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Anuarbek Akhat
5B050900 Finance

Kuatova Alua
5B050700 Management

Tulemetov Danatas
5B050900 Finance

Economic inequality in Kazakhstan: causes and consequences

Supervisor: Kemelbayeva S.S.

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Calendar plan of completion of the thesis

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Supervisor Kemelbayeva Saule Sultanovna
(Full name, signature)

Abstract

In the modern world, economic inequality – the concept that includes several interconnected dimensions (wealth inequality, income inequality, wage inequality, inequality of economic opportunities) - is considered one of the essential indicators of economic development. Meanwhile, the gap between rich and poor is only increasing even in developed countries. This is especially noticeable in the United States of America, where almost 25% of the world's billionaires live, thus the richest 1% of people own almost 50% of the total national income. According to the Bureau of National Statistics, the distribution of income among the population of Kazakhstan is relatively equal, though there is evidence that Kazakhstan is a country with a very high level of wealth inequality which likely induces inequality of opportunities. This study uses income statistics of Kazakhstanis over the period of 2011-2019 to assess income inequality according to several dimensions: region, gender, age, education, a field of activity (industry), company type and source of income. The study confirms the official indicator of income inequality - the calculated Gini index is around 0.3. We discovered that people's incomes vary greatly depending on their status of employment, gender, level of education, place of residence and field and type of economic activity. We also found that the higher the incomes within a group the higher is inequality. This was the case for the distribution of incomes by gender (men have higher but more unequally distributed incomes than women), by region and residence (oil-producing regions' and urban residents have higher but more unequally distributed incomes than agricultural regions and rural residents), by industry and company ownership (more economically successful industries and private companies have higher but more unequally distributed incomes than less economically successful industries and public companies). This, however, turned out not to be the case for education where the between-group income inequality is higher than within-group inequality. Generally, we see that there is a trade-off between economic efficiency (profitability) and inequality and the government must balance them.

It is important to note that there are few studies on economic inequality, thus results of this study contribute to the existing literature on income inequality in Kazakhstan.

Keywords: Economic inequality, Gini Coefficient, wage inequality, wealth inequality, Lorenz Curve.

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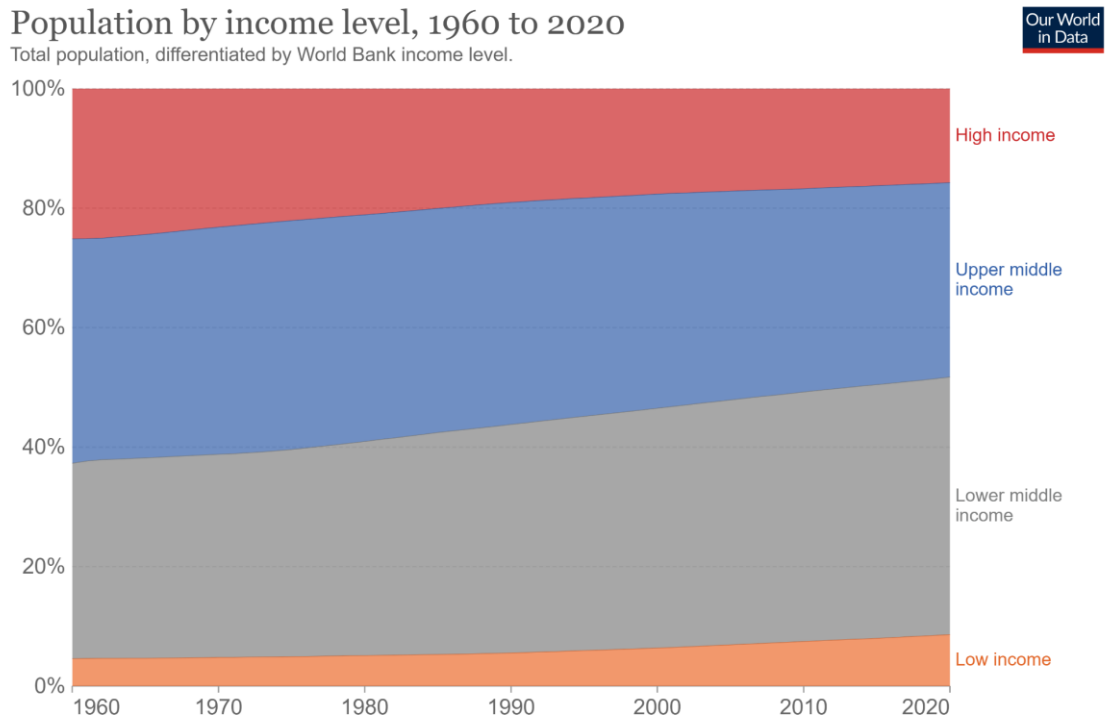
1. Introduction

The problem of economic inequality is a central problem in today's economy. According to the United Nations, "high levels of inequality inhibit the expansion of skills, limit economic and social mobility and human development, and as a result inhibit economic growth. It also contributes to a sense of uncertainty, vulnerability and insecurity, undermines trust in institutions and government, increases social discord and tension, and generates violence and conflict" (United Nations, n.d. para.12). Inequality of opportunity, property inequality, income inequality, and wage inequality are all present in many countries. This topic has been hotly debated for many years. Over the past 60 years incomes around the world have increased (Fig.1), yet according to the Roser (2013), in 2020, 51.7% (8% low-income and 43.12% lower-middle income) of the population live without being able to cover their basic needs, while 15.7% of the world's population had high incomes.

Fig.1 - *Population by income level.*



Source: Data compiled from multiple sources by World Bank

There are many reasons why one person earns more than another, such as:

-Family background

-Education

-Age

-Gender

-Differences in personal abilities, luck, connections, and so on.

According to Plehanov (2016, Para. 12), "in Kazakhstan, parental education, gender, belonging to an ethnic majority or minority play a lesser role, but it is much more important where a person was born, in a city or a village. For comparison, in Armenia, Azerbaijan, and Georgia, gender has the greatest weight in the formation of the Gini index; in Moldova, Ukraine, and Mongolia, parental education; in Russia and Uzbekistan, gender, parental education, and place of birth "weigh" approximately equally".

It is very important how the state supports and what policies it implements to combat inequality. In Sweden, for example, inequality is less of an issue. Wealth inequality in Sweden is relatively high – in 2018, the wealth Gini was 0.865 in Sweden and 0.852 in the U.S. (Global Wealth Databook 2018, Credit Suisse[1]). However, income inequality is relatively low – income Gini was 0.28 in Sweden and 0.40 in the U.S. over the same period (OECD data[2]). This is a result of a very successful redistributive policy in Sweden (Berg, 2020). This is evidenced by high levels of economic development, lack of corruption, decent wages, active social assistance, and decent pensions. For example, in Sweden, when a child turns one year, they are entitled to pervasive subsidies, such as free schooling and higher education (Berg, 2020). Furthermore, the state provides free care and pensions in old age. The taxes are high, but publicly funded services of good quality are available to everyone in the country.

According to the World Bank, the income Gini coefficient is 0.29 in Kazakhstan in 2018 and 0.29 in Sweden in 2019. The wealth inequality is also comparable since Kazakhstan appears among the countries with the highest wealth inequality in the world - 0.952 in 2018 (Global Wealth Databook 2018, Credit Suisse). Despite the inequality gap between the two countries is not that big, Kazakhstan's benefits distribution policy and production of public goods are not as effective as Sweden's. This is in part should be explained by the fact that Sweden is much richer than Kazakhstan – based on a "mean

wealth per adult" indicator in 2021, Sweden appears in the list of the countries with wealth between 250000 USD and 350000 USD, while Kazakhstan – among the countries with wealth between 25000 USD and 50000 USD (Global Wealth Repost 2021, Credit Suisse). Since independence, Kazakhstan has developed in many ways. Compared to its CIS counterparts, the country has rather high indicators in development, the economy, relations with other countries and investments. However, Kazakhstan still has weak institutions, poor housing conditions, and a rising cost of living. Overall, there are few people living below the poverty line in Kazakhstan. In 2020, 5.3 per cent of the total population was below the international poverty line (World Bank data). However, poverty remains a problem, especially in some regions and rural areas.

The aim of this study is to estimate the economic inequality based on the data collected by the Household Budget Survey (HBS) of the Bureau of National Statistics of the Republic of Kazakhstan (BNS) in all regions of the country from 2011 to 2019. The work is organized as follows. The following section discusses the theoretical background, research methodology, and analysis, and provides a brief review of previous literature and their conclusions. The following sections reveal the inequality of distribution of incomes of Kazakhstanis, depending on the sphere and type of activity, place of residence, age, and gender.

2. Economic inequality

2.1. Literature review

Many socio-economic studies have focused on the topic of income inequality and its consequences on society. The German economist and sociologist Dahrendorf (1963) noted: "Even in a prosperous society the unequal position of people remains an important enduring phenomenon". In his statement, the author meant that in any society there has always been and will be social inequality. Even in a prosperous state, people will differ in wealth and have unequal access to resources. It does not depend on the era, type of state, manners and customs. People at all times have divided and will continue to divide into rich and poor, as this is an integral part of social relations. If all people live in prosperity, there will be an imbalance in the economy. Not all people have a good education and career

experience, which contributes to a good income or a good family where the accumulated wealth is passed down from generation to generation. Abilities are also distributed unequally.

Pickett и Wilkinson (2010) argued in their book that inequality negatively affects modern society, so it should be lowered. The authors consider increasing inequality as a cause of a number of social problems, such as lack of social cohesion, increasing crime, declining health, teenage pregnancy, obesity, poor education, poverty, trust, mental health, and so on. Liebig (2012) assumes that by reducing the income gap in society many social problems can be eliminated, including stress levels, physical and mental illness, reducing the number of drug and alcohol addicts, and so on. According to the author, the way to measure social inequality is income, status, education, and social security.

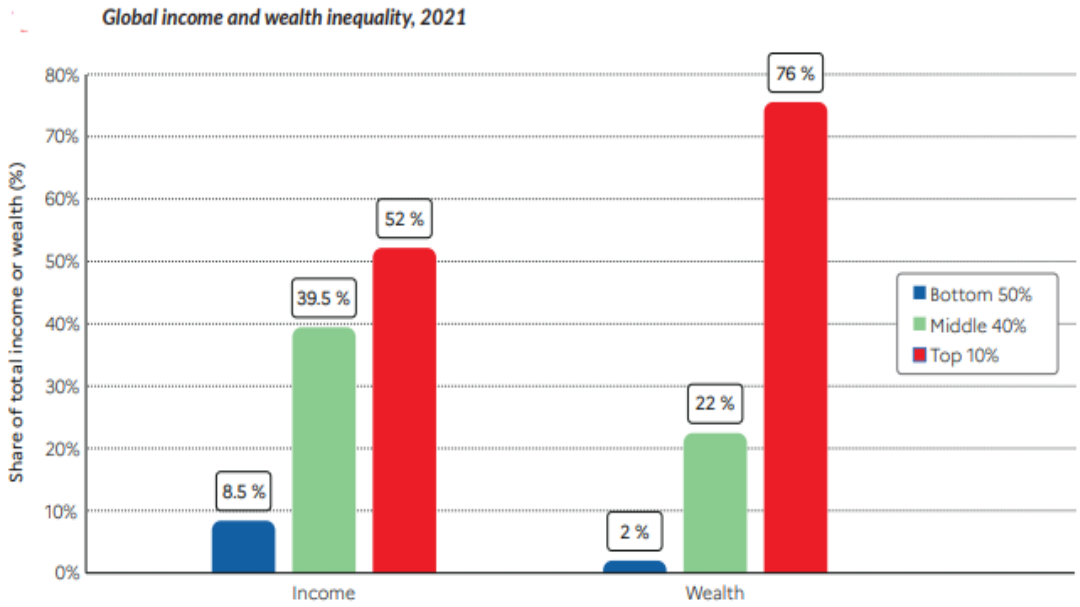
Harvard welfare economist Feldstein (2005) argues that "the emphasis should not be on the distribution of income or the degree of inequality in general, but on the fight against poverty"- a view that is widely shared (Atkinson, 2015, para.1). The unemployed are one part of the population, but there is another part - those who work, but earn low wages. They cannot afford basic needs, such as education, medical services, and leisure activities, and, therefore, lack investment in their human capital. That is, these people should also be included in the poor.

The new wave of poverty is related primarily to economic slowdown caused by the lockdowns during the COVID-19 pandemic. Therefore, the fight against poverty is becoming an increasingly acute problem for the entire world because of the consequences of the pandemic. According to the international nonprofit organization Oxfam (2022), unequal access to income and opportunities does not just create unfair, unhealthy and unhappy societies: it actually kills people. During the pandemic, citizens around the world experienced even more inequality. Sayed and Peng (2021) concluded that the impact of COVID-19 on the economy and health of the most vulnerable - the poor, the homeless, etc. - were much greater than the other segments of the population. Vulnerable social groups are much more affected by lockdowns, wage cuts, layoffs, and firms' closures. In some countries, health care inequities are exacerbated by private hospitals, businesses, and even individuals taking for themselves invaluable equipment that everyone urgently needs –"And while they were dying, the richest people in the world

got richer than ever, and some of the biggest companies made unprecedented profits" (Marriott et al., 2022, para. 1). When the coronavirus pandemic first started, the prices of masks, sanitizers, and drugs rose sharply. Drugs became more expensive or disappeared from pharmacies altogether. Pharmaceutical companies created drug shortages and raised prices. Maaza Seyoum (2021, para. 3) of the African Alliance and People's Vaccine Alliance Africa says: "It is obscene that just a few companies are making millions of dollars in profits every hour, while only two percent of people in low-income countries have been fully vaccinated against the coronavirus".

Disney (2022) states that there is enough money in the world and that this money can solve many problems, but it is all in the hands of a limited number of people. According to Chansel's World Inequality Report 2022, "Currently the richest 10% of the world's people own 52% of the world's income, while the poorest half of the world's population earns only 8.5% of that income".

Fig. 2 - *Global Income and wealth inequality.*



Source: World Inequality Report 2018, Harvard University Press, and online at wir2018.wid.world

2.2 What is economic inequality and why does it exist?

Economic inequality lies in the different economic conditions of the population in the matter of

economic distribution — income, wages, and wealth. This work is aimed at identifying general distribution of income in Kazakhstan. We start with defining the concepts.

There are three types of economic inequality, according to Wilkinson (2010):

1. *Wealth Inequality.* Wealth means the total assets of a person. It might be land, stock shares, dividends, government pension, bonds, and interest bank accounts as financial assets. Therefore, it could be stated that wealth is the total amount of assets.

2. *Income inequality.* Income is all cash acquired from job (salary, award, vacation pay), investment income such as interest from savings or dividends from stock shares, government benefits, pensions (state, personal, business) and rental income. Thus, we denote that income is earnings in material form from any type of activity. Income could be measured individually and at the household level, The latter it is the income of all people living in a one house. Income inequality is partially caused by wealth inequality when higher incomes are received by people holding assets.

3. *Wage inequality.* Along with profit, rent and interest, the wage is a type of income; the income received from selling a labor force on a labor market. It could be by hours, months or annualy payment, paid usually weekly or monthly. Thus, the difference between people's wages names wage inequality, and it can be both within ordinary company or between companies and organizations.

Why does inequality exist? Since our data mostly reveal wage inequality, we will primarily focus on the reasons for the wage inequality.

In the market economy, a wage is determined by labor productivity, thus higher wages reflect higher individual productivity or productivity of a company or industry where individual works compared to its competitors and vice versa. Thus, wage inequality should be explained for three main reasons:

- *Differences in productivity among people.* Some people are more productive than others because they have higher abilities appropriate for the work they do or higher motivation or other personal characteristics determining their productivity. Another reason for differences in productivity is a higher level of education or education of better quality. Also, people can work in better-paying jobs or

firms and this often happens because they are more productive.

- *Labor market failures.* Sometimes the labor market fails to achieve efficiency in the distribution of the resources. This can happen because of the asymmetry of information, for example, an employer is often unaware of the true productivity of a potential employee. Another reason – workers are not as flexible as is often required, for example, they often cannot easily change their place of residence even if wages are higher in another region, and this distorts a market mechanism.

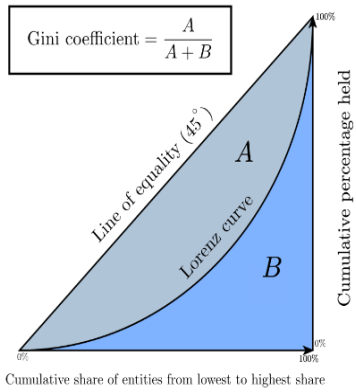
- *Labor market discrimination.* If workers with the same level of productivity receive different wages, it is often the result of discrimination. For example, there is often discrimination by gender, race and other characteristics.

How is Economic Inequality Measured?

There are many different ways to measure economic inequality. Thanks to the Lorenz curve, a large number of indicators of income inequality have been derived. James Morgan (1962) believes that the Gini index used in our study is the best indicator among all available. "The Gini index is a summary statistic that measures how equitably a resource is distributed in a population; income is a primary example. In addition to a self-contained presentation of the Gini index, we give two equivalent ways to interpret this summary statistic: first in terms of the percentile level of the person who earns the average dollar, and second in terms of how the lower of two randomly chosen incomes compares, on average, to mean income."- stated by Farris (2010).

To understand the inequality distribution of income among the population, we use special indicator - the Gini Coefficient. This coefficient shows the existing degree of income inequality, the indicator varies from 0 to 1, where 1 is absolute inequality, and 0 is perfect equality. The coefficient is calculated using the following method.

Fig.3 *- Gini coefficient and Lorenz curve*



Source: (URL: https://en.wikipedia.org/wiki/Lorenz_curve)

The calculations of the Gini coefficient use the Lorenz Curve, which represents a uniform distribution of income. A diagonal of 45 degrees is absolute equality in income. The cumulative percentage of income is located vertically, and the per cent of people receiving corresponding per cent of income is located horizontally. The Gini index is calculated as the ratio of the area between the line of ideal equality and the Lorenz curve (A) divided by the total area under the line of ideal equality (A + B).

3. Data and Research Methodology

The purpose of this study is to calculate the indicators of income inequality in Kazakhstan for the period of 2011-2019 and to analyze the possible causes and consequences of income inequality.

We used secondary data collected by the BNS as part of the HBS from 2011 to 2019. Quantitative methods are the standard methodology in the field we are investigating. The final set used in the study consists of 583,204 respondents from 16 regions of Kazakhstan and the cities of Nur-Sultan and Almaty. Since we can only compute income inequalities of those who receive incomes, the unemployed and economically inactive respondents are dropped from the analysis. We also filter out the working strata of the population who have reached the official state retirement age (58 years for women

and 63 years for men). The data register respondents' gender, age, income, education and the industry and ownership of a company in which they work. The survey has been conducted since 2002, but data on the industry has been available since 2011.

The main variable used by the study is the nominal income from employment, thereby excluding other sources of income (benefits, income from accumulated wealth, income from a share in business and other income). The only incomes reported are wages of employees and incomes of self-employed. There are, however, very few self-employed people recorded on the data – less than 1% which is much less than the officially reported share of self-employed in the population of Kazakhstan (more than 20% according to the BNS aggregated data). The survey respondents' nominal wages were adjusted based on the CPI, officially published by the Statistics Committee with 2011 as a base year.

Other variables are the age of the respondents, the place of residence (urban or rural), the attained level of education, the type of enterprise of a respondent and the industry of his activity.

Thus, taking these variables together, we analyze respondents' earned incomes according to certain parameters, the share of total income in a range of real income, and the Gini coefficient of the income distribution.

4. Results and discussions

4.1. Analysis of incomes

According to Credit Suisse (Global Wealth Data study, 2021), Kazakhstan owns only 0.1% of the share of world wealth. According to this agency, the accumulated wealth of an adult citizen of Kazakhstan is at the level of 33 thousand dollars, while an average resident of prosperous countries holds 300 thousand dollars. Over the 20 years of its development in the period 2000-2020, this indicator in Kazakhstan has increased 16 times, which indicates significant changes in the income of the country's population.

The formation of indicators of the rich and poor population primarily begins with basic norms, such as: the amount of the subsistence minimum, the minimum wage, average wages and salaries above average. The amount of the subsistence minimum includes the amount of funds that are sufficient for

the minimum required amount of food, products and services, as well as for the mandatory payments to the budget based on the cost structure for low-income families. In 2019, the subsistence minimum in Kazakhstan was 29,698 KZT. It is noteworthy that in Kazakhstan the threshold of the absolute poverty line is 70% of the subsistence minimum, which is 20,788 KZT. The minimum wage is considered to be the minimum monthly remuneration for labor established by the state, which for 2019 was equal to 42,500 KZT. According to the BNS, when studying household incomes, it was found out that the average monthly salary for the 4th quarter of 2019 is 191,000 KZT, whereas a year earlier it was 162,751 KZT. 583,206 respondents were interviewed as part of HBS in the period of 2011-2019.

Within the framework of this study, to provide more accurate calculations, various types of variables were taken into account, calculations depending on the specification are presented below:

Real Income 2019

Amount	Income	Respondents	Total Real Income	Total # of respondents	% of total Real Income	% of total # of respondents
<29698	17 197 932,67 ₸	817	18 195 059 031,93 ₸	114 432	0,09%	0,71%
>29698но <42500	43 893 274,83 ₸	1 198			0,24%	1,05%
>42500 но <162751	7 639 017 910,89 ₸	70 753			41,98%	61,83%
>162751 но <191000	2 558 154 914,11 ₸	14 413			14,06%	12,60%
>191000	7 936 794 999,44 ₸	27 251			43,62%	23,81%
Total	**18 195 059 031,93 ₸**	**114 432**	**100%**	**100%**	**100%**	**100%**

Table 1 - *Real Income*

From the Table 1, it can be seen that more than 817 people received incomes below the subsistence level. It is noteworthy that people with incomes above the subsistence minimum, but below the minimum wage, make up only 1% of the total number of people represented in the BNS's data. The largest amount of money and people earn in the range above the minimum wage but below the average salary of 2018. In 2019 the total income of 70,753 people amounted to over 7 billion KZT, or almost 42% of the income collected by the BNS. The incomes of people in the range of Average Wages in 2018 and 2019 amounted to 2.6 billion KZT and are represented by 14.4 thousand people. Only 27,751 people from this survey have a real income of over 191,000 KZT (the size of the Average Salary according to the BNS for 2019).

Thus, the HBS sample is biased to the left. This should not be surprising because such bias is typical for survey data, especially, for the surveys that collect income data. Richer people are often

overlooked by such surveys because they are reluctant to reveal their incomes. We must take this into account while analyzing the data.

4.2. Analysis of inequality

In this section, we analyze income inequality. The incomes of the population vary due to many factors, from the level of education, residence, type of activity, industry, gender and other factors. The HBS collects a fairly large range of data on personal incomes, and we will use several dimensions of population classification to understand the extent of income inequality.

We will consider the income inequality **between** different groups and **within** those groups. Those groups are:

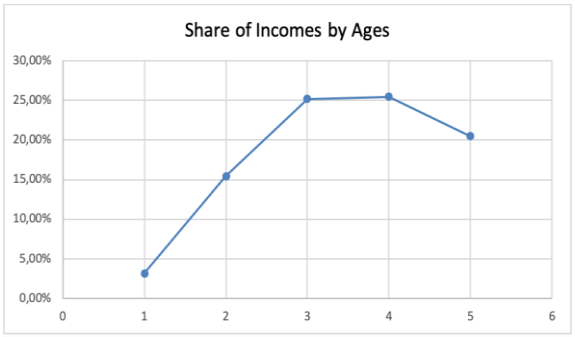
- people of different ages;
- wage earners (employees) and self-employed;
- men and women;
- people with different levels of education;
- people living in 16 country regions and the cities of Almaty and Nur-Sultan;
- people living in urban and rural areas;
- employees working in different industries;
- employees working in public and private companies.

Thus, we aim to assess how different are the incomes of people belonging to those groups and what are the main sources of income inequality in Kazakhstan.

We start by assessing income inequality by age group.

Fig. 4 *– Age-income profile*

HBS respondents' incomes distribution by age, KZT



HBS respondents' incomes distribution by age, %

Age groups:
1. from 15 to 23 years
2. from 23 to 30 years old
3. from 30 to 40 years
4. from 40 to 50 years
5. from 50 to 63 years old

Figure 4 shows the real incomes of respondents in the period from 2011 to 2019 by age category. The lowest income is represented by a group of people aged 15 to 23 years (only 3% of the total number of respondents, with a total income of 2.9 billion KZT). The highest income is formed by the age group from 40 to 50 years, which is well-established employees with rich experience (25.4% of the total number of respondents, the total income of the group is 23.5 billion KZT). These data correspond to the global trend of income formation among the population and confirm the theoretical dependency of productivity expressed in wages on experience expressed in age (Stansbury & Summers, 2017). According to this theory, over time, people's incomes grow from their experience as their productivity improves with experience, but at the end of their career, people's productivity and current earnings fall and "accumulated wealth" works for them. This relationship between age and earnings is known as the "Age Earnings Profile".

Table 2 - *Gini Index by employment status*

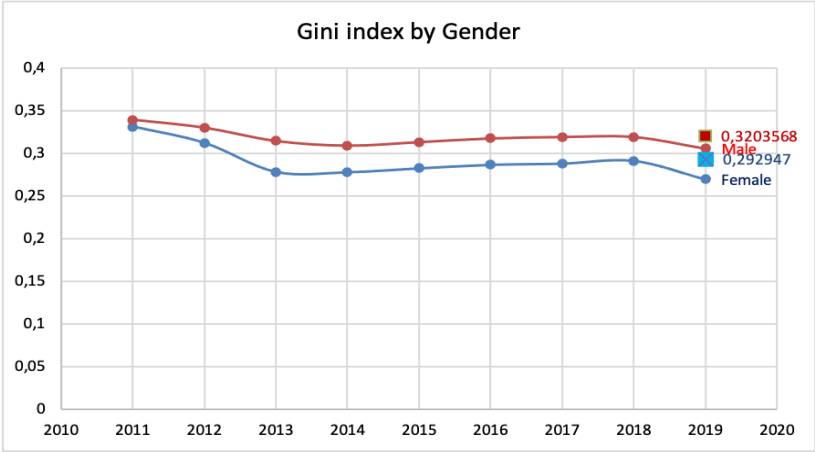
Gini Index			
Year	**Coeff.**	**Wage Earner**	**Self Employed**
2011-2019	0,32	0,31	0,84
2011	0,34	0,32	0,84
2012	0,33	0,31	0,86
2013	0,31	0,31	0,48
2014	0,30	0,30	0,42
2015	0,31	0,31	0,53
2016	0,31	0,31	0,44
2017	0,31	0,31	0,49
2018	0,32	0,32	0,40
2019	0,30	0,30	0,45

Table 2 presents calculations of the Gini coefficient for the polled sample by year and employment status. We found out that the Gini income coefficient for the pooled sample over the analyzed period was equal to around 0.3 without substantial variation across years.

However, we have also found a striking difference in income inequality both within and between employment status groups. The average income of a wage-earner in 2011-2019 was 159433.8 KZT, while the average wage of a self-employed was only 31980.6 or five times less. There is also a significant difference in within-group inequality: the inequality among self-employed is much higher. It also drops substantially over the period from 0.84 in 2011 to 0.45 in 2019 but still, it is higher than the inequality of wage-earners incomes. The first decade of the 2000s in Kazakhstan was the era of the fast-increasing incomes of the population that was driven by the oil boom. It is likely that not only did the absolute incomes grow during that period but also income inequality grew. It is well-known that inequality is higher when incomes are higher if redistribution is not sufficient. However, after 2014 Kazakhstan's GDP and population real incomes started stagnating due to the worsening economic situation and possibly this caused the decrease in income inequality. However, our result might not be very accurate due to a very small number of self-employed and requires further study.

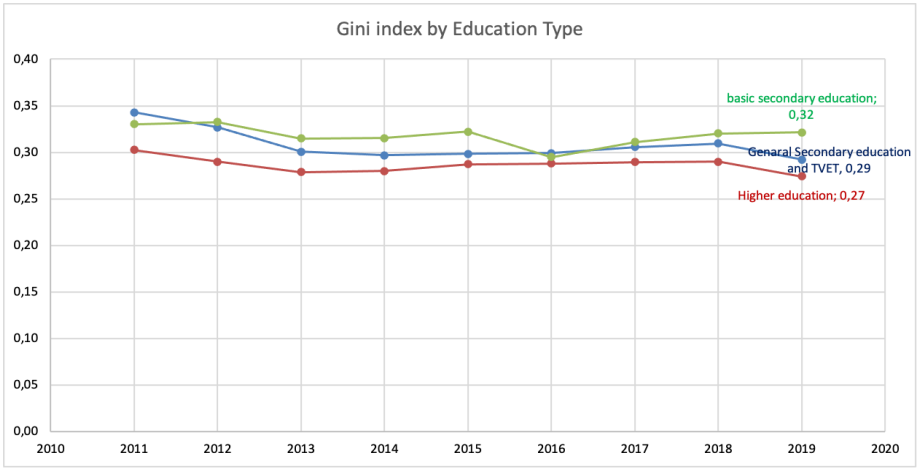
Gender is a typical source of income disparity in many countries. Kazakhstan is not an exemption. HBS data suggests that the average difference between the incomes of men and women was 30% over the observed period: men earned 1.3 times higher wages on average (178714.1 KZT versus 136143.4 KZT). We also see that males' wages are more dispersed (more unequal): the Gini index for men is higher than the Gini index for women (Fig. 5).

Fig. 5 - *Gender Gini index*



Education is another source of income inequality around the world. People with a higher level of education have better human capital and therefore tend to be employed in better-paid jobs. This is a reason why affordable good quality education is considered an important factor in decreasing income inequality and all countries invest in their education systems. In Kazakhstan, according to our data, the average real wage of a person with postgraduate education comprised 264783.68 KZT, while the average real wage of a person with secondary education was 116717.99 KZT or more than two times less. However, we have not found a substantial difference in the within-group inequality for these two characteristics: in both cases, the Gini coefficient is approximately 0.3 – figure 6.

Fig. 6 - *Gini Index by attained level of education*



In Kazakhstan, unlike in most developed countries, a place of residency is an important determinant of income. There are several regions that are economically successful (cities of Almaty and Nur-Sultan and oil-exporting western Kazakhstan regions) and the regions - economic outsiders (agricultural south and north). Also, people in rural areas are generally much poorer and the economic difference between large cities and small towns and villages has significantly increased during the period of independence.

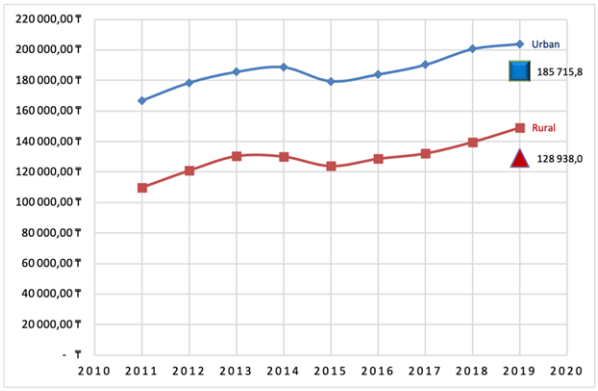
Table 3 - *Gini Index by Region*

Region	Average Income	Gini Coeff (2011-2019)	2011	2012	2013	2014	2015	2016	2017	2018	2019
Akmola	132 519,5 ₸	0,31	0,32	0,32	0,30	0,29	0,29	0,30	0,30	0,31	0,30
Aktobe	146 558,7 ₸	0,29	0,33	0,30	0,27	0,27	0,29	0,28	0,28	0,27	0,28
Almaty	148 613,7 ₸	0,22	0,25	0,25	0,22	0,22	0,20	0,21	0,21	0,22	0,21
Almaty city	221 899,4 ₸	0,27	0,29	0,27	0,25	0,24	0,25	0,27	0,28	0,27	0,25
Astana city	232 721,5 ₸	0,27	0,31	0,27	0,26	0,25	0,25	0,26	0,27	0,27	0,26
Atyrau	170 891,0 ₸	0,33	0,32	0,32	0,33	0,34	0,35	0,36	0,33	0,31	0,30
East KZ	137 543,7 ₸	0,30	0,34	0,31	0,27	0,27	0,28	0,29	0,30	0,30	0,29
Karaganda	161 103,0 ₸	0,32	0,33	0,34	0,32	0,32	0,30	0,31	0,32	0,32	0,32
Kostanai	133 873,6 ₸	0,32	0,37	0,35	0,30	0,31	0,30	0,30	0,30	0,30	0,29
Kyzylorda	136 734,2 ₸	0,30	0,36	0,33	0,30	0,28	0,28	0,27	0,27	0,29	0,27
Mangistau	247 815,6 ₸	0,35	0,31	0,31	0,33	0,34	0,37	0,37	0,37	0,37	0,35
North KZ	118 975,0 ₸	0,33	0,38	0,37	0,32	0,32	0,31	0,32	0,31	0,32	0,30
Pavlodar	136 770,4 ₸	0,26	0,31	0,26	0,24	0,24	0,23	0,24	0,27	0,28	0,26
Shymkent city	165 009,3 ₸	0,19	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0,19
South KZ	121 779,0 ₸	0,25	0,34	0,31	0,23	0,23	0,22	0,21	0,21	0,21	n/a
Turkestan	143 633,7 ₸	0,21	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0,21
West KZ	129 871,5 ₸	0,30	0,29	0,29	0,27	0,29	0,29	0,31	0,33	0,33	0,31
Zhambyl	131 947,9 ₸	0,23	0,23	0,24	0,23	0,23	0,22	0,23	0,23	0,23	0,23

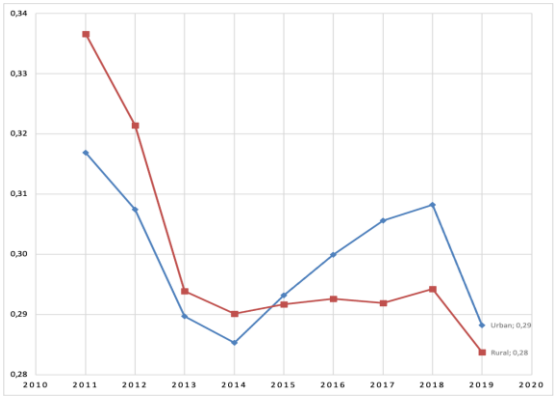
Indeed, with the HBS data, we have found that incomes vary substantially across the regions of Kazakhstan. The average earnings in Mangistau – the best paying region - were 247815.6 KZT over the analyzed period, while the average earnings in North Kazakhstan – the worst paying region – were only 118975.0 KZT or two times less. The within-group inequality is also substantial for regions: the Gini Index by region varies in the range from 0.25 to 0.35, which confirms the average level of income inequality in the population. In Table 3, it can be seen that income inequality is higher in the regions with higher incomes and lower in the regions with lower incomes. This is not surprising since higher incomes are often also more dispersed incomes. This means that not all residents of economically more successful regions receive high incomes, some of them might receive low incomes.

Urban or rural residency is indeed a source of income inequality in Kazakhstan: in 2011-2019, the average real wage was 185715.8 KZT in urban areas and 128938.0 or 1.4 times or 40% less. The pattern of higher inequality in the more economically successful groups that we saw in the region turned out to be the same for the residence: though Gini Index dropped both in urban and rural areas during the period, in 2019 it was slightly higher in an urban area than in rural.

Fig. 7 – *Incomes and Gini Index by residence*



HBS respondents' income by residence



Gini Index by residence

Finally, we look at the industry and a company where a person works as a source of income inequality.

Fig. 8 – *Total Income by Industry*

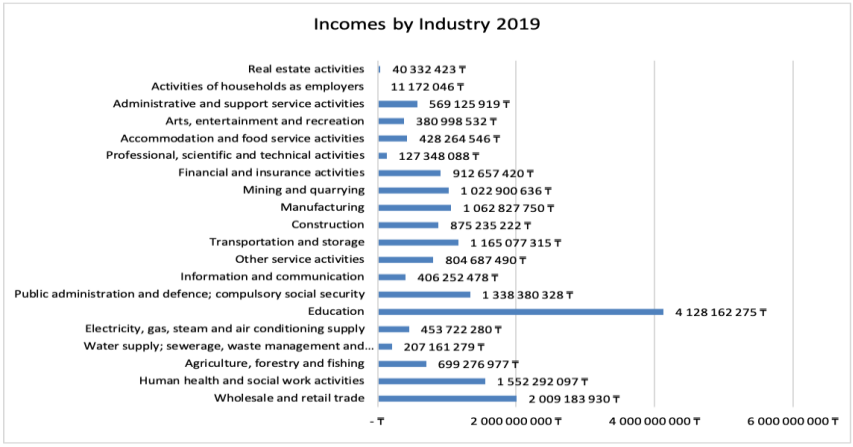
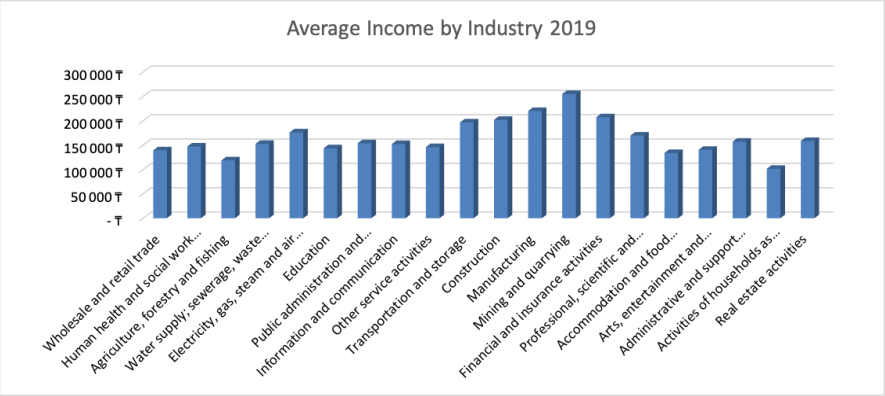


Fig. 9 - *Average Income by Industry*



Figures 8 and 9 show the respondents' incomes depending on their activities in a particular industry. For 2019, the largest income was generated by the education sector, however, this industry has relatively low wages since it employs many workers (more than 29 thousand respondents work in Education in our sample), and the productivity per worker is low. The highest-paid industry is mining and quarrying (255 thousand KZT), the lowest wages are in the field of agriculture.

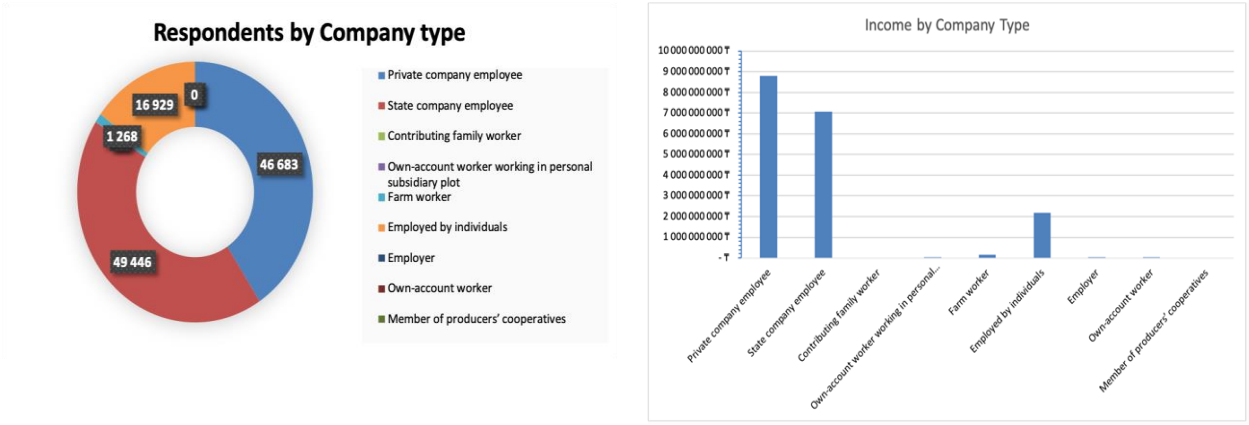
Table 4 - *Gini Index by Industry*

INDUSTRY	Average Income	Gini Coeff (2011-2019)	2011	2012	2013	2014	2015	2016	2017	2018	2019
Activities of households as employers	Low # of respondents	0,37	0,47	0,55	0,28	0,33	0,21	0,23	0,22	0,25	0,32
Mining and quarrying	256 756,30 ₸	0,32	0,30	0,31	0,32	0,33	0,34	0,33	0,33	0,32	0,32
Manufacturing	209 145,32 ₸	0,33	0,30	0,31	0,31	0,31	0,33	0,33	0,35	0,35	0,32
Financial and insurance activities	206 549,53 ₸	0,29	0,31	0,30	0,28	0,29	0,28	0,29	0,29	0,29	0,28
Activities of extraterritorial organisations	193 626,04 ₸	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Real estate activities	187 953,22 ₸	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Transportation and storage	183 112,87 ₸	0,28	0,31	0,30	0,26	0,25	0,26	0,27	0,27	0,28	0,26
Professional, scientific and technical activ	177 810,69 ₸	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Construction	176 876,37 ₸	0,30	0,34	0,32	0,30	0,28	0,28	0,29	0,29	0,30	0,28
Electricity, gas, steam and air conditioning	176 417,98 ₸	0,28	0,29	0,29	0,28	0,27	0,27	0,29	0,29	0,27	0,27
Public administration and defence; compu	162 667,47 ₸	0,29	0,29	0,29	0,30	0,29	0,30	0,30	0,31	0,30	0,28
Information and communication	161 189,70 ₸	0,31	0,31	0,31	0,31	0,31	0,30	0,30	0,31	0,32	0,31
Administrative and support service activit	151 994,86 ₸	0,30	0,31	0,30	0,28	0,27	0,28	0,28	0,33	0,31	0,30
Water supply; sewerage, waste managen	145 867,63 ₸	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Human health and social work activities	143 422,71 ₸	0,26	0,26	0,25	0,25	0,25	0,26	0,25	0,26	0,26	0,24
Other service activities	140 688,08 ₸	0,30	0,34	0,30	0,29	0,28	0,30	0,30	0,31	0,31	0,27
Wholesale and retail trade	136 520,46 ₸	0,32	0,39	0,36	0,30	0,30	0,30	0,30	0,31	0,32	0,28
Education	134 939,40 ₸	0,27	0,27	0,28	0,26	0,26	0,26	0,27	0,27	0,28	0,26
Accommodation and food service activitie	132 350,11 ₸	0,28	0,33	0,29	0,28	0,28	0,26	0,27	0,26	0,29	0,26
Arts, entertainment and recreation	132 328,55 ₸	0,30	0,31	0,30	0,30	0,26	0,28	0,28	0,30	0,31	0,29
Agriculture, forestry and fishing	104 040,82 ₸	0,31	0,42	0,37	0,27	0,27	0,27	0,29	0,28	0,27	0,27

Table 4 demonstrates the Gini coefficients by industry, on average, the indicator varies in the range of 0.3, however, similarly, as with the region and residence, the higher the incomes in the industry

the higher is within industry inequality. The variation between industries is also high: the average wage in the best-paid industry (Mining and quarrying; 256756.30 KZT in 2011-2019) is 2.5 times higher than the average wage in the worst-paid (Agriculture, forestry and fishing; 104040.82 KZT).

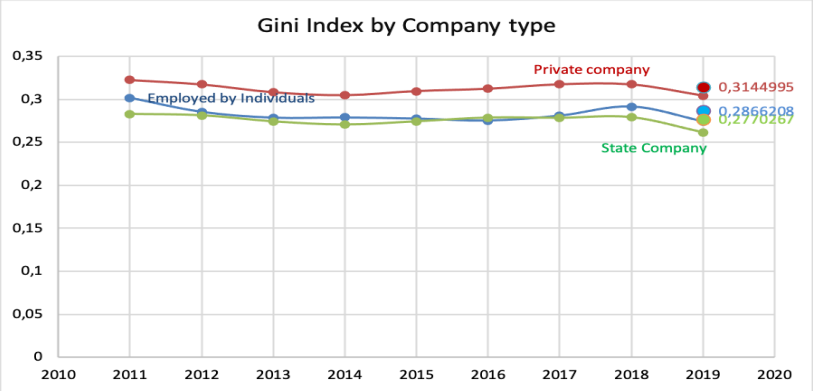
Fig. 10 – *Number of respondents and incomes by company type*



In accordance with the International Labor Organization classification, the HSB data presents 9 groups of respondents' employment (as shown in the left panel of figure 10), where three main groups state company employees, private company employees and respondents employed by individuals. Figure 10 suggests that the majority of citizens of the Republic of Kazakhstan prefer state-owned enterprises, the total number of employees of such enterprises in the sample is 49,446 people. The wages, however, are higher for employees of the second-largest group - private enterprises- they make up 48.26% of the total real income of the people who took the survey.

The wages of the private companies employees are 30% higher than the wages of the state-owned (public) companies and 50% higher than the wages of the employees working for individuals. The within-group inequality is also higher for the best-paid group of private companies (0.3) and somewhat more equal in the public sector and employees employed by individuals – figure 11.

Fig. 11 - *Gini Index by company type*



5. Conclusion

The aim of this study was to assess economic inequality in Kazakhstan and identify what causes it and what might be the consequences of economic inequality.

Based on the literature review, we understood that economic inequality might be caused by various factors and there are different types of economic inequality such as wealth inequality, income inequality, wage inequality and others. All of them in turn cause inequality of opportunities which limits human development, economic development and economic growth. Redistribution of incomes is the only way to tackle economic inequalities; for that, the government collects taxes and redistributes incomes from rich to poor by providing them with additional incomes and public goods. Many of the most successful countries redistribute a substantial part of the national income to equalize incomes and opportunities for their citizens.

We do not have access to the data on wealth inequality in Kazakhstan but there is evidence that it is very high. On the opposite, it is believed that income inequality is relatively low. We used the data collected by the Bureau of National Statistics with the official Household Budget Survey in 2011 -2019 to analyze income inequality in Kazakhstan. We compared the incomes of the survey respondents based on their characteristics and calculated the Gini index for the different groups determined by these characteristics to understand what the main causes of income inequality in Kazakhstan are.

We found out that official indicators of income inequality among the population of the Republic of Kazakhstan strongly correlate with our results – on average, the Gini index is around 0.3. However,

we noticed that the use of surveys to assess inequality has its weaknesses. Firstly, it does not allow us to evaluate wealth inequality. Secondly, the income curve collected with the survey is shifted toward the less wealthy and does not uncover the richest population's incomes. This is not at all surprising since the rich do not fully disclose their incomes in such types of surveys. Therefore, for more accurate calculations of the level of inequality, the Ministry of National Economy of the Republic of Kazakhstan, its territorial bodies and the International Conferences on Labor Statistics recommend the following: to take into account the actual data from the income of the population - social, tax deductions as well as other types of payments to the state budget instead of using the survey data.

With the HBS data, we discovered that people's incomes vary greatly depending on their status of employment, gender, level of education, place of residence and field and type of economic activity. Specifically, we found that approximately in all these groups the within-group inequality varies around 0.3 Gini index. However, the higher the incomes within a group the higher is inequality. This was the case for the distribution of incomes by gender (men have higher but more unequally distributed incomes than women), by region and residence (oil-producing regions' and urban residents have higher but more unequally distributed incomes than agricultural regions and rural residents), by industry and company ownership (more economically successful industries and private companies have higher but more unequally distributed incomes than less economically successful industries and public companies). This, however, turned out not to be the case for education where the between-group income inequality is higher than within-group inequality. Generally, we see that there is a trade-off between economic efficiency (profitability) and inequality and the government must balance them.

Despite that we found that income inequality calculated on the official survey data is not very high in Kazakhstan and comparable with some very effective countries like Sweden, income inequality topic is still relevant, and not only in Kazakhstan. Income inequality generates not only economic inequality but also social and mental inequality, as well as the danger of increased crime, social discontent, class stratification and social destabilization. In Kazakhstan, income inequality generates inequality of opportunity. For example, not everyone has access to quality education. Access to higher

education should be improved through targeted scholarship programs and measures to improve the quality of primary and secondary public education. The gap in education caused by different levels of family income has become even larger during the pandemic. Kuat Akizhanov (2022) draws attention that “Inequality between rich and poor has grown “too much” in society. The situation for low-income families is unenviable: these children attend not the best schools, receive not the best education, then graduate from not the best universities or do not graduate at all, get a low-paid job, become unproductive workers, and so it goes in circles”. Overall, the quality of public goods, such as education, healthcare, social protection, and their accessibility should become a priority for the government. Measures to reduce economic inequality will not only solve social problems but also contribute to long-term growth.

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