dispute as a bellwether for the economy.

Domestic investment has increased more sustainably than foreign investment. A difference between shares of domestic investment (15%) and foreign investment (19%) to GDP became smaller compared to large difference (32%) occurred in 2011. However, domestic investment is highly dependent on cost of financing, evidenced by a -0.78 correlation coefficient between interest rate spread and domestic investment.

With the volatile exchange rate, people became less willing to get loan in foreign currency, but more willing to deposit their savings. This was evidenced by decreased bank loan denominated in foreign currency and increased share of foreign currency (especially US\$ and Yuan) deposits (0.36) in total deposit.

In Mongolia, the election period highly influences the budget spending and thus leads to the increase of the budget deficit. In 2008, loans from investors and international markets were spent on funding the social promises of political parties, which increased wage and social insurance spending increased by 84%. Salary expenses account for about 18% of total budget spending. The public sector employs 169,000, of which 65% relates to the employment in education and health sectors. As population increases, numbers of workers in these sectors are expected to grow and thus the budget spending should increase in near future. Currently, salary and social insurance accounts for 22.7% of total budget spending.³⁴⁹

Following the significant reduction in total investment, investment as a share of GDP decreased by 41 points between 2011 and 2013. Within this context of increased government debt and reduced total investment, the IMF has stated that Mongolia needs “Credible fiscal consolidation, covering both the traditional budget and the Development Bank of Mongolia (DBM), is needed to reduce projected deficits, bring public debt under control, and moderate BOP pressure.”³⁵⁰ The government started to implement public debt management, and the Law on Debt Management passed in 2014.

Test 4: Are firms with better access to external markets doing better? Large firms and foreign firms have weathered the macro issues better than small firms, but all firms are affected in some way by the macroeconomic instability. The issue of a dollar-denominated government-backed bond in May 2015 raised questions among investors about the strength of the government’s guarantee.³⁵¹

As economic growth is mainly generated through the mining sector expansion, there are not many changes occurred in the industrial structure of the economy. The Mongolian economy is still

characterized by relatively narrow structure with domination of primary sectors, namely agriculture (15.3%) and mining (13.5%), though the share of the former significantly reduced from 41% in 1996. There is no significant structural change towards more value added sectors, and Mongolia has less value added in the industrial sector than comparators.

Among economic sectors, mining, trade, agriculture, real estate and transportation have had more changes in share of GDP and thus these sectors can be considered as “camels.” Other sectors can be categorized as “hippos” due to their lack of expansion in last 14 years. This results in unchanged industrial structure of the Mongolian economy.

The Mongolian macroeconomic condition is not favorable for small and medium-sized enterprises (SMEs), which could be categorized as hippos. Between 2002 and 2013, the number of small businesses with sales up to 1 million MNT increased fourfold, while businesses with sales more than 3 billion MNT increased by 11.5 times. However, the absolute number of small businesses is 32,031 compared to 1,237 large businesses. Estimates regarding the proportion of enterprises that are female-owned are uncertain, given the lack of systematic data collection on women-owned or managed firms. Big enterprises with sales more than 3 billion MNT only account for 1.7% of total business entities (71,038), but they generate 91.4% of total income of the private sector. This indicates that the domestic market is dominated by few big companies and others have comparatively low level of income. While SMEs comprise over 96% of all enterprises, contribute 25% to GDP and employ just over half of Mongolia’s workforce, they are not accorded policy support comparable to their potential importance to the economy. Owners of smaller enterprises do not necessarily possess the means to invest in understanding frequently changing policy, they might not have the capacity to deal with bureaucratic regulations, and they might lack the financial and social capital to adequately deal with legal issues that might arise.

Despite the increase in income, the number of big enterprises paying taxes did not increase at the same rate. They hold 91% of total income, but constitute only 2.4% of all tax paying companies. The share of ten biggest tax payers was 19% in 2008 and their share in GDP accounted for 5%. Among others, Erdenet copper mining joint venture with Russia has continued to play a leading role in budget tax income generation. Consequently, the budget tax income became more vulnerable to changes in its big taxpayers. This situation also contributes to the growth of the shadow economy.

Conclusion

The evidence presented in the analysis shows that Mongolia’s narrow economic base, dependent on mineral exports, trade with China and high levels of foreign direct investment, creates a weak and unstable macroeconomic environment, which contributes to uncertainty and vulnerability to external shocks. We also see that the movements in key macroeconomic indicators lead to certain changes in growth rate, especially the evidence shows how much impact one major project and large investment has on the overall economy. In particular, this volatility also threatens recent gains in poverty reduction, as the poor are particularly vulnerable and threatened by the potential decreases in social spending that has helped push them above the poverty line. Although Mongolia’s medium term outlook is promising, **the weak and unstable macroeconomic environment appears to be one of**

the most binding constraints to economic growth in Mongolia in the short-term. Some uncertainty related to the second phase of the Oyu Tolgoi project has been cleared, but risks remain due to the continued government budget deficit, the repayment of foreign debt due in 2017, slowdown in major export market and the need for prudent macroeconomic adjustment policy.

15. Micro Risks

Background

Factors in Mongolia's business or investment climate constrain growth by increasing administrative costs and reducing the profitability of investments. These *micro risks* include government regulations, corruption, taxes, property rights and government intervention that favors state-owned enterprises (SOEs). Elements of the micro risks could constrain economic growth by increasing the cost of doing business and reduce the appropriability of economic activities. Businesses, in particular the smaller and female-owned ones, experience direct costs when bribery is required to conduct business, and they experience indirect costs through the amount of time spent dealing with burdensome government regulations, competition with SOEs among others. This deters small, medium and female-owned firms from formalizing and capitalizing on growth prospects. Although both foreign and domestic investment have been high in Mongolia in the last five years, the recent decline in investment and economic growth have highlighted some of these risks within Mongolia's business climate.

Over the past few years, foreign investors in Mongolia have expressed concerns about government involvement in the economy. These concerns range from uneven enforcement of laws and regulations to competition with state-owned enterprises and politically connected businesses to "creeping expropriation," especially in the mining sector.³⁵² During consultations with the private sector, businesspeople frequently pointed to government policy execution as preferential and/or detrimental to private enterprise. According to them, Mongolia's laws and regulations are respectable in terms of legal and regulatory framework, but the enforcement is arbitrary and politically driven due to policy makers with conflicts of interest.

Another area of concern is that laws and regulations change frequently following the each election or cabinet re-shuffle resulted in weak policy implementation and law enforcement with little consultation from the private sector, leading to uncertainty and risk in investing.³⁵³ Private sector representatives indicated that the weak policy implementation and high turnover of civil service could contribute to inefficiencies and market distortions that prohibit growth.

These dynamics have different effects for large and small firms. While large firms may have the resources to circumvent these issues, micro, small and medium enterprises (MSMEs), as well as female enterprises, do not. Available research posits that small businesses are less well placed to navigate the barriers of obtuse regulations, frequent policy change, compliance expenses, and corruption. Further, they are more greatly excluded from the systems of patronage and cronyism that the system fosters, and the support and information that social networks provide. This presents additional barriers to growth in that the exclusion of women entrepreneurs, often small businesses, from equitable participation in the economy.³⁵⁴

In the past decade, there has been a vigorous public debate in Mongolia about the proper size and role of foreign ownership in the mining sector. Public sentiment, influenced by a complex geopolitical and regional security environment, has shifted multiple times during this period, resulting in changes

in governments and laws. Foreign investors in Mongolia have expressed concerns about government involvement in the economy, especially in the mining sector.³⁵⁵ In 2012, Parliament passed the Strategic Entities Foreign Investment Law (SEFIL), which restricted foreign ownership of assets in sectors deemed essential to national security, including natural resource extraction. As a result, FDI inflow decreased significantly from 45.3% of GDP in 2011 to 17.1% of GDP in 2013.³⁵⁶ Consequently, the law was replaced the next year, in 2014, by a new investment law that annulled many of the restrictions.

However, several other high-profile cases contributed to foreign investors' perception of government expropriation. These cases include negotiations over a new underground development at Oyu Tolgoi, (Mongolia's largest copper mine), the detention of American and Filipino business executives involved in a tax dispute and cancellation of a Canadian firm's uranium mining license due to national security concerns. An international arbitrator ordered the government to pay Khan Resources, the uranium mining company, US\$104 million as a result of the loss of its mining license. Although the judgment was settled for around \$70 million, this represents a large opportunity cost at a time when government finances are tight.³⁵⁷ Mongolia's elected leaders accept that these actions have provided a disincentive to investment, and the government has taken steps to correct many of them.³⁵⁸ The OT dispute was resolved in May 2015, and there are hopes that it may revive foreign investment.³⁵⁹ The business executives were pardoned by President Elbegdorj shortly after their conviction for tax evasion in 2015.³⁶⁰ Moreover, the government is considering privatizing or selling partial stakes in several SOEs.

"Doing Business 2015" ranks Mongolia #173 out of 189 for trading across borders, little changed from the year prior and Mongolia's worst performing doing business category. This contributes to the low contribution of the tradeables sector, outside of mining, to GDP. The Mongolian government launched its free trade zone (FTZ) program in 2004. Two FTZ areas are located in the north at the Russia-Mongolia border town of Altanbulag and in the south at the Chinese-Mongolia border at the town of Zamyn-Uud. Both FTZs are relatively inactive, with development pending at either site. A third FTZ is located at the port of entry of Tsagaan Nuur in the far western province of Bayan Olgii.

According to "2014 Investment Climate Statement" of the US Embassy in Ulaanbaatar, Mongolian law provides for tax incentives in the form of tax stabilization certificates. New projects and some older projects that meet requirements, both domestic and foreign, may qualify for favorable tax (corporate income tax; customs duties; value-added tax; and mineral resource royalties) treatment for periods up to 27 years. Accessing these incentives is a function of investment size with reference to specific sectors and the geographical area within which the investment is made.

Analysis

The Constraints Analysis tested whether perceptions of weak policy implementation, active government participation in the economy or perceptions of expropriation ("government intervention") are constraining economic growth in Mongolia. The active government participation could constrain growth by encouraging firms to pursue rent-seeking behavior at the expense of increased productivity. The costs of perceived expropriation may be direct or indirect. The indirect

costs of SOEs are more likely to stem from reduced competition in the affected sectors particularly in air transportation where only a few players participate in the market.

Test 1: Is the shadow price of government intervention in the economy high? During consultations, Mongolian firms complained of a high cost of doing business attributed largely to state-owned enterprises (SOEs) domination in the competition. As of 2014, Mongolia has about 400 SOEs in a variety of sectors,³⁶¹ including energy production, aviation, mining, water, utility, postal and transport with relatively small subsidy from the government budget. From 2011 to 2015, subsidies to public enterprises averaged 3.1% of current government expenditures, 2% of total expenditures and net lending, and 0.8% of GDP.³⁶²

Although public and private entities ostensibly compete fairly in the market, many in the business community believe that the Government encourages state owned business over private actors and crowds out private businesses.³⁶³

While the share of the private sector in the economy has increased over the past decade, state-owned enterprises limit competition in a variety of industries, such as energy, aviation, rail, healthcare, and water. For instance, Mongolian Airlines (MIAT), a 100% state-owned enterprise (SOE) with exclusive right to service the most lucrative international destinations with scheduled and charter flights, dominates the aviation industry. In 2013 MIAT was officially given a “National Flag Carrier” status with particular exclusivity on the most lucrative two destinations, Beijing and Seoul.

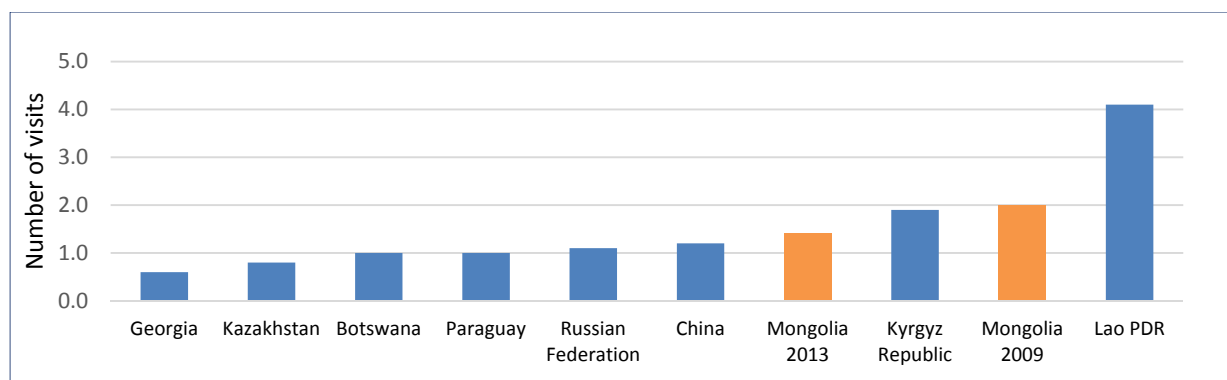
Furthermore, Eznis Airways LLC, one of the few private airlines on the local market, aimed to expand its business to profitable international destinations. In preparation of its international service to Beijing, China, Eznis Airways LLC leased a Boeing 737. However, before the company started the service, the designations including Beijing which were awarded in the summer of 2012 were revoked by the Civil Aviation Authority of Mongolia in late 2012.

Moreover, Civil Aviation Authority of Mongolia, the government agency, granted the exclusive right to only two companies to import and supply airplane fuel. Consequently, the cost of running a private airline was high in Mongolia, and eventually, Eznis Airways LLC failed to compete with MIAT and suspended its entire operation due to direct and indirect costs and exited from the market in 2014. On the other hand, the National Development Bank, an SOE, provided low-rate, favorable bridge financing for MIAT to purchase new airplanes. Private firms conducting businesses in the tourism sector also indicated that MIAT changes flight schedules without prior notification to tour operators, to the detrimental of their businesses. According to the Tourism Policy Coordination Department of the Ministry of the Environment, Green Development and Tourism, 44 flights were canceled in 2015 due to various reasons.

Medium and large enterprises, with more than 20 employees and 3 billion MNT in revenue, indicated that political instability, licenses and permits, corruption are major issues for business growth in which the indicators are higher to compare to the East Asia average.³⁶⁴ In addition, smaller firms with up to 20 employees indicated that access to finance and tax rates are primary impediments to their business.

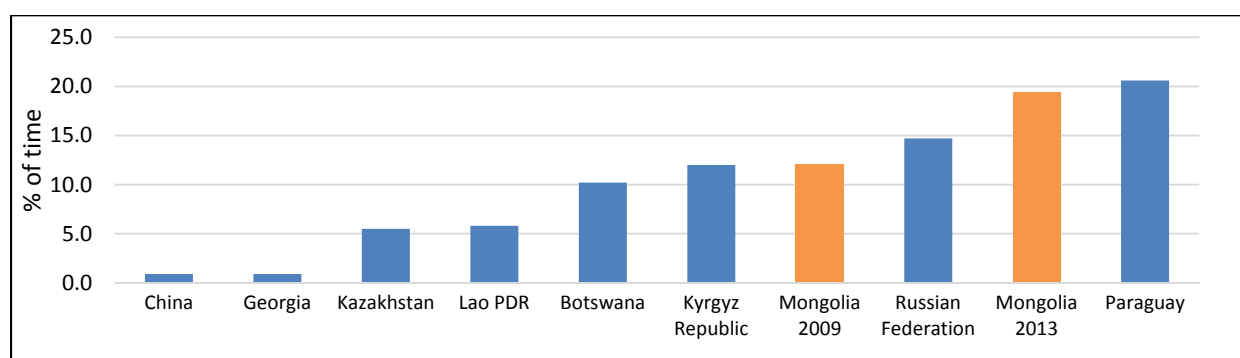
In 2013, the number of firms identifying tax rates as a problem decreased from 2009. However, the percentage of firms identifying tax administration as a problem remained the same. Mongolian firms experienced more meetings with the tax officials than firms in comparator countries (Figure 76), and their managers spend more time dealing with the requirements of government regulation (Figure 77).³⁶⁵ During consultations, firms indicated that tax audit administrator incentives, based on the over collected amount for the state budget, increased the tax burden and distorted business profitability.

Figure 76. A number of visits or required meetings related to the tax administration



Source: World Bank Enterprise Surveys, 2015

Figure 77. Senior management time spent dealing with the requirements of government regulation



Source: World Bank Enterprise Surveys, 2015

Additionally, private business interests exert substantial influence within Mongolia's political process, as in many other democratic systems. As stated by a blogger for *Mongolia Focus*, "Today these [business] competitions have become more intensified and are formally and informally institutionalized in Mongolia's political processes. Just a quick glimpse of the composition of the parliament, cabinet, and political parties demonstrates how much these private business interests are entrenched into the policy-making process."³⁶⁶

The Mongolian Government signed a concession agreement with Energy Resources Rail LLC, an indirect wholly-owned subsidiary of Mongolian Mining Corporation (MMC),³⁶⁷ to build and operate the railway base infrastructure between the Ukhaa Khudag coking coal mine and the Mongolian–Chinese border crossing, the Gashuun Sukhait. As a result, the company issued US\$600 million

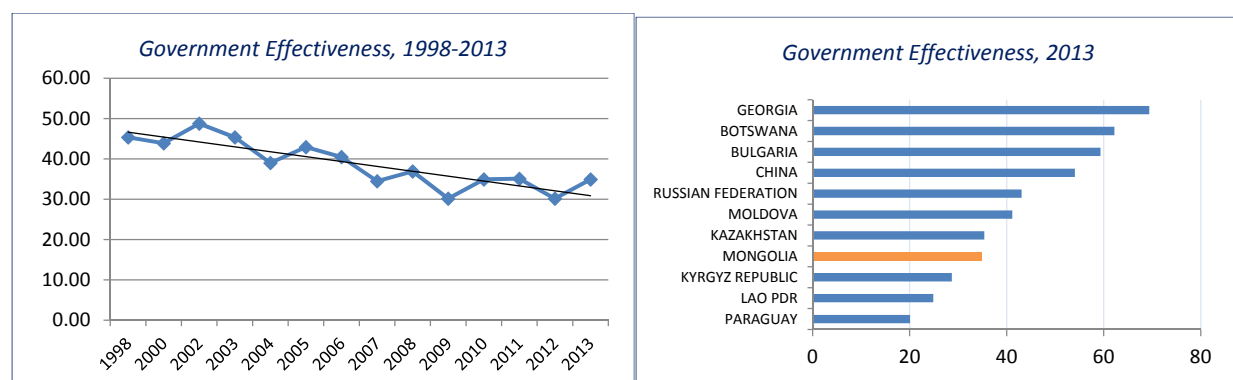
guaranteed senior notes to finance the project.³⁶⁸ However, the Government of Mongolia, at its cabinet meeting held on 3 November 2012, resolved to consolidate the first and second stage railway base infrastructure construction projects into a unified railway project to be managed and implemented under government authority and financing with the participation of domestic and foreign investors.³⁶⁹ Since the government resolution undertaken, none of railway base was built between mine site and national border. Regrettably, the Mongolian Mining Corporation announced an event of default on accrued or outstanding due amounts of US\$95 million on its senior notes on March 23, 2016.³⁷⁰

Moreover, a small and aging domestic market has been a limiting factor to productive sector growth. For example, many firms are reluctant to enforce their rights against the Government for fear of retaliation with few alternate opportunities. Government buyer power is strong and private supplier power is relatively weak, especially for SMEs. Indeed, SMEs tend to experience greater difficulties with regulatory problems than larger firms. Industry organization has improved over the last decade with the development of a variety of associations, but there remains complaint that the “government isn’t listening”, a complaint that was echoed by female-owned firms in particular.³⁷¹ Government’s response to such complaints continues to be that both private sector and civil society are not well-organized to propose solutions. Female-owned enterprises comprise up to 60% of micro and SMEs, though the lack of a formal definition makes it difficult to track and understand their specific concerns, or to craft solutions that may improve their competitiveness and potential.³⁷²

Test 2: Do changes in government intervention lead to changes in investment? The World Governance Indicators show that Mongolia’s government effectiveness decreased steadily between 1998 and 2013 in terms of perceptions of the quality of public services and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. In addition, Mongolia was not doing well amongst comparator countries (

Figure 78). When viewed from this angle, government effectiveness does not appear to have impeded investment, as domestic investments have steadily increased over the same period.³⁷³

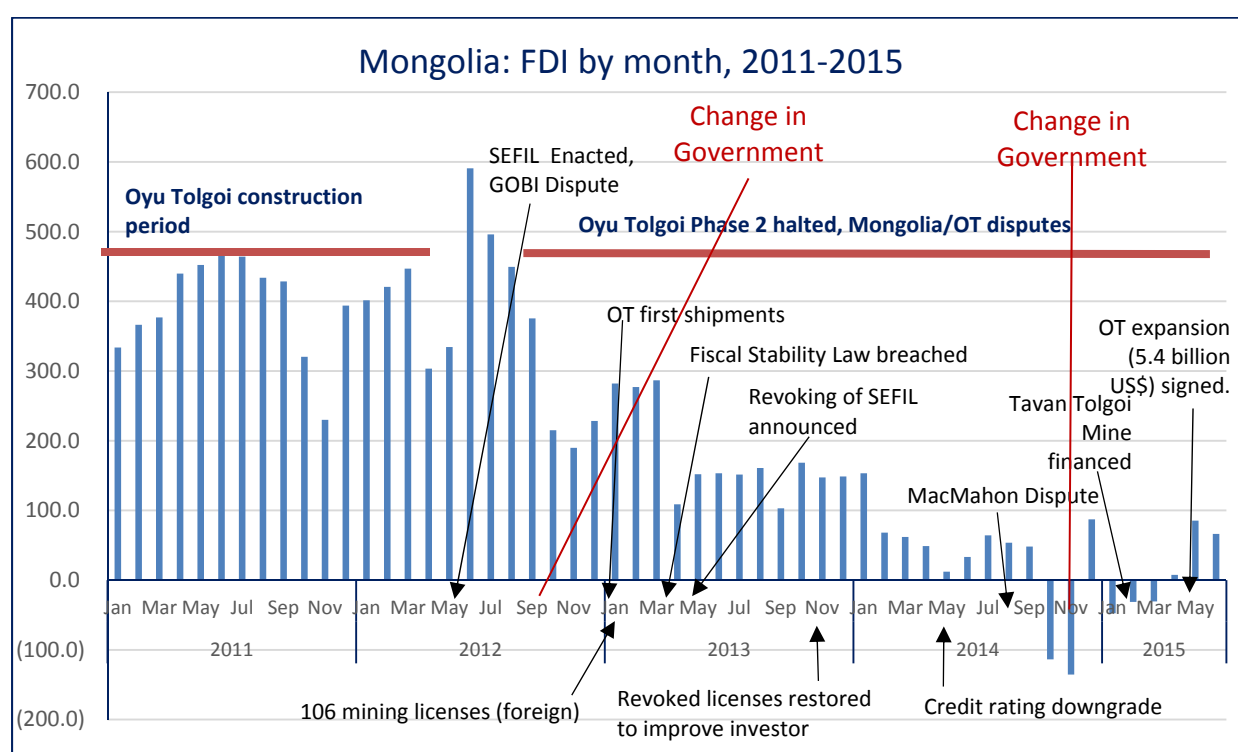
Figure 78. Governance effectiveness trend and comparison with comparator countries



Source: World Bank, *Worldwide Governance Indicators*, 2014

However changes in governments and laws surrounding mineral leases and foreign investment have clearly had large effects on the economy since 2012, government intervention is one of the major reasons behind Mongolia's current macroeconomic difficulties. Figure 79 illustrates this point, as it shows foreign direct investment in Mongolia by month between 2011 and 2015. During the initial construction period at OT, FDI was at high levels, which corresponded with Mongolia's high GDP growth rates. Although this was always likely to decline somewhat as OT construction wound down, it was accelerated by enactment of SEFIL, several disputes between the government and mining companies and a change in government. This led to several laws being repealed, which created further uncertainty within the investor community. This is the reason that so many large companies stated in the enterprise survey that "political instability" was the biggest obstacle to their growth.³⁷⁴

Figure 79. Foreign direct investment, 2011-2015



Source: Independent Mongolian Metals & Mining Research, 2015

Given the relatively small scale of the Mongolia's economy, the outcome of government intervention clearly leads to the changes in investment. In another example, the Bank of Mongolia (BOM) launched a MNT 1.1 trillion low-cost mortgage lending program in the mid-June 2013, to support housing supply through qualified consumers. Funding under this program was provided to banks at 4% interest, and on-lent by banks through 20-year mortgages at 8%. In addition, the BOM provided about MNT 0.4 trillion housing supply support to construction and real estate companies.³⁷⁵ At the same time, the number of residential buildings and apartments increased from 18,012 to 22,546, and businesses in the construction sector grew from 3,541 to 4,470. Accordingly, the employment in the construction went up from 72.4 to 81.1 thousands of persons. The investment in the construction sector grew from MNT 802.8 billion to 1,010.6 billion where the percentage to the total investment

soared from 12.2% to 18.3% relatively.³⁷⁶ As illustrated in these examples, the government and its institutions take an active role in the economy.

Test 3: Are firms looking for ways to protect themselves from the effects of government intervention? Firms feel that they need political allies to survive due to instable business environment. Inconsistent laws and policies adopted by the influence of business interests contribute to a perception of grand corruption within the government. In a recent poll, Mongolians on average rated corruption as having a moderate to large influence on political and business life in Mongolia.³⁷⁷ When asked to identify the most corrupt institutions, respondents listed, in order: land utilization, political parties, mining, national government administration, parliament/legislature and judicial system as the top culprits. Almost a fifth of respondents (19.5%) cited that lack of transparency at higher levels of government causes grand corruption, followed by “the merger of political and business interests.” In the survey, over a third respondents (37.6%) recognized that the nature of a bribe is cash while half of the respondents said that “giving a bribe helps to overcome unjust regulations.” Enterprise surveys confirm that bribery incidence³⁷⁸ and depth are high among Mongolian firms, who are expected to give gifts to government officials to get things done.

Test 4: Are non-regulated (informal) firms thriving? A number of non-regulated firms in real estate sector are thriving. For the last decade, capitals have been mobilized from mineral to real estate sector through construction development. However the real estate tax varies by zones in UB from 0.6 to 1%, the real estate leasing businesses were flourishing due to a lack of regulation such as a rental service registry and monitoring of tax collection to be imposed on rental revenue. According to the National Statistical Office business registry, the number of firms that conduct leasing business increased from 1621 in Q1 2005 to 11848 in Q1 2015.³⁷⁹

The National Development Institute (NDI) estimated the total value of the rental revenue in Ulaanbaatar city is about MNT 800 billion or 3.38% of GDP and is part of informal economy. According to the NDI studies, the rental value consists of four components: office rent accounting for 21.2%, accommodation rent for residential purposes – 8.5%, commercial space rent for service purpose – 11.04% and facility rent for commercial purposes – 59.2%.³⁸⁰ SME owners stated that the rental fee is disadvantageous for their business and erodes profitability.

Despite the administrative challenges it presents, the informal sector is a critical source of employment for Mongolians, including urban residents in ger areas. Women are significant contributors to this sector. Though the government does not have official data collection on the size and prevalence of female-owned enterprises, in consultations with women entrepreneurs it was noted that a large share of female enterprises operate informally. Due in part to burdensome regulations and a lack of capacity and knowledge, female-owned firms in particular may be less incentivized to seek formalization.

In 2013, the informal sector accounted for as much as 35% of Mongolia’s official GDP and 34% of employment outside of agriculture (compared to 22% in 2010).³⁸¹ According to another estimate, if including animal husbandry, the informal sector comprised 66.5%, 60.6%, 58.5% and 57.4% of employment respectively in the years 2006-07, 2010, 2012, and 2013.³⁸² Further, 97% of those engaged in the informal sector consider it their primary source of employment. The size of the informal sector

creates a number of obstacles for the government including: difficulty in assessing the economy's capacity, in supporting business growth, in devising an appropriate business environment, in fostering legitimate avenues for entrepreneurship, and in ensuring the legality of businesses operating informally.³⁸³ In order to address the challenges, the government of Mongolia (GOM) initiated and implemented "Taxation Pardoning Law" for the first time in 2008. According to the Mongolian National Chamber of Commerce and Industry, 2856 entities and over 5000 citizens had revealed MNT 5.4 trillion hidden assets, equal to US\$ 4 billion and twice as much as state budget then, as a result of the law implementation.³⁸⁴

The Government initiated the Law on Supporting Economic Transparency for the second time in 2015 and the State Great Khural (the Parliament) approved the "Law on Supporting Economic Transparency" on August 7th, 2015. The law stated one time pardoning of the citizens and entities from the taxes evaded and legal responsibilities to those who would voluntarily report hidden revenues or assets registered under another name both movable and immovable at the taxation, customs declaration and other registration authorities. The Law was to be implemented for four months and to be effective until 12AM of December 31st 2015, which implied the timely implementation of the law. However, the law's effective date was extended till February 20, 2016 at the government initiative and approved by the Parliament.

The Cabinet Media and Public Relations Department stated that MNT 34.7 trillion of unregistered revenue and hidden assets (1.6 times of 2014 GDP) had been waived from the legal responsibilities accordance with the preliminary report as of February 25, 2016.³⁸⁵ As a result of the implementation of the law on economic transparency, MNT 8.3 trillion of taxes and 2.5 trillion of fines and penalties had been exempted and 21,275 financial reports, 89,394 tax reports, 4,165 insurance reports and 8,140 custom declarations were disclosed as well as a total of 1,176 amendments, overlapped estimation, had been made in the registration of 744 legal entities and 647 of property rights. Moreover, MNT 15.6 billion of social insurance fee had been repaid to the state budget as social insurance and state registration fees' payables were not exempted from the due payments.

Conclusion

Based on this evidence, **inconsistent laws and policies, resulting in an unpredictable business environment, represent a binding constraint to growth.** The frequent and inconsistent intervention in the economy by various government institutions has made it difficult for businesses to secure the returns of their investments or plan for the long-term. This is also a direct contributor to the binding constraint outlined in the Macro Risks chapter, since the downturn in FDI was one of the key factors that led to the current macroeconomic difficulties. Although it is most visible for large businesses, it may be felt most acutely by small businesses.

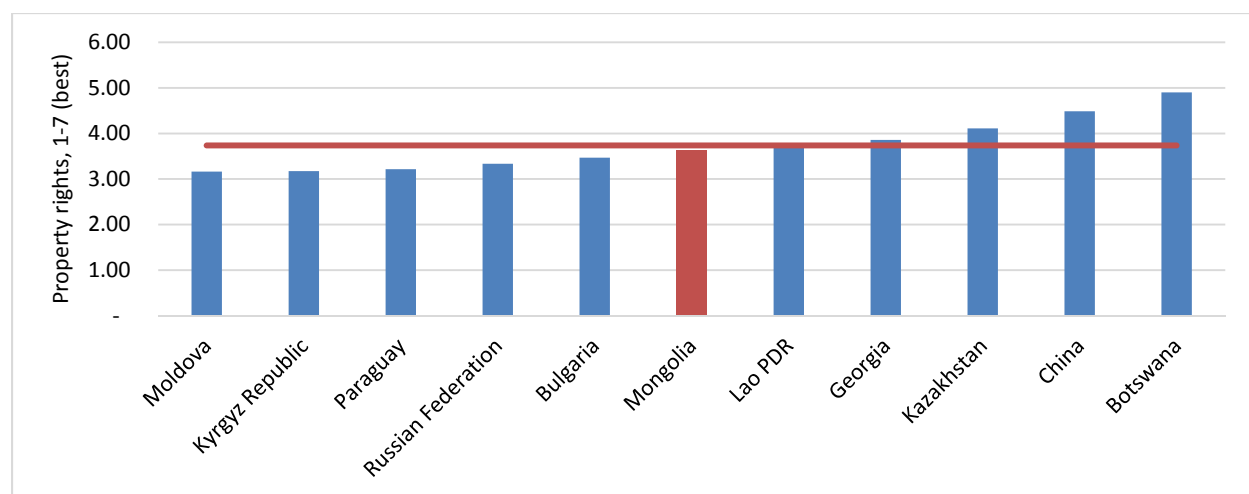
16. Property Rights

Background

Factors in Mongolia's business or investment climate could constrain growth by increasing administrative costs and reducing return on investment. One of these *micro risks* is property rights and land policy, which is a cross cutting issue that can cause, as well as affect, a broad range of constraints to growth. Insecure property rights can lead to low productivity of land, high cost of capital, and degradation of natural capital.

The Government of Mongolia recognizes the right to own private property, movable and immovable. Among international property rights benchmarks, Mongolia is similar to its peers in terms of property rights protections. The 2015 World Economic Forum Global Competitiveness Index ranks Mongolia slightly below average in relation to comparator countries as demonstrated in Figure 80, while the Index of Economic Freedom³⁸⁶ and the World Bank³⁸⁷ rank it near the average among comparators.

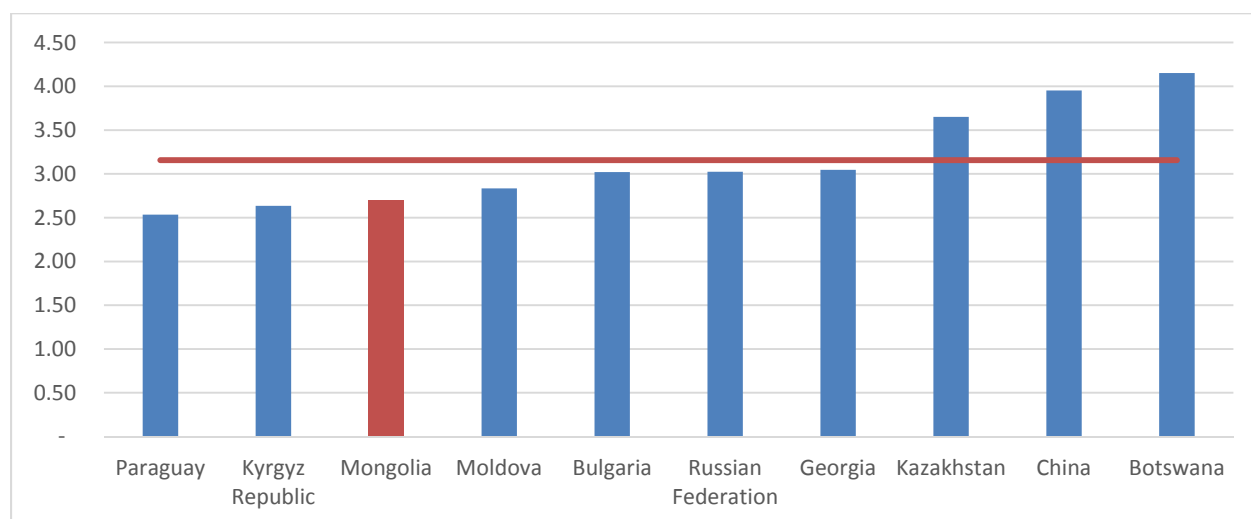
Figure 80. Property rights protection, 2014-2015



Source: World Economic Forum, Global Competitiveness Index, 2014-2015

According to World Bank's Doing Business 2015 survey, Mongolia ranks 30th out of 189 countries on the ease of registering property, and has been fairly constant since 2010. The Global Competitiveness Index ranks Mongolia as slightly below average among comparators in terms of intellectual property protection (Figure 81).

Figure 81. Intellectual property protection, 2014-2015



Source: World Economic Forum, Global Competitiveness Index, 2014-2015

Mongolia possesses abundant land and low population density and property rights and land policy are key issues. According to the Law of Mongolia on Land Ownership, every citizen is entitled to 0.07 ha of land in Ulaanbaatar and to larger land plots in rural areas (0.35 ha and 0.5 ha of land in provincial centers and soums, respectively) and may apply for title to the land that they occupy. Available data indicates female-owned plot sizes tended to be on average slightly smaller than those registered in male names, and in less desirable locations. Women have also been found to be less likely to want to use their land assets as collateral for bank loans, compared to males, in part due to higher risk aversion but also lower education and knowledge, according to the project evaluations.³⁸⁸

City-owned land in Ulaanbaatar has more recently been made available by auction. Urban planning regulations and approaches are outdated and contribute to sprawl and land market distortions³⁸⁹. Laws against unlicensed construction on city-owned property were not enforced and land utilization institution tops the ranking of five most corrupt institutions for 2006-2015 in a number of public perception surveys³⁹⁰. These problems are compounded by the high rate of migration to UB, which increased the population by an average of 34,000 people per year over the last decade,³⁹¹ and contribute to the large low-density ger districts that are home to many of Mongolia's urban poor.

In the rural areas, land management is a key issue: all non-urban land remains property of the state, largely subject to communal use for grazing.³⁹² As discussed in the Natural Capital section, overgrazing and weak management of pasturelands is contributing to land degradation and significant desertification. The development of strategic mineral deposits³⁹³ generate debate and disputes because of their intensive use of land and water resources, along with concerns about the impact of mining operations on the environment, and on the health, safety and livelihoods of those whose resources are diminished, appropriated or polluted by the industry. The bargaining power of local communities is weak given the state ownership of non-municipal land.

Property rights continue to concern the herding community, on which the meat, dairy, leather, and natural fibers value chains depend, especially as herd characteristics and size change. It has a significant importance as agriculture is the second largest contributor to GDP after mining. Consistent with global trends and as Mongolian society continues to urbanize, improved property rights will lead to more economic freedom in which Mongolia's ranking is slipped down to “mostly unfree” with a score of 60 (out of 100) among 178 countries.³⁹⁴

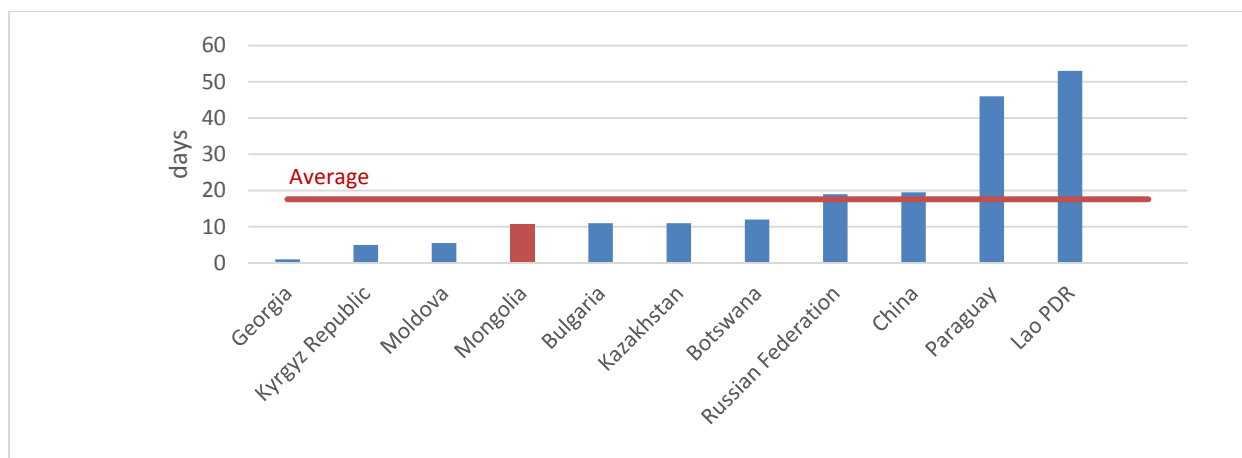
Finally, intellectual property rights are of concern to the ICT community, which is relatively nascent in Mongolia, but highly dependent on enforceability of intellectual property rights. The “2014 Investment Climate Statement for Mongolia” of the US Embassy in Ulaanbaatar notes that Mongolia supports intellectual property rights in general. The Mongolian government and its intellectual property rights enforcer, the Intellectual Property Office of Mongolia (IPOM), make a good faith effort to comply with agreements to which the country is a party. Nevertheless, legitimate software products remain rare in Mongolia, with the IPOM estimating that 95% of the market uses pirated software. Pirated optical media are also readily available and subject to spotty anti-piracy enforcement³⁹⁵.

Analysis

The Constraints Analysis tested if property rights and land policy are constraining investment in Mongolia.

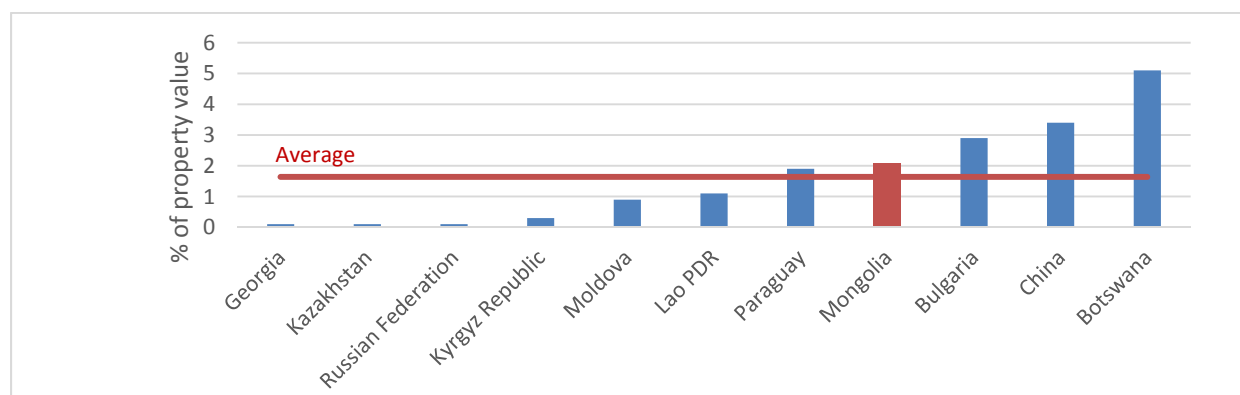
Test 1: Are the shadow prices of land or property rights high? According to the World Bank's Doing Business indicators, the time to register property (Figure 82) and cost required to register property (Figure 83) in Mongolia is similar to comparator countries.³⁹⁶ Only around 5% of Mongolian firms cite access to land as an obstacle business, which is near the regional average, and slightly above average among comparators.³⁹⁷

Figure 82. Time to register property, 2015



Source: World Bank Doing Business, 2015

Figure 83. Cost to register property, 2015



Source: World Bank Doing Business, 2015

However, a recent report on land administration in UB found that frequent changes in laws and practices on land have resulted in uncertainty for developers and inefficiencies in administration:

“The use of the tenure distinction between “possession” and “ownership” rights for residential use is not clear in practice as both afford holders very similar rights. Firms and legal entities cannot own land and must obtain possession rights, which can be subject to frequent discretionary renewals because of the possibility that they can be terminated after only 15 years. This... can distort investment decisions in land due to perceptions that use certificates will not be renewed.”³⁹⁸

Land plots (*khashaa*) in ger districts have official ownership titles, while the house built on that land plot has no official certificate as an immovable property. This gap has a negative impact on the market price and sale of the plots: around 300-400 land parcels are on sale in a week and only around 150 are sold, representing 4% annual turnover³⁹⁹. In comparison, apartment sales are much higher with 17% of annual turnover. One of large commercial banks informs that *khashaa* properties take only 10% of the lending portfolio⁴⁰⁰. In ger areas, around 56.6% of the land ownership is registered under men, while only 22.9% belongs to women with the rest being registered under joint ownership.

With proper documentation, land is typically used as collateral and a registration system exists to confirm ownership, but the process is cumbersome and does not record existing liens.⁴⁰¹ A moveable property registry may be developed as a new law on pledges over movable property and intangible assets will become effective in September 2016. Currently, the ineffective land registry and absence of immovable property increase the risk and cost of borrowing and lending.

The land-related court cases, mostly due to the lack of information on property boundaries and legal records of ownership among other reasons, represent 24.9% of total administration cases in 2015, which is reduced from 33% in 2014.⁴⁰² Time-consuming and costly court proceedings contribute to shadow prices of the ineffective enforcement of property rights.

Test 2: Do changes in land prices or property security lead to changes in investment? The approximate price per square meter of land has increased from MNT 25,172 sq. m in 2003 to MNT

155,972 sq. m in 2013, as calculated by time-average land value.⁴⁰³ Determinants for land prices are public investment to land (e.g. streets, heating, drainage) and proximity to services, public transportation, among others. Therefore, private investment is concentrated around the center of Ulaanbaatar where infrastructure and services are available and there is a potential for sales of real estate. Investment in land-intensive sectors, construction, real-estate, and mining has been growing rapidly. Investment into the construction sector increased from 6.8% (MNT 411 billion) in 2009-2010 to 11.7% (MNT 2,000 billion) in 2011-2012.⁴⁰⁴

Most of the main indicators of property rights for Mongolia have not changed drastically over the last 20 years⁴⁰⁵, but investment rate and economic growth have varied widely. Thus, it seems clear that changes in growth were not driven by changes in property rights or land policy.

Test 3: Are firms looking for ways to circumvent the land allocation system? According to a recent corruption perception survey, the land utilization system is seen by the public as the most corrupt institution in society.⁴⁰⁶ It is unclear whether this is due to concerns about the land allocation process for mining projects or land utilization within urban areas. The survey also noted that people perceive corruption as having a moderate effect on Mongolia's business environment.⁴⁰⁷ Under normal circumstances, the permitting process for new construction requires approximately 56 approvals, leaving substantial room for graft and corruption.⁴⁰⁸ According to a local investment solution firm, companies were expected to pay up to MNT 10 million to obtain a permit to build on around 500-750 sq. m, which is a medium size plot of land, although it is possible to be engaged in construction activities without paying bribes.⁴⁰⁹ Due to the burdensome regulations and procedures, firms tend to pay bribes in order to expedite the process rather than undergoing delays, however time to register property and overall complaints by the business sector remain low for the region.

Test 4: Are land-intensive firms or firms that rely on secure property rights thriving? Mining, construction and real estate have been growth sectors over the past decade. The total value of the construction industry since 2011 increased from MNT 686 billion to MNT 2,921 billion.⁴¹⁰ The total value of the real estate market is around MNT 4 trillion⁴¹¹ and is expected to grow at 5% annually.⁴¹² Today, the share of mining in GDP stands at 20%, which is twice the ratio of a decade ago. This suggests that land-intensive firms have been able to thrive in this environment. Agricultural land is also abundant, although the growth in land acquisition by the mining industry has increased competition for land among agricultural industries⁴¹³.

Conclusion

Mongolia's property rights and land policies contribute to a variety of social and economic problems, including the cost of finance, land degradation, and the concentration of poverty in ger districts. However, no negative correlations found between the property rights and land policies and investment and growth, provided by the examples of rapidly growing mining, agriculture, construction, and real estate industries. Additionally, the economy has grown and reduced poverty significantly over the last decade, despite no notable improvements in the quality of the property rights regime. **Based on the assessments of the evidence it is concluded that property rights is not a binding constraint in the economic growth.**

17. Coordination Failures and Information Externalities

Background

At its core, the HRV growth diagnostic methodology seeks to find the publicly provided inputs to production that are in low supply but high demand by firms and entrepreneurs. Most of these inputs are either physical or human assets – things like natural resources, infrastructure, and education. However, the method’s creators recognized that a proper supply of these inputs do not guarantee growth, but often they must be complemented by a market environment that coordinates these inputs efficiently. As described by Hausmann et al:

“Products cannot be made unless their non-tradable inputs are present, be they human skills, services or some other input. But nobody would like to specialize in a non-tradable input for which there is no demand. This is the classical ‘chicken and egg’, or coordination, problem. It becomes more serious the more specific the input is to a certain activity... In practice countries address this problem by moving to goods that require inputs similar to those they already have. But as we shall see, countries differ in the number of such products and hence in the severity of these coordination problems.”⁴¹⁴

In addition to this coordination problem, entrepreneurs and innovators face information and cost asymmetries that may prevent them from attempting to produce new products. An entrepreneur may discover a new product that can be produced profitably in Mongolia, but that discovery will also induce other entrepreneurs to enter that market and cut into their profits. Thus, the innovator incurs most of the research and development costs, but does not realize a similar share of the profits. In the words of Hausmann and Rodrik:

“There is great social value to discovering that cut flowers, soccer balls, or computer software can be produced at low cost, because this knowledge can orient the investments of other entrepreneurs. But the initial entrepreneur who makes the “discovery” can capture only a small part of the social value that this knowledge generates. ...other entrepreneurs can quickly emulate such discoveries. Consequently, entrepreneurship of this type—learning what can be produced—will typically be undersupplied, and economic transformation delayed.”⁴¹⁵

If other constraints are not binding, but Mongolia is still not growing or diversifying, *coordination failures* or *information externalities* could be binding constraints.

Over the past 25 years, Mongolia’s economy has not diversified, but it has actually grown more concentrated in the mining sector. Mongolian industries aside from minerals have struggled to compete globally, and many of Mongolia’s socialist-era industries declined following the democratic transition in 1990. Mongolia exported more than US \$350 million of textiles in 2005, but only around \$170 million in 2012.⁴¹⁶ However, many firms in those industries likely were artificially competitive

due to the distortions of the Soviet system and the former Multi Fiber Arrangement's quota system, which gave Mongolian textiles preferential access to US and European markets.⁴¹⁷ The Government of Mongolia has frequently applied policy support to various industries, ranging from price controls, to input and loan subsidies, to quotas, possibly contributing to market distortion from time as a result of mixed price signals. The livestock sector, including natural fibers, dairy, meat, and leather, in particular has been a repeated target of Government policy. Many enterprises in this sector have become accustomed to Government intervention for their survival, which is a factor that may be stifling innovation.

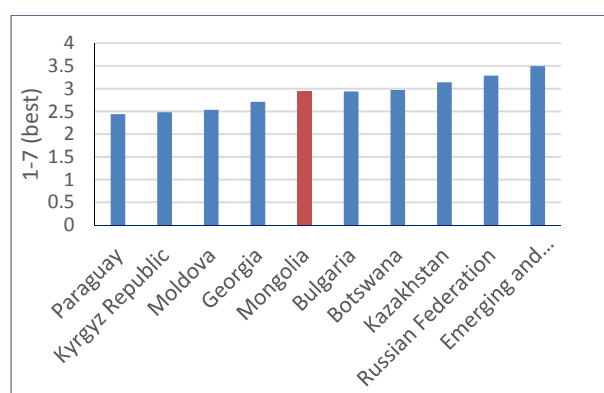
Although the livestock sector has benefitted from temporary rural buying stations for decades and at least one slaughtering or meat processing plant in each province, outside of Ulaanbaatar, vast physical distances between potentially mutually beneficial actors in the product space, may deter the development of new value chains because of the challenges low connectivity poses for large scale interaction, organization, standardization, and transportation.

Analysis

The Constraints Analysis tested whether coordination failures or information externalities are constraining diversification and economic growth in Mongolia.

Test 1: Is Mongolia failing to innovate? The Global Competitiveness Index 2014-2015 by the World Economic Forum ranks Mongolia below the global average for innovation, although it scores almost exactly average among comparators (Figure 84). The Global Innovation Index by the World Intellectual Property Organization ranks Mongolia average among comparators, although it also considers Mongolia to be an “innovation achiever” with persistent innovation performance relative to GDP (Table 11).⁴¹⁸

Figure 84. Global Competitiveness Index, Innovation, 2014-2015



Source: World Economic Forum, 2014-15

Table 11. Global Innovation Index, 2015

Rank	Country	Percentage Rank
29	China	0.80
39	Bulgaria	0.73
44	Moldova	0.69
48	Russian Federation	0.66
66	Mongolia	0.54
73	Georgia	0.49
82	Kazakhstan	0.42
88	Paraguay	0.38
90	Botswana	0.36
109	Kyrgyzstan	0.23

Source: Global Innovation Index, 2015

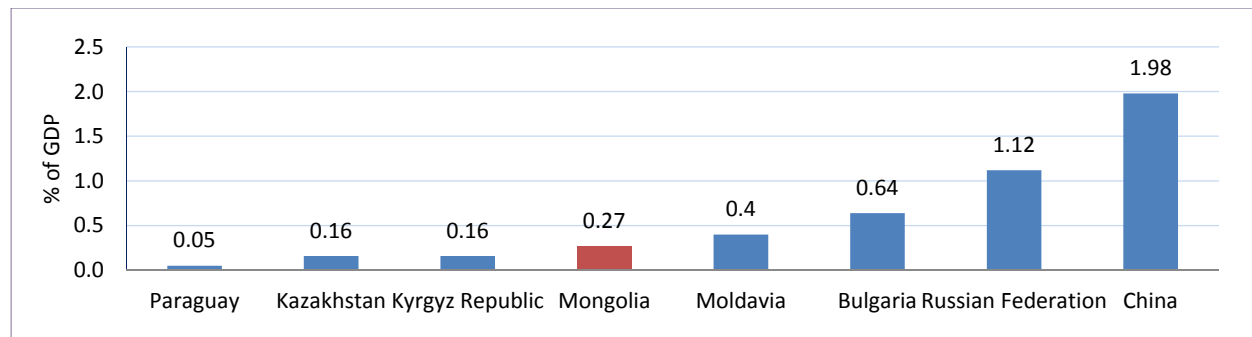
Since 2000, 2,187 patent applications have been received in Mongolia and 1,846 patents were granted.⁴¹⁹ The low levels of diversification into new products, even when examined at granular levels, indicates a lack of innovation. Research demonstrates that the creation of new businesses can be a driver of economic growth and innovation, even when that growth occurs among smaller firms. Pro-

active policies to encourage greater participation of SMEs and women in the labor market, in entrepreneurship, and in select industries in which they are under-represented can be a powerful tool for innovation,⁴²⁰ but has not been an explicit focus of the Government of Mongolia's policies to date.

Firms choose to expand production in existing product lines, rather than going into new product spaces. Mongolia is relatively low compared to benchmark countries in terms of R&D expenditure in percent of GDP. (

Figure 85)

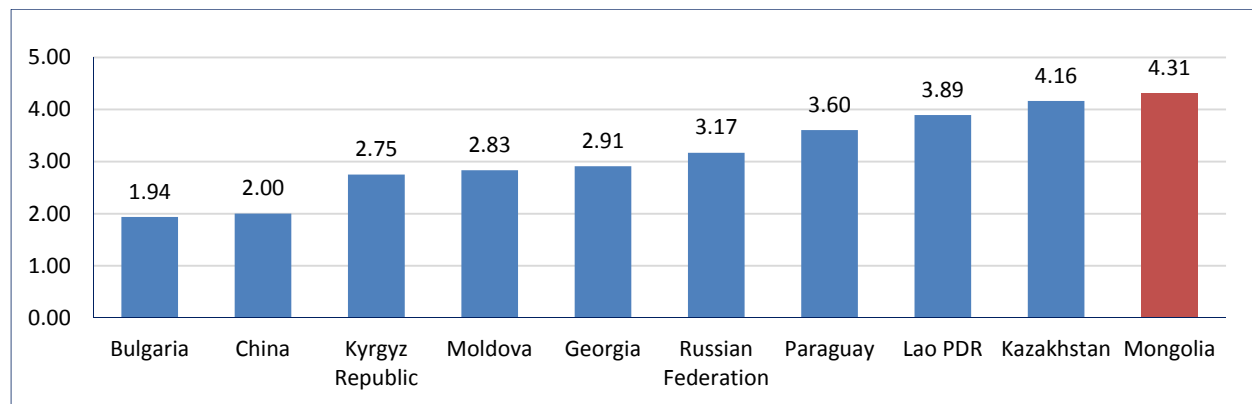
Figure 85. Research and development expenditures, 2012



Source: World Development Indicators, 2013

Test 2: Are changes in diversification correlated with economic growth? The Export Diversification Database by the IMF has three main indicators: the Export Diversification Index, the Extensive Margin, and the Intensive Margin. Higher values for the all three indices indicate lower diversification. In terms of the Export Diversification Index, Mongolia's export basket is the least diverse among its comparators.⁴²¹ (Figure 86)

Figure 86. Export Diversification Index

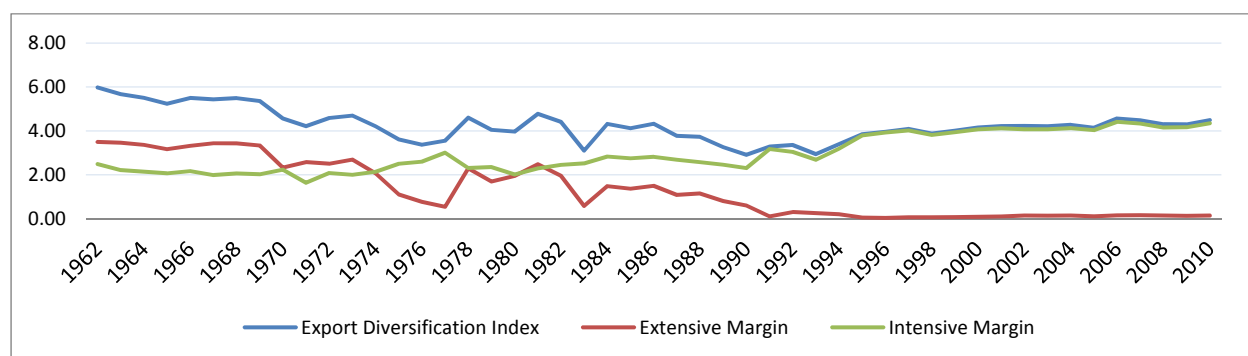


Source: IMF, Diversification Database, 2014

The Export Quality Database contains export quality measures across different aggregation levels of export products. Higher values for the quality indices indicate higher quality levels. Conceptually the Export Quality—aggregate diversification—measure is composed of two diversification dimensions: the extensive and intensive margins. Intuitively, the extensive margin measures the number of different

export sectors, while the intensive margin represents the diversification of export volumes across active sectors. The intensive margin measures is therefore a less intuitive aspect of diversification, as it identifies countries as rather less diversified when GDP or export revenues are driven only by a few sectors (although the country might export/produce many different goods).

Figure 87. Mongolia's Export Diversification Index, Extensive Margin, Intensive Margin



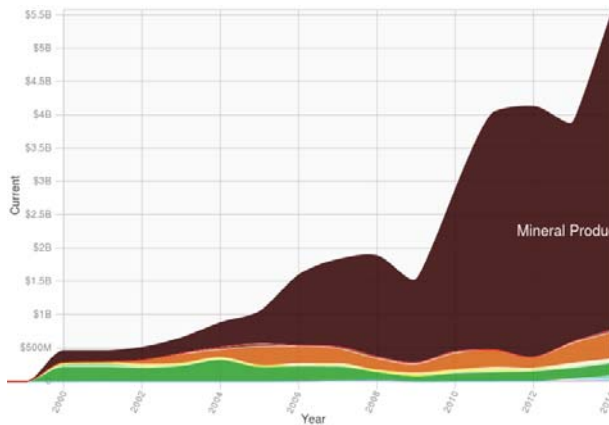
Source: IMF, Export Diversification Database, 2014

According to export quality data of the IMF, Mongolia has high intensive margins and a low extensive margin among comparators.⁴²² (Figure 88) It indicates that a number of firms grows as crossborder trade becomes less costly so that quantities traded by the same firms increase, that is, volume of the export. This suggests that Mongolia is not diversifying but export is growing. Such a lack of coordination does not allow firms to move into new product spaces.

Per the product space tree of Hidalgo et al, Mongolia's exports have been moving away from high technology products since 1995, indicating that the primary export products are becoming more commodities oriented after 2000. (Figure 88) Mongolia's exports have steadily focused on mining since 2006 and textile exports plunged from 35.8% in 2001 to 5.3% in 2012.⁴²³

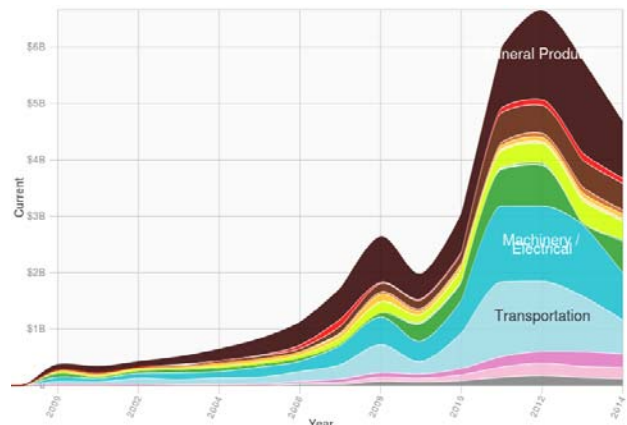
As Mongolia's economy has grown more concentrated in the mineral sector, economic growth has accelerated, with a correlation coefficient of 0.59 between the export diversification index and GDP per capita.⁴²⁴ Between 2011 and 2014, Mongolia's exports increased from US\$ 4.8 billion to 5.7 billion, but became more concentrated in mineral products. Specifically, the outputs of main export products - mineral commodities - in the export basket were shifting among themselves. The volume of crude oil and gold in semi manufactured forms was increasing, while coal and iron ore quantity was fluctuating, and the composition of exports was not broadened. The export of non-mineral products declined as a share of total exports, making the export base narrow.⁴²⁵

Figure 88. Export, 2000-2014



Source: The Atlas of Economic Complexity, Center for International Development at Harvard University, 2015

Figure 89. Import, 2000-2014



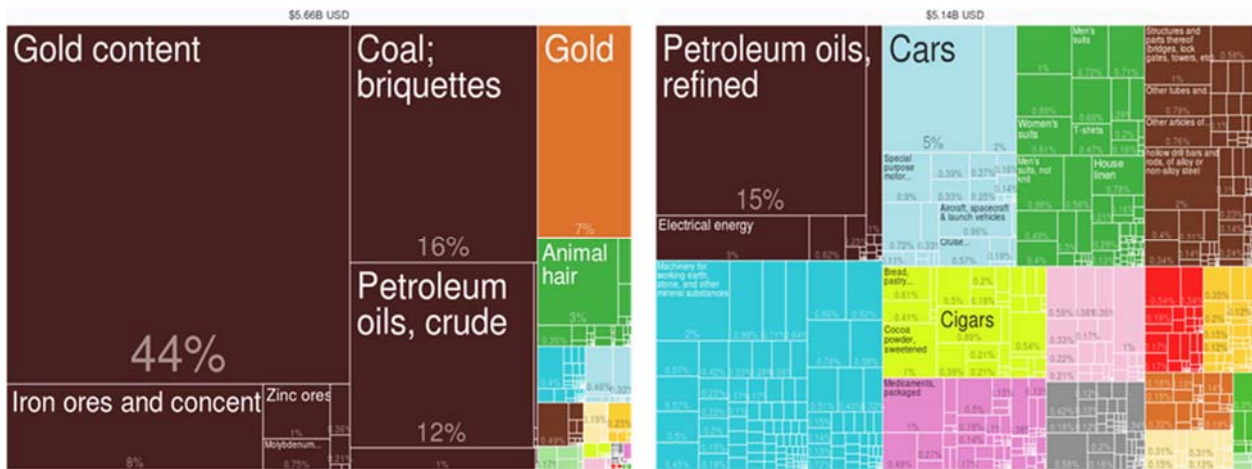
The Atlas of Economic Complexity, Center for International Development at Harvard University, 2015

In contrast, imports became more diversified, despite an overall decrease in value from US\$ 6.6 billion to 5.2 billion.⁴²⁶ (Figure 89)

Test 3: Are Mongolia’s import goods more complex and diverse than its export goods?

Mongolia’s imports are significantly more diverse and complex than its exports.⁴²⁷ (Figure 89) For example, cars, machinery, equipment and electric appliances make up 23% of imports⁴²⁸, while the percentage of exports is negligible. In contrast, minerals account for nearly 90% of Mongolia’s exports⁴²⁹. As a result, the lack of diversification has left the economy vulnerable to external shocks, namely commodity price fluctuations on international markets.

Figure 90. Export and import composition, 2014



Source: The Atlas of Economic Complexity, Center for International Development at Harvard University, 2015

Test 4: Are non-mineral firms able to export from in Mongolia? Despite Mongolia's reliance on the mineral sector, other sectors have been able to grow over the last several years. After the contraction of Mongolia's textile industry from 2005-08, the total value of textile exports grew from around US\$ 100 million to \$170 million in 2012.⁴³⁰ According to the Export Quality Database, the quality of Mongolia's exports also improved, especially in the area of food and live animals.⁴³¹ It shows that the sectors that have seen growth in recent years were associated with Mongolia's traditional supporting industries such as agriculture and livestock. A number of animal heads increased from 32.7 million to 56 .0 million as of 2010 and 2015 respectively while livestock sector output at the current price almost tripled from 1.3 trillion to 3.8 trillion tugriks at the same time.⁴³² Moreover, a quantity of raw and combed cashmere and sheep wool increased during the same period while quantity of meat export volume decreased.⁴³³

Conclusion

Aside from some previous success in exporting non-mineral products due to market distortions, Mongolia's economy has not been diversified since the end of the Soviet era. Driven by strong mineral growth, Mongolian businesses do not appear to be innovating or diversifying into new products, but is it due to a coordination failure, information externalities for innovators, or another constraint? It is certainly possible that other constraints could be contributing, such as macroeconomic conditions. For instance, Mongolia's non-mineral export growth is closely related to Mongolia's exchange rate, which is heavily influenced by mineral exports.⁴³⁴ Similarly, the quantity and quality of education likely contributes to the innovation process. Based on the evidence we conclude that **coordination failures are not a binding constraint to growth**. The conclusion that it is due to a coordination failure rather than information externalities comes from data on the structure of Mongolia's economy. Large enterprises (annual income above MNT 3 billion) comprise 2.4% of all firms, but 88.7% of all business income.⁴³⁵ This divergence shows in the export diversification data. Mongolia has a high intensive margin among comparators, which indicates that quantities traded by the same firms increase as trade becomes less costly so that firms concentrate on fewer sectors which make country's extensive margin low.

18. Summary and Conclusion

The Mongolia Constraints Analysis identified four binding constraint to economic growth in Mongolia:

1. **Macro Risks:** A weak and unstable macroeconomic environment
2. **Micro Risks:** Inconsistent laws and policies, resulting in an unpredictable business environment
3. **Health:** Health impacts of air pollution in Ulaanbaatar
4. **Water and Sanitation:** Costly access to water and sanitation in productive sectors and poor communities

Macro Risks

The most recent IMF consultation report indicates that Mongolia's medium term outlook is promising given its large mineral resource endowment and pending and active projects in the mining sector. However, in the short term, Mongolia currently faces serious balance-of-payments (BOP) pressures, the Asian Development Bank projects that Mongolia's GDP will grow 3% in 2015, which would be the lowest rate since 2009.

These macroeconomic difficulties have imposed a heavy cost on private enterprises. Over the last decade, Mongolia has had higher average annual inflation (11.4%) than comparator countries. Inflation has also been volatile - fluctuating in a wide range between a low of 5.1% in 2006 and 25.1% in 2008. Mongolia's real effective exchange rate has also been relatively volatile, appreciating by 30% between March 2009 and June 2012, with symptoms of Dutch disease due to mineral exports, before declining 15% by mid-2014. Mongolia's external position is weak, with a current account balance averaging around -26% of GDP from 2011-13, with a trade balance of -11% during the same period. Mongolia is also running a substantial budget deficit, estimated officially at 4.25% of GDP in 2014, although the IMF has identified off-budget spending that brings the total deficit to 11% of GDP. As mentioned previously, this deficit was financed by government borrowing, and Mongolia's ratio of debt service to export ratio is relatively high at 27.9%.

Micro Risks

During consultations with the private sector, businesses complained about the inconsistency and poor quality of government interventions in the economy. On a high level, their concerns centered on wholesale turnover of the civil service following each election and conflicts of interest among policy makers. At a working level, their concerns focused on competition from state-owned enterprises (SOEs), the current procurement law's focus on cost over quality or value, and the capacity of the civil service to implement policy and enforce laws. Frequent changes in laws and their selective enforcement increases the administrative burden on businesses, including small and female-owned firms. The significant presence of SOEs may also add further obstacles to competition and investment.

These actions lead to an unstable investment climate that dissuades both domestic and foreign investment. The government has also been involved in several high-profile disputes with foreign companies, especially in the resource extraction sector, which has contributed to a fear of expropriation among foreign investors.

Health

Air pollution, caused primarily by the burning of coal for heat, imposes a significant burden on the health and economy of UB. A 2013 study estimated that 29% of cardiopulmonary mortality and 40% of lung cancer deaths in UB are attributable to ambient air pollution, representing almost 10% of total mortality in UB. Studies have concluded that the economic impacts of air pollution range from 18-28% of UB's GDP and 8-13% of Mongolia's GDP. Among for children under five, per capita deaths attributable to ambient air pollution is several times higher than its comparators, although the per capita deaths attributable to ambient air pollution for the total population of Mongolia is not higher than comparators, perhaps due to the geographic concentrations of pollution in UB.

Water and Sanitation

Although Mongolia has relatively good access to improved water and sanitation sources in urban areas, access is lower among the poorest communities, such as in rural communities and urban and peri-urban ger districts. Costs are significantly higher and consumption significantly lower in these ger districts. This imposes financial, time, health and environmental costs on these communities. These problems are exacerbated by underlying water scarcity issues, driven by an uneven natural distribution of water resources and a semi-arid climate, which is most notable in water intensive industries such as textiles, mining, and minerals processing, the latter two located primarily in the Gobi Desert.

Non-Binding Constraints

Several additional sectors were examined as part of the constraints analysis. Although each sector has some issues or problems that could be improved, the analytical team concluded that they were not binding based on the balance of evidence.

Finance

Based on the CA's four tests and the evidence currently available, neither the cost of finance, the quantity of finance, nor financial intermediation appear to be a binding constraint to economic growth, as low returns to economic activities likely are more constraining. Although nominal interest rates are high, real interest rates are not high compared to other countries, and they have been declining for a decade. Data shows that Mongolian households and firms generally obtain loans and use the financial system at higher rates than their counterparts in similar countries. However, banks in Mongolia pay high real deposit interest rates to acquire funds, and Mongolian firms often need government guarantees to access international bond markets. Mongolia also has a low sovereign credit rating, reflecting a higher cost of borrowing, and the stock market is underdeveloped. Despite these challenges, bank assets and liquidity are relatively high, and Mongolia's level of borrowing from international markets is near the cross-country average. However, it is noted that a high interest rate

on foreign currency loans, adjusted for inflation, may cause burden on firms and companies that require large loans, such as construction or mining exploration firms.

Natural Capital

Based on the evidence, natural capital does appear to be a binding constraint to growth in Mongolia. Although Mongolia is somewhat geographically isolated from major international markets and population centers, its overall transport costs are similar to comparators. Mongolia benefits from its natural resource endowment, as there are significant coal and mineral deposits. The harsh continental climate of Mongolia, along with the frequent dzuds, have imposed a high cost on Mongolia's agricultural sector and led to large-scale migration to Ulaanbaatar. However, overgrazing, poor land management and weak insurance systems could be magnifying the economic effects of these disasters and point to constraints apart from natural capital. Nonetheless, water scarcity remains a concern, particularly in light of climate change and desertification, and this scarcity contributes to the water and sanitation constraint.

Education

Despite concerns about education quality, the balance of evidence indicates education is not a binding constraint to growth. Mongolia ranks in the middle of its comparator countries on the UNDP's Education Index and has relatively high levels of primary, secondary and tertiary enrollment and attainment. Returns to education are below the global average, showing that employers are not paying a premium to recruit educated workers. There seems to be little difference in unemployment rates among people with different levels of education, with the exception of post-graduate education, where unemployment is much lower, and certain gender-based differences. Despite having higher rates of educational completion at primary, secondary and tertiary levels, across all women have lower labor force participation rates. Female unemployment rates are higher than those of males, with the problem most significant among those with either no education or the highly educated. Although international education assessments indicate Mongolia's human capital is competitive, the number of firms offering formal training for their employees is higher in Mongolia than most comparators. However, Mongolia has a negative net migration rate, and a higher number of Mongolians go abroad for tertiary education than the number of foreign professionals entering Mongolia.

Infrastructure

Aside from water and sanitation, infrastructure was not found to be a binding constraint in Mongolia. In the energy sector, Mongolia's electricity consumption per capita is slightly above average for a country with Mongolia's GDP per capita and growing, although the quality of the aging electricity infrastructure is below average. The cost of electricity per kWh, including subsidies, is similar to neighbors. The average hours of power outages per month is slightly above comparators, although the losses (as a % of sales) due to electrical outages is slightly below average. The percent of Mongolian firms owning or sharing a generator is near the average among comparators, although they used them more intensively. Most importantly, electricity production has expanded over the years to meet growing demand, with only a small percentage of imports to cover periods of peak demand. Coal is

subsidized, leading to a widespread use in ger stoves and a large negative externality in the form of air pollution and its associated health constraint.

Telecommunications do not appear to be a binding constraint to growth in Mongolia. Mobile phone subscriptions per capita are above average, and costs remain relatively low. Per capita personal computer use is higher than comparators. The number of internet users per capita is low, but increasing rapidly from 10% in 2009 to 17.7% in 2013. Business use of the internet is average for the region. Based on this evidence,

Based on current data, transportation is not a binding constraint. Mongolia has improved its roads dramatically since 2010, with the total length (km) of improved roads increasing 40% and the percent of improved roads with a hard cover rising from 45% to 69%. A 2013 enterprise survey reported a relatively high proportion of products lost due to breakage or spoilage during shipping, although the percent of firms that identified transportation as a major constraint was about average among comparators. Exporters and foreign firms are more likely to identify transportation as a major obstacle to their business, but non-exporters and domestic firms report higher levels of breakage and spoilage. This suggests that the infrastructure problems lie away from the export corridors. Mining companies in the south are constructing their own private roads and rails, and the rail network may pose a constraint to mining sector operations, which typically prefer rail for efficient transport of bulk materials.

Appropriability

Macro and Micro Risks were identified as binding constraints, but several other potential appropriability concerns were determined to be not binding, such as property rights, coordination failures and information externalities. However, each of them contribute somewhat toward the binding constraints identified.

Mongolia's property rights and land policies contribute to a variety of social and economic problems, including the cost of finance, land degradation and the concentration of poverty in ger districts, but they are not a binding constraint. In UB, urban planning regulations and approaches are outdated and contribute to sprawl, land market distortions and the growth of large low-density ger districts. Land policies have contributed to the cost of finance due to collateral requirements, and poor land management in rural areas has contributed to overgrazing, land degradation and water scarcity. Despite these challenges, Mongolia is similar to its peers in terms of property rights protections, according to several international property rights benchmarks, and growth has been strong in land-intensive sectors, such as mining, construction and real estate.

Driven by strong mineral growth, Mongolian businesses do not appear to be innovating or diversifying into new products, but it is not due to a coordination failure or information externalities for innovators. Based on the evidence available, the CA determined that it is likely due to the issues identified in the Macro and Micro Risks constraints, with some contributions from other sectors as well. For instance, Mongolia's non-mineral export growth is closely related to Mongolia's exchange rate, which is heavily influenced by mineral exports. Similarly, the quantity and quality of education likely contributes to the innovation process.

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