

THE IMPORTANCE OF MATHEMATICAL STATISTICS IN THE ECONOMY

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ABSTRACT

While reading this article you will be able to get acquainted with general facts about the theme, methods and main functions of statistics. In addition to this, the writer highlighted the important points according to the economic statistics of Uzbekistan recent years.

Keywords: Statistics, Representative sampling, manipulating, data analysis, descriptive statistics, inferential statistics, central tendency, synthetic data, pandemic management, recovery in investment.

INTRODUCTION

Statistics is the discipline that concerns the collection, organization, analysis, interpretation, and presentation of data. In applying statistics to a scientific, industrial, or social problem, it is conventional to begin with a statistical population or a statistical model to be studied. Populations can be diverse groups of people or objects such as "all people living in a country" or "every atom composing a crystal". Statistics deals with every aspect of data, including the planning of data collection in terms of the design of surveys and experiments. When census data cannot be collected, statisticians collect data by developing specific experiment designs and survey samples. Representative sampling assures that inferences and conclusions can reasonably extend from the sample to the population as a whole. An experimental study involves taking measurements of the system under study, manipulating the system, and then taking additional measurements using the same procedure to determine if the manipulation has modified the values of the measurements. In contrast, an observational study does not involve experimental manipulation. Two main statistical methods are used in data analysis: descriptive statistics, which summarize data from a sample using indexes such as the mean or standard deviation, and inferential statistics, which draw conclusions from data that are subject to random variation (e.g., observational errors, sampling variation). Descriptive statistics are most often concerned with two sets of properties of a distribution (sample or population): central tendency (or location) seeks to characterize the distribution's central or typical value, while dispersion (or variability) characterizes the extent to which members of the distribution depart from its center and each other. Inferences on mathematical statistics are made under the framework of probability theory, which deals with the analysis of random phenomena. A standard statistical procedure involves the collection of data leading to test of the relationship between two statistical data sets, or a data set and synthetic data drawn from an idealized model. A hypothesis is proposed for the statistical relationship between the two data sets, and this is compared as an alternative to an idealized null hypothesis of no relationship between two data sets.

Rejecting or disproving the null hypothesis is done using statistical tests that quantify the sense in which the null can be proven false, given the data that are used in the test. Working from a null hypothesis, two basic forms of error are recognized: Type I errors (null hypothesis is falsely rejected giving a "false positive") and Type II errors (null hypothesis fails to be rejected and an actual relationship between populations is missed giving a "false negative"). Multiple problems have come to be associated with this framework, ranging from obtaining a sufficient sample size to specifying an adequate null hypothesis. Measurement processes that generate statistical data are also subject to error. Economic statistics is a topic in applied statistics that concerns the collection, processing, compilation, dissemination, and analysis of economic data. It is also common to call the data themselves 'economic statistics', but for this usage see economic data. The data of concern to economic statistics may include those of an economy within a region, country, or group of countries. Economic statistics may also refer to a subtopic of official statistics for data produced by official organizations (e.g. national statistical services, intergovernmental organizations such as United Nations, European Union or OECD, central banks, ministries, etc.). Analyses within economic statistics both make use of and provide the empirical data needed in economic research, whether descriptive or econometric. They are a key input for decision making as to economic policy.

The subject includes statistical analysis of topics and problems in microeconomics, macroeconomics, business, finance, forecasting, data quality, and policy evaluation. It also includes such considerations as what data to collect in order to quantify some particular aspect of an economy and of how best to collect in any given instance. As an example, we can give some statistics according to the economy of Uzbekistan.

Uzbekistan	2020
Population, million	34.2
GDP, current US\$ billion	59.9
GDP per capita, current US\$	1,751
Life Expectancy at Birth, years	71.7

Uzbekistan has achieved substantial progress in transforming its economy and society since 2017. The Government is now moving on to the next stage of economic reforms to address structural constraints, such as the absence of factor markets and the state's economic dominance in the economy. Despite the COVID-19 pandemic, thanks in part to reforms to liberalize prices and remove barriers to domestic and international trade, the country's economy was one of the few in the Europe and Central Asia (ECA) region to avoid negative growth in 2020. The Government has announced its intention to halve poverty by 2026 and achieve upper-middle income status by 2030. These ambitious goals will require even greater efforts to accelerate Uzbekistan's economic transition to a sustainable and inclusive market economy. Over the medium term, in addition to growth and faster poverty reduction, the Government will also need to invest in stronger safety nets, better labor market conditions, and improved health and education services for citizens. In 2021, the country's GDP is expected to accelerate to 6.2 percent as the authorities strengthen pandemic management. Success will dep

improved global economic conditions and progress on structural reforms to increase private sector growth, reduce state dominance in the economy, and increase economic inclusion.

RECENT ECONOMIC DEVELOPMENTS

GDP growth in Uzbekistan increased to 6.2 percent in the first half of 2021 after slowing to 1.7 percent in 2020. Strong industrial and services growth tempered weaker growth in agricultural production. Robust increases in household income and domestic investment, as well as the continuation of anti-crisis spending and tax relief measures, also contributed to this year's strong growth. Inflation fell to 11 percent in June 2021 from 14.7 percent in June 2020. The unemployment rate fell to 10.2 percent in the first half of 2021 from 13.2 percent in the first half of 2020 and 10.5 percent at end-2020, but it has not yet returned to pre-pandemic levels (of 9 percent) and remains higher for women and youth. Total exports increased by 12.3 percent. Imports grew by 14.3 percent in the first half of 2021 due to higher private consumption and investment. The inflow of personal remittances (8.7 percent of GDP in the first half of 2021) only partially offset the negative trade balance, so the current account deficit widened to 10 percent of GDP in the first half of the year from 7.3 percent in the same period in 2020. The fiscal deficit was within budget at 5.4 percent of GDP in the first half of 2021. Lower policy-based lending and higher tax revenues offset higher budget spending on social support, health, and public infrastructure. Public debt, at 38.5 percent of GDP in the first half of the year, was lower than the 38.9 percent at end-2020. In 2021, growth is projected to accelerate to 6.2 percent. However, this forecast remains subject to uncertainties about the continued impact of further waves of COVID-19 on global and domestic economic conditions.

A recovery in investment, trade, and remittances will support economic growth and reduce unemployment and poverty in 2021. Growth is projected to remain strong at 5.6 percent in 2022 as the pace of vaccinations accelerates and global disruptions ease further. The current account deficit is projected to be 5.9 percent of GDP in 2021 as capital imports for investment projects recover and gold exports fall from record levels in 2020. Foreign direct investment is expected to remain subdued in 2021 and partially recover in 2022. The expansion of social assistance and public investments to improve rural infrastructure, along with cost of vaccinations, is expected to further elevate public spending in 2021. This will be partially offset by higher tax, mining, and privatization revenues, leading to a projected overall fiscal deficit of 5.5 percent of GDP in 2021. This will be financed by increased public debt that will reach 40.6 percent of GDP by end-2021. Uncertainties about the global recovery and an announced value added tax reduction in 2023 will contribute to a high medium-term fiscal deficit. The economic recovery, gradual withdrawal of anti-crisis measures, and widening of the tax base will help stabilize public debt at 42 percent of GDP by end-2023.

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