Impact of Selected Macroeconomic Variables on the Unemployment Rate in Sri Lanka (2005-2020)

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Abstract

Unemployment is one of the socio-economic problems that exist globally. As a developing country, unemployment has been a long-term problem in Sri Lanka. It can be identified as one of the main macroeconomic variables affecting the sustainable economic growth in Sri Lanka. The youth unemployment rate, especially the, female unemployment rate, has increased significantly. Afterward, this has created negative consequences for the country's economy and citizens. This study examines how macroeconomic factors, such as Gross Domestic Product (GDP), inflation, export, and exchange rate, impact the unemployment rate in Sri Lanka from 2005 to 2020. Quarterly data relevant to these variables from 2005 to 2020 were used for the analysis. The Vector Error Correction Model (VECM) was employed to determine the effect of these variables on the unemployment rate. It was revealed that Sri Lanka's GDP, exports, and inflation significantly affect the unemployment rate, while the exchange rate did not significantly impact during the reference period. It can be suggested that the government and policymakers should implement policies to maintain a low unemployment rate in Sri Lanka by increasing GDP and exports while keeping the inflation rate at a substantial low level.

Keywords: *Exchange rate, Export, GDP, Inflation, Unemployment rate, Macroeconomic variables*

1. Introduction

Unemployment is one of the crucial variables to consider in understanding the micro and macro dynamics of most economies and developing strategic plans to stabilise the economies of most nations to enhance economic growth and development. Unemployment is considered the worst situation any human society can experience as it affects various dimensions and directions (Abeti & Karikari-Apau, 2019). Nowadays, the world faces major economic problems including unemployment. This unemployment is a socioeconomic issue that exits in developing and developed countries. It impacts people's living standards and the socio-economic standards of countries. The unemployment rate is a key factor monitored by both the policy makers and the government for the country's sustainable development. The unemployment rate creates a clear picture of the economic development of a certain country. Thus, unemployment is one of the most significant macroeconomic factors among other factors.

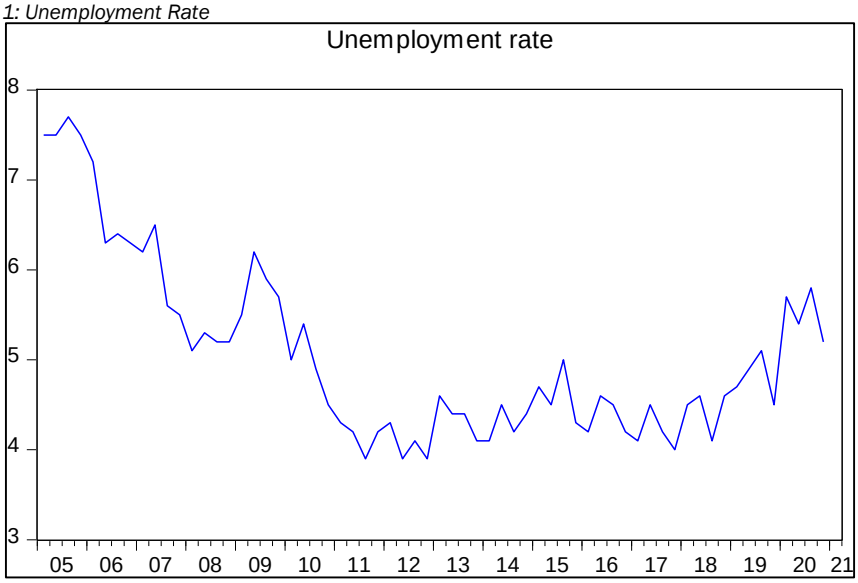
Unemployment can be defined as someone of working age, jobless, able and available to work and actively looking for a job. (Chandan & Christiansen, 2019)Unemployment has affected 190.3 million people around the world, and the global rate of unemployment is currently 6.47 percent.(Unemployment Rates

Around the World 2024 - Global Finance Magazine.Html, n.d.).

Some reasons for global unemployment can be identified as the caste system, slow economic growth, increasing population, and slow industrialization. Unemployment worldwide has become a global crisis(Chandan & Christiansen, 2019). There are 67.6 million young people without jobs and 13.6 percent of their age between 15 and 24 (Youth Unemployment_ A Global Crisis _ Mercy Corps, n.d.).This young unemployment is increasing daily due to the lack of job opportunities, barriers to entering the labor market, limited work experience, increasing population size, etc. When we examine the country's historical unemployment rate, we can see that the Sri Lankan economy was opened up after 1977. As a result of the progressive rise in unemployment, the economy had to undergo several structural reforms in different areas. The unemployment rate was 9.2% in 1990 and 7.7% in 2000. The government dropped the unemployment rate to below 10% starting in 1997 due to a gradual decline in the unemployment rate over the 1990s. It reached 7.9% in 2001, then started to rise until 2003 before beginning to drop once more from 2004 to 2012. The unemployment rate decreased from 8.3% in August 2004 to 7.7% in August 2005. This resulted from the general economic expansion that 2005 saw due to the tsunami's devastation. In 2005, the unemployment rate in tsunami-affected areas was higher (11.8%) but did not impact the national unemployment.

According to Shialini & Thangamani (2018), unemployment was 4% in 2012. After 1997, there was a declining trend in unemployment, as more unpaid family workers were counted as employees. The female unemployment rate declined progressively from 23.4% to 11% between 1990 and 2000, while the male unemployment rate decreased from 11.8% to 5.9% during the same period. The increase in female career opportunities, particularly in the manufacturing, agricultural, and hotel sectors, may be a cause for this fall. Also, according to the age group, there can be seen a considerable unemployment rate in the age group 20-29 during the 1990 to 2000 time period. There was a high incidence of unemployment rate among persons with General Certificate Advanced Level [GCE (A/L)] qualifications and above qualifications (Centra Bank Report, 2000). The behavior of the unemployment rate in Sri Lanka during the past 16 years can be seen in Figure 1.

Figure 1: Unemployment Rate



Source: (Central Bank Reports, 2005:2020)

The unemployment rate has been around 4%-5% during the last five years, 2016 (4.24%), 2017 (4.05%), 2018 (4.32%), 2019 (4.27%), 2020 (5.5%), (Central Bank Report, 2020) and it has increased by 0.7% during the one year, especially due to the impact of the COVID-19 pandemic situation. The COVID-19 pandemic has had countless effects on every aspect of life in the country. It has a particular impact on the economy and labor market. It has increased unemployment along with low wages and few opportunities for workers. Many job losers, temporarily or permanently, have stopped searching for and accepting new jobs because of the pandemic. According to the Department of Census and Statistics statistics, the unemployment rate among females, young people and educationally qualified people increased in 2020. The female unemployment rate has increased to 8.4% in 2020 from 7.4% in 2019. This rate increased to 4.0% in 2020 from 3.3% in 2019. The female unemployment rate has increased more than twice as much as the male unemployment rate. There are many types of unemployment status; structural unemployment, fractional unemployment, seasonal unemployment, cyclical unemployment, and disguised unemployment. Structural unemployment occurs due to changes in the structure of different economic activities in the country. Because of the development of technology, employees may lose jobs. Fractional unemployment can occur due to ignorance of job opportunities, a shortage of the raw materials and a breakdown of the technology. There are job opportunities in the industry, but the people looking for a job cannot fill them since they do not have the required skills or are not aware of those job opportunities. Seasonal unemployment can occur due to seasonal variations in activities, such as climate changes, changes in fashion, and the conventional nature of different industries. Cyclical unemployment is related to the economic indicators' ups and downs trend and is directly related to the macroeconomic situations in the country. This type of unemployment is also called Keynesian

unemployment or the demand deficient unemployment. If aggregative demand falls below the whole employment level, then it cannot purchase the whole employment level of output. Disguised unemployment occurs when the capacity of productivity is low and many workers are filling with few jobs. In this situation, individuals appear to be employed but are unconnected with production. Also, the productivity remains the same amount when he is not connected with the process(Chandan & Christiansen, 2019)

Several studies have been conducted to reflect the impact of different macroeconomic variables on unemployment in many countries. Researchers have used various time series models to identify the impact of selected macroeconomic variables on the unemployment rate for different periods in many countries. The unemployment rate is one of the most important macroeconomic variables for modeling and forecasting economic decisions. The effect of macroeconomic variables on unemployment has been studied using various models and statistical approaches. According to Jahoda (1982), unemployment is among the most important social issues. Also, unemployment has a very significant economic cost, both to the individual and to society as a whole. However, unemployment has additional consequences. The psychological meaning of job and unemployment has been explored beyond clear economic indicators. It is an accessible and nontechnical description of the role of social psychology in understanding Unemployment. It demonstrates the difficulties of focusing just on its economic elements. It has been explained that the psychological impact is extremely harmful, casting doubt on the widely held belief that the work ethic is vanishing. Dickens & Lang (1995) claimed that Sri Lanka has a severe problem with youth unemployment. When we account for gender, sector, and age, the positive relationship between education and unemployment disappears for urban youths and is severely diminished for rural youth, according to previous writers. Furthermore, when we consider the length of unemployment, the relationship between rural and urban youth is called into question. Unemployment usually lasts four years or longer, and the length has little to do with schooling. When age is taken into account, highly educated young people have better unemployment rates since they have recently graduated from high school. Research done by Gunatlilaka et al. (2010) shows that Sri Lanka is suffering from high unemployment. The appearance of high unemployment and slow economic growth in Sri Lanka is surprising. Also, several advantages would attract foreign investors to the country, which may generate economic growth and employment opportunities. For a low-income country, the labor force has an extraordinarily high degree of education. The infrastructure is well-functioning compared to other developing countries. Also, in terms of tourism, Sri Lanka has better comparative advantages, but there is still a considerable unemployment rate in the country. According to them, youth unemployment has increased and is highest among people between 15-19 years old. About 80% of all the unemployed are under 29 years of age. Doğan (2012) investigated the impact of unemployment from selective macroeconomic shocks for the period of 2000: Q1 to 2010: Q1 by using data from the Central bank in Turkey. This study revealed

that positive shocks to growth, growth in exports and inflation reduce unemployment and shocks to the exchange rate, interbank interest rate, and money supply increase unemployment. Also, they have shown that macro variables influence unemployment by including structural breaks and all variables significantly impact unemployment.

Kitov (2013) conducted a study investigating the relationship between inflation and unemployment in Germany from 1970 to 2012. Cointegration, dynamic OLS, and error correlation models have been used as analytical tools, and they have highlighted that there is no negative short-run relationship between inflation and unemployment. However, the result of the error correlation model has given significant evidence of a long run relationship between inflation and unemployment in Germany. Another study was done by Xuen et al. (2017) to find the long-term relationship between 1982 and 2014 and discover the macroeconomic factors influencing the unemployment rate in China. The Autoregressive Distributed Lag (ARDL) model was utilised to analyse the annual data collected from World Indicators to determine the relationships. They claimed that population growth and GDP growth have a long-term impact on the unemployment rate while inflation and foreign direct investment are not negligible. The ordinary Least Square method (OLS) was employed to evaluate the effect of economic development and inflation on unemployment in Bangladesh using data from 1991 to 2015 from Tanha (2018). Economic expansion, inflation, industry, and age dependency ratio were considered explanatory factors. This approach indicated that economic growth has a negligible positive impact on unemployment and that industry is inversely affected by unemployment. Moreover, the impact of the age dependency ratio on unemployment is statistically inversely significant. A study carried out by Sahoo & Sahoo (2019) to examine the relationship between unemployment rate and some macroeconomic variables; Gross Domestic Products (GDP), Inflation (INFL), gross Fixed Capital Formation (GFCF), Lobar Force (LF) and Literacy Rate (LR) in India for the period 1991-2017. Vector error Correlation (VECM) model and Granger causality test were applied in the analysis process and the result indicated that selected variables somewhat predict economic unemployment in India. The result of the Granger Causality test indicated that the unidirectional relationship between the unemployment rate and gross domestic product, domestic private investment (GFCF) and labor force significantly causes unemployment and shows bi directional Granger causality between labor force and unemployment based on these findings. Vladi & Hysa (2019) examined the study of the impact of the selected macroeconomic indicators on the unemployment Rate in the region of the Western Balkan Countries. This research was based on the period 2000 to 2017. Quarterly data were retrieved from World Bank and International Monitory Fund (IMF) and Unemployment, Interest Rate, GDP, Inflation, FDI were used as independent macroeconomic variables. Vector Autoregressive Model (VAR) was used as the analysis tool for this research. The result of the unit root test showed that all variables are stationary. VAR model implied that from all of the selected macroeconomic variables, only the interest

rate was shown to impact unemployment significantly. Also, it shows a significant and negative impact on GDP and Inflation. The Granger causality test implied that the interest rate Granger caused the unemployment rate. According to Karikari-Apau and Abeti (2019), unemployment is a severe problem that most developed and emerging countries face, leading to economic and social problems. The economic concerns of unemployment include rejection of tax revenue in the form of income tax, wastage of productive hours, and many others. In contrast, the social issues of unemployment include depression, a lack of self-respect, and other vices such as robbery, prostitution, and many more. It has also been argued that unemployment is a multi-dimensional economic and social phenomenon that demonstrates the discrepancy in economic activity and its impact on society's social structure as a social activity. Iloabuchi (2019) analyzed the effect of unemployment on Nigeria's economic growth using data from 1999 to 2017.The data was collected from the Central Bank of Nigeria and World Bank databases. The research design used Augmented Dickey-Fuller, Phillip-Perron Unit Root Test, OLS and Pairwise Granger causality tests. It is revealed that the impact and direction of the causality on GDP are in line with Okun's law. As the research findings, the Grange causality test has shown a unidirectional relationship between unemployment and economic growth. Also, the population growth result is occurring concurrently with economic growth.

As a major macroeconomic variable, it significantly impacts the economy. Sri Lanka's unemployment rate has fluctuated significantly in the past to the present with more fluctuations. Even though Sri Lanka's overall unemployment rate has greatly decreased, the rates for women and young people are still relatively high. This unemployment problem in a country affects the economy in different ways the production will decrease and the Gross Domestic Product will go down if individuals lose their jobs or if there are no open positions. Additionally, as the unemployment rate rises, it impacts personal economic elements like wages, health care costs, and the need to live below the poverty line. Both the economic and social repercussions of unemployment are evident. The issue of unemployment affects both individuals and their families. Both the person's physical and mental wellbeing are mostly affected. It can be viewed in a variety of ways, including as melancholy, anxiety, embarrassment, and other types of suffering. Also, if a person has this issue, it directly impacts their family. Moreover, many unemployed persons are influenced to engage in criminal activities including gambling, drug usage, and theft. Since there is a high youth unemployment rate in Sri Lanka, it is clear that many young people are encouraged to engage in these activities.

As a developing nation, it is crucial to pay closer attention to the country's unemployment issue as a key macroeconomic factor. The unemployment rate in Sri Lanka is in the significant level with more fluctuations. Over the years, there have been changes in the unemployment rate in Sri Lanka. It's crucial to note that these figures can change due to numerous reasons. The unemployment rate in Sri Lanka is roughly 5-6%. Due to the country's inadequate capacity for population

growth and the high rate of unemployment among young people, which is around 25%, there are few job openings for qualified applicants. Even among women, the unemployment rate has recently increased slightly.

Because it is a significant macroeconomic element, Sri Lanka's sustainable economic growth and development are primarily impacted by the unemployment rate. Number of social and economic issues, such as money troubles, racial discrimination, poverty, and inequalities in living standards and income, are brought on by unemployment. GDP, inflation, exports, and exchange rates are macroeconomic factors that have a direct or indirect impact on the unemployment rate. Therefore, it is crucial to research how these macroeconomic factors impact these changes in Sri Lanka's unemployment rate.

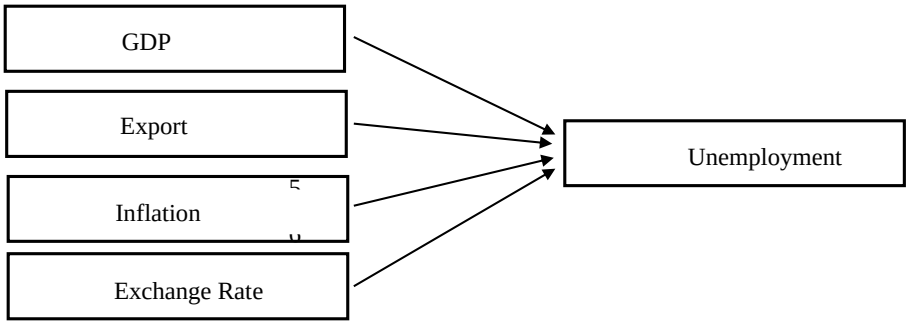
There is no reliable evidence from researches about the impact of macroeconomic variables on Unemployment in Sri Lanka. Therefore, here it is going to identify the impact of selected macroeconomic variables (GDP-Gross Domestic Product, Inflation Rate, Export and Exchange Rate) on Unemployment Rate in Sri Lanka from 2005 to 2020 time period as the main objective.

In point of view, this study finds out the impact of selected macroeconomic factors affect for the unemployment rate in Sri Lanka. There are many macroeconomic factors that affect to the behavior of unemployment in Sri Lanka such as GDP, Inflation, and Foreign Direct Investments, Interest Rate, Export, Exchange Rate, Industrial Production, Population etc. The main factor that affects for the unemployment is GDP. Theoretically, the high amount of GDP growth reduces the unemployment. Also, when exports increase the unemployment rate is decreased. Also, there is a negative impact of Inflation on unemployment rate. When consider about the exchange rate, there may be an indirect impact of exchange on unemployment rate. Therefore, to identify the impact of macroeconomic variables on the behavior of unemployment rate in Sri Lanka from 2005 to 2020, this study has selected GDP, Inflation, Export and Exchange Rate as the explanatory variables.

2. Research Methodology

This research is being carried out to examine the effects of particular macroeconomic variables on Sri Lanka's unemployment rate. Therefore, the macroeconomic variables chosen to influence the unemployment rate were the gross domestic product, exports, inflation, and exchange rate. In order to determine how these chosen macroeconomic variables affect the unemployment rate in Sri Lanka from 2005 to 2020, the conceptual framework has been applied in this study.

Figure 2: Conceptual Framework



Source: Survey Data, 2024

This research is being carried out to examine the effects of particular macroeconomic variables on Sri Lanka's unemployment rate. Therefore, the macroeconomic variables chosen to influence the unemployment rate were the gross domestic product, exports, inflation, and exchange rate. In order to determine how these chosen macroeconomic variables affect the unemployment rate in Sri Lanka from 2005 to 2020, the conceptual framework has been applied in this study. For the purposes of this study, quarterly data for the variables covering the years 2005 to 2020 have been used. Therefore, the relevant data regarding the variables of unemployment rate, GDP, Export, inflation, and exchange rate has been gathered from the Central Bank of Sri Lanka and the Department of Census and Statistics. In order to acquire quarterly data for the sixteen-year period under consideration in this study (2005 to 2020), sixty-four sample sizes were used. This study entitled “Impact of selected Macroeconomics variables on unemployment rate in Sri Lanka”, has been used univariate data analysis techniques as well as multivariate data analysis techniques. There, time series plots were used to analyses the behavior of variables over the years as univariate data analysis method. Vector Error Correction Model (VECM) was employed to identify the impact of macroeconomics variables on unemployment rate in Sri Lanka for the period of 2005 to 2020. To determine if the variables are stationary or not, the Augmented Dickey-Fuller (ADF) & PP (Philip- Pearson) unit root tests were used. The long-term correlation between non-stationary variables was examined using the Johansen's Cointegration test. Additionally, the Granger Causality test is employed to examine whether at least one independent variable is caused of dependent variable. Also, Impulse Response Graphs were used to show that how the model's variables change in response to shocks in particular variables.

3. Result and Discussion

Figure 3 illustrates the trend of unemployment rate in Sri Lanka from the first quarter of 2005 to fourth quarter of 2020. It shows a downward trend in unemployment rate in first few years with more fluctuations but it has been shown a slight upward trend in recent years. According to the Figure 4, the Gross Domestic Product in Sri Lanka shows a gradual upward trend in over the 15 years. The trend of inflation rate indicates downward trend with many random variations over the 15 years. As per the Figure 6 shows the trend of Export in Sri Lanka illustrates a sharp upward trend with many variations over these 15 years. Also, there is evidence to say that there is a seasonal pattern in Sri Lanka’s Export. Moreover, according to the Figure 7, Exchange Rate (USD) in Sri Lanka shows rapid upward trend over the selected period of time.

Figure 3: Time Series Plots of Unemployment Rate

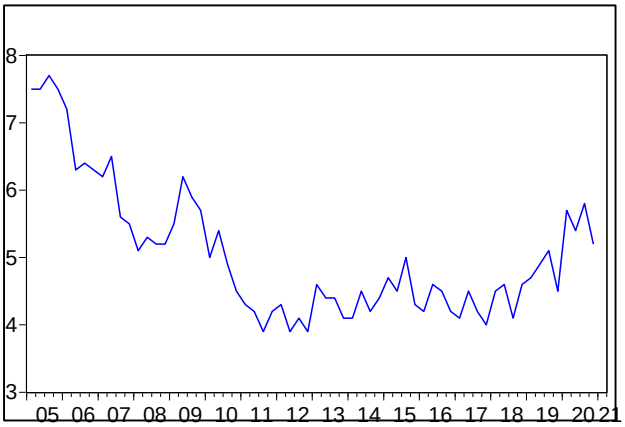


Figure 4: Time Series Plots of DGP

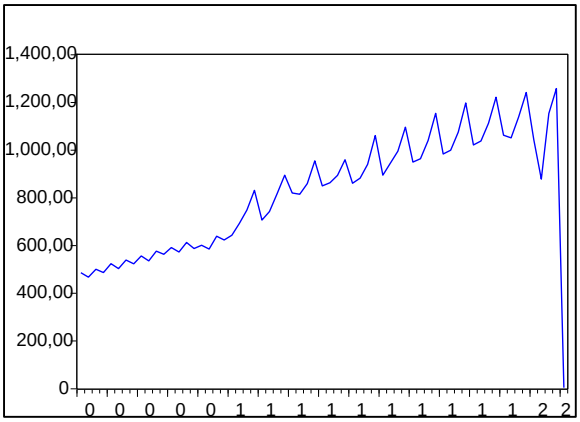


Figure 5: Time Series Plots of Inflation

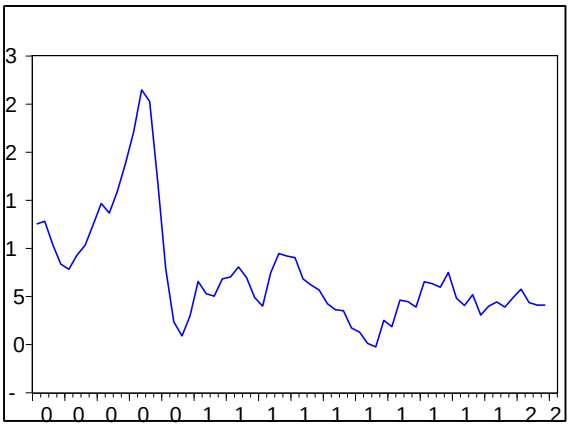


Figure 6: Time Series Plots of Export

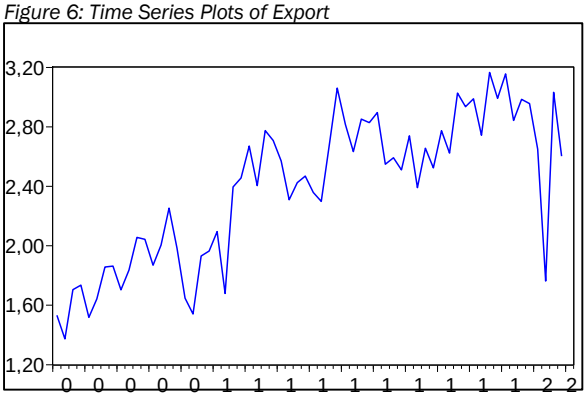


Figure 7: Time Series Plots of Exchange Rate

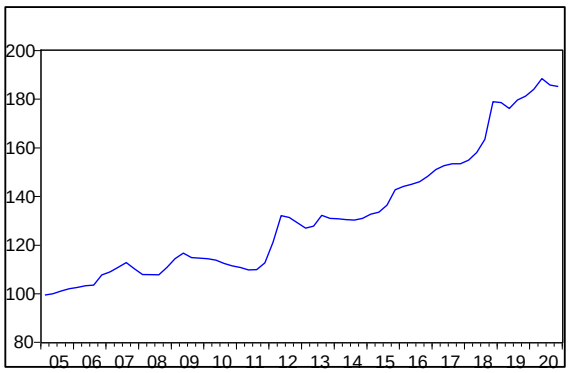


Table 1 shows the result of Phillips-Perron Test at level and at 1st difference. It indicates that all the variables; unemployment, GDP, inflation, export and exchange rate were non-stationary at level form. But after 1st Differencing the probability values of all variables are less than significance level direct to make a concluded that at 1st difference of all series are stationary at 5% level of significance.

Table 1: Result of Phillips-Perron Test

Variable	Level		1st Difference	
	Test Statistic	Probability Value	Test Statistic	Probability Value
Unemployment Rate	-2.6378	0.0909	-10.5828	0.0000
GDP	-1.9096	0.3259	-3.3871	0.0151
Inflation	-2.2930	0.1774	-4.6446	0.0003
Export	-2.8001	0.0640	-20.7249	0.0001
Exchange Rate	1.0214	0.9964	-5.3872	0.0000

Table 2 represents the lag length criteria for build the VAR model. The table with 1,2,3,4, and 5 lag, suggest lag four is optimal lag because it has relatively small values of Sequential Modified LR Test Statistics, Final Prediction Error, Akaike Information Criterion, Schwarz Information Criterion and Hannan-Quinn Information Criterion. Therefore, it can be suggested that the optimal lag order for the VAR model is 3.

Table 2: Lag length criteria

Number of Lag	LogL	Sequential Modified LR Test Statistics	Final Prediction Error	Akaike Information Criterion	Schwarz Information Criterion	Hannan-Quinn Information Criterion
0	-1654.210	NA	1.84e+18	56.24441	56.42047	56.31314
1	-1437.206	389.8719	2.75e+15	49.73579	50.79217*	50.14816
2	-1395.670	67.58308	1.60e+15	49.17527	51.11196	49.93127
3	-1362.553	48.27337	1.27e+15	48.90009	51.71709	49.99973
4	-1318.684	56.50901*	7.37e+14*	48.26047*	51.95778	49.70375*
5	-1295.217	26.25118	9.12e+14	48.31244	52.89006	50.09936

Table 3: Cointegration Rank Test (Trace)

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Probability
None *	0.481784	92.03706	69.81889	0.0003
At most 1 *	0.353421	53.25267	47.85613	0.0143
At most 2	0.233432	27.52515	29.79707	0.0894
At most 3	0.128644	11.84109	15.49471	0.1647
At most 4	0.061049	3.716519	3.841466	0.0539

Table 3 and 4 represents the analysis of Johansen Cointegration test. The results indicated that two Cointegration equation in trace statistics. The trace statistics of Johansen Cointegration method determines the level of Cointegration among the data series in the study. Therefore, according to the results of Johansen Cointegration test indicates that long run relationship among the variables such as the Unemployment Rate, GDP, Inflation, Export and Exchange Rate by indicating two Cointegration equations. If there exists a long run relationship between the Unemployment Rate and macroeconomic variables it can be perform a VECM model for this study.

Table 4: Result of Cointegration Test

Variable	Cointegration Equation 1	Cointegration Equation 2
UNEMPLOYMENT_RATE (-1)	1.000000	0.000000
GDP(-1)	0.000000	1.000000
EXPORT(-1)	0.051073	-6374.411
	(0.01526)	(1888.18)
	[3.34655]	[-3.37596]
INFLATION (-1)	2.985235	-358218.4
	(1.00437)	(124264.)
	[2.97226]	[-2.88273]
EXCHANGE_RATE (-1)	0.523294	-69217.92
	(0.29952)	(37057.4)
	[1.74712]	[-1.86786]
C	-220.4944	26476900

Table 5: VECM estimation results & test

Variable	Coefficient	Standard Error	Test Statistic	P- Value
COINTEGRATION EQUATION 1	-0.304631	0.112705	-2.702912	0.0104
COINTEGRATION EQUATION 2	-2.55E-06	9.06E-07	-2.811883	0.0079
D(UNEMPLOYMENT _RATE(-1))	-0.724753	0.167144	-4.336092	0.0001
D(UNEMPLOYMENT _RATE(-2))	-0.565837	0.191515	-2.954530	0.0055
D(UNEMPLOYMENT _RATE(-3))	-0.409501	0.177580	-2.306011	0.0270
D(UNEMPLOYMENT_RATE(-4))	-0.388795	0.163049	-2.384534	0.0225
D(GDP(-1))	1.32E-07	1.31E-06	0.101041	0.9201
D(GDP(-2))	-3.77E-07	1.28E-06	-0.294502	0.7701
D(GDP(-3))	-4.84E-07	1.44E-06	-0.335498	0.7392
D(GDP(-4))	-3.11E-06	1.51E-06	-2.061176	0.0466
D(EXPORT(-1))	-0.000999	0.000282	-3.546287	0.0011
D(EXPORT(-2))	-0.000902	0.000305	-2.961966	0.0054
D(EXPORT(-3))	-0.000567	0.000278	-2.038593	0.0489
D(EXPORT(-4))	-0.000594	0.000288	-2.062885	0.0464
D(INFLATION(-1))	-0.052589	0.025124	-2.093140	0.0434
D(INFLATION(-2))	-0.013789	0.026458	-0.521172	0.6054
D(INFLATION(-3))	-0.033706	0.025313	-1.331583	0.1914
D(INFLATION(-4))	0.011849	0.025151	0.471133	0.6404
D(EXCHANGE_RATE(-1))	-0.021345	0.015516	-1.375718	0.1774
D(EXCHANGE_RATE(-2))	-0.007539	0.016568	-0.455033	0.6518
D(EXCHANGE_RATE(-3))	0.004216	0.016192	0.260384	0.7961
D(EXCHANGE_RATE(-4))	-0.009298	0.016172	-0.574951	0.5689
CONSTANT	0.026458	0.079274	0.333755	0.7405
R-squared	0.672605	Mean dependent var		-0.033898
Adjusted R-squared	0.472530	S.D. dependent var		0.410051
S.E. of regression	0.297808	Akaike info criterion		0.700906
Sum squared resid	3.192821	Schwarz criterion		1.510793
Log likelihood	2.323284	Hannan-Quinn criter.		1.017053
F-statistic	3.361771	Durbin-Watson stat		1.867168
Prob(F-statistic)	0.000615			

According to the Table 5, the p-value (0.0006) is less than the significance level (0.05), therefore it can be concluded that constructed VECM model is overall significant at 5% confidence level. Also, the adjusted R-squared of the model 47.25% indicated the goodness of the VECM model. According to the results of the VECM model, the p-values of D(GDP(-4)) ,D(EXPORT(-1)), D(EXPORT(-2)), D(EXPORT(-3)), D(EXPORT(-4)), D(INFLATION(-1)) are less than the significant level (0.05), it can be concluded that there is an impact of GDP, Export & Inflation variables on the unemployment rate.

Table 6: Results of Residual Diagnosis

Test	**Test Statistics**	**p-value**
Jarque- Bera Test	0.1669	0.9199
Heteroskedasticity test - ARCH	1.6105	0.0994
Serial Correlation LM test	0.8447	0.5073

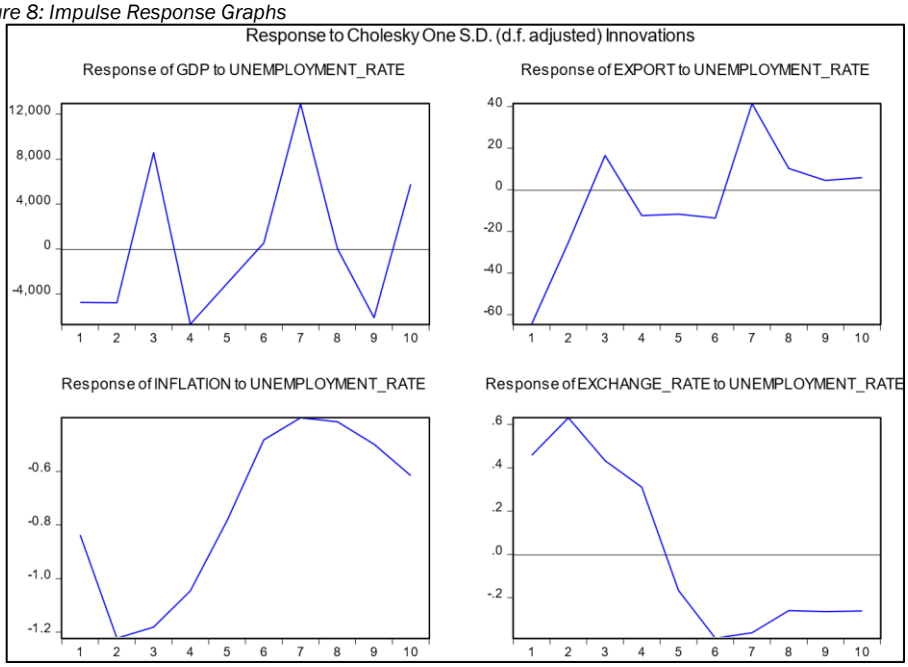
Table 6 indicates the p-values (0.9199, 0.0994, 0.5073) of all the tests are greater than the significance level (0.05). Therefore, it can be denoted that the assumptions (Normality, Homogeneity of Variance & Randomness) are satisfied with the 5% level of significance.

Table 7: Result of Granger Causality Test

Dependent variable: D(UNEMPLOYMENT_RATE)			
Excluded	**Chi-sq**	**df**	**P-value**
D(GDP)	16.29517	4	0.0026
D(EXPORT)	14.85884	4	0.0050
D(INFLATION)	10.18270	4	0.0375
D(EXCHANGE_RATE)	2.803657	4	0.5912
All	49.45922	16	0.0000

Table 7 shows the result of Granger Causality Test. It revealed that there are 3 independent variables are granger cause to the unemployment rate in Sri Lanka. According to that the p values of D(GDP), D(Export) and D(Inflation) are less than the significance level 0.05. Therefore, it can be concluded that the GDP, Export and Inflation are granger cause to the Unemployment Rate in Sri Lanka. Also, it denoted that the p value of Exchange Rate is greater than the significance level, so it can be identified that the Exchange Rate does not granger cause to the unemployment rate in Sri Lanka.

Figure 8: Impulse Response Graphs



The Figure 8 shows the Impulse Response Graphs relevant to the Unemployment Rate In Sri Lanka. According to the graphs it shows that how Macroeconomics variables (GDP, Export, Inflation and Exchange Rate) affect the Unemployment Rate equilibrium. Accordingly, the first figure shows the effect of GDP on the equilibrium level of unemployment. It appears that in the short term and long term, GDP is expected to keep the unemployment level from equilibrium with fluctuations on both the positive and negative sides. Therefore, shock of GDP will have positive and negative impact to the unemployment Rate. The Figure 3 also shows the how exports of Sri Lanka is affecting the equilibrium of unemployment rate in Sri Lanka. Accordingly, it is clear from the figure that in short term, Sri Lankan shock of exports affect to keep the unemployment level below the equilibrium level. But it is clear that exports will have the effect of bringing the

unemployment rate to equilibrium as it progresses gradually over the long term.
According to the Figure 3 shows the impact of Inflation on the unemployment rate in Sri Lanka. Therefore, according to the Figure 3, it is clear that in short run as well as in long run shock of inflation will have negative impact on the unemployment rate in Sri Lanka.in short run the negative impact of inflation rate on unemployment rate is higher than the short run impact on unemployment rate's equilibrium. Figure 4 also shows the how the exchange rate affects the unemployment rate equilibrium. Accordingly, it shows that the shock of exchange rate affects the level of unemployment rate to be significantly higher than the equilibrium level in the short term. It shows that in long term, the exchange rate will have to keep unemployment levels well below the equilibrium. Therefore, it is clear that the exchange rate has greatly influenced the level of unemployment in the short as well as in the long term to vary through the equilibrium level.

4. Conclusion and Suggestions

This study mainly focusses on the impact of selected macroeconomics Variables; GDP, export, inflation and exchange rate on unemployment rate in Sri Lanka over the time period 2005 to 2022. Based on literature reviews it could be selected the factors as GDP, export, inflation and exchange rate that affects to the unemployment rate. For determining that there is a significant impact of macroeconomics variables on unemployment rate, and determine whether a long run relationship between the variables is and how these macroeconomics variables affect to the unemployment rate's equilibrium level it was applied time series analysis techniques and the major findings of the study can be denoted as follows.

According to the results that revealed by the VECM model, it could be got a clear identification about how this macroeconomics Variables affect to the unemployment rate. According to that when looking at the GDP, D (GDP (-4)) is significantly affected to the unemployment rate in Sri Lanka and there is a negative relationship between the GDP and unemployment rate according to the coefficient value. It means that when GDP is increasing it is affected to the reduction of Unemployment Rate. Also, when looking D (EXPORT (-1)), D (EXPORT (-2)), D (EXPORT (-3)) & D (EXPORT (-4)) on unemployment rate, it is clear that the Exports is significantly affect to the unemployment rate in all four quarters in Sri Lanka. Therefore, it could be identified that the export is significantly affect to the unemployment rate. Also, there is a negative impact between export and unemployment rate according to the coefficient value. Also, inflation has a significant impact on the unemployment rate in Sri Lanka. When looking back four quarters with inflation on unemployment rate, it has been denoted that the D(INFLATION(-1)) is significantly affect to the unemployment rate according to the results of VECM. But it has a positive impact of inflation rate on unemployment rate. It means when inflation rate increased also the unemployment rate is increased. The special finding is here that there is no significant impact of exchange rate on unemployment rate in Sri Lanka. According to the model, it is clear that in even one quarter there is no significant impact between those two variables when looking back four quarters during the period under consideration. If it could investigate a significant impact of exchange rate on unemployment rate according to the Literature Reviews, in Sri Lanka under the time period of consideration in this study there was no significant impact of exchange rate on unemployment rate. Also, according to the Granger Causality test that was carried out to find that whether there is a Granger causality between the variables it revealed that only GDP, export and inflation is affect to the unemployment rate in Sri Lanka. It revealed that there is no granger cause of exchange rate unemployment. Therefore, according to the

result of VECM model and Granger Causality Test there is enough evidence to say that there is no impact of exchange rate in Sri Lanka on unemployment rate in Sri Lanka. Also, impulse response graph showed that there is an impact of macroeconomics variables on equilibrium of unemployment Rate.

Especially when consider about the unemployment problem in Sri Lanka, this research also purposes to select various potential industries to create employment opportunities especially for younger generation and women in Sri Lanka to keep the unemployment rate in Sri Lanka at an even lower level. Policies should also be taken to keep the country's GDP and exports high and to keep inflation low. According to the results obtained from the study it is clear that the GDP, Export and Inflation is significantly affect to the Unemployment Rate in Sri Lanka Therefore it can be recommended that government and policy makers should implements the policies to keep Sri Lanka's unemployment rate low, to increase GDP, to further increase the exports and to keep inflation rate low. Although the unemployment rate in Sri Lanka is not significantly higher, policies should be formulated to keep it at or below its current level. The future researchers can select the more variables that affect to the unemployment rate in Sri Lanka and find some more valuable findings about impact of macroeconomics variables on unemployment in Sri Lanka. Also, it will be very important to implements the policies to reduce the unemployment rate in the country.

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