



The effects of military expenditure and inflation on the unemployment in Pakistan

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Abstract:

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This study examines the effect of inflation and military expenditure on unemployment in the case of Pakistan. This study used the data set from 1972-2021 and, based on the behaviour of the data, employed the ARDL procedure for assessment. This study found that FDI, GDP, inflation, military expenditure, gross capital formation, and human capital have adverse and noteworthy effects on unemployment over a long period. However, the FDI, GDP, military expenditure, gross capital formation, and human capital have an inconsequential impact on the unemployment rate. However, inflation has an adverse and noteworthy effect on unemployment in a short period. Furthermore, there exists a bi-directional causality between military expenditure and unemployment, while there exists no causality between inflation and unemployment, and military expenditure and inflation. This study concluded that the rise in military expenditure and inflation inversely influence unemployment in Pakistan. This study supported the Philips theory in Pakistan that inflation and unemployment have an adverse link. Based on these findings, this study recommended that the government increase military expenditure to maintain peace in Pakistan and minimise inflation and unemployment.

Keywords: ARDL, GDP, FDI, Foreign direct investment, Gross capital formation, Military expenditure, Inflation, Unemployment, Human capital, Physical capital.

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1. Introduction

Every economy aspires to three macroeconomic objectives: price stability, full employment, and a high rate of production growth. These economic aggregates are interrelated, so changes in one will cause alterations in the others. Throughout a recession, for example, output declines, unemployment rises, and prices fall. As a result, it is critical to employ policy instruments discretely to minimize unexpected consequences. Unemployment is a key macroeconomic issue in the majority of developing nations. It is a circumstance in which people who are eager and capable of working are unable to obtain acceptable jobs. This has had a detrimental impact on the country in a variety of ways. It has resulted in a constant decline in the pace of increase of output and income, resulting in a poor quality of life (Onwachukwu, 2016). In reality, one of the primary purposes of governments is to promote full employment, while maximizing the use of all resources to increase social welfare. Unemployment is defined as a condition in which the labour supply exceeds the labour demand at the current pay arrangement (Azam et al., 2016). Unemployment is not a good gauge for a country, both socially and economically. It contributes to poverty, crime, and political and social disruption (Aqil et al., 2014).

Predominantly, the governments have been tasked with two (2) fundamental functions: maintaining the law enforcement situation and providing the needed social arrangement. However, in the current day, these activities have evolved to encompass guaranteeing GDP, inflation control, balance of payments (BOP) equilibrium, full employment, and equitable income-sharing. Fiscal policy is critical for the government to accomplish whichever of these macroeconomic aims. Fiscal policy is the management of government outlay and taxation to accomplish desired macroeconomic goals (Nenbee et al., 2021). Governments allocate significant portions of their budgets to defence spending. This will require them to devote fewer resources to expenditures in education, infrastructure, and health, all of which will help the country flourish. This will stifle economic progress. More R&D efforts and resources are required in the development of defence items. Employee turnover will be low in this area since skilled personnel will be required. This will be a limiting factor for employment in other areas. Some defence businesses' conversion to civil manufacturing is restricted or non-existent. Inefficient utilization of structures, institutions, and manufacturing capacity developed for the military sector will result in economic resource waste. Capital transfers between nations are very significant in a globalizing society. When capital transfers across nations, the belief and stability climate in each country is taken into account. FDI and indirect investment flow to nations with a trusted and stable environment. One of the greatest essential factors influencing a country's GDP is trust and a stable environment. Defence expenditure puts pressure on budget revenues and directs external debt, reducing social welfare as a result of armament efforts in nations lacking political and military stability. Military spending in developing nations is mostly based on imports, which affects the BOP. Military spending has a negative influence on countries' GDP. As a result, governments should try to create a more peaceful environment, cut defence spending, and shift investment funds to areas that would ensure economic-development (Korkmaz, 2015).

There are several reasons behind the government's decision. Even, though the defence spending kept rising from the day of independence. According to the World Development Indicators (WDI) (2021), the average military expenditure is 5 percent of the GDP of Pakistan which too higher than other countries because of external and internal threats. As a result, it is possible to align the country's defence spending with its economic growth. In addition, to combat emerging

threats and keep pace with the global new military reform wave, Pakistan needs to boost its overall defence budget, as well as the budget for military equipment renovation. Furthermore, the policy of postponing retirement age has sparked debate about its impact on the unemployment rate. Under such conditions, another rationale for increased defence expenditure emerged, arguing that increased defence spending would produce more job possibilities in the military department, so stimulating public employment and lowering unemployment. Even though the connection between military outlay and GDP has been extensively studied in the defence economics literature, limited studies have been enthusiastic to investigate the military outlay linked to unemployment. There is no universal agreement in the literature on the effects of military outlay on unemployment. The military outlay would enhance unemployment because, a large number of individuals are directly employed by military-related companies or in a range of service or auxiliary positions, or military spending may generate higher demand. However, military spending on high-tech labour-saving weapon systems is likely to exacerbate unemployment (Yildirim & Sezgin, 2003).

An appropriate degree of inflation is required for a country's economic growth. Inflation and unemployment may both be utilized to exert control over one another. The Phillips curve shows that increasing the rate of inflation reduces the amount of unemployment. According to the Phillips Curve (PC), there is an adverse link between unemployment and the inflation rate, and the economy must tolerate a particular inflation rate to lower unemployment. Unemployment refers to a scenario in which individuals want to work but are unable to gain employment (Arshad & Ali, 2016). According to Raphael and Winter-Ebmer (2001), unemployment increases various social problems such as property violence, corruption, and murder. Increased unemployment is bad for all economies. New work possibilities can be created by investment to boost the availability of jobs. Increasing investment can help to determine the unemployment rate. There are two types of unemployment: rural unemployment and urban unemployment. The urban regions have a higher rate of unemployment than the rural ones (Ali & Zulfiqar, 2018). Both forms of unemployment are closely related to inflation and interest rates (Arshad & Ali, 2016).

According to the extant literature, numerous research focus on the many causes and implications of rising unemployment rates. Several previous research addressed unemployment drivers, but empirical studies on the influence of military outlay on unemployment are still uncommon. Prior research on military outlay and unemployment provides a variety of evidence. Chester (1978) finds no discernible influence of defense outlay on unemployment for the particular eight OECD nations. Dunne and Smith (1990) conclude that the sample dynamic abridged from regression estimates for the US and the UK, as well as pooled post-war data for eleven (11) OECD nations, do not show that military outlay share has a substantial influence on unemployment rates. Tang et al. (2009) perceive that the causality moving from military outlay to un-employment is not important when measured by military outlay; however, when measured by the military load for twenty-three (23) OECD and twenty-three (23) non-OECD economies from 1988 to 2004, it is important primarily for low-income and non-OECD economies. According to Mpanju (2012), there is a strong encouraging link between FDI and unemployment in Tanzania from 1990 to 2008. Using monthly data from 1991:01 to 2010:12, Ahmad (2013) uncovers a substantial influence of oil prices on unemployment but no meaningful association between interest rate and unemployment in Pakistan. According to Zeb et al. (2014), the primary factors of unemployment in Pakistan from 1995 to 2011 are FDI, inflation, and population.

Different scholar gives different results like Huang and Kao (2005), Yildirim and Sezgin (2003), Azam et al. (2016), Canbay and Mercan (2020) and Hanif et al. (2023) that military-outlay has adverse effect on unemployment, while, dissimilar with Ceyhan and Köstekçi (2021) and Nenbee et al. (2021) that military-outlay has encouraging effect on unemployment. However, Ledesma et al. (2022) found no link between military outlay and unemployment. Similarly, Wulandari et al. (2019), Afzal and Awais (2012), Ibrahim et al. (2023), and Pascal and JILENGA (2022) have that the inflation rate affects unemployment, while, dissimilar with Santoso and Kristiyanto (2021), and Leasiwal (2021) that inflation has positive effect on unemployment. Many variables contribute to unemployment; however, the current study examines the influence of military outlay on unemployment while adjusting for other macroeconomic factors in Pakistan. More military spending causes a slew of socioeconomic issues, including more unemployment in the economy. In recent decades, several industrialized and emerging countries have seen prohibitive unemployment rates (Azam et al., 2016).

Many economists have endorsed free market economics, beginning with Adam Smith, and continuing to this day. Because it is widely acknowledged that a free-market economy is the greatest instrument for ensuring GDP growth. The government was asked not to intervene in the economy, but it was asked to perform several essential obligations, one of which was national security. However, governments restrict public spending; they strategy the amount of money to be saved for fields that are beneficial to the country's growth. Because the country's security is at stake, the spared ratio for defence expenditure fluctuates based on conflicts in neighbouring nations (Korkmaz, 2015). Unemployment is a direct threat to any country's stability, limiting human and economic growth. Economic research shows that unemployment raises the chance of poverty and adds to inequality. As a result, governments attempt to minimize unemployment rates and buffer their effects through fiscal policy, which is required to promote sustainable growth, price stability, and lower unemployment. This is particularly true for policymakers in poor nations. Furthermore, the assembly of government outlay is critical for any country's economic strategy (Abouelfarag & Qutb, 2021). According to various theories and studies, the primary causes of unemployment in an economy vary. The Pakistani government has established programs and techniques to reduce unemployment. However, this issue continues to pose a threat to economic development (Macharia & Otieno, 2015).

The existing empirical literature gives ambiguous and controversial results about the link between Inf and UR. The prior studies found that there are positive links between Inf and UR, like Santoso and Kristiyanto (2021), and Leasiwal (2021). However, others found that there are negative links between the inflation rate and UR, like Wulandari et al (2019). Furthermore, Afzal and Awais (2012) also found that negative link between inflation and the unemployment rate in the case of Pakistan, by employing OLS and ARDL techniques, Maqbool et al. (2013) found the same results from Pakistan. Mangnejo et al. (2020) examined data from 1991-2015 using an English Granger econometrics technique, which revealed the existence of the PC in Pakistan. Similarly, Pascal and Jilenga (2022) originate the positive link in Tanzania. However, Ibrahim et al. (2023) confirm the validity of the PC for the Nigerian economy.

Given that un-employment has become a critical issue, and that it causes socioeconomic difficulties. Existing evidence supports the existence of a strong association between unemployment and military outlay either optimistic or negative. Malizard (2014) and Azam et al. (2016) argue that an increase in the military outlay reduces the unemployment rate, while, others like Qiong and Junhua (2015) argue that an increase in the military outlay will increase

the unemployment rate. Therefore, the existing literature gives mixed results and there are only a few studies are available to scrutinize the connection between military outlay and unemployment. Similarly, unlike the results of the prior studies to outdated estimation techniques and small data periods, Malizard (2014) used data periods from 1975 to 2008 and Pascal and Jilenga (2022) used data sets from 1991-2021. Therefore, the results of the past studies cannot be generalized for the current period. As a result, this study will undoubtedly contribute to the current literature, and the study's findings are likely to aid policymakers in developing appropriate policies on military expenditure in which, the problem of unemployment is treated equitably. This study also identifies the importance of the inflation rate for the unemployment rate in Pakistan. This study also used the military expenditure and inflation rate in one model in the case of Pakistan with an updated data period and methodology. Because the military expenditure and inflation rate have more effect on the unemployment rate in Pakistan. Furthermore, no updated study is available to examine the connection between inflation rate, military expenditure, and unemployment in Pakistan. Therefore, this study will be conducted to examine the link between inflation, military expenditure, and unemployment in Pakistan. Therefore, this study is investigating the effect of military expenditure on the unemployment rate in Pakistan.

Since the 1990s, the Pakistani economy has seen high rates of unemployment and inflation (Arshad & Ali 2016). According to Aqil et al. (2014), important predictors of unemployment and inflation include FDI, GDP growth, population growth, investment, and education. Policymakers are concerned about developing strategies that may successfully reduce unemployment without increasing inflationary pressures. Mahmood et al. (2013) sought to look at the link between unemployment, inflation rate, and interest rates. Nowadays, military expenditures are too much mandatory because Pakistan faces both internal and external threats and maintains the law-and-order situation. Furthermore, there is no such updated study is available in the context of Pakistan. As a result, this study will undoubtedly contribute to the current literature, and the study's findings are likely to aid policymakers in developing appropriate policies on military expenditure in which the problem of unemployment is treated equitably. This study also used the military expenditure and inflation rate in one model in the case of Pakistan with an updated data period and methodology. Because the military expenditure and inflation rate are the more significant variables to affect the unemployment rate in Pakistan. Therefore, this study opens new ways for researchers to use the different combinations of variables in the presence of inflation rate and military expenditure. After the introduction, the second section contains a literature review of past studies, section three contains methodology. Furthermore, section four contains the outcomes conversation and the conclusion at the end.

2. Literature review

2.1. Military expenditure and unemployment rate

Yildirim and Sezgin (2003) use the ARDL technique to empirically evaluate the impact of military outlay on employment in Turkey from 1950-1997. They discovered that military outlay had an unfavourable impact on employment. However, Tang et al. (2009) use the worldwide panel data collection of 46 nations, and a panel data variant of the Granger-causality (G-C) test is used. Their findings show that there is a direct connection between unemployment and military outlay, the causation running from military outlay to unemployment. However,

Malizard (2014) examines the impact of military outlay on unemployment rates between 1975-2008. Their assessment was based on the ARDL technique to co-integration, and the results show that both defence outlays harm unemployment, with defence outlays having a greater adverse impression in France. Zhong et al. (2015) evaluate the causal links between military outlay and unemployment for G7 nations using data from 1988 to 2012. They discovered uni-directional G-C going from military outlay to unemployment in Japan, Canada, and the United States. However, France and Germany have the reverse one-way Granger causation flowing from unemployment to military outlay. Similarly, there is a link between military outlay and unemployment in Italy and the United Kingdom. Military outlay influences unemployment or unemployment affects military expenditures in all G7 countries. They gave mixed results for G-7 countries and concluded that the results are not generalized for all G-7 countries. Moreover, Sanso-Navarro and Vera-Cabello (2015) utilize data from 1991 to 2012 to examine the possibility of Granger causation between military outlay and unemployment rates in the EU15 nations. Both cross-country heterogeneity and dependency using the panel bootstrap test. Using two different metrics of military spending, they found little evidence to support the null hypothesis that it does not impact unemployment. These statistically significant causal links are evident in nations that spend a greater proportion of their military budget on people.

Khan et al. (2015) used the data from a group of five (5) Asian countries from 1992 to 2013. They discovered that defence expenditure is not a superior other for addressing unemployment in the majority of the sample nations. Thus, their findings show that reducing defence outlay allocation for other productive sectors. Aside from reduced military spending, boosting investment and restraining population growth can aid in the reduction of unemployment. Remittances tend to be positively related to unemployment. However, Qiong and Junhua (2015) use the data from China from 1991-2013 and ARDL techniques for estimation. They found that the surge in military outlay also increases the unemployment rate while non-military expenditure reduces the unemployment rate. Similarly, Korkmaz (2015) used data from ten Mediterranean nations from 2005-2012. He discovered that military outlay in GDP growth and raises unemployment. However, the necessity of country security grows as a result of the upheaval in nations bordering the Mediterranean. Moreover, Azam et al. (2016) used panel data from SAARC nations from 1990 to 2013 and employed a multivariate approach to evaluate. The panel DOLS results demonstrate that military expenditures benefit the SAARC employment rate, as the estimated quantity of military spending has a destructive and more elastic connection with the unemployment rate.

Fotros and Golkhandan (2017) used data from developing nations from 1995 to 2014 and the Panel Mean Group (PMG) method was employed to quantify connections. Their findings support the Abrams curve in the military sector and show that the proportion of military spending in GDP has a favourable influence on unemployment. In the civilian sector, the effect of the proportion of non-military outlay on the UR is adverse, rejecting the Abrams curve. According to the other findings, GDP and INF have a damaging influence on unemployment, confirming Okun's-law and PC. Furthermore, To deal with the defence outlay -unemployment nexus, Michael and Stelios (2017) use the ARDL method for estimation and utilize data from 1960 to 2015 for Portugal, Italy, Greece, and Spain. Their major findings indicate that: (i) for Portugal, Greece, and Spain, there is a consistent long-run link between the variables under investigation. (ii) Defence expenditure reduces (increases) unemployment in Portugal and Greece (Spain), (iii) non-defence outlay has a lower impact than defence outlay, and (iv) Okun's law is verified for Portugal, Greece, and Spain. (v) These findings are resistant to the

application of heterogeneous panel co-integration and causality analyses. Moreover, Onuoha and Moses (2019) use twenty-one countries' panel data from 2000-2017 and GMM approaches for estimation. They revealed that outlay on education and infrastructure sinks the region's unemployment while spending on defence and health raises it. However, Canbay and Mercan (2020) employed ARDL to estimate the influence of military outlay on the unemployment rate in Turkey from 1988 to 2017. They discovered that there is no statistically important relationship between military outlay and the unemployment rate in the short period; nevertheless, military outlay reduces the unemployment rate in the long period.

Nenbee et al. (2021) employed the ARDL test to estimate the influence of government military outlay on unemployment and poverty in Nigeria between 1980 and 2017. They discovered that in-consistency in federal government military outlay has resulted in an upsurge in both Nigeria's unemployment and poverty levels. Similarly, ÖZŞAHİN and ÜÇLER (2021) investigate the link between defense spending and employment rates in 18 NATO member nations. In the post-Cold War period, they estimated using the Bootstrap Panel Causality Test. According to their findings from 1991 to 2018, a causation link between ME and employment was observed in 5 of the 18 nations in the panel, and a causality link between employment rates and defense outlays was established in 3 of the 18 countries. As a result, it is hard to draw broad conclusions regarding the causal link between defense spending and employment in NATO member nations. Furthermore, Ceyhan and Köstekçi (2021) analyze the impact of military outlay on Turkish economic development and unemployment. A data collection spanning the years 1988 to 2019 was utilized to investigate the relationships between factors. In the study, the FMOLS estimator was utilized for estimation. They discovered that military spending boosts GDP growth and unemployment. Their findings revealed that military spending resulted in growth that was not dependent on employment in Turkey.

From 1980 to 2017, Abouelfarag and Qutb (2021) analyzed the impact of government outlay on Egypt's unemployment rate. Furthermore, they also investigate whether the differential between discretionary and non-discretionary government spending has a different influence on unemployment. They use the Johansen-cointegration test to ensure that the variables are in long-period equilibrium, and then the VECM to investigate the dynamic impacts. They discovered that increasing government spending raises the long-term unemployment rate. Discretionary and nondiscretionary expenditures both contribute to unemployment increase at nearly the same rate. Employee compensation and government subsidies are mostly to blame for the decreasing impact of discretionary expenditure on unemployment. Investment expenditure has limited influence due to its modest percentage of government spending. Moreover, Ledesma et al. (2022) utilize the OLS model to calculate the linear effect of military spending on unemployment from 1993 to 2019. They grouped themselves based on their degree of military outlay and income group to investigate the possibility of a trend. Their regression results reveal that nation categorization has no consequence on the influence of military outlay on economic development, investment, and unemployment; rather, the impact depends on each country's condition. Moreover, Raifu et al. (2022) use the ARDL estimation technique of Nigeria data from 1984 to 2019. Their causality findings indicate that the direction of causation is affected by the measure of military spending utilized. Their key findings show that military outlay decreases UR in the short period but upsurge the unemployment rate in the long period. Similarly, Hanif et al. (2023) employ the ARDL approach and use data from the period of 1990-2018 in Bangladesh. They discovered that a rise in ME greatly decreases UR in the near run, but no meaningful long-period association is identified.

2.2 Inflation rate and unemployment-rate

Herman (2010) used the data of Romania between 1990 and 2009 and there is no consistent, statistically important association between the inflation rate and UR in Romania. However, Li and Liu (2012) try to assess the VAR model of the collaboration mechanisms of China's data period 1978-2010. They found that inflation has a negative connection with both the unemployment rate and GDP, which means that a high inflation rate can enhance employment. However, Chowdhury and Hossain (2014) used a CLRM to analyze Bangladesh's data from 2000-2011. Their key result is that the inflation rate positively stimulates UR, whereas the GDP and the exchange rate have a harmful influence on UR. Moreover, Blanchflower et al. (2014) derive happiness equations using a large European data set encompassing the period 1975-2013. They discovered that the unemployment rate has a greater negative impact on well-being than inflation. They use the misery ratio to characterize the well-being trade-off between unemployment- and inflation rates. Moreover, Furuoka and Munir (2014) used Malaysia data from 1973 to 2004 and employed the Johansen cointegration test for estimation. They concluded that the UR influences the inflation rate. Their findings provide credence to the manifestation of the Phillips Curve (PC) in the background of a growing country like Malaysia. However, Macharia and Otieno (2015) use the data period 1963-2015 and cointegration methods for estimation. They discovered that inflation rates exhibited an inverse association with unemployment rates.

Onwachukwu (2016) uses Nigeria's data from 1980 to 2016 and the OLS approach for estimation. His findings indicate that government spending, Inf, and population are relevant in explaining variations in UR in Nigeria. However, the initial lag of UR and Real-GDP does not explain UR in Nigeria. However, Arshad and Ali (2016) use the data from Pakistan from 1974 to 2013 and the ARDL model to determine cointegration among model variables. Their findings show no significant trade-off between unemployment. Interest rate analysis in the near run involves a trade-off with the inflation and unemployment rates. Moreover, Zayed et al. (2018) analyze whether or not the PC is known in the Philippines between 1950-2017 and the OLS model for estimation. They found that except for GDP, the other factors are positively connected to Inf in the Philippines. Furthermore, the unemployment rate, which is positively connected with the Inf, denies the fundamental nature of the PC. According to the PC, the Inf and the unemployment rate have an inverse connection. Similarly, Singh (2018) used India's data from 2011 to 2018 and decided that Inf has a negligible impression on GDP and unemployment and that the link is harmful. However, Tenzin (2019) uses the data from Bhutan from 1998 to 2016 and the ARDL approach for estimation. Their empirical findings designate that GDP does not affect the lowering of Bhutan's UR. However, Inflation exhibited an adverse short-period link with the unemployment rate and a positive long-period link.

Sasongko and Huruta (2019) use data from Indonesia from 1984-2017 and Granger Causality-test for estimation. Their findings indicate that there is a one-way causal link between Inf and UR. Their data suggest that the unemployment rate heightens the inflation rate but not the other way around. Moreover, Abu (2019) investigates the PC and its stability in Nigeria from 1980-2016 using the ARDL method. They found that there is a trade-off connection between the variables, with more UR leading to lower Inf. The causality technique shows that there is uni-directional causation from the inflation rate to the unemployment rate. Moreover, Wulandari et al. (2019) investigated the link between Indonesian Inf and UR from 1987-2018 and used a quantitative tool called the VECM for estimation. Their studies revealed that inflation had a

one-way link with UR in Indonesia, with the third lag. They found that the unemployment rate did not affect the inflation rate. From 1991 to 2016, Irewole (2019) investigated the link between unemployment and inflation rates in Nigeria and Mexico, and the econometric model's OLS and basic regression analysis were utilized for estimation. She discovered that: Inf has a negligible influence on UR in Nigeria. In Mexico, there is no substantial association between UR and Inf since when inflation is high, so is UR. Furthermore, she discovered that in Mexico, investors had an inverse association with unemployment. In Mexico and Nigeria, inflation and GDP have an inverse connection. Similarly, Korkmaz and Abdullazade (2020) used data from 2009 to 2017 from nine randomly chosen G6 countries and the Granger-causality (G-C) test for estimation. They found that there is uni-directional causation from the inflation rate to the unemployment rate. When unemployment rises, inflation falls, and when unemployment falls, inflation rises. Moreover, Diakhoumpa (2020) uses Senegal's data from 1991-2018 and the ARDL modelling technique for estimation. His findings indicate a negative association between the unemployment rate, GDP, industry, and age dependence ratio, but unemployment and inflation appear to have a positive relationship. There is also no Granger causation link between UR, GDP, and Inflation.

Aliu et al. (2021) examine the Phillips Curve, in the seven nations that emerged from the former Yugoslavia and use data from 2003 to 2020 and OLS for estimation. they found that Slovenia, Croatia, and Montenegro have a negative trade-off between unemployment and inflation and confirm PC. Furthermore, they show a positive association between inflation and unemployment in Kosovo, North Macedonia, Serbia, and Bosnia. Moreover, Pascal and Jilenga (2022) scrutinize the prevalence of PC in Tanzania's data from 1990-2021 and several econometric techniques for estimation. They found that there is a positive link between Inf and UR in Tanzania. Moreover, Ibrahim et al. (2023) use Nigeria's data from 1991 to 2021 and the OLS technique for estimation. The model's results show that the inflation rate explains unemployment, confirming the PC validity for Nigeria.

2.3. Summary of literature

This study considers a lot of existing literature on the link between military outlay and unemployment, like Dunne and Smith (1990), Payne and Ross (1992), and Raifu et al. (2022) among others, found no causation relationship between military outlay and un-employment, but Hooker and Knetter (1994), and Tang et al. (2009) discovered causation between them. In their empirical assessments, Yildirim and Sezgin (2003), and Huang and Kao (2005) found that military outlay harms employment. However, Ledesma et al. (2022) found no relationship between military outlay and unemployment. Furthermore, Ceyhan and Köstekçi (2021) and Nenbee et al. (2021) found that military outlay boosts UR, while, Canbay and Mercan (2020) and Azam et al. (2016) gave opposite results. Because of the changes in the direction of the impacts of military outlay on the UR, no definite conclusion can be taken from this research. The variances in the era, nation, group of countries, and the method which is utilized in the study are the primary reasons for this. Regardless of the matter how difficult it is to determine the direction of this link, the consequences of the military spending on the employment cannot be ignored.

Similarly, this study also considers a lot of existing literature on the relationship between Inf and un-employment-rate, the prior studies found that there are positive link between Inf and un-employment-rate Santoso and Kristiyanto (2021), and Leasiwal (2021). In the example of

Bali Province, Santoso and Kristiyanto (2021) discover a positive link between inflation and salaries on UR. Instead, Wulandari et al (2019) found that there are negative links between inflation rate and UR. Afzal and Awais (2012) also found that negative link between inflation and unemployment rate in the case of Pakistan, by employing OLS and ARDL techniques. Maqbool et al. (2013) found the same results in Pakistan. Mangnejo et al. (2020) examined data from 1991 to 2015 using an E-G econometric technique, which revealed the existence of the PC in Pakistan. That is, greater inflation leads to a lower UR, which boosts employment opportunities in the country. As the demand for labor rises owing to an increase in job prospects, so does the pay rate given by producers to their workers. This raises the cost of producing things, resulting in inflation (Sasongko & Huruta, 2019). Putri and Indriani (2017) investigated the impact of the inflation rate, investment, and pay rates on the unemployment rate in eastern Java Province between 2006 and 2016. Multiple linear regression is used to analyze data both concurrently and partly. The findings show that inflation rate and wage rates have a considerable impact on UR, both partially and concurrently. An additional study, conducted by Pratomo and Setyadharma (2020), discovers the partial and simultaneous outcomes of the Indonesian industry sector from 2007 to 2015. As a consequence, both the minimum wage and the Inf had a substantial influence on UR, with partial analysis indicating a harmful and important association between the inflation rate and wage rate on the unemployment rate.

3. Theoretical framework

The accomplishment of full employment is viewed differently by two schools of thought: classical and Keynesian. The classical thinkers believe that if the government does not intervene, full employment will be realized naturally through its internal mechanisms. In the laissez-faire system, market forces play a critical role in overseeing the whole economy, while the government's responsibility is limited to maintaining the country's law and order. Keynes, on the other hand, contended that insufficient outlay produced unemployment, and that full employment can be achieved only when total expenditure is enough. As a result, Keynes disputed the conventional idea that market economies automatically gravitate to full employment, whereas Keynes proposed that increased levels of demand or total expenditure as a necessary aspect of an economy's health, where the involvement of the government can't be overlooked (Hoover, 1995).

Similarly, Baran and Sweezy (1966) performed a study to address regarding outlay and UR. Through the model they developed over the eighteen richest capitalist nations, the authors inspected the effect of military outlay in averting economic and concluded in the UR component of their analysis that the greater the importance of military expenditure in an economy, the lower the jobless rate. Chester (1978) performed research based on Smith's essay on high-capital nations' military spending. He concluded that increasing military spending resulted in greater unemployment. Moreover, Berentsen et al. (2011) investigated a long-standing topic in macroeconomics: the relationship between unemployment and monetary variables such as inflation or nominal interest rates. After filtering out higher-frequency movements, they reviewed the data and found a strong encouraging long-period association between these variables. Then, consistent with these facts, they created a model based on specific micro-foundations for both money and unemployment. The model takes Friedman's claim that the natural rate of unemployment is governed by actual issues, such as the cost of maintaining real balances, seriously. They believe the framework is a logical integration and

expansion of existing unemployment and monetary-economic models. They then looked at some mathematical difficulties, including how the model compensates for low-incidence patterns in unemployment when monetary policy is the only driving force. Their answer is mostly determined by two major parameters: the elasticity of money demand (Md) and the value of leisure. The former dictates how monetary policy affects real balances and hence retail profits, while the latter decides how profits translate into entry and employment. They can explain around 20% of the rise in unemployment throughout the 1970s stagflation period using fundamentalist values of MD and leisure value, which is not negligible but leaves room for additional explanations. For settings that are less conservative but not ridiculous, the model can explain the vast majority of changes in trend unemployment during the previous half-century. These findings imply that monetary considerations may be relevant for labour market outcomes, both conceptually and empirically.

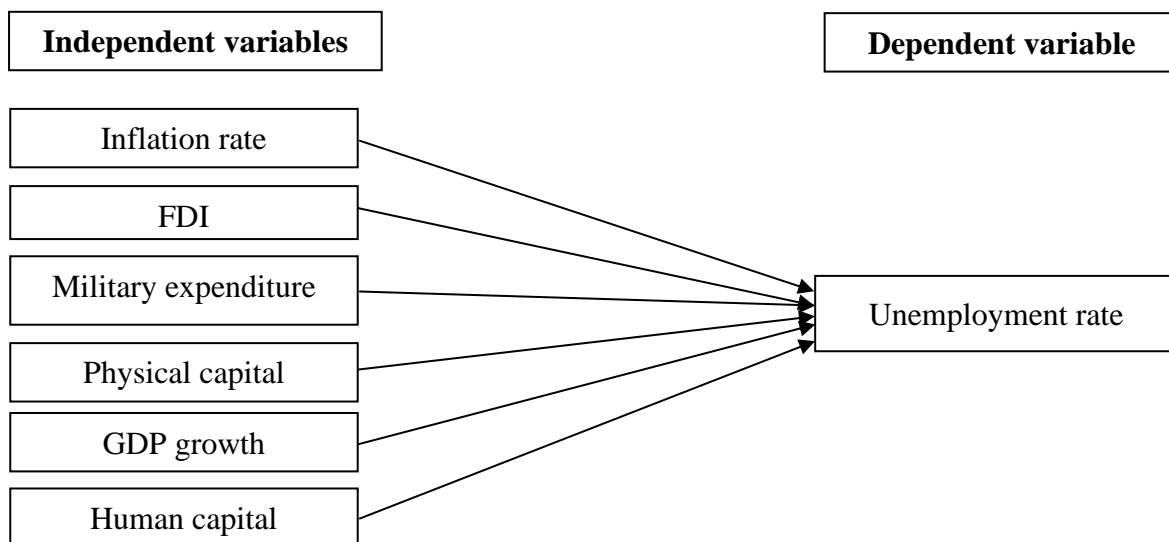
Mankiw (2001) investigates the trade-off between Inf and UR in the near run. Although this trade-off remains a critical component of business-cycle theory, economists have failed to develop a thorough explanation for it. A contractionary monetary shock, according to central bankers and monetary economists, boosts UR, at least briefly, and leads to an overdue and slow reduction in Inf. Standard-dynamic models of price tuning, on the other hand, are unable to explain this pattern of reactions. Reconciling the conventional view on the impacts of monetary policy with price adjustment models remains a conundrum for business-cycle theorists. Similarly, Phillips (1958) invented the PC idea in 1958. The curve depicts a trade-off between an economy's unemployment rate and its pricing level. According to the Philips curve, there is an inverse link between unemployment and inflation. In a situation when unemployment is lower, salaries in the labour market must rise quicker to compete for available labour (Forder, 2014). However, in a scenario when UR is high, there is an excess supply of labour, and hence the labour market does not need to fight for labour. Wages rise slowly in such circumstances. As a result, the common argument is that reduced unemployment may exist only at the price of higher inflation, or vice versa. However, Phillips (1958) and Friedman (1977) contended that the government cannot continuously trade reduced UR for greater inflation. The notion of the PC is important because it aids in the conception of the link between the unemployment- and the inflation rate. However, the Philips principle is not always applicable. The theory has limits, particularly because of the occurrence of stagflation, which is a condition in which the economy faces both an increase in prices and an upsurge in the amount of unemployment (Sherman, 1976). The studies discussed above show that in Pakistan, the level of inflation is high, as is the degree of unemployment, thus raising questions about the validity of the Philips curve notion.

4. Conceptual framework

Figure 1 shows the conceptual framework, which shows the empirical relationship between the independent and dependent variables. Some scholars found that the FDI affects UR (Dritsakis & Stamatiou 2018; Zeb et al 2014), while, Tsaurai (2018) found a positive link between FDI and UR. Similarly, according to Tsaurai (2018) the GDP affects UR, while, Singh (2018) found a positive link between economic growth and UR. Furthermore, the prior studies found that there are positive links between Inf and UR like, Santoso and Kristiyanto (2021), Santoso and Kristiyanto (2021), and Leasiwal (2021), while, other scholars found that there is the negative relationship between inflation rate and unemployment rate (Wulandari et al., 2019). Afzal and Awais (2012) and Maqbool et al. (2013) also found the same in case of Pakistan.

Furthermore, the previous studies also give mixed results. Like Yildirim and Sezgin (2003) and Huang and Kao (2005) found that military spending affects employment. However, Ledesma et al (2022) found no link between ME and UR. Furthermore, the Gross Capital Formation (PK) has a negative and significant effect on unemployment (Alrayes et al., 2018), while, Pasara and Garidzirai (2020) found an encouraging effect. Similarly, human capital has a negative and noteworthy effect on UR (Afolayan, 2019).

Figure 1: Conceptual framework



5. Methodology

5.1. Nature of the study

This study used the data from 1972 to 2021 of Pakistan and the data was extracted from the World Development Indicators (WDI) (2022). The data period of the study is selected for two reasons. Firstly, based on the availability of data and secondly, after the separation of Bangladesh and Pakistan.

5.2. Model specification

This study utilized the following adapted model to investigate the effect of military expenditure on the unemployment rate in Pakistan. The same model was used by Khan et al. (2015), Rehman et al. (2020), Afzal and Awais (2012), Maqbool et al. (2013), and Santoso and Kristiyanto (2021).

$$UR_t = \beta_0 + \beta_1 FDI_t + \beta_2 GDP_t + \beta_3 Inf_t + \beta_4 ME_t + \beta_5 PK_t + \beta_6 HK_t + \mu_t \dots\dots\dots (1)$$

5.2.1. Variables description

The description of variables used in this study i.e., unemployment, FDI, GDP growth, inflation (consumer prices), military expenditure, gross capital formation and school enrolment (secondary) have been given in the table-1.

Table 1: Description of Variables

S.No.	Variables	Symbol	Supporting References
1	Unemployment, total (% of total labour force)	UR_t	Maqbool et al. (2013), and Santoso and Kristiyanto (2021)
2	FDI, net inflows (% of GDP)	FDI_t	Dritsakis and Stamatou (2018) and Zeb et al. (2014)
3	GDP growth (annual %)	GDP_t	Singh (2018)
4	Inflation, consumer prices (annual %)	Inf_t	Santoso and Kristiyanto (2021), and Leasiwal (2021)
5	Military expenditure (% of GDP)	ME_t	Huang and Kao (2005) and Ledesma et al. (2022)
6	Gross capital formation (% of GDP)	PK_t	Alrayes and Abu Wadi (2018), and Pasara and Garidzirai (2020)
7	School enrollment, secondary (% gross)	HK_t	Ho and Tan (2008) and Afolayan (2019)

Source: World development indicators (WDI) (2022)

5.2.2. Econometric techniques

This study used ARDL techniques which are reliable and trustworthy initiated by Pesaran and Shin (1995) and are principally well suited for estimating for mixed order of integration and repeatedly solve the concerns of uniformity and endogeneity. This study also grants causality techniques and diagnostic tests.

Model 1 in ARDL and ARDL-bound arrangement:

$$\begin{aligned}
 UR_t = \beta_0 + \sum_{i=1}^n \beta_{1i}UR_{t-i} + \sum_{i=0}^n \beta_{2i}FDI_{t-i} + \sum_{i=0}^n \beta_{3i}GDP_{t-i} + \sum_{i=0}^n \beta_{4i}Inf_{t-i} \\
 + \sum_{i=0}^n \beta_{5i}ME_{t-i} + \sum_{i=0}^n \beta_{6i}PK_{t-i} + \sum_{i=0}^n \beta_{7i}HK_{t-i} + \mu_t
 \end{aligned}
 \tag{2}$$

$$\begin{aligned}
 \Delta UR_t = \beta_0 + \sum_{i=1}^n \beta_{1i}UR_{t-i} + \sum_{i=0}^n \beta_{2i}\Delta FDI_{t-i} + \sum_{i=0}^n \beta_{3i}\Delta GDP_{t-i} + \sum_{i=0}^n \beta_{4i}\Delta Inf_{t-i} \\
 + \sum_{i=0}^n \beta_{5i}\Delta ME_{t-i} + \sum_{i=0}^n \beta_{6i}\Delta PK_{t-i} + \sum_{i=0}^n \beta_{7i}\Delta HK_{t-i} + \gamma_1 FDI_t + \gamma_2 GDP_t \\
 + \gamma_3 Inf_t + \gamma_4 ME_t + \gamma_5 PK_t + \gamma_6 HK_t + \mu_t
 \end{aligned}
 \tag{3}$$

5.3. Results and discussions

5.3.1 Descriptive statistics and correlation matrix

Table 2 summarizes descriptive statistics, indicating that the human capital series has the highest, while the FDI series has lowest mean. Similarly, the human capital series is the most variable, while the FDI series is the least variable. Furthermore, there are only GDP and gross

capital formations are normally distributed while the rest of the variables are not normally distributed.

Table 2: Summary of descriptive statistics

	UR _t	FDI _t	GDP _t	INF _t	ME _t	PK _t	HK _t
Mean	2.0646	0.7574	4.7070	9.0341	5.0900	17.2072	25.0462
Median	1.8735	0.5792	4.7820	8.0941	5.4783	17.5642	20.0381
Maximum	4.3520	3.6683	10.2157	26.6630	6.9917	20.6850	44.8682
Minimum	0.4000	-0.0627	-1.3295	2.5293	3.0000	12.8119	16.5387
Std. Dev.	1.4918	0.7643	2.1956	5.1010	1.3323	1.8640	9.2401
Skewness	0.3239	2.3537	-0.1570	1.5136	-0.0579	-0.4691	0.8160
Kurtosis	1.4560	8.6618	3.2532	5.6199	1.4004	2.4318	2.1427
Jarque-Bera	5.841***	112.95*	0.3391	33.391*	5.359***	2.5063	7.080**
Probability	0.0539	0.0000	0.8440	0.0000	0.0686	0.2856	0.0290

Note: *, ** & *** indicated the significance level at 1%, 5%, and 10% respectively.

Table 3 shows the correlation between the variables. The correlation results show that all the variables are negatively correlated with the unemployment rate except military expenditure. Furthermore, there are negative correlation between Inf and UR. Similarly, there is also a negative correlation between Inf and UR.

Table 3: Correlation matrix

Variables	UR _t	FDI _t	GDP _t	INF _t	ME _t	PK _t	HK _t
UR _t	1						
FDI _t	-0.4833	1					
GDP _t	-0.3141	-0.1708	1				
INF _t	-0.2282	0.0702	-0.1210	1			
ME _t	-0.1530	-0.4538	0.2611	0.1019	1		
PK _t	-0.1531	0.2850	0.2448	-0.1990	0.4176	1	
HK _t	-0.2122	0.2958	-0.1928	-0.0891	-0.7211	-0.3454	1

5.3.2. Unit root test results

Table 4: ADF test results

Variables	At Level		1 st Difference		Decision (Stationary)
	ADF test Statistic	p-value	ADF test Statistic	p-value	
UR _t	-0.9485	0.7642	-7.2668*	0.0000	At 1 st Difference
FDI _t	-3.1415**	0.0301	---	---	At level
GDP _t	-5.6115*	0.0000	---	---	At level
INF _t	-3.4723**	0.0130	---	---	At level
ME _t	-0.3444	0.9101	-4.5409*	0.0006	At 1 st Difference
PK _t	-2.2134	0.2043	-6.4230*	0.0000	At 1 st Difference
HK _t	0.2041	0.9702	-6.6686*	0.0000	At 1 st difference

Note: *, ** & *** indicated the significance level at 1%, 5%, and 10% respectively.

Table 4 depicts that UR, military expenditure, gross capital formation, and human capital series are stationary at 1st difference, while FDI, GDP, and inflation series are stationary at the level. The ADF test indicated that the order of integration of the variables is mixed.

5.3.3. Regression results

Table 5 shows the ARDL techniques results, in the long run, which shows that the FDI has a harmful and important effect on unemployment. A % gain in FDI will decrease unemployment by 0.12 percent. These results are same as of Dritsakis and Stamatiou (2018) and Zeb et al (2014), and are dissimilar to Tsaurai (2018). Similarly, the GDP has an opposing effect on unemployment. A % upsurge in GDP will decrease the unemployment by 0.07%. These results are the same with Tsaurai (2018) and dissimilar with Singh (2018). Furthermore, the Inf has adverse and notable effects on UR. A % upsurge in Inf will diminution the UR by 0.04 percent. The prior studies found that there are positive links between Inf and UR like, Santoso and Kristiyanto (2021), and Leasiwal (2021). Instead, some studies found that there are negative links between inflation rate and UR like, Wulandari et al. (2019). Afzal and Awais (2012) and Maqbool et al. (2013) also found the same in case of Pakistan.

Table 5: ARDL techniques results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FDI _t	-0.1233*	0.0359	-3.4401	0.0014
GDP _t	-0.0727***	0.0361	2.0117	0.0512
Inf _t	-0.0445*	0.0079	-5.6500	0.0000
ME _t	-0.0991***	0.0539	-1.8403	0.0733
PK _t	-0.0515***	0.0289	-1.7789	0.0830
HK _t	-0.0628**	0.0248	-2.5309	0.0155
C	1.2752***	0.7551	1.6888	0.0992
D(FDI _t)	0.0148	0.1543	0.0957	0.9242
D(GDP _t)	0.0468	0.0282	1.6579	0.1052
D(INF _t)	-0.0386**	0.0168	-2.2944	0.0271
D(ME _t)	0.1455	0.2113	0.6886	0.4951
D(PK _t)	-0.0390	0.0589	-0.6629	0.5112
D(HK _t)	-0.0491	0.0349	-1.4062	0.1674
ECM _{t-1}	-0.5050*	0.0761	-6.6332	0.0000

ARDL-Bounds Test			
H ₀ : No long-period associations exist			
Test Statistic	Value	k	
F-statistic	3.8525**	6	
Critical-Value			
Significance	I0 Bound	I1 Bound	
10%	2.12	3.23	
5%	2.45	3.61	
1%	3.15	4.43	

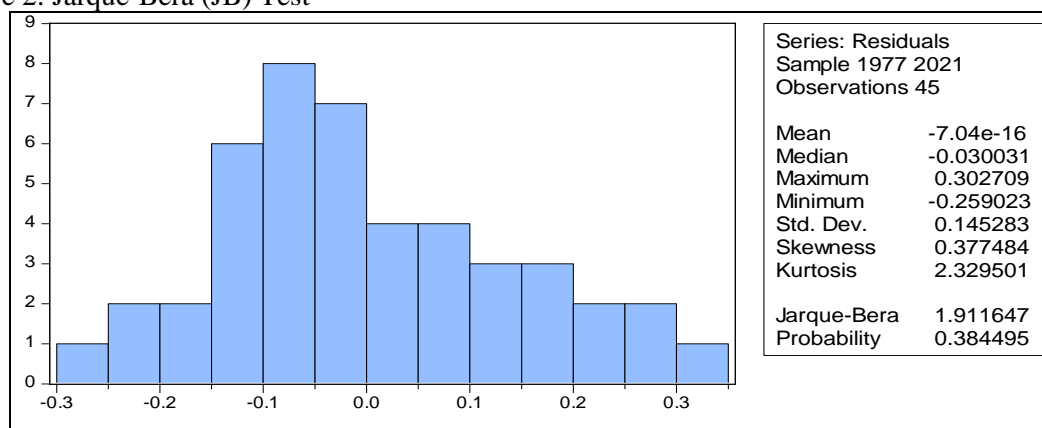
Note: *, ** & *** designated the significance level at 1%, 5%, and 10% respectively.

Likewise, the military outlay has adverse and noteworthy effects on UR. A % upsurge in military outlay will decrease the UR by 0.10 percent. The previous studies also give mixed results. Like Huang and Kao (2005) found that ME affects employment. However, Ledesma et al. (2022) found no link between ME and UR. Furthermore, Ceyhan and Köstekçi (2021) and Nenbee et al. (2021) found that ME boosts UR, while, Canbay and Mercan (2020) and Azam et al. (2016) give opposite results. Furthermore, the PK has adverse and noteworthy effects on UR. A % surge in PK will diminution the UR by 0.05%. This result is in line with the results of Alrayes and Abu Wadi (2018) and dissimilar with Pasara and Garidzirai (2020). Also, HK has a negative and noteworthy effect on UR. A % increase in HK will decrease the unemployment by 0.06%. These results are the same with Afolayan (2019). In the short term, the FDI, GDP, military expenditure, gross capital formation, and HK have inconsequential effects on the unemployment rate. However, the Inf has adverse and important effects on unemployment. A % upsurge in inflation will decrease unemployment by 0.04 percent. The calculated ECM is found negative and significant, which shows the 50% junction to the long-period equilibrium. The calculated value of the ARDL bound test shows that there is long-term co-integration among the variables.

5.3.4. Normality test results

Figure 2 shows the normality status of the residuals of the model. The Jarque-Bera (JB) test shows that the residuals of the study are normally distributed.

Figure 2: Jarque-Bera (JB) Test



5.3.5. Diagnostic tests results

The diagnostic tests show that there is no serial correlation, heteroskedasticity, and no specification-error in the model.

Table 6: Diagnostic tests results

Test with H_0	Test statistic	Statistic	p-value	Decision
Breusch-Godfrey Serial Correlation LM	F-statistic	1.6072	0.2530	Can't reject H_0
Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-Statistic	0.5520	0.9079	-do-
Ramsey RESET Test	t-statistic	0.6250	0.5459	-do-
	F-statistic	0.3907	0.5459	

5.3.6. Stability tests results

The results of the *CUSUM* and *CUSUM* square tests in the figure-3 and figure-4 revealed that the model is stable.

Figure 3: Result of *CUSUM* test

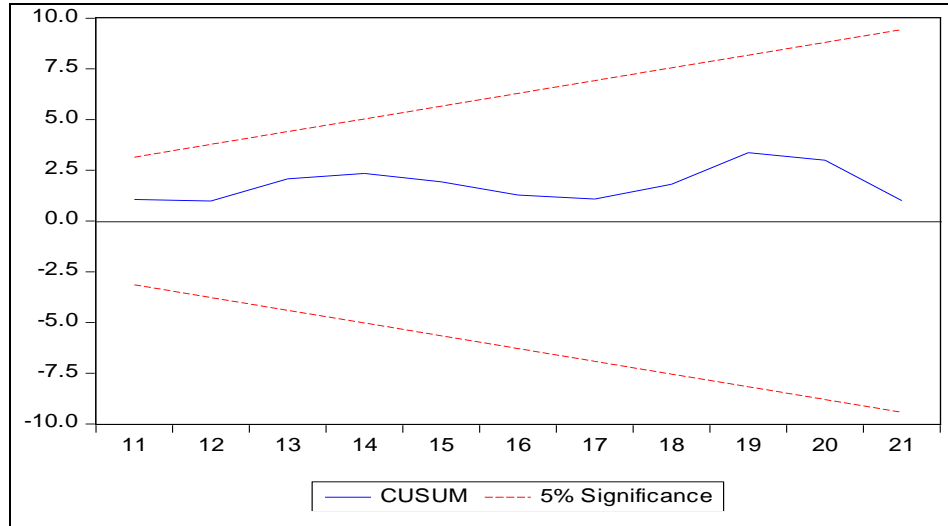
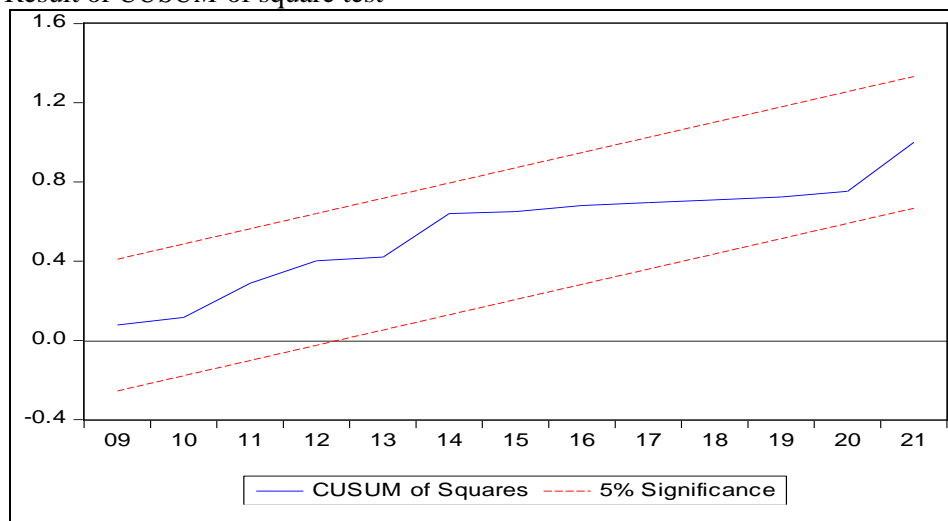


Figure 4: Result of *CUSUM* of square test



5.3.7. Causality tests results

Table 7 shows the granger-causality (G-C) test results among the variables. The results show that there exists a two-way causality between military expenditure and UR, GDP and FDI, and military expenditure and GDP. Furthermore, there exists one-way causality running from UR to GDP, GDP to gross capital formation, human capital to GDP, military expenditure to PK, and ME to HK. However, there exists no causality between FDI and UR, inflation and UR, PK and UR, HK and unemployment, inflation and FDI, military expenditure and FDI, FDI and PK, FDI and HK, inflation and GDP, military expenditure and inflation, PK and inflation, HK, and inflation, and human capital and gross capital formation.

Table 7: Granger causality test results

Variables	UR _t	FDI _t	GDP _t	INF _t	ME _t	PK _t	HK _t
UR _t	----	0.6492 (0.4246)	4.6984** (0.0354)	0.0282 (0.8674)	4.0838** (0.0491)	0.0286 (0.8665)	0.0087 (0.9262)
FDI _t	0.4644 (0.4990)	----	5.1431** (0.0281)	0.6087 (0.4393)	1.1419 (0.2908)	0.2779 (0.6006)	0.2226 (0.6393)
GDP _t	1.3400 (0.2530)	7.2414* (0.0099)	----	0.0806 (0.7777)	12.288* (0.0010)	13.5421* (0.0006)	0.6619 (0.4201)
INF _t	0.2213 (0.6402)	2.3680 (0.1307)	1.6428 (0.2064)	----	0.0872 (0.7691)	0.8277 (0.3677)	0.8039 (0.3746)
ME _t	4.0314*** (0.0506)	0.2623 (0.6110)	2.8566*** (0.0978)	0.6631 (0.4197)	----	3.2540*** (0.0778)	6.1106** (0.0172)
PK _t	2.6435 (0.1108)	0.4421 (0.5094)	0.0139 (0.9068)	0.9559 (0.3333)	0.8647 (0.3573)	----	1.9768 (0.1664)
HK _t	2.1761 (0.1470)	0.1021 (0.7508)	4.4620** (0.0401)	0.0311 (0.8608)	0.0064 (0.9367)	2.5480 (0.1173)	----

Note:

1. *, ** & *** indicated the consequence level at 1%, 5%, and 10% respectively.
2. The values inside the square parenthesis () are p-values.

6. Conclusion

The main aim of the study is to explore the effect of inflation and military expenditure on unemployment, in the case of Pakistan. This study used the data from 1972-2021 and employed ARDL techniques for estimation. This study found that FDI, GDP, inflation, military expenditure, PK, and HK have adverse and significant on unemployment in the long-period. However, the FDI, GDP, military expenditure, gross capital formation, and HK have inconsequential effects on the unemployment rate. while inflation has an adverse and noteworthy effect on unemployment in the near run. Furthermore, there exists bi-directional causality between ME and UR, GDP and FDI, and military expenditure and GDP. Furthermore, there exists one-way causality running from unemployment to GDP, GDP to gross capital formation, human capital to GDP, military expenditure to PK, and military expenditure to human capital. However, there exists no causality between FDI and unemployment, inflation and unemployment, PK and unemployment, HK and unemployment, inflation and FDI, military expenditure and FDI, FDI and PK, FDI and human capital, inflation and GDP, military expenditure and inflation, PK and inflation, HK and inflation, and human capital and gross capital formation. This study concluded that the increase in military expenditure and inflation have an inverse influence on unemployment in Pakistan. This study strongly supported the Philips theory in Pakistan that inflation and unemployment have a negative relationship.

7. Recommendations

The allocation of limited economic resources to defence, goods, and services is dictated by current economic conditions. According to Pakistan, at first glance, increased defence spending is likely to boost total demand in the economy and hence contribute to GDP. However, diverting supplies from alternative consuming locations that are critical for growth may hurt production capacity. Because modern technology is employed in the military sector, manufacturing requires a large amount of cash and a skilled workforce. However, the increase in defence expenditure is mandatory. Because Pakistan is threatened by internal and external enemies. The increase in defence is also mandatory because the armed forces keep the law-

and-order situation, which encourages investors to invest in Pakistan to increase production and create new jobs which reduces unemployment. It might be argued that defence-outlay is effective in increasing jobs.

The federal government should immediately implement budgetary discipline measures that would ensure employment development. This can be accomplished by enforcing Pakistan's local content laws, particularly those about local manufacturing of military and other civilian commodities. According to the study, there is a precondition for building peace and security in Pakistan, which should play a part in freeing themselves from armed and ammunition competitions. This method would benefit Pakistan's growth rates by maximizing its resources efficiently.

Redirecting superfluous spending toward labour-intensive governmental initiatives, as well as decreasing domestic and foreign indebtedness in this sense, not only should particularly items of government expenditure on defence be reduced, but that money should also be directed into initiatives that promote job development. Furthermore, the government must strive hard to raise the pace of economic growth, as it plays an important role in lowering unemployment. The government should increase the price level to encourage industry and investors to investment to create new jobs and reduce unemployment. The government should minimize both inflation and unemployment based on these findings.

Due to some constraints, this study is limited to Pakistan and has limited variables. Future researchers may use the different combinations of variables and other developing countries data to explore the same area.

Declaration of conflict of interest

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References

- Abouelfarag, H. A., & Qutb, R. (2021). Does government expenditure reduce unemployment in Egypt? *Journal of Economic and Administrative Sciences*, 37(3), 355-374. <https://doi.org/10.1108/JEAS-01-2020-0011>
- Abu, N. (2019). Inflation and unemployment trade-off: a re-examination of the Phillips curve and its stability in Nigeria. *Contemporary Economics*, 13(1), 21-35. <https://link.gale.com/apps/doc/A607535451/AONE?u=anon~657a16f0&sid=googleScholar&xid=d8f70bac>
- Afolayan, O. T. (2019). Reducing unemployment malaise in Nigeria: the role of electricity consumption and human capital development. *International Journal of Energy Economics and Policy*, 9(4), 63-73. <http://zbw.eu/econis-archiv/bitstream/11159/4935/1/1742746934.pdf>
- Afzal, M., & Awais, S. (2012). Inflation-unemployment trade off: evidence from Pakistan. *Journal of Global Economy*, 8(1), 21-32. https://www.academia.edu/48853663/Inflation_Unemployment_Trade_Off_Evidence_from_Pakistan
- Ahmad, F. (2013). The effect of oil prices on unemployment: evidence from Pakistan. *Business and Economics research journal*, 4(1), 43-57. [https://www.berjournal.com/wp-content/plugins/downloads-manager/upload/BERJ%204\(1\)13%20Article%203%20pp.43-57.pdf](https://www.berjournal.com/wp-content/plugins/downloads-manager/upload/BERJ%204(1)13%20Article%203%20pp.43-57.pdf)
- Ali, A., & Zulfiqar, K. (2018). An assessment of association between natural resources agglomeration and unemployment in Pakistan. *Munich Personal RePEc Archive (MPRA)*, 89022, 1-15. https://mpra.ub.uni-muenchen.de/89022/1/MPRA_paper_89022.pdf
- Aliu, F., Jahja, A., & Lubishtani, E. (2021). Relationship between inflation and unemployment: the case study of Former Yugoslav Countries. *University for Business and Tertiary for Business and Technology International Conference, 2021*, 551, 1-21. <https://knowledgecenter.ubt-uni.net/cgi/viewcontent.cgi?article=3718&context=conference>
- Alrayes, S. E., & Abu Wadi, R. (2018). Determinants of unemployment in Bahrain. *International Journal of Business and Social Science*, 9(12), 64-74. <https://doi.org/10.30845/ijbss.v9n12p8>
- Aqil, M., Qureshi, M. A., Ahmed, R. R., & Qadeer, S. (2014). Determinants of unemployment in Pakistan. *International Journal of Physical and Social Sciences*, 4(4), 676-682. <https://www.indus.edu.pk/publication/Publication-4.pdf>
- Arshad, S., & Ali, A. (2016). Trade-off between inflation, interest and unemployment rate of Pakistan: Revisited. *Bulletin of Business and Economics (BBE)*, 5(4), 193-209. <https://bbejournal.com/index.php/BBE/article/view/260>

- Azam, M., Khan, F., Zaman, K., & Rasli, A. M. (2016). Military expenditures and unemployment nexus for selected South Asian countries. *Social indicators research*, 127(3), 1103-1117. <https://doi.org/10.1007/s11205-015-0993-7>
- Baran, P., & Sweezy, P. M. (1966). Monopoly capital: an essay on the American economic and social order. *Monthly Review: An Independent Socialist Magazine*. https://monthlyreview.org/product/monopoly_capital/
- Berentsen, A., Menzio, G., & Wright, R. (2011). Inflation and unemployment in the long run. *American Economic Review*, 101(1), 371-398. <https://doi.org/10.1257/aer.101.1.371>
- Blanchflower, D. G., Bell, D. N., Montagnoli, A., & Moro, M. (2014). The happiness trade-off between unemployment and inflation. *Journal of Money, Credit and Banking*, 46(S2), 117-141. <https://doi.org/10.1111/jmcb.12154>
- Canbay, Ş., & Mercan, D. (2020). Unemployment effects of military spending in Turkey. *Journal of Yaşar University*, 15(60), 941-952. <https://doi.org/10.19168/jyasar.704853>
- Ceyhan, T., & Köstekçi, A. (2021). The effect of military expenditures on economic growth and unemployment: evidence from Turkey. *Firat Üniversitesi Sosyal Bilimler Dergisi*, 31(2), 913-928. <https://doi.org/10.18069/firatsbed.898944>
- Chester, E. (1978). Military spending and capitalist stability. *Cambridge Journal of Economics*, 2(3), 293-29. <https://doi.org/10.1093/oxfordjournals.cje.a035392>
- Chowdhury, M., & Hossain, M. (2014). Determinants of unemployment in Bangladesh: a case study. *Developing Country Studies*, 4(3), 16-20. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2402908
- Diakhoumpa, M. (2020). Effect of economic growth and inflation on unemployment: an empirical analysis in Senegal from 1991 to 2018. *Journal of Economics Library*, 7(1), 19-38. <https://doi.org/10.1453/jel.v7i1.2029>
- Dritsakis, N., & Stamatiou, P. (2018). Causal nexus between FDI, exports, unemployment and economic growth for the old European Union members. evidence from panel data. *International journal of economic sciences*, 7(2), 35-56. <https://doi.org/10.20472/ES.2018.7.2.002>
- Dunne, P., & Smith, R. (1990). Military expenditure and unemployment in the OECD. *Defence and Peace Economics*, 1(1), 57-73. <https://doi.org/10.1080/10430719008404650>
- Forder, J. (2014). *Macroeconomics and the Phillips curve myth*. Oxford. <https://global.oup.com/academic/product/macroeconomics-and-the-phillips-curve-myth-9780199683659?cc=fr&lang=en&>
- Fotros, M. H., & Golkhandan, A. (2017). Effect of military spending on unemployment in selected developing countries using panel mean group approach. *Economic*

Development Policy, 5(3), 51-69.
https://ieda.alzahra.ac.ir/article_3372_262c5a9c09f34b1b52ed3865b20719b1.pdf

Friedman, M. (1977). Nobel lecture: inflation and unemployment. *Journal of Political Economy*, 85(3), 451-472. <https://doi.org/10.1086/260579>

Furuoka, F., & Munir, Q. (2014). Unemployment and inflation in Malaysia: Evidence from error correction model. *Malaysian Journal of Business and Economics (MJBE)*, 1(1), 35-45. <https://jurcon.ums.edu.my/ojums/index.php/mjbe/article/view/111>

Hanif, A., Salah Uddin, M., Bakirtas, T., & Kader, S. A. (2023). Military expenditure and unemployment nexus in Bangladesh. *Revista Finanzas y Política Económica*, 15(1), 157-184. <https://doi.org/10.14718/revfinanzpolitecon.v15.n1.2023.7>

Herman, E. (2010). Inflation and unemployment in the Romanian economy. *Annals of the University of Petrosani Economics*, 10(2), 157-170. <https://upet.ro/annals/economics/pdf/2010/20100215.pdf>

Hooker, M., & Knetter, M. M. (1994). Unemployment Effects of military spending: evidence from a panel of states. *National Bureau Of Economic Research Working Paper Series*, 4889, 1-32. https://www.nber.org/system/files/working_papers/w4889/w4889.pdf

Hoover, K. D. (1995). Relative wages, rationality, and involuntary unemployment in Keynes's labor market. *History of Political Economy*, 27(4), 653-685. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=d096192ee45c9178817dcdaaa221f7bbdae59bc8>

Huang, J. T., & Kao, A. P. (2005). Does defence spending matter to employment in Taiwan? *Defence and Peace Economics*, 16(2), 101-115. <https://doi.org/10.1080/10242690500070094>

Ibrahim, M. S., Muhammad, I. S., & Sada, A. (2023). Relationship between inflation and unemployment: testing the applicability of Philips Curve To Nigeria. *EPRA International Journal of Economic Growth and Environmental Issues (EGEI)*, 11(1), 1-7. <http://eprajournals.net/index.php/EGEI/article/view/1341>

Irewole, O. E. (2019). Inflation and unemployment relationship: a dynamic report of Nigeria and Mexico in the perspective of Phillips Curve from 1991-2016. *International Journal of New Economics and Social Sciences*, 2(10), 11-30. <https://www.cceol.com/search/article-detail?id=846040>

Khan, A. Q., Azam, M., Emirullah, C., & Usman, M. (2015). Impact of defense spending on unemployment in five countries from Asia. *Corporate Board: Roles and Composition*, 11(3), 117-129. <http://repository.lppm.unila.ac.id/id/eprint/1089>

Korkmaz, S. (2015). The effect of military spending on economic growth and unemployment in Mediterranean countries. *International Journal of Economics and Financial Issues*, 5(1), 273-280. <https://dergipark.org.tr/en/pub/ijefi/issue/31967/352125>

- Korkmaz, S., & Abdullazade, M. (2020). The causal relationship between unemployment and inflation in G6 countries. *Advances in Economics and Business*, 8(5), 303-309. <https://doi.org/10.13189/aeb.2020.080505>
- Leasiwal, T. C. (2021). A longitudinal analysis of the effect of wages, inflation, economic growth on unemployment rate in Maluku Province, Indonesia. *International Journal of Entrepreneurship*, 25, 1-11. <https://www.proquest.com/openview/a0a6d673915ccd8ae780ddaf34fc12c4/1?cbl=29727&pq-origsite=gscholar>
- Ledesma, I., Quetua, S. M., Yang, T.-H., & Rosete, M. A. (2022). Analyzing the economic effects of military expenditures in ASEAN Countries. *International Journal of Social and Management Studies*, 3(5), 20-36. <https://doi.org/10.5555/ijosmas.v3i5.169>
- Li, C., & Liu, Z. (2012). Study on the relationship among Chinese unemployment rate, economic growth and inflation. *Matrix*, 1(1), 1-7. https://www.academia.edu/34295802/Study_on_the_relationship_among_Chinese_unemployment_rate_economic_growth_and_inflation
- Macharia, M. K., & Otieno, A. (2015). Effect of inflation on unemployment in Kenya. *International Journal of Science and Research*, 6(6), 1980-1984. <https://doi.org/10.21275/ART20174660>
- Mahmood, Y., Bokhari, R., & Aslam, M. (2013). Trade-off between inflation, interest and unemployment rate of Pakistan: A cointegration analysis. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 7(3), 482-492. <https://www.econstor.eu/handle/10419/188106>
- Malizard, J. (2014). Defense Spending and unemployment in France. *Defence and Peace Economics*, 25(6), 635-642. <https://doi.org/10.1080/10242694.2013.857450>
- Mangnejo, G. M., Mahar, S. W., & Ahmed, B. (2020). Inflation and unemployment in Pakistan: an empirical analysis. *Pakistan Social Sciences Review*, 4(2), 306-318. [https://doi.org/10.35484/pssr.2020\(4-ii\)25](https://doi.org/10.35484/pssr.2020(4-ii)25)
- Mankiw, N. G. (2001). The inexorable and mysterious tradeoff between inflation and unemployment. *The Economic Journal*, 111(471), 45-61. <https://doi.org/10.1111/1468-0297.00619>
- Maqbool, M. S., Mahmood, T., Sattar, A., & Bhalli, M. (2013). Determinants of unemployment: empirical evidences from Pakistan. *Pakistan Economic and Social Review*, 51(2), 191-208. <https://media.teckiz.com/pakistan-economic-and-social-review/pesc-eco-pu/2021/04/19/607dbc9105c82.pdf>
- Michael, C., & Stelios, R. (2017). Defense spending and unemployment. evidence from Southern European countries. *Peace Economics, Peace Science and Public Policy*, 23(1). <https://doi.org/10.1515/peps-2016-0026>
-

- Mpanju, A. K. (2012). The impact of foreign direct investment on employment creation in Tanzania. *International Journal of Business Economics & Management Research*, 2(1), 126-139. <http://dSPACE.tia.ac.tz:8080/xmlui/handle/123456789/103>
- Nenbee, S. G., Njoku, F. N., Vite, B. N., & Otovwe, E. E. (2021). Defence spending, unemployment and poverty in Nigeria: an econometric analysis. *International Journal of Research in Humanities and Social Studies*, 8(5), 41-54. <https://doi.org/10.22259/2694-6296.0805005>
- Onuoha, F. C., & Moses, O. A. (2019). Impact of disaggregated public expenditure on unemployment rate of selected African countries: a panel dynamic analysis. *Journal of Economics, Management and Trade*, 24(5), 1-14. <https://doi.org/10.9734/JEMT/2019/v24i530175>
- Onwachukwu, C. I. (2016). Determinants of the rate of unemployment in Nigeria. *International Journal of Information Research and Review*, 4, 3593-3595. https://mpra.ub.uni-muenchen.de/81125/1/MPRA_paper_81125.pdf
- Özshinz, Ş., & Ücler, G. (2021). The relationship between defense expenditures and employment in NATO member states: bootstrap panel causality test. *İstanbul İktisat Dergisi*, 71(1), 231-249. <https://dergipark.org.tr/en/pub/istjecon/issue/64179/972521>
- Pasara, M. T., & Garidzirai, R. (2020). Causality effects among gross capital formation, unemployment and economic growth in South Africa. *Economies*, 8(2), 1-12. <https://www.mdpi.com/682044>
- Pascal, A., & Jilenga, M. T. (2022). The effect of inflation on unemployment in emerging countries' economy. *Institute of Accountancy Arusha (IAA)*, 1(1), 1-11. <http://dSPACE.iaa.ac.tz:8080/xmlui/handle/123456789/1957>
- Payne, J. E., & Ross, K. L. (1992). Defense spending and the macroeconomy. *Defence and Peace Economics*, 3(2), 161-168. <https://doi.org/10.1080/10430719208404724>
- Pesaran, M. H., & Shin, Y. (1995). *An autoregressive distributed lag modelling approach to cointegration analysis, 9514*: Department of Applied Economics, University of Cambridge Cambridge. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=743dc1e8cf7eea4a2ac9bc58907f2ce08a1f5d90>
- Phillips, A. W. (1958). The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1861-1957. *Economica*, 25(100), 283-299. <https://doi.org/10.2307/2550759>
- Pratomo, A. M., & Setyadharma, A. (2020). The effect of wages, economic growth, and number of industries on unemployment. *KnE Social Sciences*, 4(6), 1266-1279. <https://knepublishing.com/index.php/KnE-Social/article/view/6677>

- Putri, Y. E., & Indriani, S. T. (2017). The effect of inflation, investment and wages rate on unemployment in the East Java province. *2nd International Conference on Economic Education and Entrepreneurship (ICEEE, 2017)*, 791-798. <https://www.scitepress.org/Papers/2017/69902/69902.pdf>
- Qiong, L., & Junhua, H. (2015). Military expenditure and unemployment in China. *Procedia Economics and Finance*, 30, 498-504. [https://doi.org/10.1016/S2212-5671\(15\)01247-2](https://doi.org/10.1016/S2212-5671(15)01247-2)
- Raifu, I. A., Obijole, E. O., & Nnadozie, O. O. (2022). The role of institutional quality in military spending and unemployment nexus in Nigeria. *Peace Economics, Peace Science and Public Policy*, 28(2), 155-194. <https://doi.org/10.1515/peps-2022-0006>
- Raphael, S., & Winter-Ebmer, R. (2001). Identifying the effect of unemployment on crime. *The Journal of Law and Economics*, 44(1), 259-283. <https://www.journals.uchicago.edu/doi/abs/10.1086/320275>
- Rehman, Z. U., Khan, M. A., & Tariq, M. (2020). Government expenditure composition and economic growth: empirical evidence from Pakistan. *Journal of Managerial Sciences*, 14(1), 54-64. https://qurtuba.edu.pk/jms/default_files/JMS/14_1/14_1_6.pdf
- Sanso-Navarro, M., & Vera-Cabello, M. (2015). The causal relationship between military spending and unemployment in the EU15. *SSRN*, 1-21. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2550136
- Santoso, I. H., & Kristiyanto, S. (2021). The effect of inflation and wages on unemployment in East Java province. *International Journal of Economics and Finance Studies*, 13(2), 65-81. <https://sobiad.org/menuscript/index.php/ijefs/article/view/749>
- Sasongko, G. & Huruta, A. D. (2019). The causality between inflation and unemployment: the Indonesian evidence. *Verslas: Teorija ir Praktika/Business: Theory and Practice*, 20, 1-10. <https://www.ceeol.com/search/article-detail?id=772699>
- Sherman, H. J. (1976). *Stagflation: a radical theory of unemployment and inflation*. Harper and Row. <https://cir.nii.ac.jp/crid/1130000796316617472>
- Singh, R. (2018). Impact of GDP and inflation on unemployment rate: a study of Indian economy in 2011-2018. *International Journal*, 8(3), 329-340. <https://www.indianjournals.com/ijor.aspx?target=ijor:ijmie&volume=8&issue=3&article=022>
- Smith, R. P. (1977). Military expenditure and capitalism. *Cambridge Journal of Economics*, 1(1), 61-76. <https://doi.org/10.1093/oxfordjournals.cje.a035351>
- Tang, J. H., Lai, C. C., & Lin, E. S. (2009). Military expenditure and unemployment rates: Granger causality tests using global panel data. *Defence and Peace Economics*, 20(4), 253-267. <https://doi.org/10.1080/10242690903105257>

- Tenzin, U. (2019). The nexus among economic growth, inflation and unemployment in Bhutan. *South Asia Economic Journal*, 20(1), 94-105. <https://doi.org/10.1177/139156141882220>
- Tsaurai, K. (2018). Exploring the employment effect of FDI in BRICS: does conditionalities matter? *Acta Universitatis Danubius. OEconomica*, 14(3), 86-103. <https://journals.univ-danubius.ro/index.php/oeconomica/article/viewFile/4651/4468>
- World Development Indicators (WDI). (2021): The World Bank. <https://databank.worldbank.org/reports.aspx?source=2&series=EN.ATM.CO2E.PC#>.
- World Development Indicators (WDI). (2022). World development indicators (WDI). *The World Bank*. <https://databank.worldbank.org/home.aspx>
- Wulandari, D., Utomo, S. H., Narmaditya, B. S., & Kamaludin, M. (2019). Nexus between inflation and unemployment: evidence from Indonesia. *The Journal of Asian Finance, Economics and Business*, 6(2), 269-275. <https://doi.org/10.13106/jafeb.2019.vol6.no2.269>
- Yildirim, J., & Sezgin, S. (2003). Military expenditure and employment in Turkey. *Defence and Peace Economics*, 14(2), 129-139. <https://doi.org/10.1080/10242690302919>
- Zayed, N. M., Islam, M. R., & Hasan, K. R. (2018). Testing Phillips curve to examine the inflation rate regarding unemployment rate, annual wage rate and GDP of Philippines: 1950-2017. *Academy of Accounting and Financial Studies Journal*, 22(5), 1-9. <https://www.abacademies.org/articles/Testing-Phillips-Curve-to-Examine-the-Inflation-Rate-1528-2635-22-5-292.pdf>
- Zeb, N., Qiang, F., & Sharif, M. S. (2014). Foreign direct investment and unemployment reduction in Pakistan. *International Journal of Economics and Research*, 5(2), 10-17. [https://ijeronline.com/documents/volumes/Vol%205%20iss%2002/ijer%20v05%20i2%20\(2\).pdf](https://ijeronline.com/documents/volumes/Vol%205%20iss%2002/ijer%20v05%20i2%20(2).pdf)
- Zhong, M., Chang, T., Tang, D., & Wolde-Rufael, Y. (2015). The causal nexus between military spending and unemployment in the G7: a bootstrap panel causality test. *Defence and Peace Economics*, 26(6), 609-622. <https://doi.org/10.1080/10242694.2014.994835>