



E-ISSN: 2706-8927
P-ISSN: 2706-8919
www.allstudyjournal.com
IJAAS 2020; 2(3): 01-05
Received: 02-05-2020
Accepted: 05-06-2020

Tokhir Shomurodov
Phd Student of School of
Economics, Beijing
Technology and Business
University, China

Yang Hong`en,
Associate Professor of School
of Economics, Beijing
Technology and Business
University, China

Mamarakhimov Bekzod,
Researcher of Tashkent State
University of economics,
Tashkent, Uzbekistan

Ziyodullayev Khushnud
Phd student of School of
Economics, Beijing
Technology and Business
University, China

Corresponding Author:
Tokhir Shomurodov
Phd Student of School of
Economics, Beijing
Technology and Business
University, China

Analysing the factors effecting on unemployment rate and recent trends in labour market of Uzbekistan

Tokhir Shomurodov, Yang Hong`en, Mamarakhimov Bekzod and Ziyodullayev Khushnud

Abstract

This article analyzes the impact of economic growth (GDP), inflation and population growth on unemployment rate and the significance of the relationship among them in Uzbekistan. Such significant relationships are among the variables that are proven by performing OLS method altogether testing their normally distribution by Jarque-Bera. Literature reviews and related journals and articles are searched to support our findings though. The impact of economic growth, inflation and population growth on the unemployment rate, and the significant link among them, have shown that only high levels of economic growth, population growth rate have strong impact on unemployment rate, 1% increase in these independent variables have led to a certain reduction in the unemployment rate. In contrast to the study articles and scientific research, we find that the increase in the number of population leads to a decrease in the unemployment rate by 0.014 percent. It has been scientifically and practically analyzed in the article during the discussion on why such a result has occurred. Conclusions and results were compared with other scientist and researchers' findings and conclusions.

Keywords: Unemployment, GDP Growth, Labor Force Distribution, Labor Productivity of Structures, Relative Labor Productivity of Regions

Introduction

It's known that labor force is one of the factors of production process, which makes any good valuable by its impact. Therefore reproducing and distributing labor force efficiently are important tasks on micro and macro level. One of the earliest and clearest definitions about labor force and functions were studied by the works of A. Smith¹ and K. Marx². Even though the economists studied the labor force by different approaches, yet both sought to show the crucial role of labor for in the economy. Since then, many researchers have been done on the relationship between unemployment and other sets of macroeconomic variables but little attention is paid on the main determinants of unemployment. Unemployment rate is sustainable in Uzbekistan, yet it is one of the hottest issues of the country, since every year thousands of young enter the labor market hoping to find new job opportunities and it impacts on the increasing supply level of labor market and unemployment rate. This paper determines the main factors of unemployment i.e. GDP growth, inflation rate and population growth rate in circumstance of Uzbekistan economy. In our model GDP growth, inflation rate, population growth as independent variables and unemployment are taken as dependent variable. In this paper we employed OLS modelling, Jarque-Bera Test for testing normal distribution of our variables. Paper uses the data is obtained from economic survey of Uzbekistan for the period of 2000-2017.

At the same time, the statistical data on the number of labor force in Uzbekistan has been analyzed in terms of its level of employment in the industrial sector, the productivity ratio and the existing labor force distribution in the regions, as well as its trends. It is well known that, great deal of research and development were done on this subject, therefore, we believe that the statistical data and results that were used, would help future observations of economists and researchers, politicians and international organizations that want to explore labor force and unemployment rate in Uzbekistan.

The second section deals with the literature review, theoretical framework. Third section focuses on trends of labor force and its productivity by regions and industries of Uzbekistan.

¹ Smith, Adam. The Wealth of Nations, 1776 (Reprinted in New York: Modern Library, 1965).

² Karl M. "Capital", 1867, (Progress Publishers Moscow, 1887)

Section fourth illustrates data collection and modelling. Fifth section presents empirical results of gross domestic product, inflation rate, population growth and unemployment. Conclusions and recommendations are represented in section 6 of the paper.

Literature review

On his studies Pissarides ^[21] (1990) did research on, by combining theoretical framework and mathematic modelling, relationship between unemployment and economic growth. And found that there is a negative nexus between unemployment and growth, this negative nexus is called capitalization effect.

One of the eminent economic laws representing linkages between economic growth and unemployment is Ouken's law. Theoretically, increase in the unemployment rate by 1 percent leads to a decline in potential GDP by more than 2 per cent when other factors are holding constant. This law implies a relative relationship between unemployment and economic growth. One of the scientific innovations in this article is to examine A. Ouken's law in reverse connection, for example, how GDP per 1% change on the unemployment rate? How does this theoretically proven fact correspond to the practical application of the law? That is to find a solution to such questions.

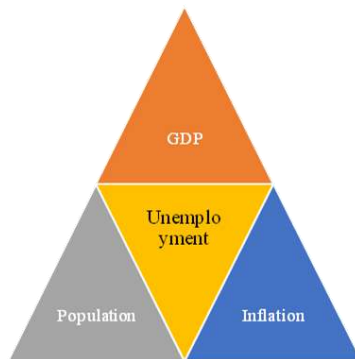


Fig 1.1: Relationship pyramid of Macroeconomic Factors Affecting Unemployment Rate

Aghion and How it ^[4] (1994) studied the relationship between growth and unemployment. The researchers came across a new theoretical nexus between growth and unemployment variables. The new founding is called “the creative destruction effect”, that illustrates a positive correlation between growth and unemployment. In contrast, pool of saving effect which causes an inverse relationship between unemployment and growth Bean and Pissarides ^[21] (1993).

According to Acemoglu ^[3] (1997) unemployment positively impacts on economic growth without a social planning, this conclusion is made by the effect of the coordination failure. In their study, Herwartz and Niebuhr ^[13] (2011) states that the growth and unemployment nexus differs across countries and depends on labor market framework (unions' bargaining power, unemployment benefits, etc.). Additionally, labor market imperfections (estimated unemployment replacement ratio and union density) negatively effects on economic growth in the long run Carmeci and Mauro ^[8] (2003).

Aurangzeb and Asif ^[6] (2013) observed three main macroeconomic factors such as GDP growth, exchange rate and population in three countries India, Pakistan, and China.

Researcher employed regression analysis, granger causality, and co-integration. According to his results the all employed independent variables have significantly impact on unemployment rate in observed countries in the regression analysis. Granger causality is not determined for all three countries. Indeed, unemployment rate and GDP growth have positive and significant relationship in Pakistan, because of high level of poverty and lack of policy on utilization of FDI of this country.

Haug and King ^[12] (2014) investigated the relationship between inflation and unemployment rate, by taking years from 1952 to 2010 and found that an increment in unemployment rate will always cause a higher inflation rate about three years after, it means that there is a positive and significant relationship of inflation towards unemployment rate.

Furuoka and Munir ^[11] (2014) studied relationship of unemployment and inflation and their findings support theory of Phillips curve. According to outcome of their observation unemployment rate is negative correlated with inflation in Malaysia. Phillips curve illustrates trade-off between inflation and unemployment rate. It is based on demand and supply in labor market, in the situation of higher demand for labor force than supply, wages tend to increase and due to increased wages inflation rate will go up and causes lowered unemployment rate.

Rigas, Theodosiou, Rigas, and Blanas ^[15] (2011) tested whether the Oukn's law is still available today's economic environment by employing data during the period from 1960 to 2007 taking in to account unemployment and real GDP of three countries France, Greece, and Spain. Concluded from their findings, proved that an inverse relationship between unemployment and real GDP employing first differences model, as a result of incongruity in the productivity growth of the countries led different correlations in Greece than France and Spain. According to Neely ^[9] (2010) Oukn's law doesn't work very well in the most industrialized economies, unemployment rate tends to vary less than for a given change in GDP. Since in these countries labor market is free and not heavily controlled by the government, therefore employers are able to fire their employees easily during economic recession. He stated that Oukn's law should be studied according to changes over the period such factors as technology, law, and preferences.

Raurich and Sorolla ^[28] (2014) examined correlation between GDP growth and employment, on the basis of long term real wage inertia in. They concluded that a decline in GDP growth leads permanent drop off the employment rate by considering the real wage inertia.

Bakare ^[7] (2011), studied the causes of urban unemployment in Nigeria from 1978 to 2008. His estimations proved that population growth has positive relationship with unemployment rate. Population growth in Nigeria leads labor force growth, therefore, the demand of jobs exceeds the supply of jobs causing high unemployment rate.

Recent Trends of Labor Force and Unemployment Rate

In 2018, the unemployment rate in Uzbekistan was 9.3%, and for the first time in the history of Uzbekistan, the number of people employed in the official sector of the economy exceeded 300,000.

Table 4.1: Labor force, employment and unemployment rate³

	Number of labor force (1000 p)	division		Activity rate of population, (%)	Employed, (%)	Unemployed, (%)
		employed	unemployed			
2010	12286.6	11628.4	658.2	70.7	66.9	5.4
2011	12541.5	11919.1	622.4	69.7	66.2	5.0
2012	12850.1	12223.8	626.3	70.0	66.6	4.9
2013	13163.0	12523.3	639.7	70.5	67.1	4.9
2014	13505.4	12818.4	687.0	71.3	67.7	5.1
2015	13767.7	13058.3	709.4	71.9	68.2	5.2
2016	14022.4	13298.4	724.0	72.5	68.7	5.2
2017	14357.3	13520.3	837.0	73.5	69.2	5.8
2018	14641.7	13273.1	1368.6	74.3	67.4	9.3

In 2018, the Republican Scientific Center for Employment and Labor Protection of the Ministry of Employment and Labor Relations conducted a social survey in 104 cities and districts of the country. The survey covered 462 citizens 'self-government bodies, 4,880 households and 25,925 citizens.

An analysis of the survey results showed that the unemployment rate for the economically active population was 9.3%, which is 3.5% higher than the corresponding period of 2017. The highest unemployment rates were registered in Kashkadarya, Syrdarya and Fergana regions - 9.4%, and the lowest - in Tashkent (7.7%).

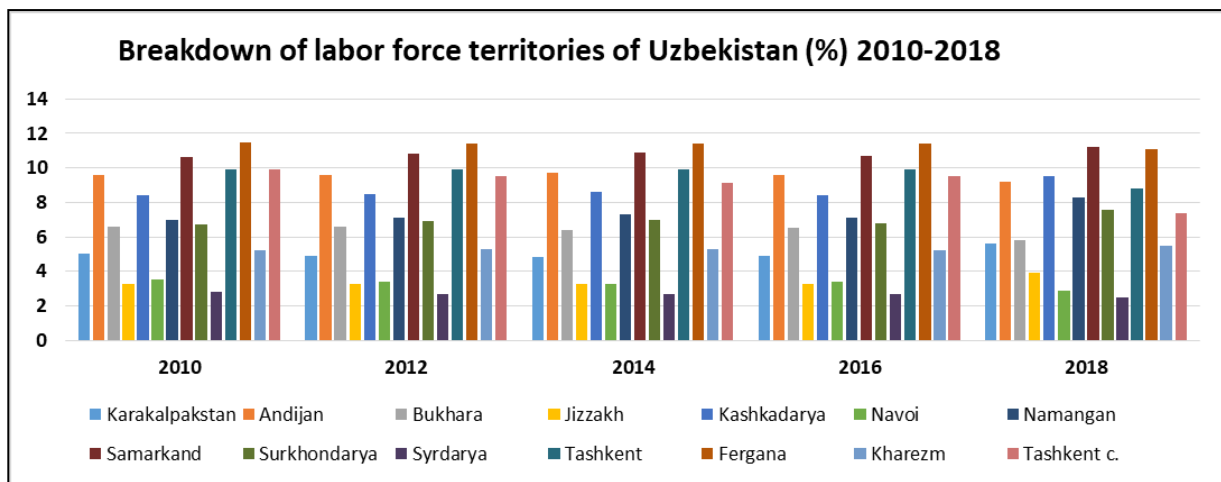


Chart 4.1: Breakdown of labor force territories of Uzbekistan (%) 2010-2018

The number of people in need of employment is 1,342.6 thousand people, the unemployment rate among young people (under 30) is 15.1%, among 15-25-year-olds - 16.8%, and among women - 12.7%. did. The number of labor resources was 18,964,000, an increase of 1% compared to January-June 2018. The number of economically active population increased by 181.5 thousand or 1.2% compared to the same period in 2018. The number of economically inactive population was 4,213.0 (an increase of 0.1%), with an increase of 4.4% in the number of women on maternity leave, maternity leave or child care for children under 2 years of age. explained. It should be noted that the number of people who voluntarily lost their jobs fell sharply from 805.6 thousand to 734 thousand (8.9%), which means an increase in labor and entrepreneurial activity.

Data and Modelling

This paper based on time series data, all data is secondary data and taken from official website of Statistical Committee of Uzbekistan covering the period from 2000 to 2018. Impact of regressors on the regressand is studied by OLS method altogether testing normality distribution of variables by Jarque-Bera test.

$UN_t = \beta_0 + \beta_1 \ln INF_t + \beta_2 \ln GDP_t + \beta_3 \ln POP_t + \mu_t$ (1) In our model we choose unemployment rate (UN) dependent variable, while inflation rate (INF), GDP growth (GDP) and population growth (POP) are taken as independent variables, since according theory these macroeconomic indicators highly effects on unemployment rate, β_0 here comes for constant term, β_1 , β_2 and β_3 are regression coefficients.

Most economists take into consideration that inflation the main disaster to affect employment rate most of the time. But in macroeconomic field there are some inverse ideas prove that there is positive relationship between unemployment rate and inflation. Vermeulen^[24] (2015) and Yelwa, David, and Awe^[29] (2015) according to their observations found that inflation and unemployment has a negative relationship both in the short and long term. Philip Curve has great contribution understanding and comprehension for economists and policy makers when it comes to the analysis between inflation and unemployment (Furuoka & Munir^[11], 2014). Moreover, there is research denying on the validity of Phillip Curve as well. Based on Alisa^[5] (2015), they concluded that, Philip Curve did not apply to short or long run. We also try to prove that, either there is positive or negative relationship between

³ source: Statistical committee of the Republic of Uzbekistan www.stat.uz

unemployment and inflation in Uzbekistan. Economists put forward different conclusions and opinions about relationship between GDP growth and unemployment nexus. A group of researchers argue that economic growth and unemployment experiences significant relationship. Yet Okun’s law states that: there is negative relationship between GDP growth and unemployment. This theory is proved by Abdulla ^[1] (2012) and Zivanomoyo & Mukoka ^[30] (2015). However, some empirical studies are not agree with Okun’s Law, stating that Okun’s Law does not give complete information for economic growth and unemployment rate Kreishan ^[16] (2011) and Dunsch ^[10] (2016). During our analysis we also try to get results which prove either Okun’s law or oppositions.

Normality testing

Jarque-Bera test specialized for checking normality of data, it is known that Jarque-Bera test gives assumptions like various statistical and econometrical tests, such as t test or F test. Normal distribution is very important for estimation procedure, since unless normality assumption is satisfied, the researchers may get biased results. Consequently, researchers must be reckless for the assumptions, because if the assumptions are violated, it may lead biased and inconsistent results.

Process of testing the null hypothesis:

Null hypothesis: the error term is normally distributed

Alternative hypothesis: the error term is not normally distributed

When results of JB test $\alpha > 2(\alpha, 2)$, then we reject the null hypothesis and accept alternative hypothesis concluding the data is not normally distributed.

Results and discussions

Based on results in Table 2, we can conclude that the GDP

and POP are significant to interpret the unemployment rate in the long term at 5% significance level, while the INF is insignificant to interpret the unemployment rate at 5% significance level.

The value of -0.0014 states that when 1 percent increase in population growth in Uzbekistan, on average, leads 0.0014percent decrease in unemployment rate in the long-run, when the other variables are constant. Some empirical results conclude that population growth is negative and significant to unemployment growth Aqil *et al.* ^[31] (2014) and Deda and Loku ^[17] (2013). 1 percent growth of GDP in Uzbekistan impacts on 0.7389 percent fall in the estimated unemployment rate, holding other factors constant. Our finding follows Okun’s Law which states that there is an inverse nexus between economic growth and unemployment rate. Lal *et al.* (2010) also found that GDP growth is a crucial determinant to decline in unemployment rate. The impact of INF is insignificant on unemployment rate in Uzbekistan in the long-run. In line with Philips Curve, inflation rate does not effect on unemployment in the long run since it supposes natural unemployment rate in the long-run.

Jarque-Bera Test: Hypothesis

Null hypothesis: Error term is normally distributed.

Alternative hypothesis: Error term is not normally distributed.

Significance Level: $\alpha = 5\%$ or 0.05

Decision Rule: Reject H0 if p-value is less than α . Otherwise, do not reject H0.

The results in table-3 illustrates that p-value (0.5399) is larger than 5% level of significance. This implied that the null hypothesis of our variables are normally distributed is accepted at 5% significance level.

Table 7.1: OLS regression results

GDP	Coeff.	Std. Err.	T	P>t	[95% Conf. Interval]	
POP	-0.01405	.0003389	-4.15	0.001	-.0021175	.0001478
INF	-.1002202	.0759169	-1.32	0.203	-.2597156	.1369586
GDP	-.7389077	.1852952	-3.99	0.001	-1.128198	.2664037
_cons	12.39928	2.259371	5.49	0.00	7.652522	17.14605

Table 7.2: Results of Jarque-Bera test

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	Joint	
				Adj chi2(2)	Prob>chi2
My residuals	22	0.4497	0.4538	1.23	0.5399

Conclusion

Obtained results illustrates that GDP growth has a positive and significant impact on unemployment rate. Our finding proves the prior theories especially Okun’s law, on the other hand it is aligned with the conclusions of various researchers such as Molana ^[18] (2007), Haririan *et al.* (2009), Malley and and Mosikari ^[19] (2013), and Abdul-Khaliq *et al.* ^[2] (2014).

In terms of population, the empirical results illustrate significant and negative nexus toward unemployment. Even though our estimation results reject theoretical framework which declares positive relationship, but it aligns with some previous studies that argues about significant negative nexus Loku and Deda ^[17] (2013) and Aqil *et al.* ^[31] (2014). Same

situation occurs with inflation rate, since inflation has a negative and insignificant relationship to unemployment rate. Even though this finding is inversed to theoretical framework, but, Rizvi and Nishat ^[23] (2009) achieved same result through their empirical analysis.

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