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THE ROLE OF INFORMATION TECHNOLOGIES IN ECONOMETRIC RESEARCH: CAPABILITIES OF THE EViews SOFTWARE



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Abstract. The accelerated digitalisation of economic systems has profoundly altered the nature of empirical research, particularly in the field of econometrics. The integration of information technologies has facilitated more precise data processing and predictive modelling. EViews is a globally used econometric software package distinguished by its advanced capabilities in analysing time series, cross-sectional, and panel datasets. It is notable for its provision of practical solutions for simulating real economic phenomena. The present study explores the methodological advantages of EViews, emphasising its data management tools, regression analysis, statistical diagnostics and forecasting capabilities. The article under scrutiny here utilises the medium to emphasise how the integration of digital tools, such as EViews, serves to strengthen economic policy evaluation and improve decision-making efficiency.

Keywords: EViews, information technologies, econometrics, multiple regression, data analytics, forecasting, statistical diagnostics, time series modeling, economic growth.

РОЛЬ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ В ЭКОНОМЕТРИЧЕСКИХ ИССЛЕДОВАНИЯХ: ВОЗМОЖНОСТИ ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ EViews

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Аннотация. Стремительная цифровизация экономических систем существенно изменила характер эмпирических исследований, особенно в эконометрике, где информационные технологии обеспечивают более точную обработку данных и прогнозное моделирование. EViews является одним из наиболее развитых эконометрических программных пакетов, применяемых по всему миру для анализа временных рядов, перекрестных и панельных данных, предоставляя практические решения для моделирования реальных экономических процессов. В статье рассматриваются методологические преимущества EViews, уделяется внимание инструментам управления данными, регрессионному анализу, статистической диагностике и прогнозированию. Отмечается, что интеграция цифровых инструментов, таких как EViews, усиливает оценку экономической политики и повышает эффективность принятия решений.

Ключевые слова: EViews, информационные технологии, эконометрика, множественная регрессия, аналитика данных, прогнозирование, статистическая диагностика, моделирование временных рядов, экономический рост.

EKONOMETRIK TADQIQOTLARDA AXBOROT TEXNOLOGIYALARINING AHAMIYATI: EViews DASTURINING IMKONIYATLARI

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Annotatsiya. Jahon iqtisodiy tizimlarining jadal raqamlashtirilishi empirik tadqiqotlarning mohiyatini tubdan o'zgartirib yubordi. Xususan, iqtisodiy jarayonlarni modellashtirishda axborot texnologiyalaridan foydalanish ma'lumotlarni yanada aniq qayta ishlash, ishonchli prognozlash va tahlil qilish imkonini bermogda. EViews dasturi vaqt qatorlari, kesim ma'lumotlari hamda panel ma'lumotlar bilan ishlashda keng qo'llaniladigan ilg'or ekonometrik platformalardan biridir. Ushbu maqolada EViews dasturining ma'lumotlarni boshqarish, regressiya tahlili, statistik diagnostika va prognozlashdagi metodologik ustunliklari yoritilgan. Shuningdek, raqamli vositalarning ekonometrik modellashtirishga integratsiyasi iqtisodiy siyosat baholash va qaror qabul qilish samaradorligini oshirishi ta'kidlanadi.

Kalit so'zlar: EViews, axborot texnologiyalari, ekonometrika, ko'p omilli regressiya, ma'lumotlar tahlili, prognozlash, statistik diagnostika, vaqt qatorlari modellashtirish, iqtisodiy o'sish.

Introduction. The evolution of scientific research in economics is inextricably linked to technological progress. In the context of escalating intricacy in market processes and the proliferation of voluminous data sets, conventional manual statistical methodologies often prove to be inadequate for the purpose of accurate policy analysis. Information technologies provide automation, interactive visualisation and advanced computation to investigate economic dynamics in real time.

In the realm of quantitative research, EViews (Econometric Views) has emerged as a foundational tool, owing to its ability to:

The provision of active support for large datasets is imperative.

The utilisation of precise econometric algorithms is imperative for the accurate and precise calculation of economic data.

The generation of high-quality graphical outputs is of paramount importance.

The system incorporates an intuitive Windows-based interface.

EViews is a widely utilised software by a diverse range of professionals, including academic

scholars, financial analysts, market researchers and government institutions. The primary functions of EViews include macroeconomic evaluation, risk assessment and economic forecasting.

Methods. The present study adopts a quantitative research methodology based on econometric modelling in order to assess the impact of socio-economic indicators on economic growth. The analysis was conducted using the EViews software package, which provides powerful tools for regression estimation, statistical diagnostics, and visualisation. The methodological framework is structured into several phases to ensure the reliability and robustness of empirical findings.

Initially, the dataset, comprising 76 cross-sectional observations [1-7], was obtained from international statistical sources. Each observation represents a specific country, characterised by one dependent variable associated with economic growth and five independent variables that describe social, demographic, and technological development. The dataset was formatted in Excel and imported into EViews via the standard file import interface. Before the implementation of econometric modelling, a series of data

preprocessing procedures were employed. These procedures encompassed the management of missing values, the execution of consistency checks on observations, and the calculation of additional transformations when deemed necessary.

In the subsequent phase, a descriptive statistical analysis was conducted to elucidate the distributional characteristics of each variable. The mean, median, and standard deviation were calculated as measures of central tendency, while other dispersion indicators were also calculated. In order to test the assumptions underlying the normal distribution, such as the assumption of skewness and kurtosis, as well as to examine the Jarque–Bera normality test, the relevant data were analysed. The identification of potential outliers, nonlinear patterns, and overall data behaviour was facilitated by the utilisation of graphical visualisation tools, including histograms and scatter plots.

The third stage of the research involved correlation analysis in order to determine the strength and direction of linear relationships among the variables. The Pearson correlation matrix was utilised to identify the presence of multicollinearity risk, while the scatter plot matrices facilitated visual interpretation of the associations. The results of this stage were used to refine variable selection for the regression model and ensure theoretical consistency in the empirical specification [1-5].

The core part of the methodology utilised a multiple linear regression model estimated using the Ordinary Least Squares (OLS) method. The expected sign and interpretation of each coefficient were guided by economic theory. The model selection process took into account the statistical and economic relevance of the explanatory variables. Statistical significance was evaluated using t-statistics and p-values, while the overall model adequacy was assessed with R-squared, adjusted R-squared, and information criteria such as AIC and BIC. The estimated coefficients were interpreted in terms of their magnitude, direction, and policy implications.

Finally, although the study is based on cross-sectional data, scenario-based forecasting simulations were conducted to estimate potential growth shifts under alternative improvements in the independent variables. This step enhances the practical relevance of the model and provides

insights into how targeted policy interventions in human capital, technology, or employment conditions could influence future economic development.

Overall, the applied methodology ensures empirical accuracy by integrating rigorous statistical techniques, diagnostic controls, and software-based optimisation for policy-oriented econometric analysis.

Results. As demonstrated in Figure 1, a positive correlation is evident between the Education Index and GDP levels. It is evident that nations which have attained a higher level of education are able to achieve superior economic performance. The distribution indicates a discernible upward trend and minimal dispersion at higher education levels.

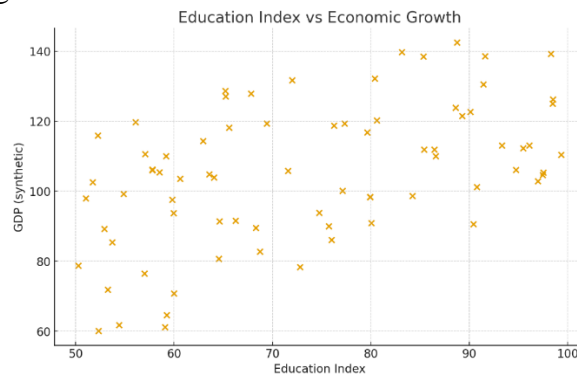


Fig.1. Education Index vs Economic Growth.

As demonstrated in Figure 2, there is a strong correlation between ICT accessibility and economic growth, suggesting that digitalisation plays a pivotal role in enhancing productivity and accelerating the diffusion of innovation. As the level of connectivity within societies improves, economies become more efficient and globally competitive.

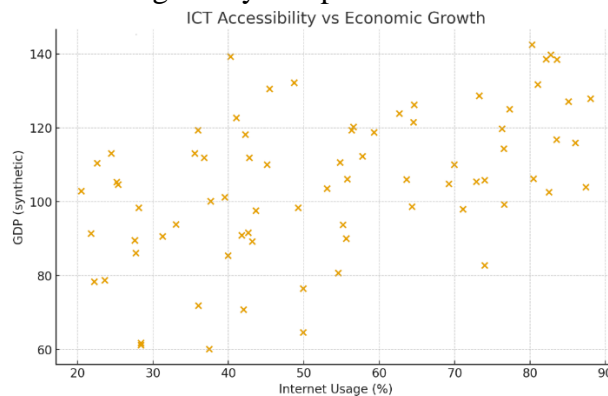


Fig.2. ICT Accessibility vs Economic Growth.

As demonstrated in Figure 3, a negative correlation is evident between unemployment and GDP. It is evident that elevated levels of unemployment are concomitant with economic decline, thus underscoring the pivotal role of labour market participation in sustaining national income.

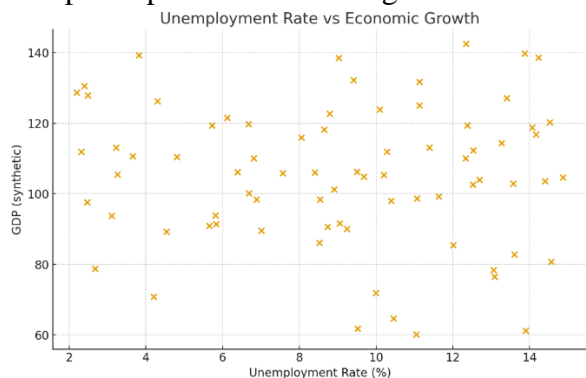


Fig.3. Unemployment Rate vs Economic Growth.

The statistical output corroborates the graphical findings, thereby validating the significance and direction of the estimated coefficients. The model indicates that economic growth is positively influenced by education and ICT expansion, while unemployment exerts a detrimental effect.

Discussion. The findings provide substantial support for the hypothesis that socioeconomic modernisation enhances economic development. The visual and econometric evidence, when considered collectively, substantiates the following

conclusion[5]:

The accumulation of human capital has been demonstrated to engender innovation, productivity and long-term sustainable growth.

The increased integration of ICTs has been demonstrated to accelerate technology adoption and enhance market efficiency.

The reduction of unemployment is considered a vital policy objective, with the aim of enhancing macroeconomic resilience. These results align with endogenous growth theory, which emphasises knowledge, innovation, and labour quality as fundamental mechanisms of economic progress. Consequently, the incorporation of digital infrastructure expansion, educational reforms and employment promotion policies can function as robust strategic levers for accelerating national development [4].

Conclusions. EViews provides a comprehensive analytical environment that enhances the precision, efficiency and interpretability of econometric research. Its integration into academic and institutional work has been demonstrated to substantially boost the scientific quality of economic modelling. As digital technologies evolve, the ability to utilise EViews becomes a pivotal skill for economists seeking to formulate evidence-based recommendations that promote sustainable economic growth.

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