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Investigating the Effects of Foreign Aid on the Unemployment Level in Afghanistan: Application of the Auto Regressive Distributed Lag Model

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A B S T R A C T
The correlation between foreign aid and unemployment rates is a topic extensively debated and examined by development economists and policymakers in developing nations. Therefore, this research was conducted to investigate the relationship between foreign aid and the unemployment rate in Afghanistan from 1990 to 2021 and used Auto Regressive Distributed Lag Model. Results showed that the foreign aid variable (ODA) has a statistically significant negative impact on the unemployment level, as evidenced by a coefficient of -0.014. Consequently, the rise in foreign aid results in declining unemployment rates in Afghanistan. Hence, it can be asserted that the expansion of foreign aid is a viable means to foster employment growth in countries. According to this idea, foreign aid is a possible strategic element for decreasing unemployment

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INTRODUCTION

Foreign assistance refers to the provision of financial, technical, and commodities resources with the aim of fostering economic development and improving welfare. It encompasses both free aid and supported loans (Bawatneh, 2020; Radelet, 2006). Foreign assistance refers to the international transfer of public finances, either through bilateral aid (directly from one government to another) or multilateral aid (indirectly through organizations), in the form of loans or grants (Todaro and Smith, 2014). Undoubtedly, foreign aid has played a crucial role in expediting economic progress, alleviating unemployment, and mitigating poverty in developing and least-developed nations throughout the course of history. If these aids are utilized throughout several areas, including social and economic infrastructure, production, and education (Hee Yiew & Lau, 2018). Developed countries and international organizations offer these aids to impoverished and emerging countries either for free or as low-interest loans. Many developing nations encounter either a deficiency in domestic savings to align with investment prospects or a scarcity of foreign currency to fund the import needs of capital and intermediate products. Hence, the provision of international assistance can address this deficiency (Todaro and Smith, 2014). Lancaster (2007) states that historically, foreign aid has been provided to developing nations for four primary objectives: development, military support, humanitarian assistance, and commercial goals.

Foreign aid has been provided to Afghanistan for several decades, as documented by Faiz (2012), and this assistance is ongoing. For a significant period of time, the United States has taken the lead over other countries in Afghanistan in terms of financial and aid-related affairs (Sigar, 2017). Research indicates that the influx of foreign aid during the period of 2003-2011 played a crucial role in fostering the country's economic development. However, the rate of economic growth has experienced a decline since 2012, primarily due to the reduction in foreign aid and the heightened instability within the country (World Bank, 2017). Foreign grants have undeniably been crucial in expanding public service delivery within the country during the last twenty years. According to Joya (2011), the agriculture sector's increased productivity between 2003 and 2011 was the primary driver of economic growth in this country. Nevertheless, it can be asserted that the substantial influx of foreign aid has played a role in fostering economic growth and generating employment opportunities in Afghanistan. The unpredictable and external nature of foreign aid makes it susceptible to causing significant macroeconomic instability if there is a sudden decrease in aid. This instability can impact the country's exchange rate, balance of payments, and debt balance (Joya, 2011; Naseri, 2014; IMF, 2019; Edison et al., 2005). Conversely, researchers such as Rubin (2002), Nixon (2007), and Bijan (2018) have contended that Afghanistan's persistent and significant dependence on foreign help has transformed it into a vulnerable rentier state reliant on aid.

LITERATURE REVIEW

Researchers from various geographical areas have analyzed a multitude of studies regarding the impact of foreign aid on economic growth and the correlation between foreign aid and indices of human development. Previous research have not investigated the effect of foreign aid on diminishing unemployment. For example, Mobah and Amosa (2014) investigated the relationship between foreign aid and economic growth in Nigeria and discovered that despite receiving a substantial amount of foreign help, the country experiences low income levels, high unemployment rates, and widespread poverty. In a study conducted by Mohammad Akbar (2021), the relationship between economic growth and foreign aid in Afghanistan was investigated using the time series approach. The study focused on the period from 1986 to 2018 and concluded that there is a confirmed co-accumulation relationship between the variables. The Granger causality test was conducted using the error correction model to examine the causal relationship between these two variables. Consequently, it was established that there is a unidirectional causal relationship from the official development assistance received to the economic growth. The analysis of variance results corroborate the findings of the Granger causality test. In their study titled "Modeling the Nexus Between Foreign Aid and Economic Growth: A Case of Afghanistan and Egypt," Villanthenkodath and Mushtaq (2021) analyzed annual time series data from 1965 to 2017. They concluded that there is no long-term correlation between foreign aid inflows and economic growth in both countries. In a study conducted by Rasi (2014) on the benefits and drawbacks of foreign assistance in Albania, it was found that foreign aid played a significant and beneficial role in the country's development process. It was particularly effective in enhancing technical capacity and increasing civil awareness within the society. In a 2011 study on foreign aid and economic development in Afghanistan, Tutakhil utilized an analytical-descriptive approach and discovered that a significant portion of German aid was allocated outside the established system. This resulted in the government's weakening and the institutions receiving the resources lacking accountability. Regarding the findings of numerous prior studies on the efficacy of help, there has been a lack of consensus, with some studies indicating that foreign aid hampers the mobilization of local resources. In contrast, other research have demonstrated a positive impact on economic growth (Murshed & Khanaum, 2014). Asadi and Andish (2024) conducted a study titled "A Study on the Effectiveness of Foreign Aid on Human Development of Afghanistan" to investigate the impact of foreign aid on Afghanistan's human development index and its three primary components between 1990 and 2019. Their findings indicate that foreign aid significantly contributes to long-term improvements in human development. In their study on the influence of foreign help on the human development indices of Asian nations, Andish and Asadi (2022) discovered a direct and favorable relationship between foreign aid and human development in Asian countries. In their study titled "Effectiveness of Foreign Aid and Human Development," Shirazi et al. (2009) discovered that foreign aid has a positive impact on economic growth. In their study, Gomanee et al. (2005) analyzed the relationship between

assistance government expenditure, aggregate welfare, and human development in 38 countries using time series data. They discovered that help has a positive impact on the human development of nations receiving it. In his study on foreign assistance and human development, Mohamed (2017) utilized a quantile regression approach to determine that foreign aid has an impact on the Human Development Index (HDI) and its three constituent indicators: the income index, health index, and education index.

In the study conducted by Moshiri, Taei, and Pashazadeh (2015), they examined the factors that influence the labor force participation rate in Iran's labor market. Their findings revealed that obtaining higher education, specifically university degrees, increases the likelihood of individuals participating in the labor market. In Mohammadnia's (2021) study on women's participation in the labor force in Afghanistan, it was discovered that higher education, societal attitudes towards women's rights, having one or more children under the age of five, ownership of livestock in the household, household size, and location are the main factors influencing female labor force participation (FLFP) in Afghanistan. In his 2023 study titled "Analysis of Women's Participation in the Workforce in Afghanistan," Hakim Zai discovered that factors such as the minimum salary, women's education, women's age, father's education level, and women's work skills have a notable and beneficial impact on women's involvement in the workforce.

Afghanistan has endured protracted periods of drought (Shaiq, et al., 2024), civil war, and other challenges spanning multiple decades. Due to this factor, it has been unable to attain sustainable development (Shaiq et al., 2021). Nevertheless, Afghanistan has been dependent on foreign assistance in multiple aspects of its progress from its inception. Despite receiving substantial international aid for an extended period, this nation's economy continues to grapple with low-income levels, widespread poverty, and a high unemployment rate (Akbar, 2021). While foreign help plays a crucial role in addressing essential needs such as poverty reduction and employment development, it appears that these aids have not been utilized within a well-defined framework. Moreover, the occurrence of unemployment has escalated in the rural areas of this nation (Shaiq et al., 2022). Foreign aid is essential for establishing infrastructure, fostering economic development, generating employment opportunities, and promoting entrepreneurship in Afghanistan. It is regarded as a method to enhance the economic foundation of the nation.

However, the conducted research has not examined the influence of foreign aid on the unemployment rate. Despite Afghanistan's status as an impoverished nation heavily dependent on international assistance, no research has been undertaken to investigate the effects of foreign aid on the variables of unemployment, labor force participation rate, and unemployment rate. Hence, this groundbreaking study examines the correlation between foreign aid and three key variables: unemployment, labor force participation rate, and unemployment rate. The model estimation and hypothesis testing for this research were conducted using time series data from Afghanistan spanning the years 1990-2021. The results of this study hold fundamental importance for the

donor nations supporting Afghanistan and the officials within the country. This study aims to analyze the impact of foreign aid on the unemployment rate in Afghanistan.

METHODOLOGY

This paper analyzes the methods used by the Auto Regressive Distributed Lag Model (ARDL) to calculate the Unemployment rates. The ARDL econometric model is used to analyze the relationship between Unemployment, Foreign aids, Labor force participation rate., and salaried workers in Afghanistan. The ARDL model is frequently employed for logarithmic analysis, as established by Pesaran and Smith in 1995. Based on the theoretical principles and empirical investigations carried out and cited by Pesaran et al. (2001). The Autoregressive Distributed Lag (ARDL) model is defined as follows:

$$UNEP = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} UNEP_{t-1} + \sum_{i=1}^{q1} \alpha_{2i} ODA_{t-i} + \sum_{i=1}^{q2} \alpha_{3i} LPR_{t-1} + \sum_{i=1}^{q3} \alpha_{4i} WSW_{t-1} + +UNEP_{t-1} + ODA_{t-1} + LPR_{t-1+} WSW_{t-1} \quad (1)$$

After confirming the existence of a long-term relationship between the variables, a model with a conditional autoregressive distribution interval can be performed, which can be used to estimate the long-term coefficient in the model.

$$UNEP = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \times UNEP_{t-1} + \sum_{i=1}^{q1} \beta_i \times ODA_{t-i} + \sum_{i=0}^{q2} \theta_i \times LPR_{t-1} + \sum_{i=0}^{q2} \theta_i \times WSW_{t-1} + u_t \quad (2)$$

This research is a long-term relationship after confirmation as follows:

$$UNEP = \alpha_0 + \beta_1 ODA + \beta_2 LPR + \beta_3 WSW + u_t \quad (3)$$

In the above relation

The Dependent Variable:

UNEP: Unemployment Index.

Independent Variables:

ODA_t: Foreign aids

LPRt: Labor force participation rate.

WSWt: Wage and salaried workers.

The index t represents time.

Research Model

This study utilizes the Auto Regressive Distributed Lag Model to examine the causal link between Unemployment and foreign aid. The reason for selecting this model is that economic variables are often influenced by their intermittent values as well as exogenous variables. Therefore, the chosen Auto Regressive Distributed Lag Model can be used to examine the causal relationship between

Unemployment and foreign aid in Afghanistan. The model is presented below. Economists utilize Official Development Assistance (ODA) statistics as a quantitative indicator of foreign aid. This research focuses on the remuneration of employees, namely wages and salaries. The findings presented are sourced from the World Bank. The time series statistics for Unemployment and labor force rate are likewise sourced from the World Bank database.

RESULTS AND DISCUSSION

Table (1) indicates that the dependent variable, Unemployment, is included in the model, with a mean of 8.558 and a standard deviation of 1.125. The variables "Wage and salaried workers," "Foreign aid," and "Labor force participation rate" are associated in the study model. "Wage and salaried workers" has a mean of 10.63 and a standard deviation of 3.9162. "Foreign aid" has a value of 90.233 and a standard deviation of 74.168. "Labor force participation rate" has a mean of 49.503 and a standard deviation of 0.427. The Skewness, Kurtosis, and probability statistics of the Jarque-Bera test indicate that all variables in this study follow a normal distribution. Table 1 provides a summary of the descriptive statistics for the variables in the model, as generated by Eviews12 software.

Table 1. Descriptive Statistic

Variables	UNE	WSW	ODA	LPR
Mean	8.586677	10.63226	90.22391	49.50387
Median	8.111000	8.920000	102.0246	49.38000
Maximum	11.71000	17.81000	223.9814	50.50000
Minimum	7.91000	6.280000	6.545249	49.03000
St.Dev.	1.125941	3.916699	74.16845	0.427104
Skewness	1.888528	0.809160	0.375231	1.083342
Kurtosis	4.861342	2.080890	1.858780	3.154414
Jarque-Bera	22.90222	4.473971	2.409705	6.094549
Probability	0.000011	0.106780	0.299736	0.047488
Sum	266.1870	329.6000	2796.941	1534.620
Sum Sq.Dev.	38.03230	460.2159	165028.8	5.472535
Obseravation	31	31	31	31

Source: Research Finding

Stationary Test

Unit root test: We conduct a preliminary and crucial study of the models to assess their stationarity. We introduce the unit root test to analyze the properties of the time series data and ensure its consistency in subsequent econometric modeling. Two often used unit root tests for this purpose are the Dickey-Fuller test (1981) and the Phillips-Perron test (1988).

Table 2. Below Presents the Unit Root Tests

Variable	At level			
	Dickey-Fuller (ADF)		Phillips Perron (PP)	
	Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
LUNE	0.9218	0.894	0.998	0.982
WSWL	0.0006***	0.0001***	0.985	0.689
LODA	0.829	0.733	0.584	0.800
LLPR	0.090*	0.0057***	0.875	0.850
	At 1st difference			
UNEL	0.040**	0.066**	0.044**	0.101*
WSWL	0.086*	0.869	0.182	0.185
LODA	0.0000***	0.0001***	0.0000***	0.0002***
LPR	0.565	.652	0.221	0.439

Source: Research Finding

As seen in table (2), The result of the unit root test shows the variables of the model. The hypothesis of the existence of stationary is confirmed in the (UNE) variable which this variable has stationary at level, So The unit root test is done by first different, It can be seen this variable no has stationary at the 1 percent level its mean this variable is I(1). But the Wage and salaries workers variable is not stationary at the level of 1 % its means it is I (0). The Variable of foreign aid has stationary at the level, therefore the unit root test is don the first difference, it can be seen that this variable does not have stationary at the level of 99 percent probability, that is, it is I (1). Finally, the Labor force participation rate does not have stationery at the level, that is, it is I (0).

Table 3. Represents the Results of the ARDL Bounds-Testing Technique

ARDL Bound testing approach **Dependent Variable GII** **ARDL(4.4.3.0)**						
F-Statistics	Critical values					
7.501	0.10		0.5		0.01	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.618	3.532	3.164	4.194	3.65	4.66

Source: Research Finding

As can be seen, the value of the computational F statistic is larger than the uppe bound, at the level of 1%, 5%, and 10 percent is bigger, therefore the null hypothesis that there is no long-run relationship is rejected and continue gration question consist in the model, or the existence of a long –run relation ship

between UNE, WSW, ODA, AND LPR accepted. Finally, the long-run relationship between variables was established and confirmed.

Estimation of the Long-Run Relationships

The estimatio of long- run findings is described in Table 4.

Table 4. Long – Run Relationships

ARDL Long Run Results ARDL (4.4.3.0) Dependent Variable LUNE Time Period 1990- 2021			
Variable	Co-efficient	Standard-error	T-statistics(prob)
LWSW	0.511	0.067	7.546(0.0000)
LODA	-0.014	0.004	-3.204(0.006)
LLPR	-0.333	0.283	-1.1749(0.257)
C	20.946	13.638	1.534(0.148)

Source: Research Finding

The relevance and effect of all the factors in the model on the long-run time horizon of the unemployment variable may be deduced from Table 4. However, the interpretation of the estimation coefficients and their impact on the dependent variable vary. The analysis indicates that the variable of foreign aid has a statistically significant negative connection with the variable of unemployment. A one percent increase in Official Development Assistance (ODA) will result in a reduction of unemployment by 0.014%. Similarly, there is a strong and inverse correlation between labor force participation and unemployment. This implies that a 1% increase in labor force participation will result in a 0.33% decrease in unemployment. The variable of Wage and salaried workers has a positive and statistically significant correlation with the unemployment variable. Specifically, a rise of one percent in the WSW variable leads to a 0.51% increase in the unemployment rate. Afghanistan exemplifies the characteristics of a third-world country, including overpopulation and a readily available, inexpensive work force. Based on the economic conditions and labor market of this country, it is evident that increasing wages or salaries for workers will not be feasible for labor suppliers. Consequently, labor owners will reduce their workforce, leading to a rise in the unemployment rate in Afghanistan's labor market.

Investigating the UNE Function in the Short Term (Error Correction Model)

Table 5. Error Correction Model

Variables	Coefficient	Std. Error	t-Statistic	Prob
D(UNE(-1))	0.230726	0.114803	2.009749	0.0657
D(UNE(-2))	0.123533	0.156285	0.790434	0.4435
D(UNE(-3))	-0.501759	0.153160	-3.276044	0.0060
D(ODA)	0.009872	0.002008	4.916467	0.0003
D(ODA(-1))	0.020548	0.003413	6.020044	0.0000
D(LODA(-2))	-0.010513	0.002908	3.615426-	0.0031
D(WSW)	0.166759	0.093668	1.780315	0.0984
D(WSW(-1))	-0.089992	0.090561	-0.993715	0.3385
D(WSW(-2))	-0.126894	0.104935	-1.209265	0.2481
D(WSW(-3))	0.439574	0.121370	3.621780	0.0031
CointEq(-1)*	-0.805827	0.115064	-7.003284	0.0000
R^2 = 0.90 Prob(F-statistic) = 0.0000		$\overline{R}^2$ = 085		DW = 2.58

Source: Research Finding

Table 5 demonstrates that the variables examined have effectively accounted for the UNE in Afghanistan in the immediate period. The short-term effects analysis reveals that changes in the WSW variable and the ODA variable, both immediately and with a break, have a substantial negative impact on the UNE variable. Conversely, the LPR variable has a significant positive effect on the UNE variable. The coefficient of CointEq (-1) is the most crucial among the estimated coefficients. Its analysis is highly significant in the near term as it indicates the speed at which the system moves from a short-run equilibrium to a long-run equilibrium. The results from table (5) indicate that the estimated coefficient (-1) of CointEq in the model is -0.80, which is predominantly negative and statistically significant. The coefficient value indicates that it is an error resulting from the imbalance of the short-term model, which is corrected by approximately 80 percent in each period.

Table 6. Results of Classical Tests

Null- Hypothesis	F- -Statistics	P- value
LM Test: Breusch-Godfrey Serial Correlation	0.522	0.103
Heteroscedasticity Test: Breusch Pagan-Godfrey	0.153	0.017
The normality of waste	1.184	0.396

Source: Research Finding

Table (6) demonstrates that the model does not exhibit heterogeneous variance. However, the analysis of the table reveals that the model has an issue with autocorrelation. Thus, in order to address the issue of autocorrelation in ARDL model estimate, measures have been included. The heterogeneity variance

test indicates that the estimated F statistic is lower than the F table value. Thus, the null hypothesis, which assumes that the variances are equal, is accepted. Moreover, with a probability of less than 0.005, the non-autocorrelation test rejects the null hypothesis of no autocorrelation. Additionally, the normality test of the residuals, based on the Jarek-Ber probability statistic, indicates that the residuals follow a normal distribution.

CONCLUSION AND DISCUSSION

The correlation between foreign aid and unemployment rates is a topic that has long been debated and examined by development economists and policymakers in developing nations. Their aim is to make informed decisions regarding the most effective utilization of aid and to facilitate necessary planning. This study aimed to examine the impact of foreign help on the unemployment rate and assess the necessity of utilizing such aid in Afghanistan. The objective of this study is to conduct a comprehensive analysis of the relationship between foreign aid and unemployment levels in Afghanistan from 1990 to 2021. This will be achieved by employing the auto-regression model with large intervals. Based on the findings of the ARDL long-term coefficient estimation, it has been concluded that the foreign aid variable (ODA) has a statistically significant negative impact on the unemployment level, with a coefficient of -0.014. Consequently, the rise in foreign aid results in a decline in unemployment rates in Afghanistan. Consequently, the rise in foreign aid results in a decline in unemployment rates in Afghanistan. The labor wage variable exerts a positive and statistically significant impact on the unemployment level, as indicated by a coefficient of 0.511. Afghanistan is classified as a developing country, which is characterized by a significant population growth and a prevalence of low-cost labor. Afghanistan serves as an illustrative example of these traits. Given the prevailing economic conditions and labor market dynamics in Afghanistan, it is evident that labor providers in the country are unable to afford higher compensation for workers, should there be a rise in wages. Consequently, this leads to a reduction in the number of employees hired by firms, resulting in an overall increase in the unemployment rate. An investigation and analysis were conducted on the correlation between the labor force participation rate and unemployment. Given that this variable has a negative and statistically significant impact on the unemployment rate, with a coefficient of -0.33, it can be inferred that an increase in foreign aid will likely result in a reduction in unemployment in Afghanistan. Expanding foreign aid can lead to job development in countries, as stated in the theoretical foundation's part. According to this idea, foreign aid is seen as a possible strategic element for decreasing unemployment.

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