Balancing Natural Resources and Human and Social Capital:

Pathways to Economic Diversification in Mongolia

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Abstract

Economic diversification has gained significant attention as a crucial factor for sustainable development worldwide. This paper addresses the risks associated with extreme specialisation and explores the potential benefits of economic diversification for Mongolia. By comparing Mongolia with its designated aspirational and structural peers, the paper aims to shed light on strategies that can foster economic and societal diversification in the country. Although Mongolia possesses favourable levels of human capital compared with its peers, its unusually high ratio of natural capital to human capital highlights the necessity of reducing reliance on natural resources and promoting human capital-intensive economic activities. The paper examines the implications of declining demand for Mongolia's key minerals, primarily coal, resulting from climate change concerns and evolving investor preferences towards sustainability, China's coal consumption reduction goals, and the enduring impact of the COVID-19 pandemic. Through this analysis, the paper offers insights into pathways for Mongolia to diversify its economy and enhance the well-being of its people by striking a balance between natural resources and human and social capital.

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1. Introduction

Recent research and policy debates have described economic diversification as a potentially important determinant of sustainable development around the world. This idea is not self-evident because specialisation in export production according to comparative advantage as outlined by Ricardo (1817) can be seen to boost economic efficiency by giving rise to gains from trade and thereby, in keeping with modern growth theory, also to more rapid long-run growth. All the same, there can be too much of a good thing. With too many eggs in one basket, extreme specialisation can entail risk. If the specialised sector is exposed to damage, this will hurt the rest of the national economy if the exposed sector exerts significant adverse economic spill-over effects on other industries. Hence the perceived need for economic diversification.

Viewed broadly, economic diversification means several things. It includes diversification of exports and other production away from excessive dependence on a single dominant sector or a few typically natural-resource-based commodities. It also involves change towards increased complexity and increased quality and variety of output. The former – diversification per se – is of value because it reduces the risks and vulnerabilities associated with extreme dependence on a narrow economic foundation. The latter – economic complexity and product quality – matters because a nation's ability to export goods and services depends on its ability to produce high-quality items that other nations wish to buy. Well-diversified economies capable of selling various complex high-quality products to their trading partners tend to be more efficient as well as more open to trade, and hence to have a greater capacity for rapid and sustained economic growth. Economies can diversify either by producing a more varied selection of goods and services for export to a given set of trading partners or by exporting an unchanged selection of goods and services to a more varied group of trading partners.

An important sign of the beneficial effects of economic diversification on growth is the widely observed inverse relationship across as well as within countries between heavy dependence on a few natural resources and long-run economic growth. This phenomenon, especially prevalent when resources are not well managed, is also known as the 'resource curse', and was revisited by Sachs and Warner (1995), who noticed the weak economic growth performance of several countries with abundant natural resources. The case for diversification is well made in Spence et al. (2008), among several others.

Overall, the empirical evidence emerging from this research over the past 25-30 years on the relationship between resources and growth since 1960 seems clear. Many countries, from Angola to Zambia, have experienced disappointingly slow growth for reasons that seem related to their mismanaged dependence on their natural resources (minerals, oil, forests, fish, etc.). Resource abundance can give rise to socially damaging rent-seeking and neglect of good governance (including democracy and equality), infrastructure and institutions, and, moreover, overvalued currencies (Auty, 1993; Collier, 2011). Other countries, by contrast, have clearly benefited from their well-managed natural resources, including Australia, Canada, Norway and the United States, among other democracies (Gylfason, 2008). Much of the empirical evidence to date suggests that the first group dominates the observed overall cross-country patterns of growth and resource dependence as described in several

recent surveys of the literature (Ross, 2011; van der Ploeg, 2011; Frankel, 2012; Venables, 2016). The adverse effects of natural resource dependence on economic growth detected in the patterns observed, may, however, signal a broader issue: the adverse effect of insufficient diversity or, in other terms, of excessive economic concentration on growth. Brenton et al. (2009) and Cadot et al. (2011) survey the recent analytical and empirical literature on economic diversification and its relationship to long-run economic growth.

What does the empirical relationship between economic diversification and long-run growth across countries look like? Figure 1 (left panel) shows how the Finger-Kreinin index of export diversification is correlated across countries with economic growth, assessed here simply by the 2018 level of the purchasing power of per capita GNI on the grounds that a country's income today reflects its economic growth in the past. The Finger-Kreinin index (FKI) is a relative index that compares the structure of exports across countries by showing the extent to which the structure of exports by product of a given country differs from the world average. The index spans the range from 0 (full diversification) to 1 (no diversification). Thus, values closer to 1 indicate a larger departure from the world average and hence a less diversified structure of exports. For this reason, the scale on the horizontal axis in Figure 1 has been reversed to make rising regression lines go along with increased diversification. The index covers only merchandise exports, i.e. exports of goods, not services. International data on the diversification of service exports are not yet available.

Figure 1 / Export diversification, concentration and growth, 1995-2018

Diversification and per capita GNI in 181 countries — $y = -4.4489x + 12.356$, $R^2 = 0.3138$

Concentration and per capita GNI in 181 countries — $y = -2.0889x + 10.103$, $R^2 = 0.129$
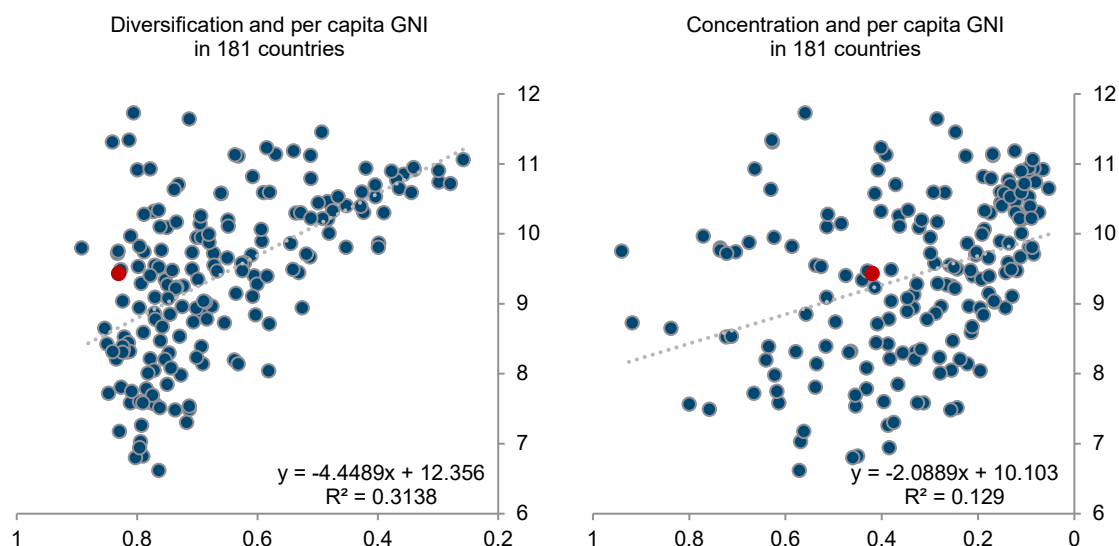
Note: The natural log of PPP-adjusted per capita GNI in 2018 is shown on the vertical axes. The horizontal axes show the average Finger-Kreinin index of export diversification during 1995-2018 (left panel) and the average Herfindahl-Hirschman index of export concentration during 1995-2018 (right panel). The values are shown in reverse order, and so rising lines mean more diversification and less concentration. Mongolia is marked in red.
Source: Authors' computations, based on UNCTAD and World Bank, *World Development Indicators*.

Figure 1 also shows a significantly positive cross-country correlation between the average value of the Herfindahl-Hirschman index of export concentration in 1995-2018 and the natural log of per capita GNI in 2018 in the same 181 countries (right panel). The Herfindahl-Hirschman index (HHI) is a country-specific index, defined as the sum of the squares of the shares of each sector of production in total

output (or sometimes as the square root of the sum of squares). Like the FKI, the HHI covers only merchandise exports, but not services. As a country's markets become more concentrated – i.e. less dispersed – the value of the HHI rises towards 1. While a lower FKI means more export diversification, a lower HHI means less market concentration, i.e. more market dispersion, which is not quite the same thing as more diversification.

Per capita incomes and export diversification and concentration go hand in hand from the bottom left to the top right in both panels of Figure 1. If Figure 1 is taken to suggest that diversification affects growth, rather than the other way round (on the grounds that GNI in 2018 cannot possibly have retroactively influenced average diversification during 1995-2018), and if the slope of the regression line shown in the left panel, -4.4, is taken at face value, the results suggest that increased diversification by one-tenth of a point, say, from 0.8 to 0.7, would in the average country be accompanied by an increase in per capita GNI by 44%. A rise of one-tenth of a point in diversification spans a bit less than a sixth of the scale observed across countries from 0.9 to 0.25. Mongolia is not far from the regression line. The right panel of Figure 1 can be interpreted in a similar way.
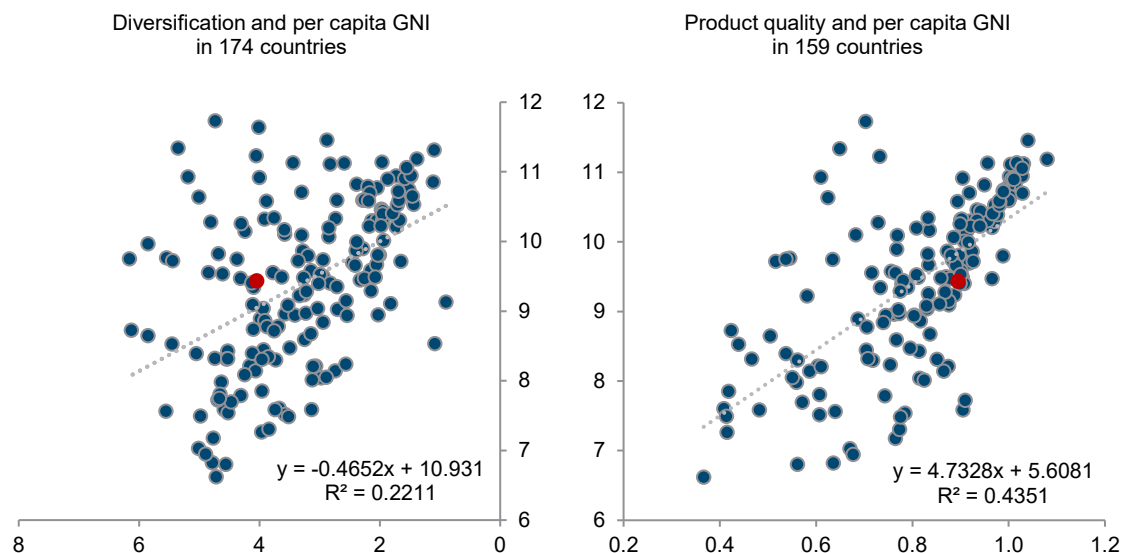
Bivariate correlations such as those shown in Figure 1 do not permit inferences about cause and effect.[1] Although economic diversification can be good for growth, economic growth is probably also conducive to diversification. Even so, Figure 1 does not seem to support the hypothesis of a U-shaped relationship reported in several studies to suggest that diversification, while prevalent in many low-income countries, tends to slow down or reverse course at higher levels of income as new opportunities for specialisation arise (Imbs and Wacziarg, 2003; Klinger and Lederman, 2004; Cadot et al., 2011). But whether economic diversification and growth tend to go hand in hand only up to a certain mid-range level of per capita GNI or whether the relationship persists at high levels of income, available empirical evidence, including Figure 1, serves as a warning against extreme specialisation, especially in early stages of economic development.

Apart from considerations of risk, export diversification is generally considered desirable because it helps to promote the emergence of high-quality exports. Beyond what and how much a country exports, it also matters to whom the exports are sold. Geographic diversification is desirable in addition to economic diversification, in that selling the same product to several different customers spreads risk in a similar way as selling several different products to the same customer. Good neighbours are good for a country's long-run growth (Ades and Chua, 1997). The IMF has recently, through elaborate modelling, compiled data series intended to assess export diversification anew, as well as the average quality demanded in an exporter's current destination markets (Henn et al., 2013). The IMF's export diversification index (EDI) is based on the Theil index, a common measure of inequality, segregation and other forms of diversity. The Theil index – unlike, for example, the Gini index of inequality – is designed to reflect diversity within, as well as among, sectors and groups. Specifically, the Theil index equals the sum of measures of diversity across sectors (vertical diversity or extensive margin, meaning new export products or new export destinations) and diversity within sectors (horizontal diversity or intensive margin, meaning a larger volume of exports of old products). The more diversified a country's exports, the lower

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[1]   For further evidence of cross-country patterns of economic performance and various measures of economic diversification, including the Herfindahl-Hirschman index of market concentration, the Theil index of export diversification, the IMF's product quality index and the Hidalgo-Hausmann economic complexity index, see Gylfason (2017, 2018).

the EDI. Accordingly, the Theil index on the horizontal axis in the left panel of Figure 2 is shown in reverse order, as in Figure 1.

Figure 2 / Export diversification, export quality and growth, 1990-2018

Diversification and per capita GNI
in 174 countries

Product quality and per capita GNI
in 159 countries

y = -0.4652x + 10.931
R² = 0.2211
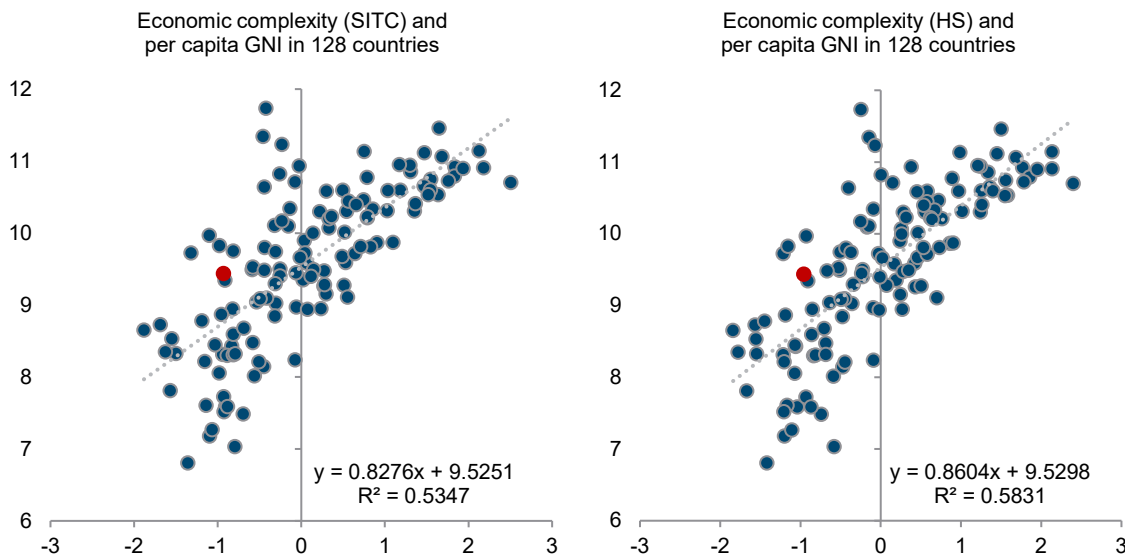
y = 4.7328x + 5.6081
R² = 0.4351

Note: The natural log of PPP-adjusted per capita GNI in 2018 is shown on the vertical axes and the Theil index of export diversification during 1990-2014 is shown on the horizontal axis in the left panel. The product quality index 1990-2014 is shown on the horizontal axis in the right panel. See Henn et al. (2013). The values on the horizontal axis in the left panel are shown in reverse order, and so rising lines mean more diversification, as in the right panel. Mongolia is marked in red.
Source: Authors' computations, based on IMF and World Bank, *World Development Indicators*.

The horizontal axis of the right panel of Figure 2 shows how a higher quality of exports is reflected in a larger value of the product quality index (PQI), produced through elaborate modelling (IMF, 2014).

Figure 2 shows a significantly positive cross-country correlation between the average value of the Theil index of export diversification (left panel) and the natural log of per capita GNI in a sample of the 174 countries for which data are available, and between the average PQI as above and the log of per capita GNI (right panel). Per capita incomes and diversification go hand in hand from bottom left to top right in both panels of Figure 2.

If Figure 2 is taken to suggest that diversification is a determinant of growth, rather than the other way round, and if the slope of the regression line shown in the left panel, -0.47, is taken at face value, the regression coefficient suggests that an increase in diversification by one point, spanning a fifth of the scale observed across countries from 1 to 6, would in the average country go along with an increase in per capita GNI by 47%, as in Figure 1. Likewise, in the right panel, the slope of the regression line shown, 4.73, suggests that when product quality rises by 0.1, an increase that spans a seventh of the range of the variable from 0.4 to 1.1, per capita GNI rises by 47%. The causation, if that is what Figure 2 suggests, must run from export diversification and product quality to growth because per capita GNI in 2018 cannot possibly have had a retroactive influence on diversification or the PQI.

Figure 3 / Cross-country patterns of economic complexity and growth, 1995-2018

Economic complexity (SITC) and
per capita GNI in 128 countries

y = 0.8276x + 9.5251
R² = 0.5347

Economic complexity (HS) and
per capita GNI in 128 countries

y = 0.8604x + 9.5298
R² = 0.5831

Note: The natural log of PPP-adjusted per capita GNI in 2018 is shown on the vertical axes and the two economic complexity indices are shown on the horizontal axes. Mongolia is marked in red.
Source: Authors' computations, based on Atlas of Economic Complexity and World Bank, *World Development Indicators*.

Related to the IMF measure of product quality, the Economic Complexity Index (ECI) developed by Hidalgo and Hausmann (2009) ranks countries by the diversity and complexity of their export structure. The most complex products are sophisticated chemicals and machinery, whereas the least complex products are raw materials and simple farm products. Countries that produce complex goods as well as many products are typically more economically developed or likely to grow more rapidly in the future than countries producing fewer and less complex products. The consideration of economic complexity adds a potentially useful dimension to the analysis of economic diversification and development. Greater economic complexity is reflected in a higher value of the ECI as defined here. The two main systems in use for international trade statistics are the Standard International Trade Classification *(*SITC*)* and the Harmonised System (HS). Accordingly, the two corresponding measures of economic complexity are shown side by side on the horizontal axes of Figure 3, which indicates that the two main measures of economic complexity are closely correlated with per capita GNI across selected countries. Once again, we see a significantly positive relationship suggesting that a 0.6-point increase in complexity from one country to another, spanning roughly a seventh of the scale from -2 to 2.5 shown on the horizontal axes in the figure, goes along with an increase in per capita GNI by about 50%, once more a similar result as in Figures 1 and 2.

Together, Figures 1, 2 and 3 suggest a clear cross-country connection between economic performance and export diversification in its various guises, including product quality and complexity. This entails that, as a rule, economic diversification is not only desirable in its own right but also because it may be an independent catalyst of economic development. Digging deeper into the data by panel estimation methods to see if the significance of the cross-sectional patterns reported here is preserved within as well as across countries – i.e. across time as well as space – would be a worthwhile undertaking when disaggregated trade data covering services as well as products become available. It would also be of interest to see if indices of geographic diversification of trade are correlated with economic performance

across countries in view of the insights and empirical results from gravity models, which suggest that countries generally prefer trade with their neighbours to trade with more distant countries (for a recent survey, see Anderson, 2011).

A gravity model analysis reveals that Mongolia's exports to China and Russia exceed expectations, driven by China's resource demand. Enhancing transport infrastructure between Mongolia and Russia could further enhance trade potential. Although Mongolia has achieved its export potential with Russia despite small trade flows, untapped export potential exists in South Korea and India to support their industrial sectors (Nganou et al., 2023).

Figure 4 / Diversification of assets and production

Asset diversification can facilitate product diversification
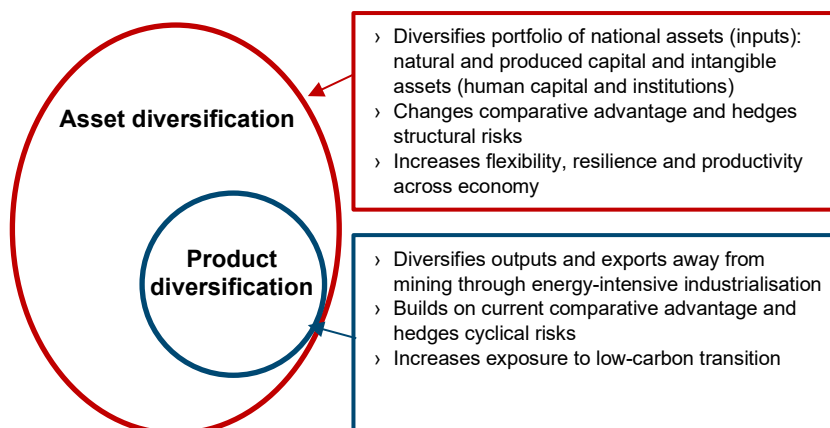
Asset and product diversification
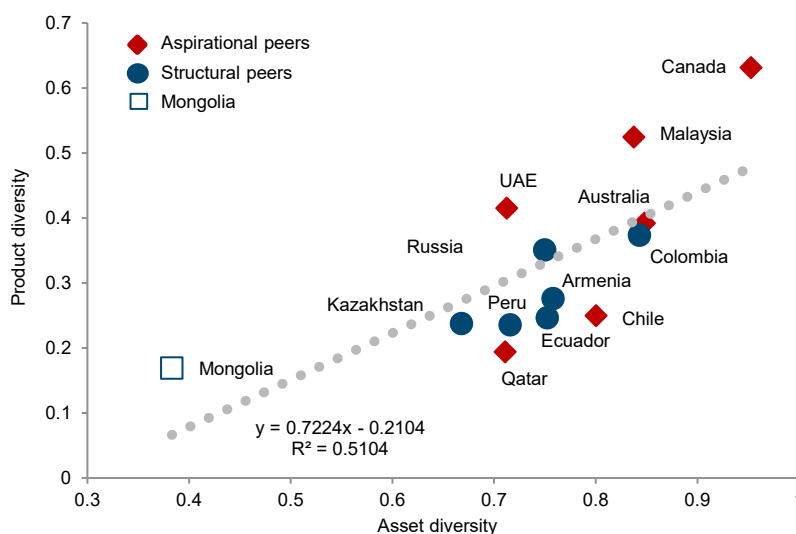
Note: Asset diversity is measured as the share of non-natural capital in total wealth, and product diversity is measured by the Finger-Kreinin index, which is reparametrised here as: 0 = no specialisation and 1 = full diversification.
Source: World Bank, 2020.

Mongolia's inability to diversify its assets has also constrained its output and export diversification. A strong positive association between asset diversity and export/product diversification is shown in Figure 4. It indicates that Mongolia lags its peers in those measures of economic diversity. In fact, exports have become not only heavily concentrated in mining, but also to a single market. Exports to China represented around 20% of the total in the early 2000s, but increased to over 90% after 2012. This finding is confirmed by the Economic Complexity Index, which indicates that Mongolia's product basket is less complex/sophisticated than that of its peers. Nevertheless, Mongolia is found to have a revealed comparative advantage in several merchandise sectors, including minerals, cashmere and meat products, according to the Balassa index of revealed comparative advantage (World Bank, 2020).

Because they cover only goods and not services, the diversification measures shown in Figures 1, 2 and 3 tell only a part of the story of economic diversification. Even so, the export diversification strategies of many countries focus increasingly on branching out into services, the world's largest economic sector by far in terms of manpower as well as share in total output. The argument that diversification reduces risk applies with equal force to services and to tangible goods. Furthermore, the expansion of services can be a strong catalyst for goods exports, directly as well as indirectly through spill-over effects (Cattaneo, 2009). Disaggregated statistics on services, enabling statisticians to measure the diversification, concentration, quality and complexity of services, remain to be compiled and analysed. Ongoing work at the IMF and elsewhere aims to put together an international database on services to expedite a balanced coverage of goods and services exports in studies of economic diversification and its consequences.

2. Economic and social indicators side by side

Economic performance and social progress need to be assessed in tandem. It is not enough to know that a country's per capita GNI has attained a certain level; we also need to know the extent to which national income reaches the population through, for example, more and better education, health care, justice, etc. There are different ways to approach economic policy analysis in two or more dimensions (Gylfason, 2016). One possible approach is to emulate financial economics, where assets are rightly assessed in terms of both risk and rates of return. Another approach is to assess economic performance by viewing economic and social indicators side by side. If, for example, two countries generate the same per capita income for their citizens, but one offers its inhabitants better education opportunities, longer lives, more transparency, less inequality, more justice and so on, the latter country would clearly be judged to have done better by its people. Along these lines, abundant natural resources and their utilisation need to be assessed not solely on their own terms (magnitudes of mineral deposits, barrels of oil drilled per day, etc.) but rather in terms of the benefits they generate for the people. This is not only because of the need to assess economic performance, like assets, in more than one dimension, but also because natural resources belong to the people by national laws as well as by legally binding international covenants such as the International Covenant on Civil and Political Rights (ICCPR), signed and ratified by Mongolia and 172 other nations.[2] From this arises the urgency of the question of how to convert the rents from natural resources into human and social capital that benefit broad swathes of the population, the lawful owners of the resources and the rents they generate.

In what follows, several economic and social indicators for Mongolia will be compared with those for a group of structural peers at a comparable stage of economic development (Armenia, Colombia, Ecuador, Guyana, Kazakhstan, Peru and Russia, as well as the ASEAN group[3] and the EAP group) and aspirational peers that have reached a more advanced stage of development (Australia, Canada, Chile, Malaysia, Qatar and the United Arab Emirates). The comparisons aim to illuminate ways in which Mongolia can diversify its economy and society through judicious conversion of its natural resources to human capital and social capital for the current and future benefit of the Mongolian people.

## 2.1. HEALTH, EDUCATION AND HUMAN DEVELOPMENT, 1990-2018

Sandwiched between China and Russia, Mongolia has seen its economy grow at a rapid pace since 1990, when an authoritarian regime began to give way to democratic rule. During the 28-year period to 2018, the purchasing power of per capita GDP in Mongolia increased by a factor of 2.4. Although far below China's increase of 10.6, it is well above Russia's rise of 1.2. Mongolia's average annual growth

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2   Article 1 of the International Covenant on Civil and Political Rights (ICCPR) states: 'All people may, for their own ends, freely dispose of their natural wealth and resources.' The ICCPR was adopted in 1966 to fortify the United Nations Human Rights Declaration from 1948. Its purpose is to rule on effective remedies for victims of human rights violations. At present, 173 countries have ratified the ICCPR. Among those countries which have not ratified the covenant are China, Cuba, Malaysia, Myanmar, Oman, Saudi Arabia, Singapore and the United Arab Emirates.

3   Data for the ASEAN group that are comparable with the data for other members of the two groups are not available in the data sets used here, and thus are not reported.

rate of per capita GDP in terms of purchasing power over this period was 3.2%, well above average in its two peer groups (Figure 5).

**Figure 5 / Growth of per capita GDP (% per year), 1990-2018**

Structural peers

Aspirational peers
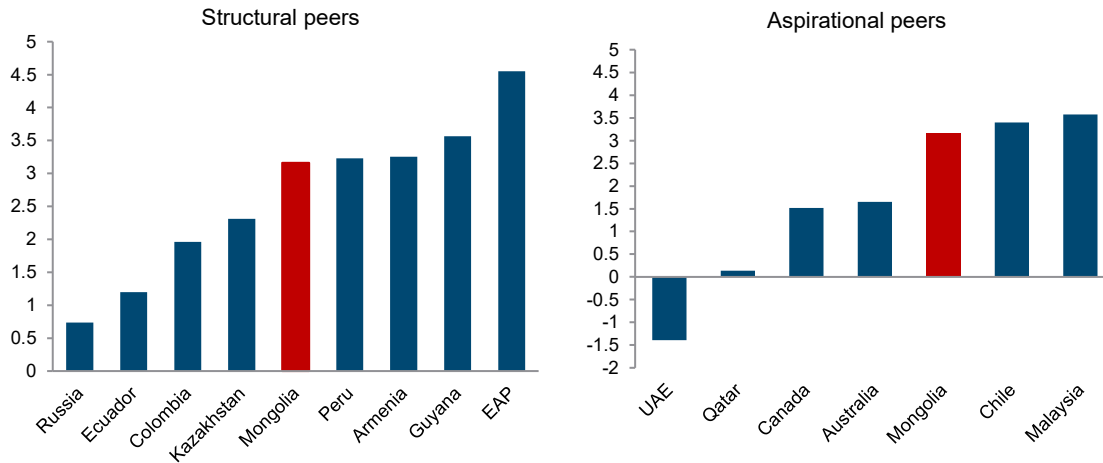
Note: GDP is expressed at PPP in constant 2011 (for UAE 2017) international dollars.
Source: World Bank, *World Development Indicators*.

Meanwhile, the Mongolian people added 9.4 years to their average life expectancy, a stronger increase than for China (7.6 years) and Russia (3.8 years). As a first approximation, this suggests that the national income accounts' exclusive focus on economic variables such as GDP and GNI understates the social progress achieved by Mongolia since 1990. Even so, having risen from 60 years in 1990 to 70 years in 2018, the average life expectancy at birth in Mongolia remains below that of all except one of its structural and aspirational peers, Guyana, as shown in Figure 6.

Figure 6 / Life expectancy at birth (years), 1990-2018

Structural peers

Aspirational peers
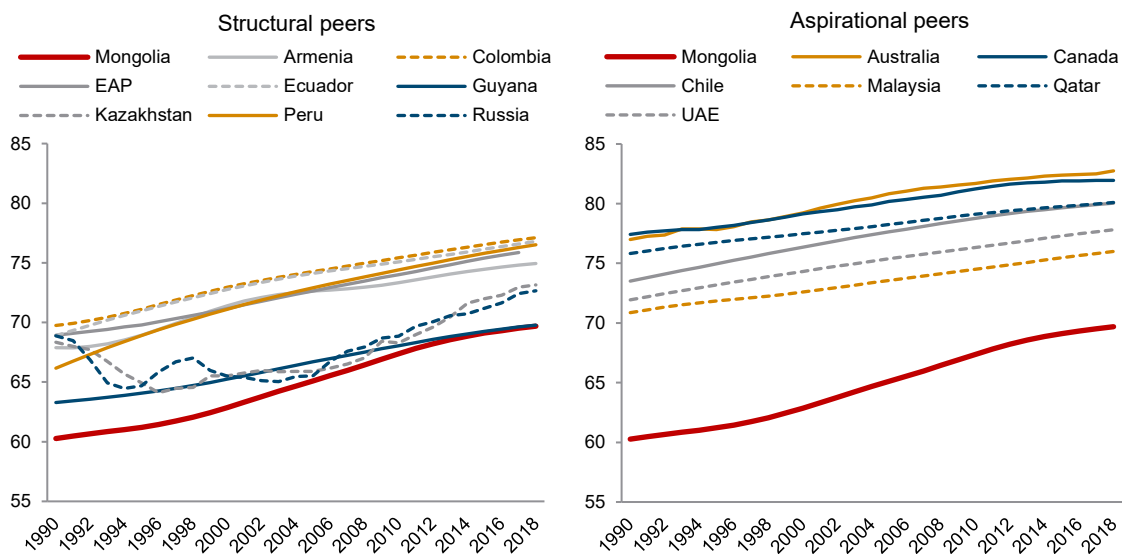
Source: World Bank, *World Development Indicators*.

Or take education. While Russia added 1.8 years to its school life expectancy (primary to tertiary, both genders) from 1990 to 2010, and China added 3.8 years, Mongolia added 4.4 years (source: World Bank).[4] Again, this suggests that a narrow economic focus on GDP understates Mongolia's overall performance. For this reason, the differences between Mongolia, China and Russia in terms of their Human Development Index (HDI) values for 2018 (0.735, 0.758 and 0.824, respectively) are smaller than the differences in their per capita GDP figures.[5] The HDI is defined as the geometric average of income, two different measures of education,[6] and life expectancy. Figure 7 shows the 2018 HDIs for Mongolia and its peers, showing clearly how catching up can be accomplished through advances in education and health, as well as through increased production and income.

Figure 7 / Human Development Index, 2018
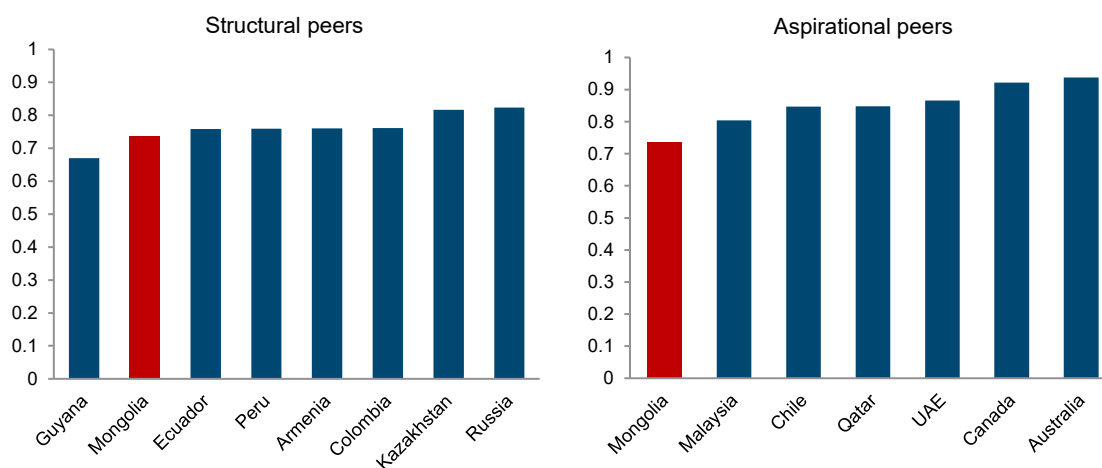
Note: Data for EAP are not available.
Source: United Nations Development Programme.

Although life expectancy is easy to gauge, education is difficult because nearly all available measures of education assess output by input. The World Bank's recently developed Human Capital Index is a welcome exception as it includes test scores, in addition to other education variables. Unlike school enrolment figures and such statistics, examination test scores may constitute an independent measure of the output of the education system. In Figure 8, we see in the left panel a clear positive association across countries between average export diversification during 1995-2018 along the horizontal axis and test scores in 2017 along the vertical axis. Diversification and education go hand in hand. In the right panel of Figure 8, we see a corresponding positive correlation across countries between test scores in 2017 and per capita GNI in 2018. As in Figures 1-3, economic growth can be said to be represented here by the level of the purchasing power of per capita GNI in 2018 on the grounds that a country's
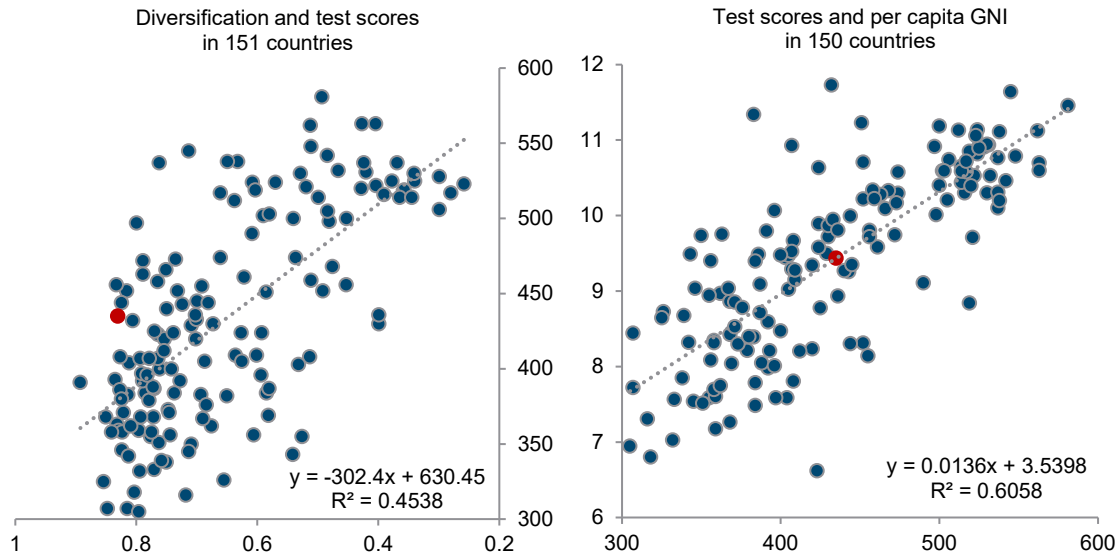
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[4]   More recent data are not available for China and Mongolia.

[5]   Specifically, the HDI weighs together income per person, education and life expectancy in equal proportions by taking the geometric average of indices reflecting these three components.

[6]   As an input into the HDI, education is measured in two different ways, by mean years of schooling for adults aged 25 years and more (a backward-looking measure ranging from 0 to 15 years) and expected years of schooling for children of school entry age (a forward-looking measure ranging from 0 to 18 years).

income today reflects its economic growth in the past. As before, in Figures 1-3, Mongolia is not far from the regression line in the left panel and is on the line in the right panel.
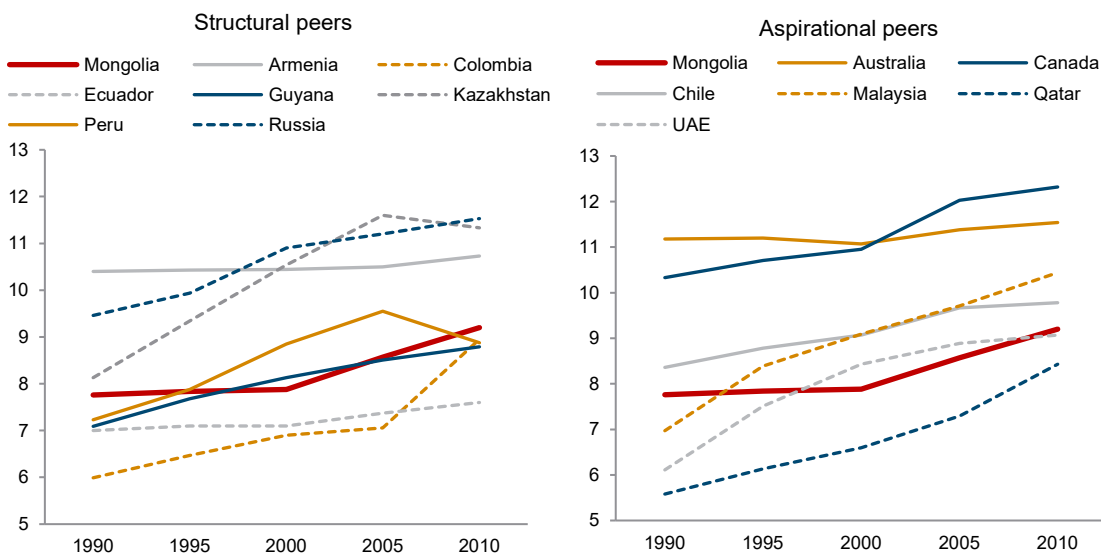
Figure 8 / Test scores, diversification and growth, 1995-2018

Diversification and test scores in 151 countries

$y = -302.4x + 630.45$
$R^2 = 0.4538$

Test scores and per capita GNI in 150 countries

$y = 0.0136x + 3.5398$
$R^2 = 0.6058$

Note: Test scores are shown along the vertical axis in the left panel and the horizontal axis in the right panel. The Finger-Kreinin index of export diversification during 1995-2018 is shown on the horizontal axis in the left panel. See Finger and Kreinin (1979). The values are shown in reverse order, so rising lines mean more diversification. The natural log of PPP-adjusted per capita GNI in 2018 is shown on the vertical axis in the right panel. Mongolia is marked in red.
Sources: World Bank, *World Development Indicators* and Human Capital Index, and United Nations Development Programme.

Figure 9 / Educational attainment (years at school), 1990-2010

Structural peers

— Mongolia   — Armenia   --- Colombia
--- Ecuador   — Guyana   --- Kazakhstan
— Peru   --- Russia

Aspirational peers

— Mongolia   — Australia   — Canada
— Chile   --- Malaysia   --- Qatar
--- UAE

Note: Comparable data are not available for EAP. The data set ends in 2010.
Source: Barro and Lee (2013).

More commonly used measures of education include primary, secondary and tertiary school enrolment represented by the proportion of each relevant cohort at school and school life expectancy, which means the number of years spent at school. By one such measure, educational attainment for the population aged 15 and over, compiled by Barro and Lee (2013), Mongolians over the age of 15 had in 2010 spent nine years on average at primary, secondary and tertiary school, compared with eight years for their counterparts in China and 11.5 years in Russia. Figure 9 compares the Barro-Lee statistics for Mongolia with its peers at five-year intervals. Figure 10 presents sparser World Bank data on net secondary school enrolment and conveys a similar impression of Mongolia's significant progress in education as well as its position vis-à-vis its peers.

Figure 10 / Secondary school enrolment (% of school-age cohort), 1990-2017
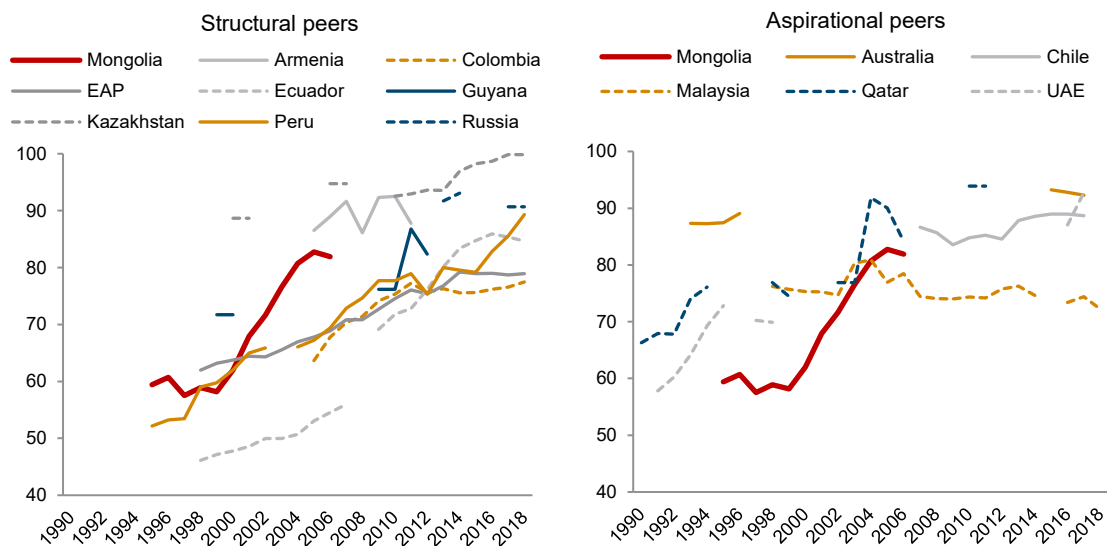
Note: Data are not available for Canada (where the average secondary school enrolment rate for 2012-2017 was 94.4%).
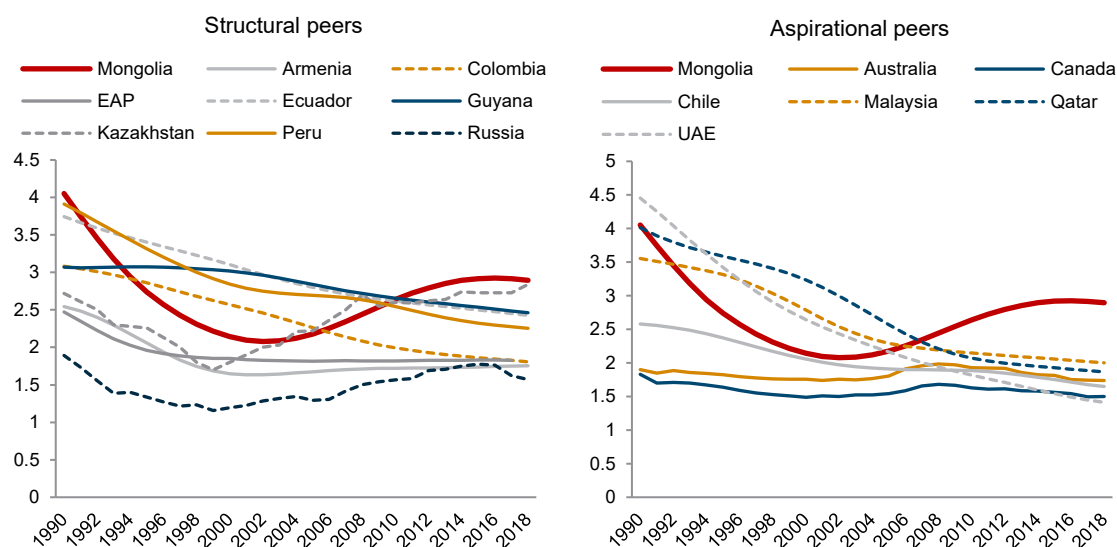Source: World Bank, *World Development Indicators*.

There is yet another way of assessing the advance of education, indirectly through fertility. Lower birth rates and reduced population growth make it possible for parents to provide each of their children with more and better education. Thus, reduced fertility can be regarded as investment in human capital, intended to enhance the quality and efficiency of the labour force as well as individual happiness. Such human capital investments require prior or contemporaneous investments in social capital, for example through social insurance and pensions, to reduce the need for large families (Gylfason, 2012). This is in keeping with the worldwide trend from short lives in large families to long lives in small families.

Figure 11 compares fertility in Mongolia with its two peer groups. Mongolia is one of a few countries where a rapid reduction in the average number of births per woman has recently been reversed and has increased significantly since 2000. This change was induced in part by the government's Child Money Programme, a conditional cash transfer programme for families with children. This scheme is intended to be an essential part of Mongolia's social protection system, an understandable concern in the world's least densely populated independent country.[7] It remains to be seen whether the difference between two

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[7]   Only Greenland, a self-governing overseas administrative division of Denmark, is less densely populated than Mongolia.

and three children per family is significant in terms of the build-up of human capital. Perhaps the difference matters for human capital only at larger fertility rates in more densely populated countries. In 1960 the average number of births per woman in Mongolia was seven, compared with less than six in China. By 1990 Mongolia's fertility rate had fallen to four births per woman, against 2.3 in China. In 2018 it stood at 2.9, compared with a fertility rate of 1.7 for China and 1.6 for Russia.

Figure 11 / Fertility rate (births per woman), 1990-2018


Source: World Bank, _World Development Indicators_.

2.2. CONVERTING NATURAL CAPITAL TO HUMAN AND SOCIAL CAPITAL

Experience suggests that human capital and social capital tend to go hand in hand in ways that reinforce their encouraging effects on economic growth. To borrow language from quantum mechanics, this confluence of forces can be thought of as a benign entanglement. For example, high standards of education normally call for democracy, equality and justice, and vice versa – and also for economic diversification, as we saw in Figure 8. There are good reasons for this. A poorly educated populace is easier to oppress over long periods than a well-educated population that understands what is amiss. Likewise, an egalitarian and democratic society that respects the rule of law is less likely than an inegalitarian autocracy with scant respect for the rule of law to tolerate low standards of education for long. Social capital – that is, social cohesion that promotes domestic peace – includes several other ingredients in addition to democracy, equality and justice, such as the rule of law, transparency (in contradistinction to corruption), good governance and trust. This makes a difference here because the build-up of social capital is an important driver of economic growth, as are the accumulation of human capital, physical capital and natural capital. While the build-up and use of physical capital boosts growth directly, human capital, social capital and natural capital, if judiciously managed, encourage growth indirectly by underpinning efficiency and technology. Unlike physical, human and social capital, however, natural capital (apart from gold and other precious metals) does not as a rule have an intrinsic value in and of itself. It rarely happens that societies become overburdened by their accumulation or

mismanagement of physical, human or social capital.[8] From this hierarchy of the different kinds of capital arises the need to channel the revenues and rents from natural capital into human, social and physical capital and hence economic prosperity for the masses.

Mongolia has more natural capital relative to total wealth than Russia, let alone China, which has relatively few natural resources (World Bank, 2018). The share of natural capital in Mongolia's total wealth is 63%, compared with 25% in Russia and 14% in China.[9] In contrast, the share of human capital in Mongolia's total wealth is 26%, compared with 48% in Russia and 59% in China. These numbers need to be viewed with scepticism, however, because independent measures of social capital, or intangible capital, do not yet exist. Figure 12 compares the shares of natural capital and human capital in Mongolia's total wealth with those of its two peer groups. Eleven of the 13 peers shown – all except Guyana and Qatar – have more human than natural capital. Neither of those two countries' ratio of natural capital to human capital surpasses that of Mongolia.

Figure 12 / Natural capital and human capital (% of total wealth), 2014
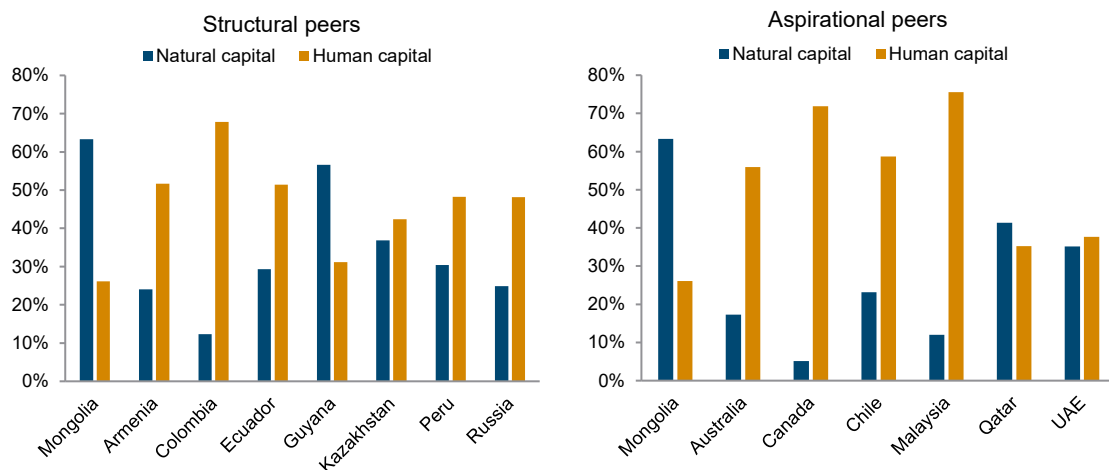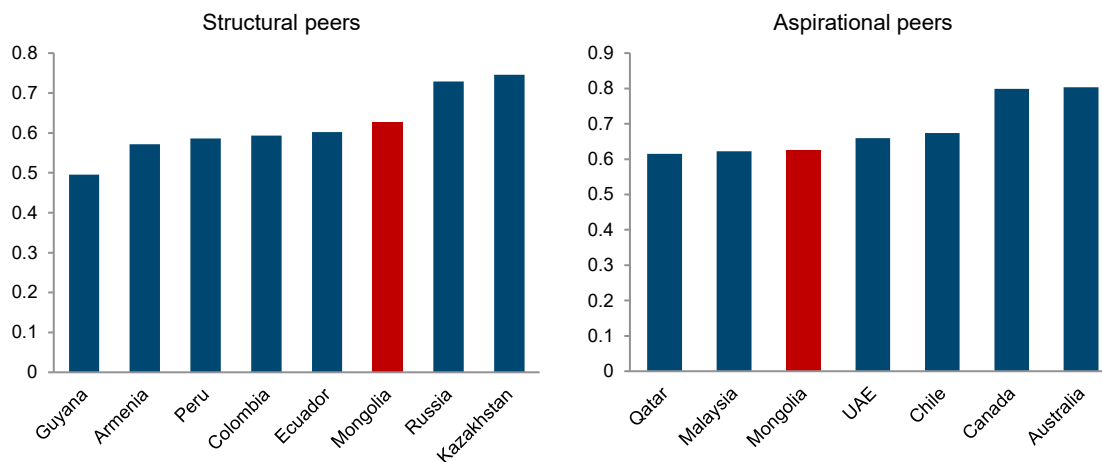

Note: Data on EAP are not available.
Source: World Bank (2018a, Appendix B).

Even so, the World Bank's Human Capital Index (HCI) suggests that Mongolia has managed to build up a significant stock of steadily improving human capital. The HCI aims to capture the contributions of health and education to labour productivity. The index ranges from 0 to 1, aiming to show the future labour productivity of children born today relative to the benchmark of full health and complete education. Figure 13 shows that, among its structural peers, only Russia and Kazakhstan have more human capital than Mongolia by this measure. Among its aspirational peers, Mongolia's human capital matches or surpasses that of Malaysia and Qatar.

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[8] The accumulation of unproductive capital in the former Soviet Union can be regarded as an exception. Another notable exception may be found in schools, where religious studies can crowd out science and other essential subjects in the curriculum.

[9] In per capita terms (not shown), Mongolia has more natural capital than all its structural peers except Kazakhstan, but less than all its aspirational peers except Malaysia.

Figure 13 / Human capital index, 2017

Structural peers

Aspirational peers

Note: Data on EAP are not available.
Source: World Bank (2018a).

The rents from Mongolia's natural resources, mostly minerals and coal, have fluctuated widely over the years, as have the rents accruing to most of its peers (Figure 14). Since 2010 the Mongolians' resource rents have on average amounted to about 30% of GDP, the largest rents-to-GDP ratio among its peers. The potential for converting these rents into human and social capital as well as physical capital is substantial. The need is clear.

**Figure 14 / Total natural resource rents (% of GDP), 1990-2017**

Structural peers

Aspirational peers
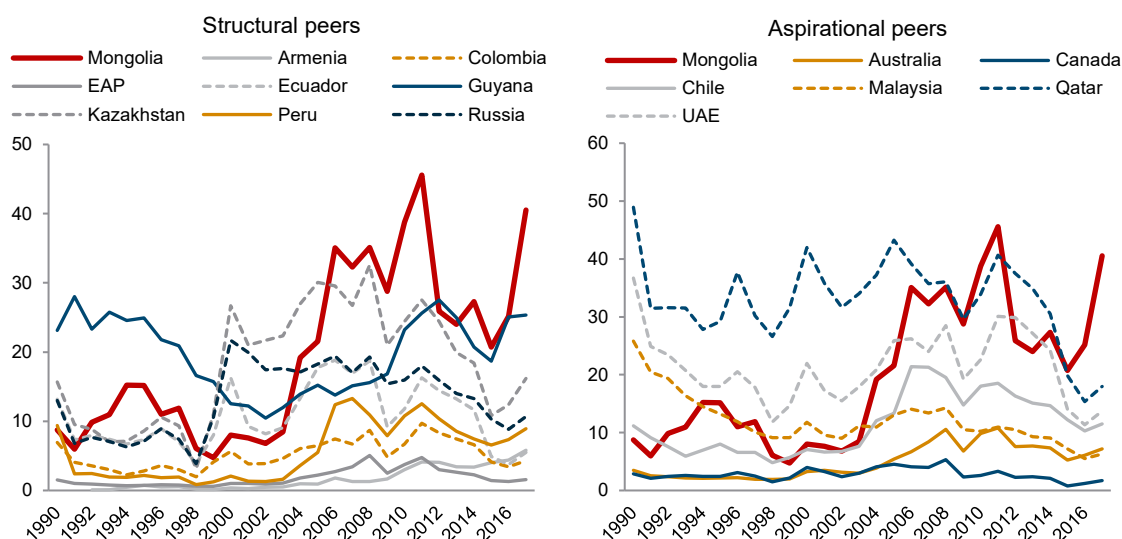
Source: World Bank, *World Development Indicators*.

Governance needs improvement. As Figure 15 shows, the Corruption Perceptions Index from Transparency International indicates problems, as Mongolia's score is far below those of all of its aspirational peers. Transparency International is not alone. In 2012, 83% of Gallup (2013) respondents in Mongolia considered corruption to be 'widespread throughout the government', compared with 62% to

83% among the structural peers included in the Gallup survey. By weakening social capital, pervasive corruption fed by a lack of transparency can undermine economic growth.[10] However, remedies are available. For example, Thailand established a National Anti-Corruption Commission in 1999 as part of constitutional reform. Other examples abound. Such commissions can deter corruption and inspire public trust, another important ingredient of social capital.
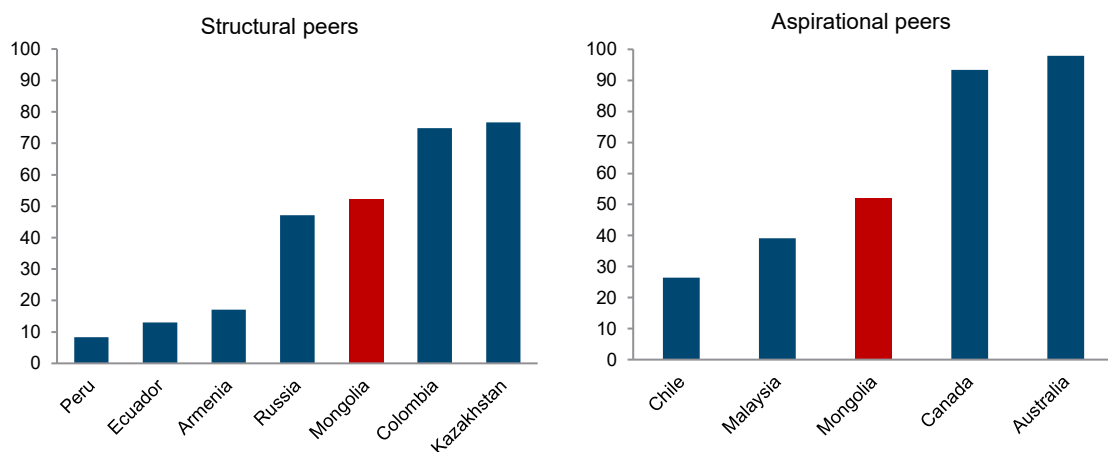
Figure 15 / Corruption perceptions index, 2000-2019
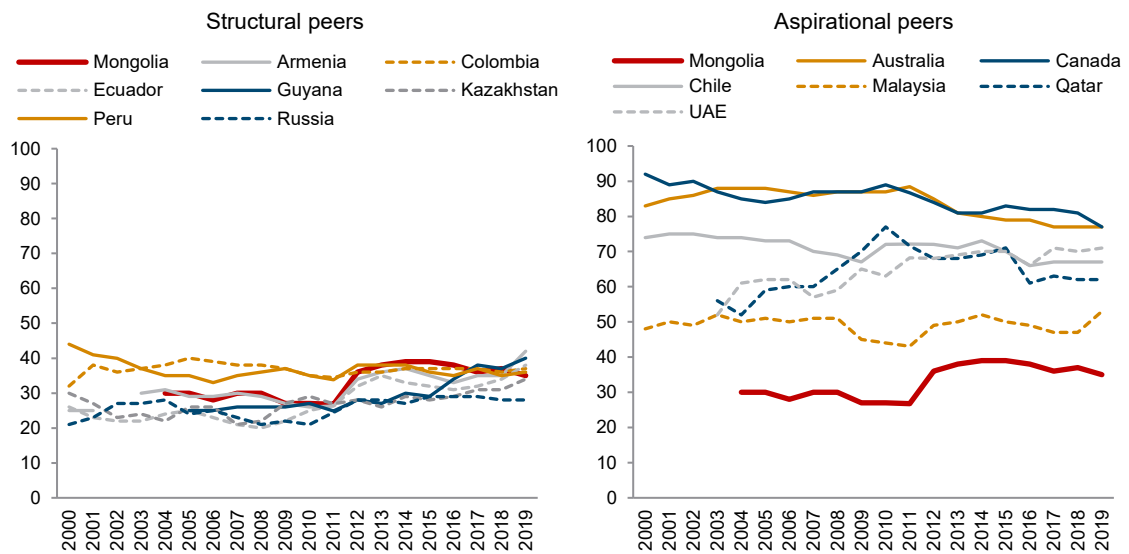
Note: The vertical axes show corruption perceptions indices ranging from 0 (deeply corrupt) to 100 (squeaky clean). Rising curves means less corruption and more transparency. Data on EAP are not available.
Source: Transparency International.

Figure 16 / Trust index, 2017-2020

Note: Data on Guyana, EAP, Qatar and UAE are not available.
Source: World Values Survey.

[10] Louis Brandeis, US Supreme Court Justice from 1916 to 1939, said it well: 'Publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman.'

Mongolia's participation in the World Values Survey (WVS) during Wave 7 (2017-2021) has provided valuable data on trust, encompassing both interpersonal trust and trust in institutions. Trust, when appropriately established, has the potential to contain social conflicts and contribute to economic growth. The WVS measures interpersonal trust by asking respondents whether they believe most people can be trusted or if caution is necessary in their interactions. Using this information, the interpersonal trust index is derived as follows:

TRUST INDEX = 100 + (% Most people can be trusted) - (% Can't be too careful).

A trust index below 100 signifies a prevalence of distrust, while a score above 100 indicates a higher level of trust. It is noteworthy that the trust index falls below 100 in our sample, with Mongolia occupying a middle position in terms of trust levels (Figure 16).

Figure 17 / Rule of law, 2012-2020 (average index from 0 to 1)
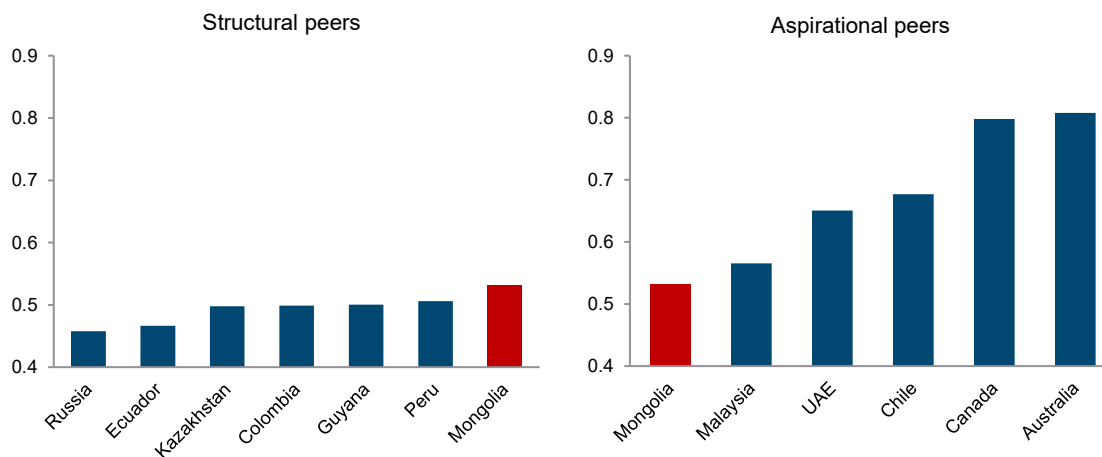
Note: Data on Armenia, EAP and Qatar are not available.
Source: World Justice Project.

A new statistical measure of the rule of law, another important ingredient of social capital, has recently become available from the World Justice Project (2018). The measure is based on expert opinion as well as public opinion. It is a composite index, reflecting various aspects of the rule of law.[11] The index at this stage covers only the years from 2012 to date. Figure 17 shows that Mongolia's rule-of-law score is akin to those of its structural peers but lower than those of its aspirational peers. Mongolia's 2022 rank, 62nd out of 140 countries, is above the global average, but there is ample room for improvement.

For example, to strengthen its application for European Union membership, Albania recently undertook (with external help) a thorough study of the country's judicial system by tasking an independent committee of American and European justices with assessing the competence of Albanian justices and prosecutors. The aim of the committee was to ensure that the judicial system can operate independently and honestly, unhindered by pressure exerted by politicians or other interested parties. In 2017 the

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[11]   The various factors that make up the index are organised under eight headings: constraints on government powers, absence of corruption, open government, fundamental rights, order and security, regulatory enforcement, civil justice, and criminal justice. Each of these factors has several subcategories.

United Nations examined judicial corruption in Albania and reported that 70% of Albanians did not trust their judicial system.[12] Other comparable precedents can be found. Again, such committees can help deter corruption, raise standards and inspire public trust.

Yet another important ingredient of social capital and cohesion is economic equality. Figure 18 shows that economic disparities do not seem to be a cause for serious concern in Mongolia, either in comparison with its peers or in terms of increasing inequality over time. Less is known about the distribution and evolution of wealth and health.

Figure 18 / Gini index of inequality, 1990-2016
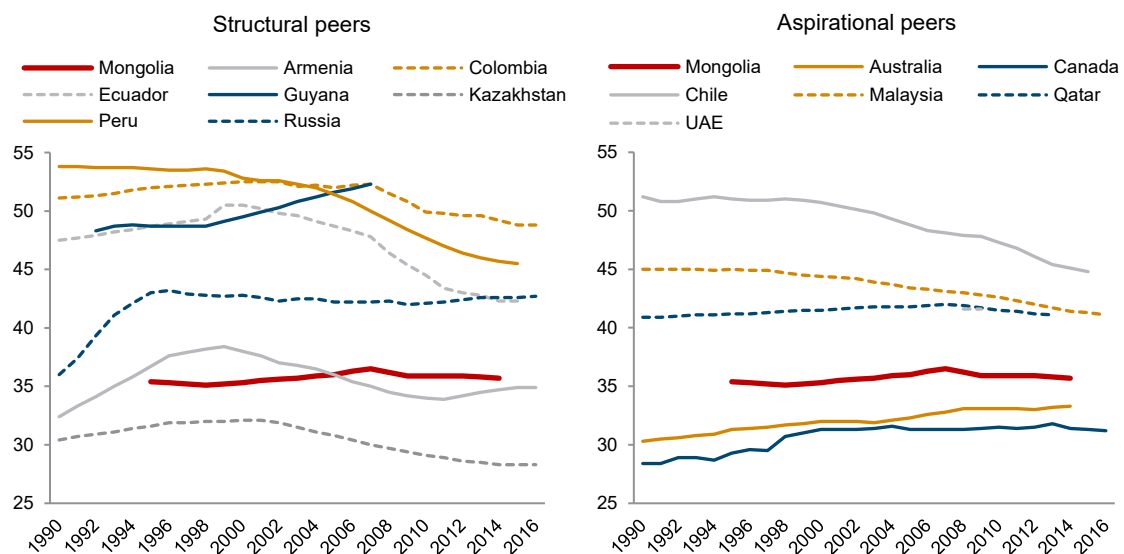
Note: Rising curves denote increased inequality. Data on EAP are not available.
Source: Standardised World Income Inequality Database (SWIID) (Solt, 2016).

2.3. THE DOUBLE IMPORTANCE OF DIVERSIFICATION

The conversion of natural resource rents to the accumulation of human and social capital calls for the diversification of exports and other economic activity to reduce risk and raise incomes. This requires the government, on behalf of the people, to levy resource depletion charges – that is, user fees – on the utilisation of natural resources and to use the proceeds to finance more and better education that is well aligned with labour market needs, public welfare expenditures to promote longer lives in smaller families, improved governance through greater transparency and a stronger rule of law. It is important to note that 'charges' and 'fees' are more appropriate words than 'taxes' in this context because, like rents, charges and fees are typically levied in exchange for the provision of specific services such as the permission to exploit common property resources (Gylfason and Weitzman, 2003). Some opponents of fees still insist on calling them taxes, to incite opposition to regulation by price. The IMF and the World Bank are both on record as advocates of resource depletion fees to combat climate change (see, for example, Lagarde and Kim, 2015).

[12]   See United Nations Development Programme (2017).

Figure 19 shows that Mongolia's merchandise exports are less diversified than those of virtually all of its peers. Remember that the Finger-Kreinin index of exports diversification shown in the figure is a relative index that shows the extent to which the structure of Mongolia's exports by product differs from the world average. Mongolia's five main export commodities are coal, gold, copper, iron ores and animal hair.

Figure 19 / Finger-Kreinin index of export diversification, 1995-2018
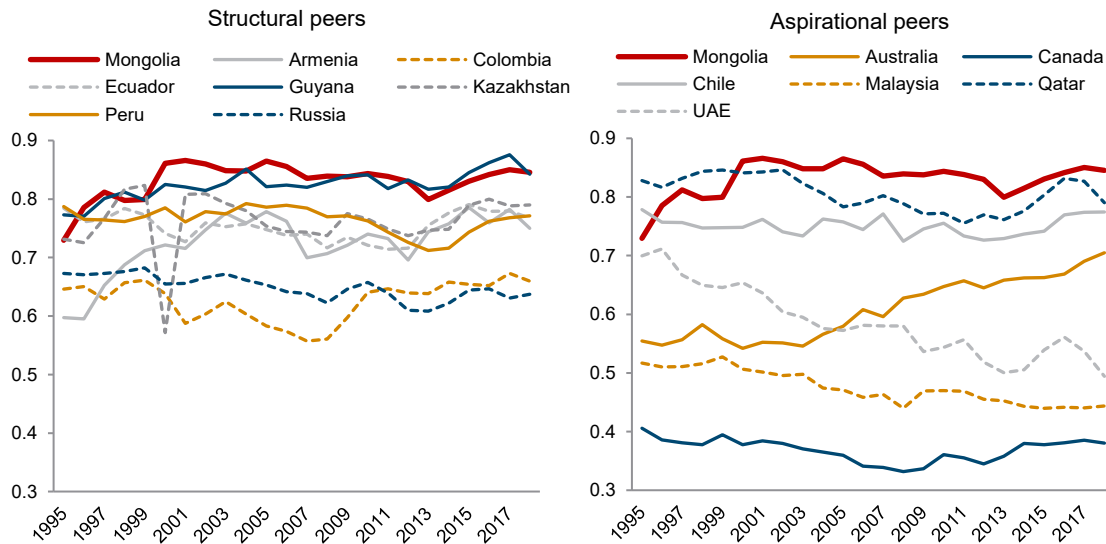
Note: Rising curves denote reduced diversification.
Source: UNCTAD.

Figure 20 / Herfindahl-Hirschman index of export concentration, 1995-2018
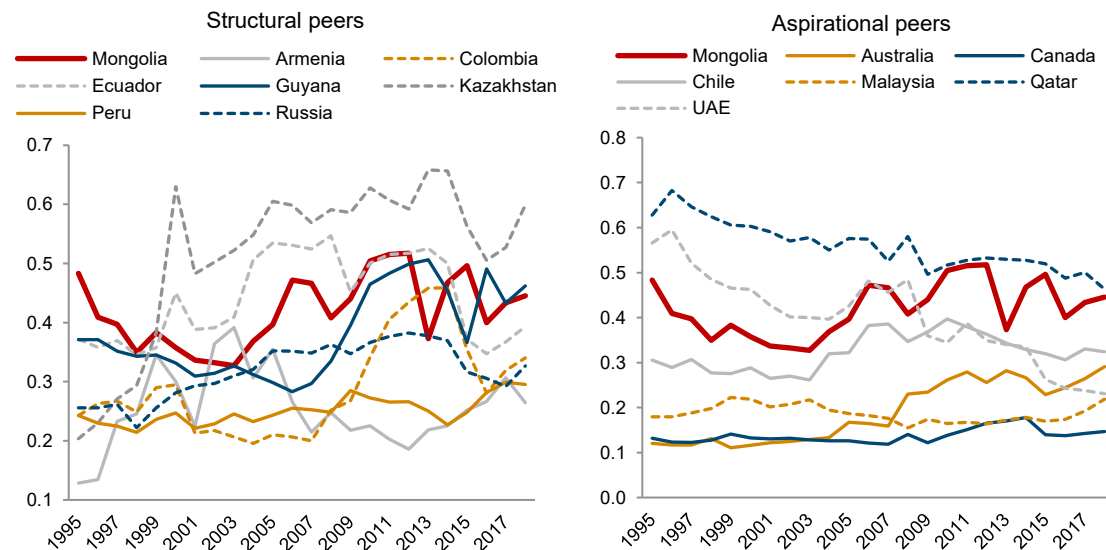
Note: Rising curves denote increased concentration.
Source: UNCTAD.

Figure 20 portrays a similar pattern. It shows the Herfindahl-Hirschman index (HHI) of export concentration. Figure 20 suggests that Mongolia's exports are more concentrated than those of all its aspirational peers except Qatar, but broadly akin to those of its structural peers. Armenia, Colombia, Peru and Russia have less concentrated export structures than Mongolia, but Kazakhstan has a more concentrated export structure than all the others. Figures 19 and 20 suggest ample scope for economic diversification in Mongolia for the benefit of human and social capital accumulation.

Figures 21, 22 and 23 convey a similar impression of Mongolia's standing vis-à-vis its peers by suggesting too little diversity in its exports and in terms of the variety of its trading partners, and also limited complexity, but respectable product quality. Like Figure 2 (right panel, horizontal axis), Figure 22 describes exports in terms of the average quality demanded in exporters' current destination markets. Like Figure 3 (both panels, horizontal axes), Figure 23 describes exports in terms of their complexity, ranging from raw materials and simple farm products to sophisticated chemicals and machinery at the other end of the scale. The point of these comparisons is that it is not enough to note that, at nearly 60% of GDP in 2021, Mongolia's exports of goods and services exceed those of its structural peers, because we need to assess export activity in terms of quality and variety, as well as volume.
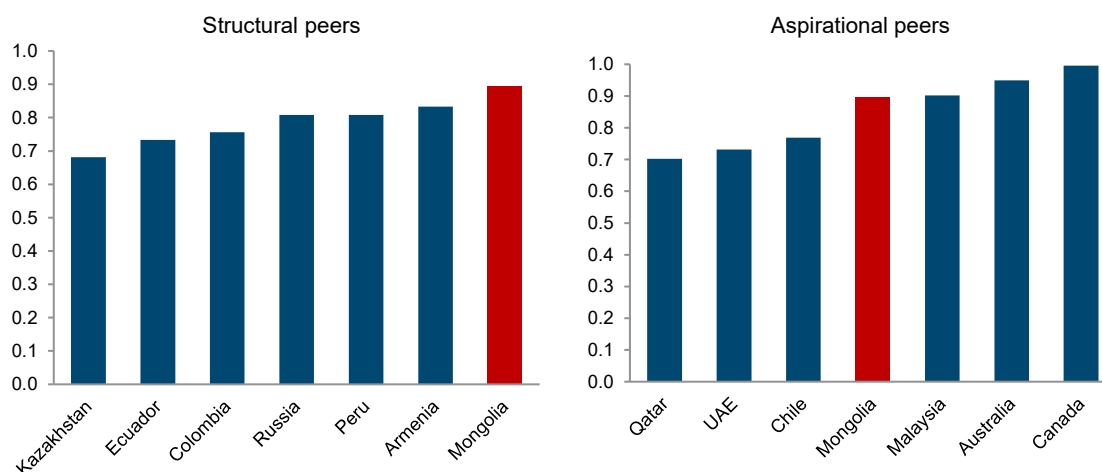
Figure 21 / Theil index of export diversification, 1990-2014
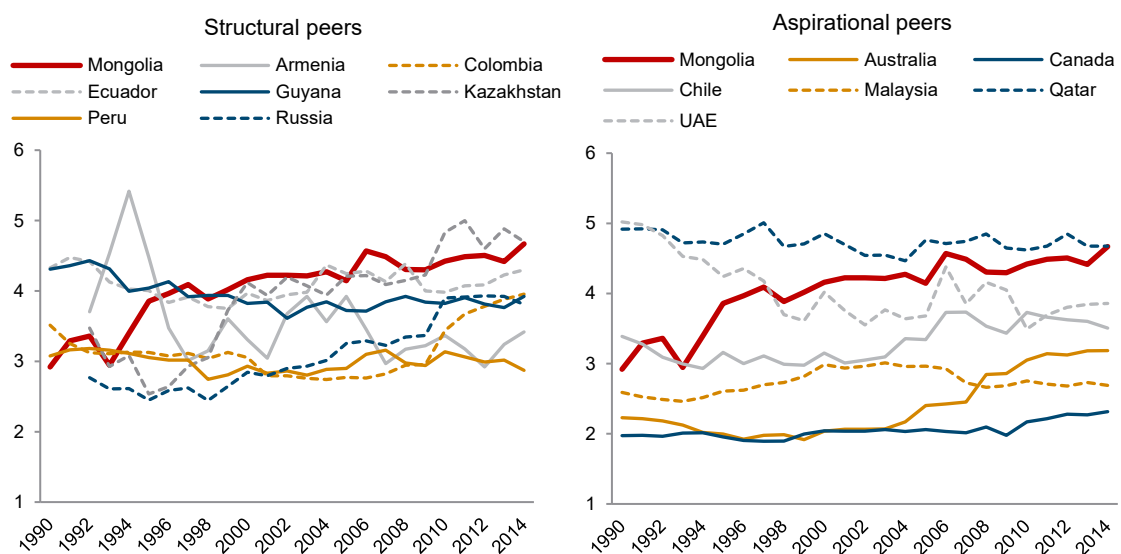

Note: Rising curves denote reduced diversification.
Source: IMF.

Figure 22 / Product quality index (average), 1990-2014

Structural peers

Aspirational peers

Note: High columns denote high quality of exports as defined by the IMF. Data for Guyana are not available.
Source: IMF.

Figure 23 / Economic complexity 1995-2017, (average index from -1 to +1)

Structural peers

Aspirational peers
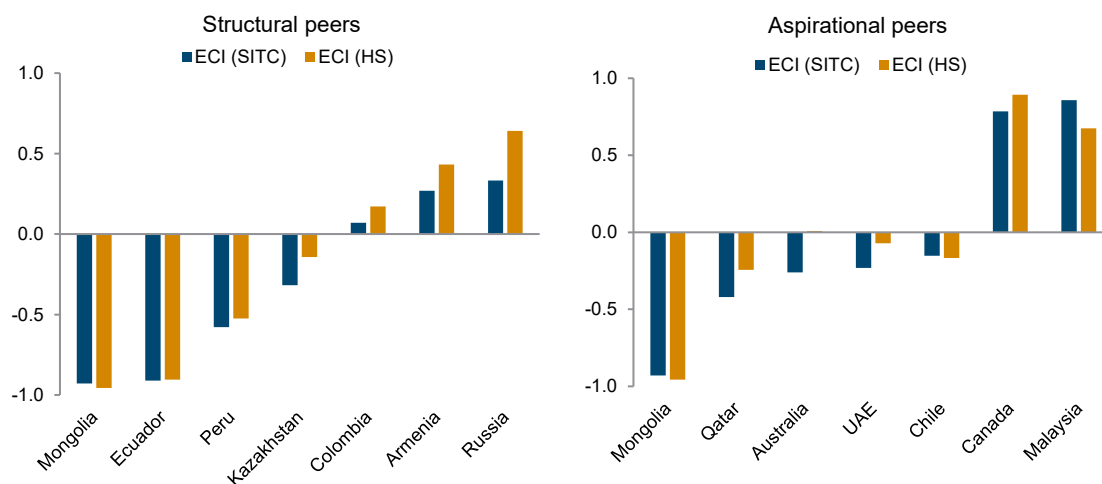
Note: Higher columns denote more complexity. Data for Guyana and EAP are not available.
Source: Atlas of Economic Complexity.

One unusual feature of Mongolia's economy is worth emphasising in the context of insufficient economic diversity: the absence of foreign competition in the local banking sector. Like restrictions against external trade, the absence of foreign banks encourages inefficient banking. Figure 24 shows the interest rate spread between lending rates and deposit rates, a basic indicator of bank inefficiency, to be significantly higher in Mongolia than among its aspirational peers. Foreign competition is essential to promoting and preserving efficient banking services. For this reason, the three Baltic countries, Estonia, Latvia and Lithuania, for example, opened their banking systems to foreign ownership and competition in the 1990s, mostly with good results. Without foreign competition in the financial system, banks can get away with inefficiency and waste at the expense of their customers, sometimes even to the point of crashing (as occurred in 2008 in Iceland, another country with no foreign competition in local banking).

Figure 24 / Interest rate spread (lending rate minus deposit rate; %), 1990-2018
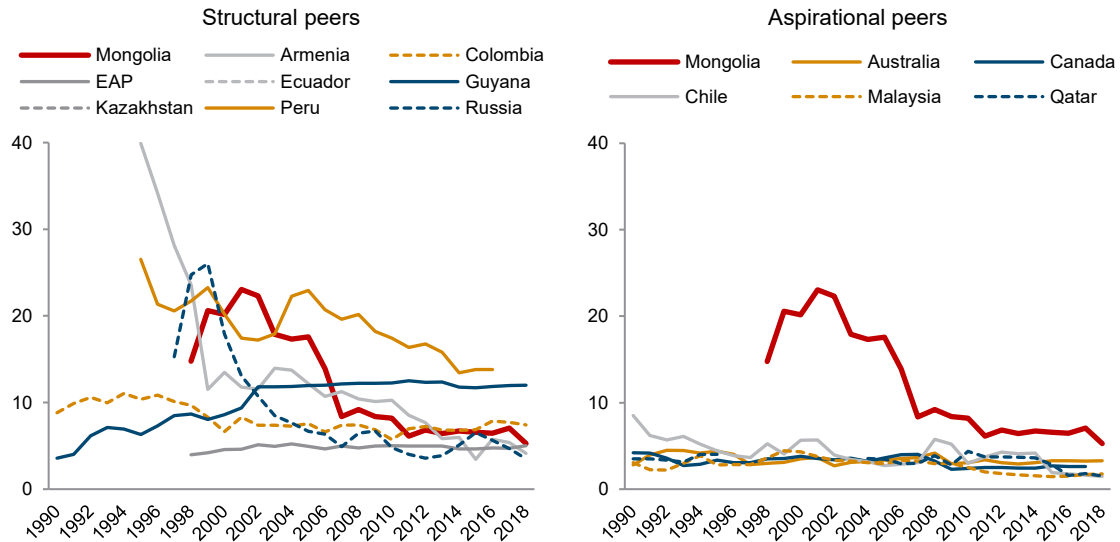

Note: Extremely high values for Peru during 1990-1994 were excluded from the left panel to allow the same scale on the vertical axes in both panels.
Source: World Bank, *World Development Indicators*.

There is more. Just as economic diversification spurs growth by transferring labour from low-paying jobs in low-skill-intensive mining and farming to more lucrative jobs in more high-skill-intensive occupations, political diversification can boost growth by redistributing political power from narrowly based ruling elites to broader segments of the population. Replacing a group's monopoly on political power by democracy and pluralism means promoting electoral competitiveness, openness and popular participation. This can be viewed as an investment in social capital, as it strengthens civil society and promotes good governance and societal institutions that people can trust. Economic and political diversification through fortified democracy can thus be viewed as two sides of the same coin (Gylfason and Wijkman, 2016).

One of the hallmarks of Mongolia's development since 1990 has been the ascent of liberal democracy. In Figure 25, the index of democracy is the Polity IV Project's Polity2 variable, which reflects several characteristics of democratic vs autocratic authority in governance (Polity IV Project, 2019). The index spans a spectrum from fully institutionalised autocracies through mixed authority regimes to fully institutionalised democracies on a scale ranging from -10 (hereditary monarchy) to 10 (consolidated democracy). Figure 25 illustrates Mongolia's strong position among its structural peers as the sole unfettered democracy, together with Australia, Canada and Chile among its aspirational peers. In view of Mongolia's geographical position, this is no mean feat. Mongolia's democratic credentials are acknowledged also by Freedom House (Figure 26). As the experience of, for example, Australia, Canada, Norway and the US bears out, a well-functioning democracy facilitates efficient and fair management of natural resources, including the avoidance of excessive dependence on these resources through judicious economic diversification.

Figure 25 / Democracy, 1990-2018 (index from -10 to +10)
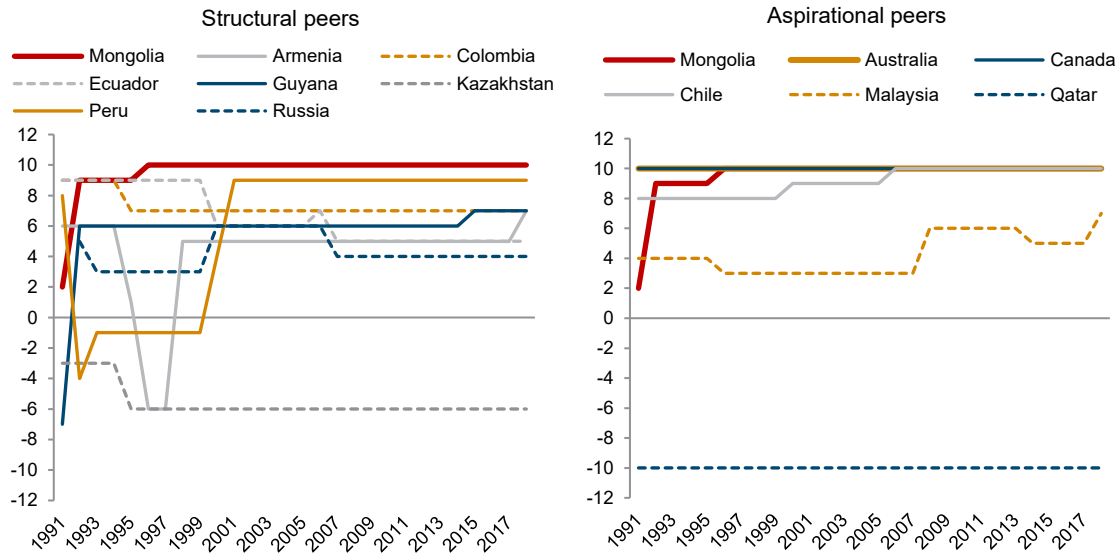
Note: Vertical axes show the Polity2 index of democracy. Data for UAE are not available.
Source: Polity IV Project.

Figure 26 / Global freedom status, 2019 (index from 0 to 100)
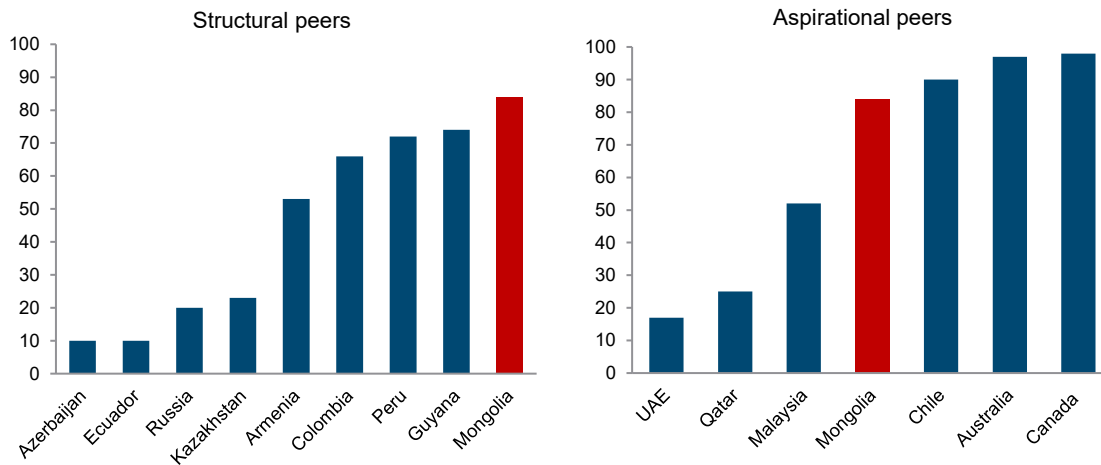
Note: Higher columns denote more freedom. Data for EAP are not available.
Source: Freedom House.

3. Summary and discussion

Where do we stand following this brief overview of the diversification-related situation on the ground, including comparisons of Mongolia with its designated peers around the world? In this section, we provide a summary of our main findings, followed by a brief discussion of two special topics relevant for Mongolia.

At the outset, six different measures of economic diversification were seen to vary directly and significantly with per capita GNI across large samples of countries where Mongolia fits the general pattern quite well (Figures 1, 2 and 3).[13] Compared with its peers, Mongolia's per capita economic output was seen to have grown at a respectable pace since 1990, even if life expectancy and human development as measured by the UNDP based on incomes, education and health still lag behind the two peer groups (Figures 5, 6 and 7).

3.1. BENIGN ENTANGLEMENT

New data on test scores that assess education by output rather than by input confirm Mongolia's middle-of-the-road status (Figure 8), as do earlier input indicators of educational attainment and secondary school enrolment (Figures 9 and 10). By contrast, Mongolia stands out in having seen fertility rates rise sharply since 2000 to the top of the league of its peers, a deliberate result of the government's Child Money Programme aimed at increasing population density (Figure 11).

The need for diversification away from excessive dependence on natural resources in favour of more human-capital-intensive economic activities is borne out by Mongolia's uncommonly high ratio of natural capital to human capital (Figure 12). Even so, Mongolia's human capital as measured by the World Bank compares favourably with several of its structural and aspirational peers (Figure 13). Relative to GDP, Mongolia's resource rents are the largest among its peers, suggesting a significant potential for converting these rents into human and social capital as well as physical capital (Figure 14).

Economic diversification consists in moving resources from dominant resource-based industries to emerging new human-capital-intensive industries, often in the services sector, involving the export of, for example, expertise, tourism services and so forth, in addition to manufactures. This can be done through a combination of mutually supportive policy undertakings to promote diversity, efficiency and growth. Hence the reference to benign entanglement. An efficient way to accomplish this is through a realignment of fiscal policy where resource depletion fees, also known as user fees, as in Alaska, Norway and several other locations, are used to generate public revenue that can be used to reduce other less efficient forms of taxation or to mobilise socially productive public and private outlays on education, health care, investments in social capital, and more, all of which are widely viewed as desirable both as ends and means. Alternatively, or concurrently, revenue from such fees can be used to build up a sovereign wealth fund (SWF) for the benefit of future generations. Fees are frequently key to resource reallocation, whether the aim is to relieve traffic congestion in London or Singapore, or to reduce dependence on natural resources

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[13]   Similar cross-sectional patterns have been reported in Gylfason (2017, 2018).

to make room for the build-up of human and social capital beside natural and physical capital and to promote economic and social diversity. Mongolia's ample natural capital signals the need for diversification, and so does the need for improved human and social capital.

Available evidence on various aspects of governance points to the need for diversification with the aim of accumulating more and better social capital. Corruption is an issue. It has declined, true, but it remains similar to the levels in Mongolia's structural peers and greater than among its aspirational peers (Figure 15). Trust is also an issue. In terms of interpersonal trust, Mongolia is broadly comparable to its structural peers (Figure 16). The rule of law is yet another issue. Judging by the World Justice Project's survey measure, based on expert opinion as well as public opinion, Mongolia surpasses its structural peers but lags behind all of its aspirational peers (Figure 17). Income distribution, which is reasonably equal and has been stable over time, is not an issue for Mongolia, however (Figure 18). The evidence on diversity vs concentration suggests that, by all the measures considered here, Mongolian merchandise exports are less diversified and more concentrated than among most of its peers (Figures 19-21 and 23) even if those exports are classified by the IMF as comparatively high-quality in terms of trading partners (Figure 22). The lack of foreign competition – that is, lack of diversity – in Mongolian banking accords with the general pattern of insufficient diversity (Figure 24).

Although there remains ample scope for economic diversification, Mongolia has excelled in terms of political diversification by establishing a solid reputation as a liberal democratic state in a challenging geographical neighbourhood (Figures 25 and 26). The strong state of Mongolian democracy should make it easier to pursue benign entanglement with popular support by undertaking measures to strengthen education, reinforce the rule of law, reduce corruption and move resources among economic activities along the lines of desirable economic diversification, as other nations and states – including Alaska (population 734,000) – have managed to do.

3.2.   THE ALASKA DIVIDEND

The foundation of the Alaska Permanent Fund (APF), Alaska's SWF, was laid down by constitutional amendment in 1956. This stipulated that, apart from private farms, all land and all natural resources in Alaska are the common property of the residents of the State of Alaska. Four years later, in 1960, North America's largest oil reserves were discovered on public lands on the Alaska North Slope. The state government decided in 1976 to establish the APF by channelling into it a portion of the annual income from the oil industry. The APF is managed by a state-owned corporation, the Alaska Permanent Fund Corporation. In 1982 the state government further decided to devote a portion of the annual revenue of the APF to a Permanent Fund Dividend, also known as the Alaska Dividend, which delivers an annual payment to each resident of Alaska. By law, each resident thus receives an annual dividend that varies from year to year, depending mostly on oil prices in world markets. Since 1982 the dividend has provided universal basic income averaging USD 6,600 at 2015 prices for each family of four in the state (Berman, 2018). Alaska has one of the lowest poverty rates in the US, as well as the country's most equal distribution of income. Furthermore, in Alaska, income disparities have decreased over the past 20 years.

Among the 100 largest SWFs in the world, the APF ranks 21st, behind Qatar (10th) and the UAE (20th), but ahead of Kazakhstan (two funds, 22nd and 27th), Azerbaijan (two funds, 28th and 39th), Russia (35th),

Chile (two funds, 54th and 55th) and Colombia (62nd), to name a few countries.[14] The Norway Government Pension Fund Global heads the list of SWFs, with assets approaching USD 1.4 trn, equivalent to more than USD 1m for each family of four in Norway.

3.3. PROS AND CONS OF INDUSTRIAL POLICY

The academic consensus on industrial policy efficacy remains contentious. Historically, reflecting widely held views in academic circles and international organisations including the IMF and the World Bank, criticisms have centred on perceived inefficiencies and risks, such as the difficulty of 'picking winners' and the susceptibility to political capture and corruption. However, the successful implementation of industrial policies in countries such as Malaysia, Chile and China suggests a more nuanced understanding (Rodrik, 2004). Industrial policies can catalyse economic diversification and growth when appropriately tailored to the national context and continually evaluated for effectiveness.

A one-size-fits-all approach to industrial policy is neither feasible nor desirable (Aiginger and Rodrik, 2020). The design of these policies must consider the specificities of a country's comparative advantage, its public administration capacity and the unique features of its economic landscape. Modern industrial policy has evolved, shifting from selective trade restrictions and public companies towards market-friendly measures that promote innovation, human capital investment, entrepreneurship, cluster formation, globalisation and public-private partnerships.

Despite potential pitfalls, the goal is not to eschew industrial policy, but to implement it effectively (Stiglitz et al., 2013). This requires a balanced public-private collaboration to identify and overcome significant restructuring obstacles. Governments, acting in a similar way to venture capitalists, need to make calculated decisions and be prepared to pivot when necessary. Hence, industrial policy, when well designed and adapted to local circumstances, can significantly contribute to national economic diversification and growth.

Hausmann and Rodrik (2003) argue that a carrot-and-stick strategy should be adopted. Providing rents to initial investors as compensation for the cost of new discovery would be considered the carrot, while these rents must in turn be subject to performance requirements or close monitoring, which is the stick, so that mistakes and bad projects are not perpetuated. The Chinese experience, for instance, illustrates how industrial policies such as the provision of soft loans, public ownership, local-content requirements, export subsidies and technology-transfer requirements can drive macroeconomic performance and growth. Similarly, Taiwan's upstream investment in infrastructure supports the formation of industry clusters, demonstrating the role of the government in co-ordinating investments.

Therefore, industrial policy, when well designed, adaptable to local circumstances, and managed effectively, has significant potential to boost national economic diversification and growth. It can pave the way for a nation to climb up the technological ladder through strategic export transformation and can promote actual and potential comparative advantages, rather than merely protecting domestic producers against foreign competition.

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[14] Source: Sovereign Wealth Fund Institute, https://www.swfinstitute.org/fund-rankings/sovereign-wealth-fund

4. Conclusion and policy options

Extreme specialisation can entail risk. Based on comparisons of Mongolia with its designated aspirational and structural peers around the world, this paper has suggested ways in which Mongolia can diversify its economy and society through a judicious balancing of its natural resources and human and social capital stocks for the current and future benefit of the Mongolian people. Although Mongolia's human resources compare favourably with several of its structural and aspirational peers, its uncommonly high ratio of natural capital to human capital points to the need for diversification away from excessive dependence on natural resources in favour of more human-capital-intensive economic activities. Moreover, the demand for Mongolia's key minerals (mainly coal) is likely to decline sharply, owing to climate change concerns, a shift in investors' preference toward sustainability and China's ambitious goal to reduce coal consumption.

The World Bank (2020) concluded that Mongolia needs to address its underutilisation of human capital and weak institutional development to escape its over-reliance on natural capital. Key policy recommendations include:

1. **Investing in human capital:** (a) develop a human resources development plan focused on improving education quality and STEM fields (science, technology, engineering and mathematics); (b) establish a quality control system for education and training programmes; (c) foster collaboration between universities and the private sector for better skills matching; and (d) redesign school curriculums to align with future needs.

2. **Promoting female labour participation:** (a) improve access to affordable childcare and information technology; (b) enhance the education system to provide equal opportunities for both genders; and (c) implement gender budgeting and promote job creation.

3. **Migration policy for talent retention and attraction:** (a) engage with the diaspora and make them partners in Mongolia's development; (b) map migrants in major host countries and accelerate knowledge and technology transfer; and (c) incentivise returning emigrants through tax benefits, housing and access to quality education.

4. **Investing in institutions:** (a) enhance transparency and accountability, particularly in the extractive industries; (b) reform the public investment management framework; (c) leverage Mongolia's comparative advantage by providing incentives for manufacturing industries; (d) strengthen infrastructure selectively to support economic diversification and competitive advantage; and (e) utilise trade agreements and co-operation to facilitate international market access.

By implementing these policy measures, Mongolia can move towards a more sustainable and diversified economy, reducing its dependence on natural resources and promoting long-term growth.

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