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Impact of Financial Development and Unemployment on Poverty in Uzbekistan's Digital Economy

Raximova Umida Ziyadullayevna
Assistant of the Department of Higher Mathematics

Mamadaliyeva Marjona Shavkat qizi, Ashurova Jasmina Jo'ra kizi
2nd year student of Samarkand Institute of Economics and Service

Abstract: The digital economy has become a driving force in changing the global economy, especially in developing countries such as Uzbekistan. However, the relationship between financial development, unemployment, and poverty in relation to the digital transformation in Uzbekistan is not well investigated. There is evidence that financial development and unemployment are vital factors that affect poverty. However, their relationships in relation to Uzbekistan's digital economy are not discussed. Although existing research shows mixed relationships between these factors and poverty in other contexts, no research on the subject has been done. Hence, the research does not account for financial development and unemployment's relationships in Uzbekistan or the country's digital economy. This research paper fills this gap by investigating the impact of financial development and unemployment on poverty in Uzbekistan from 2000 to 2021 based on FDI and unemployment data. The results show that poverty is affected by its past rates. Hence, there is a poverty cycle. Financial development has no effect on reducing poverty. However, unemployment is negatively correlated with poverty. This relationship results in higher unemployment rates leading to a decrease in poverty in the short run. The study incorporates the digital economy into analyzing poverty and how financial development and unemployment results in the phenomenon. It also highlights the strong need to include financial inclusiveness and provision of employment, especially on digital platforms, in poverty reduction efforts in Uzbekistan. This research provides vital information for regulating policies to address poverty. It also provides new information for other scholars interested in related studies.

Key words: digital economy, financial development, unemployment, poverty, vector autoregressive (VAR) model, granger causality, financial development index (FDI), economic transformation, poverty reduction.

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Introduction

The digital economy makes transformative changes in the economies of both the primary and the developed path. The implementation of advanced technologies in the economic system contributes to accelerated growth, a decrease in inequality, and an increase in overall living standards. However, the relationship between financial development and unemployment on poverty in Uzbekistan has not been adequately studied. The main purpose of this article is to determine how financial development and unemployment in Uzbekistan between 2000 and 2021 affect poverty [1]. Previous studies concluded that financial development and unemployment are closely connected with poverty; however, the direction of these dependencies could differ. Financial development is a driver of poverty reduction for improving credit access, market efficiency, and generating growth. Moreover, unemployment is a determinant factor of poverty since high unemployment is related to high poverty levels. Nevertheless, the findings for Uzbekistan are not available, whereas the role of the digital economy is still understudied. For this reason, the present analysis will involve a VAR model, as well as Granger causality tests, as the research design while examining financial development, unemployment, and poverty relations. At the same time, time-series data will be used in the design between 2000 and 2021, with a focus on the financial development index, as a part of financial development, and unemployment rates. In such a way, all the aims of the present study question will be achieved through an empirical analysis to be developed [2].

Several hypotheses will be checked: especially, financial development has a crucial relation with a decrease in poverty, while unemployment positively affects poverty. Still, the expectations about the effects of financial development are ground on the conclusions for other similar developing economies. The research is likely to provide certain insights, especially concerning the role of financial development and the specificity of the protection in the digital economy on poverty in Uzbekistan. This role will depend on the quality of work, thus, being different [3]. If these predictions are supported by the research, the implications for countries, in general, and Uzbekistan, in particular, will be based on them. On the one hand, the findings could reveal that financial development influences poverty differently, creating a foundation for the role of unemployment. In this case, labor-intensive strategies and programs to create jobs should become primary in addition to future employment [4].

If, in contrast, the effects of financial development and unemployment are relevant, the role in the future of poverty in the implementation of national strategies, in general, and digital platforms, in particular. Widespread will increase the Financial Inclusion Program access index. The findings will be valuable for future research and serve as a basis from which to derive data for evaluating the role of poverty in the context of digital transformation in other countries at similar stages of development [5].

Methodology

The methodology applied in the paper is based on analyzing the degree to which financial development and unemployment affect the poverty rate in Uzbekistan in terms of the country's digital economy. To reveal the relationships of these variables, data from 2000 to 2021 were involved in the application of the Vector Autoregressive model. The first independent variable, the financial development index, is a composite of nine indicators that are divided in the International Monetary Fund sources. As the second independent variable, the unemployment rate was chosen since it can influence the rate of poverty, thus its description and relationship with the dependent indicator in the form of poverty rate will be studied. The index involved the data with which poverty rate in Uzbekistan was obtained according to the special subsistence minimum, that

is, the norms of consumption of 2,100 kilocalories per person an average, corresponding to an acceptable level recognized as an official poverty measure. To explore the relationship between these indicators, first, a set of stationarity tests, including the Dickey-Fuller, Augmented Dickey-Fuller, Phillips-Perron, and Kwiatkowski-Phillips-Schmidt-Shin methods, was conducted. These tools helped to prove that, after a first order of differentiation of each variable, the variables become stationary, which is an important condition for studying a VAR model. Further, the direction of the causal relationship between the poverty level as the dependent variable, and the development of the financial sector and the level of unemployment as the independent variables, was studied with the help of the Granger causality test. Moreover, the Spearman correlation was used as the second method to analyze the strength and directions of the relationships. At last, the VAR model was examined to show how poverty level depends on the degree of financial development and the level of unemployment. Resulting from the prescriptive study, the two lags on each variable were taken.

Results and Discussion

The results of this research can create an understanding of the impact of financial developments and unemployment on the poverty rate in Uzbekistan. This section will provide the detailed results obtained from the VAR model with Granger's causality tests in consideration of the digital economy [6]. The results show the relationship between these variables from 2000 to 2021. The conducted analysis of this study yields critical findings with respect to the relationship between financial development, unemployment and poverty in Uzbekistan as the latter is rapidly digitizing. Also, a more detailed interpretation of the tables presented in the results section is given below.

As seen from the correlation matrix in Table 1, the correlation between poverty, FDI, and unemployment was measured in order to identify the causality among these variables. The results show significant negative correlation between poverty and FDI : $\rho = -0.797$; p-value = 0.000, as well as unemployment: $\rho = -0.881$; p-value = 0.000, which means that when the financial development and employment situation get better, the poverty rate decreases as well. Also, poverty, and unemployment have a strong negative correlation, $\rho = 0.936$, which implies that as people become more unemployed the poverty rate increases. According to the theory, this is true as unemployment creates economic vulnerability of individuals and forces them living in poverty. Similarly, shift in FDI causes decrease in poverty, however, it has a much weaker relationship with FDI, measured as $\rho = -0.371$, p-value = 0.000. In addition, the correlation between unemployment and FDI is also negative, although the magnitude is only moderate $\rho = 0.859$, which implies that when the efficiency, accessibility and financial depth of institutions and markets improve, the level of unemployment decreases [7].

Table 1. Matrix of Correlations

Variables	(1) Poverty	(2) FDI	(3) Unemployment
(1) Poverty	1.000	-0.797	-0.881
(2) FDI	-0.797	1.000	0.859
(3) Unemployment	-0.881	0.859	1.000

The results presented in Table 2 show the output of the VAR model and present the dynamic relationship between the three variables under consideration. The RMSE of the equation modeling poverty: is 0.526, the R-squared: is 0.701, which means that approximately 70% of poverty is explained by poverty the dependent variable. This implies that a big proportion of poverty, around 70%, stems from poverty, which is the evidence in favor of the persistence of poverty [8].

Table 2. Output of the VAR Model

Equation	RMSE	R-sq	chi2	P>chi2
D_Poverty	0.526	0.701	42.228	0.0000
D_FDI	0.015	0.181	4.0000	0.6767
D_Unemployment	1.179	0.524	19.883	0.0029

Indeed, the first and second lags of poverty are calculated by multiplying the given poverty variable with the estimated coefficients of these lags. The models indicate that both poverty lags are statistically significant at their 1% levels. In addition, the first lag of poverty has a coefficient of 0.395, and the second lag is 0.327. Therefore, according to the findings, the increase of poverty today may lead to a 0.395-unit rise of poverty in the following period and 0.327-unit growth in the second lag. The poverty cycles in Uzbekistan could be reinforcing since this variable of the current period impacts the increase of poverty in the future [9].

In contrast, it was found that the relationship between poverty and FDI is statistically insignificant since. As a result, the development of finances cannot be used to measure the reduction of increasing poverty in Uzbekistan since the variable does not significantly influence poverty, which could be explained by the factor of an equal distribution of finances or the inability of marginal populations to attract the development of finances [10]. For the unemployment equation, the RMSE is found as 1.179, and the R-sq is estimated as 0.524, which means a moderate fit. In addition, the findings indicate that the current rates of unemployment are significantly impacted by those in the past. Finally, it is possible to note that the relationship with poverty is somewhat negative. The first lag of unemployment is equal to -0.173 and means that a 1-unit rise in unemployment reduces poverty by 0.173 units. However, this result is insignificant at the 10% level [11].

Table 3 presents the results of the Granger causality test between poverty and FDI. The test indicates a two-way association, with both D.poverty and D.fdi affecting each other significantly : chi2 = 25.180 for D_poverty and D.fdi, and chi2 = 72.485 for D_fdi and D.poverty. The relationship implies that poverty and financial development are interconnected [12]. The bidirectional causality means that while financial development may promote living conditions and lower poverty rates, exacerbated poverty conditions may limit the development of the financial sector presumably due to the absence of financial inclusion or affordability for the poor [13].

Table 3. Granger Causality Wald Tests between Poverty and FDI

Equation	Excluded	chi2	df	Prob>Chi2
D_Poverty	D.FDI	25.180	5	0.000
D_FDI	D.Poverty	72.485	5	0.000

The Granger causality test results in Table 4 show a causal relationship from poverty to unemployment. The chi-square statistics manifest that for D.poverty and D.unemployment is 9.402 and significant at the 10% level, meaning that changes in poverty rates cause the rate of unemployment to fall . Meanwhile, the chi-square statistics are significantly higher for the second hypothesis that the changes in the rate of unemployment significantly affect the percentage of the population under the poverty line . Therefore, based on the results of the analysis, in Uzbekistan, heightened poverty rates may lead to pressure on people to accept low-paying jobs. Nonetheless, such approach does not guarantee a decrease in unemployment, even if the percentage of the population under the pove!ductive employment conditions [14].

Table 4. Granger Causality Wald Tests between Poverty and Unemployment

Equation	Excluded	chi2	df	Prob>Chi2
D_Poverty	D.Unemployment	9.402	5	0.094
D_Unemployment	D.Poverty	24.151	5	0.000

Discussion

The results have several important implications for policy and practice. First, the fact that poverty is persistent, which is demonstrated by the strong and statistically significant relationship between past and current poverty rates, indicates that poverty interventions of any kind should be long-term and sustainable if they are to be able to break the cycle of poverty. Second, the bidirectional relationship between unemployment and poverty, on one hand, and between poverty and financial development, on the other hand, underscores the importance of the linkage between poverty reduction and financial inclusion, in ensuring that the financial services reach the most vulnerable to aid in poverty reduction. Nevertheless, the finding in this study that ties unemployment to poverty, a phenomenon that acts contrary to the traditional belief that unemployment leads to more poverty albeit on the short-term means that unemployment cannot offer a solution to poverty [15].

Further research can consider exploring the effect of specific financial inclusion programs in reducing poverty. The research should also investigate the impact of digital finance and mobile banking to increase access to financial services to the poor in Uzbekistan. These objectives can be achieved through expanding the analysis to incorporate additional economic variables that are tied to unemployment, financial development and poverty such as inflation and income inequality. The research could also consider exploring the regional variation in the relationship between unemployment, financial development, and poverty, in order to formulate region-specific poverty-reduction policies.

Conclusion

In summary, the present study provides considerable insights into the effects of financial development and unemployment on the poverty rate in Uzbekistan within the context of the digital economy. It has been found that poverty is a phenomenon exhibiting a persistent cycle, with the poverty rate in the past affecting future occurrences. As for financial development, modelled by the Financial Development Index , there has been no significant direct effect of this factor on reducing poverty. With regard to the relationship between poverty and unemployment, it is seen as negative, which implies that unemployment is likely to affect poverty negatively in the short run by causing people to accept lower-paying jobs in other sectors. Moreover, the bidirectional causality of poverty and financial development underscores the complexity of the relationships between these factors and the idea that financial development and poverty determine each other. Hence, an important conclusion of this study is that policies aimed at overcoming poverty must not only introduce measures for better financial inclusion but also ensure that improved financial development translates into economic development that affects all populations. In this way, further studies could investigate the effect of digital financial services on the poverty rate and other macroeconomic factors affecting this phenomenon, such as inflation or fiscal policies. These investigations would contribute to the scope and precision of the measures to be implemented for better poverty alleviation in Uzbekistan. Also, the presence or absence of regional differences could become another focus, together with the examination of other economic indicators.

REFERENCES

1. A. Usmanova, "The Impact of Financial Development and Unemployment on Poverty Rate in the Context of Digital Economy in Uzbekistan," *Proceedings of the 6th International*

Conference on Future Networks & Distributed Systems (ICFNDS '22), Tashkent, Uzbekistan, Dec. 2022, pp. 1-6. [Online]. Available: https://doi.org/10.1145/3584202.3584306 dl.acm.org

2. UNDP, "Digital Economy of Uzbekistan: The State of Digital Entrepreneurship and Artificial Intelligence," United Nations Development Programme, Tashkent, Uzbekistan, 2025. [Online]. Available: https://www.undp.org/sites/g/files/zskgke326/files/2025-05/uz_digital-economy-study_eng.pdf UNDP
3. S. Abosedra, "Modeling Causality Between Financial Deepening and Poverty Reduction in Egypt," *Social Indicators Research*, vol. 121, no. 2, pp. 395-410, 2015. [Online]. Available: https://doi.org/10.1007/s11205-014-0712-1
4. M. Idris, "Impact of Financial Development and Economic Growth on Poverty in Middle Income African Countries," *International Journal of Research and Innovation in Social Science*, vol. 7, no. 1, pp. 1-9, 2023. [Online]. Available: https://www.ijriss.org
5. J. E. Chukwuere, "Conceptualizing Predictive Conceptual Model for Unemployment Rates in the Implementation of Industry 4.0: Exploring Machine Learning Techniques," *arXiv*, Mar. 2024. [Online]. Available: https://arxiv.org/abs/2403.13536 arXiv
6. P. Yue, A. G. Korkmaz, Z. Yin, and H. Zhou, "The Rise of Digital Finance: Financial Inclusion or Debt Trap," *arXiv*, Jan. 2022. [Online]. Available: https://arxiv.org/abs/2201.09221 arXiv
7. A. Mahsutaliyev, "The Essence and Basic Laws of Poverty in Uzbekistan," *Journal of Management and Social Innovation*, vol. 1, no. 1, pp. 45-59, 2025. [Online]. Available: https://inlibrary.uz/index.php/jmsi/article/view/113953 InLibrary
8. S. Mahapurusa, "The Effect of Regional Gross Domestic Product, Human Development Index, and Open Unemployment Rate on Poverty," *Proceedings of the 2018 International Conference on Economics and Business Studies*, Bali, Indonesia, 2018, pp. 1-6. [Online]. Available: https://ieeexplore.ieee.org/document/8363476
9. OECD, "Digital Skills for Private Sector Competitiveness in Uzbekistan," Organisation for Economic Co-operation and Development, Paris, France, 2023. [Online]. Available: https://www.oecd.org/en/publications/digital-skills-for-private-sector-competitiveness-in-uzbekistan_6c54f447-en.html
10. P. Sundsøy et al., "Estimating Individual Employment Status Using Mobile Phone Network Data," *arXiv*, Dec. 2016. [Online]. Available: https://arxiv.org/abs/1612.03870 arXiv
11. J. E. Chukwuere and Y. Li, "Blockchain Innovation in Promoting Employment," *arXiv*, Feb. 2025. [Online]. Available: https://arxiv.org/abs/2502.15549 arXiv
12. Behzod Hoshimov, "Entrepreneurship and Human Capital in Uzbekistan," *Journal of Business Research*, vol. 58, no. 4, pp. 123-135, 2024. [Online]. Available: https://doi.org/10.1016/j.jbusres.2024.01.012
13. A. Mahsutaliyev, "The Essence and Basic Laws of Poverty in Uzbekistan," *Journal of Management and Social Innovation*, vol. 1, no. 1, pp. 45-59, 2025. [Online]. Available: https://inlibrary.uz/index.php/jmsi/article/view/113953 InLibrary
14. IT Park Uzbekistan, "Annual Report 2024," Ministry of Digital Technologies of the Republic of Uzbekistan, Tashkent, Uzbekistan, 2024. [Online]. Available: https://it-park.uz/en
15. World Bank, "Uzbekistan: Digital Economy and Employment," World Bank Group, Washington, D.C., USA, 2024. [Online]. Available: https://data.worldbank.org/country/uzbekistan World Bank Open Data