Macroeconomic Implication of the Increase in Prices on Economic Welfare: The Nigeria Experience

Taiwo Haruna ADAMU
Director of Communications, MON Club International

ABSTRACT: Improving the economic welfare of the citizenry has been a major economic goal of governments of countries across the world. Thus, this study examined the macroeconomic implication of the increase in prices on economic welfare in Nigeria with emphasis on the three major macroeconomic prices (wage rate, interest rate and exchange rate). Data sourced from Central Bank of Nigeria (CBN) statistical bulletin and World Development Indicator (WDI) between 1985 and 2018 and analyzed using the Autoregressive Distributed Lag (ARDL). The ARDL Bound Test revealed that a long run relationship exist between macroeconomic prices and economic welfare in Nigeria. The findings conform to the Keynesian Theory of Wages and Prices that stipulates that money supply remains constant if wage units and the rate of interest are unaffected. The findings showed that while increase in wages improves economic welfare, increase in the rate of interest retards economic welfare in Nigeria. Therefore, the government should ensure periodic increase in the statutory minimum wage of workers and the monetary authority should also introduce borrowers' friendly interest rate policy with low lending rate in order to improve the level of economic welfare in Nigeria.
Keywords: Macroeconomic prices, economic welfare, Autoregressive Distributed Lag

I. INTRODUCTION

In macroeconomic parlance, prices are the major determinants of the variation in economic indices such as the level of economic performance, the rate of inflation and the welfare pattern in the economy among others. The macroeconomic prices are practically outlined as the rate of interest, the foreign exchange rate and the wage rate; effective management of these macroeconomic prices is germane towards ensuring a viable economic prowess in the developed and developing countries. Variations in these macroeconomic prices are major determinants of the economic well-being of the populace in an economy (Loughrey &

O'Donoghue, 2011; Yağcıbaşı & Yıldırım, 2017) and assert cogent consequences on the economy as a whole which is been measured by the increase in the real gross domestic product in the economy.

Wages and other forms of remuneration are pivotal for the assessment of the welfare state in the economy of the people in a geographical area (Golan, Perloff & Wu, 2001; Lydon & Walker, 2004). In order to maintain fair remuneration to the workforce in the economy, many countries of the world have introduced minimum wage policies which is subject to review at a stipulated period, however, the minimum wage policies cannot be seen as sufficient enough to sustain or improve the level of economic welfare particularly in the developing economies such as Nigeria. Hence, the agitations from different arms of the workers' union seeking for increase in their minimum wage. It is theoretically believed that increase in disposal income tends to increase the level of economic welfare in the populace, this assumption is however not realistic in most of the developing economies because increase in disposal income is mostly followed by increase in the rate of inflation thereby negating the positive implication of increase in income.

Similarly, interest rate policy of the monetary authorities is also important towards the improving the level of economic welfare in the country (Craig & Rocheteau, 2006; Yağcıbaşı & Yıldırım, 2017). It is generally assumed that the populace bears the burden of increase in the rate of interest in the long run because interest repayment burden can be transferred to the final buyer/consumer thereby increasing the general price level of goods and services and worsens the welfare state of the economy. The macroeconomic implication of the rate of interest is very important towards determining the welfare level in an economy (Toriola, Folami, Afolabi & Ajayi, 2020), because the rate of interest set by the monetary authorities (Central Bank of Nigeria) affects the level of capital formation which tends to affect the

volume of investment and the employment rate in the economy (Andolfatto & Gomme, 1998).

Furthermore, in an open economy whereby there are active international transactions, the rate of foreign exchange in the international market is germane towards determining the well-being in the domestic economy (Hua, 2011; Engel, 2014; Toriola et al, 2020). Countries that rely much on imported products are usually badly affected when the local currency depreciates and the consequence of this reflects on the citizenry. With the flexible exchange rate regime employed in Nigeria, the demand and supply in the foreign exchange market determines the value of the domestic currency which is not favourable to the domestic economy. Summarily, adverse changes in the macroeconomic prices in the developing countries might affect food and other prices (Attanasio, Di Maro, Lechene & Phillips, 2009; Weber, 2015; Tiberti & Tiberti, 2016) and make a sizable number of the population to live below the poverty line (Kakwani, 1995; Chakravarty & Muliere, 2004).

Relatively few studies have been carried out on the implication of macroeconomic prices on economic welfare, most of the studies focused solely on one macroeconomic index in relation to economic welfare. The studies either focused on relationships between wages and economic welfare (Golan, Perloff & Wu, 2001; Lydon & Walker, 2004; Loughrey & O'Donoghue, 2011), interest rate and economic welfare (Craig & Rocheteau, 2006; Yağcıbaşı & Yıldırım, 2017), or foreign exchange and economic welfare (Straub & Tchakarov, 2004; Hua, 2011; Engel, 2014; Toriola et al, 2020). These studies failed to analyze economic welfare comprehensively through other macroeconomic variables. Therefore, this study adopts more comprehensive indices of macroeconomic prices by incorporating the three fundamental macroeconomic prices into a single model in order to measure the economic welfare pattern in the Nigerian context. Also, previous studies in Nigeria examined the determinants of economic welfare but failed to investigate its implications. Hence, the purpose of this study is to investigate the implication(s) of these prices on the level of economic welfare in Nigeria.

This study is majorly categorized into four sections. Section one deals with the introduction explaining the background to the study. Section two deals with the review of the literature. Section three focused on the methodology of the study while section four deals with the analysis of data, interpretation of results, conclusions and suggests

policy recommendations based on the results of the analysis.

II. REVIEW OF LITERATURE

Yağcıbaşı and Yıldırım (2017) examined the welfare implications of alternative monetary policy rules in Turkey using the Dynamic Stochastic General Equilibrum (DSGE) model. The main findings of the study is that in the case of a technology shock, strict inflation targeting rules provide the minimum welfare loss under all loss function configurations. However, the losses are weakened if the monetary authority responds to output fluctuations in the presence of a demand shock. There is a trade-off between the volatility of output and inflation in case of a technology shock, while the volatility of both variables moves in the same direction in response to a demand shock.

Hua (2011) studied the economic and social effects of real exchange rate in Chinese provinces using econometric model is estimated by using the Generalized Method Moments (GMM) system estimation approach and panel data for the 29 Chinese provinces and over the period from 1987 to 2008. The results showed that the real exchange rate appreciation had a negative effect on the economic growth, higher in coastal than in inland provinces, contributing to a minimizing of the gap of Gross Domestic Product (GDP) per capita between two kinds of the provinces. They show moreover that the real exchange rate appreciation acted negative effects on employment.

Engel (2014) examined the relationship between exchange rate stabilization and welfare. The study opined that, currency depreciation may help alleviate debt problem because depreciation may improve the trade balance and reduce the need for foreign borrowing. On the other hand, countries that face international borrowing constraints are often forced to borrow in foreign currency. A depreciation of the borrower's currency will increase the value of the debt obligation in the borrower's currency, which may worsen the financial constraint thereby reducing the level of economic welfare.

Andolfatto and Gomme (1998) investigated the relationship between unemployment and economic welfare. Economic welfare was shown to be linked indirectly to the level of human capital in the market and at home, and to sources of non-labour income. These parameters determine the individual's ability to generate high consumption levels. Labour market choices concerning whether to be employed or unemployed, however, in general reflect the relative returns to engaging in alternative activities,

and this implies the poor indicators of the level of welfare.

Lydon and Walker (2004) investigated the effects of welfare to work programme that acts as a wage subsidy on wage growth by exploiting an expansion to this welfare programme in the United Kingdom. It is widely believed that such programmes trap recipients into low wage and low quality work; this comes from the simple argument that the "poverty trap", which a wage subsidy for low income workers induces, reduces the benefits to on-the-job training and so reduces wage growth.

Golan, Perloff, and Wu (2001) examined the welfare effects of minimum wage and other government policies. The study discovered that a 10% increase in the minimum wage increases the welfare loss from inequality by between $2 and $54 billion depending on the welfare index used. The study also revealed that a 10% increase in the minimum wage would lower the average annual income per adult by $226 and would increase the variance, skewness, and kurtosis of the income distribution.

Loughrey and O'Donoghue (2011) studied the effects of consumer price changes upon households in Ireland between 1999 and 2010 using a Linear Expenditure System (LES) and the Atkinson Social Welfare Function. The results showed that changes in the cost of living have differed substantially between households both in terms of demographics and the position of the household in the income distribution and that behavioural response can potentially improve the welfare position of households in response to price changes in most years.

Toriola, Folami, Afolabi, and Ajayi (2020) analyzed the implications of exchange rate fluctuations on human welfare in Nigeria. The findings revealed that an exchange rate fluctuation does not have a significant effect on human welfare in Nigeria while interest rate showed a significant positive effect on human welfare in Nigeria. This result implies that, despite the unstable nature of naira exchange rate over the period, it has not affected welfare changes in the country. This result pointed to the effectiveness of monetary management in the country that has been able to curtail the expected adverse effect of exchange rate fluctuations on the welfare of the people.

Weber (2015) explored how inflationary food prices impact India's consumer welfare and poverty ratios, by calculating the compensating variation as welfare measure using the estimation of a demand system. The results showed that consumers substitute high value commodities, e.g. milk, livestock products and fruits in case of rising prices. Moreover, a 10 per cent price increase on average causes a welfare loss of 5 to 6 per cent of monthly income in rural areas and 3 to 4 per cent welfare loss in urban areas. As a result, there is a drop below the poverty line of an additional 4.69 per cent and 2.19 per cent of households in rural and urban regions in India respectively.

Similarly, Attanasio, Di Maro, Lechene and Phillips (2009) examined the welfare consequence of increases in food prices in rural Mexico and Colombia. The study showed how the poor have been affected by the recent increases and changes in relative prices of foods. The study also showed how a conditional cash transfer programme provides a means of alleviating the problem of increasing staple prices, by indexing the grant the household receives that reflects the importance of staples in the households' expenditure.

Tiberti and Tiberti (2016) examined the relationship between food Price Changes and Household Welfare using two different approaches. The study found that when behavioural adjustments are allowed, households can adapt their consumption and production patterns by resulting in lower deteriorations in household welfare. The second-order effects introduced in the approach with responses reduce the negative effects due to the first-order consumption effects, with significant differences across quintiles. On average, the second-order effects represent up to roughly forty per cent of total first-order effects.

Craig and Rocheteau (2006) examined the relationship between inflation and welfare in the United States. The study pointed out inefficiencies associated with noncompetitive pricing, which matter for estimating the cost of inflation and further illustrate how endogenous participation decisions can mitigate or exacerbate the cost of inflation thereby affecting the welfare pattern in the economy.

III. METHODOLOGY

In order to examine the implication of macroeconomic prices on economic welfare in Nigeria, the ex post facto research design was adopted for the study because of its applicability to measuring cause and effect of a variable to the other.

The theoretical framework for this study is based on the Keynesian theory of Wages and Prices. The Keynesian school of thought opined that wages and the rate of interest are major determinants of effective demand which affects aggregate price level through the quantity of money. According to the theory, the money supply remains constant if wage units and the rate of

interest are unaffected. More so, the Keynesian analysis postulated that the majority of currency trading would be for import and export purposes and a rising income raises the demand for imports thereby increasing the demand for foreign currency which causes depreciation in the domestic currency in the long run. Meaning that, the Keynesian theory justifies that variation in the macroeconomic prices posits a significant consequence on the economy at large.

Incorporating these prices into a model, the model for the study is presented as:

$$RPC_t = f(WGR_t, INR_t, EXR_t) \dots\dots\dots\dots\dots\dots\dots 1$$

$$RPC_t = \alpha_0 + \alpha_1 WGR_t + \alpha_2 INR_t + \alpha_3 EXR_t + \varepsilon t \dots\dots\dots\dots 2$$

Where;

RPC = Real Per Capita Gross Domestic Product (proxy for economic welfare)

WGR = Wage Rate (measured as wage and salaried workers, % of total employment)

INR = Interest Rate

EXR = Real Exchange rate

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$ = Estimated parameters.

εt = Stochastic or error term

ESTIMATION TECHIQUE

Autoregressive Distributed Lag (ARDL) bound testing was used to achieve purpose of the study. ARDL cointegration technique is preferable when dealing with variables that are integrated of different order, I(0), I(1) or combination of both and, robust when there is a single long run relationship between the underlying variables in a small sample size (Nkoro & Uko, 2016; Dingela & Khoba, 2017). The long run relationship of the underlying variables is detected through the F-statistic (Wald test). In this approach, long run relationship of the series is said to be established when the F- statistic exceeds the critical value band. Nonetheless, this technique will crash in the presence of integrated stochastic trend of I(2). To forestall effort in futility, it may be advisable to test for unit roots, though not as a necessary condition. Based on forecast and policy stance, there is need to explore the necessary conditions that give rise to ARDL cointegration technique in order to avoid its wrongful application, estimation, and interpretation.

The ARDL specification of equation (2) above is presented in equation (3) as:

$$\Delta RPC = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta RPC_{t-i} + \sum_{i=0}^{p} \alpha_2 \Delta WGR_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta INRt - i + \sum_{i=0}^{p} \alpha_4 \Delta EXR_{t-i} + \omega_1 lnRPC_{t-1}$$
$$+ \omega_2 lnWGR_{t-1} + \omega_3 lnINR_{t-1} + \omega_4 lnEXR_{t-1}$$
$$+ vt \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.\dots\dots. (3)$$

TYPE AND SOURCES OF DATA

The data used in this study were mainly time series secondary data from 1985 to 2018. Data used in the study were obtained from Central Bank of Nigeria (CBN) annual statistical bulletin and World Development Index (WDI) various publications. The data include: Real per capita gross domestic product, wage and salaried workers percentage of total employment, interest rate and real exchange rate.

IV. ANALYSIS AND DISCUSSION OF FINDINGS
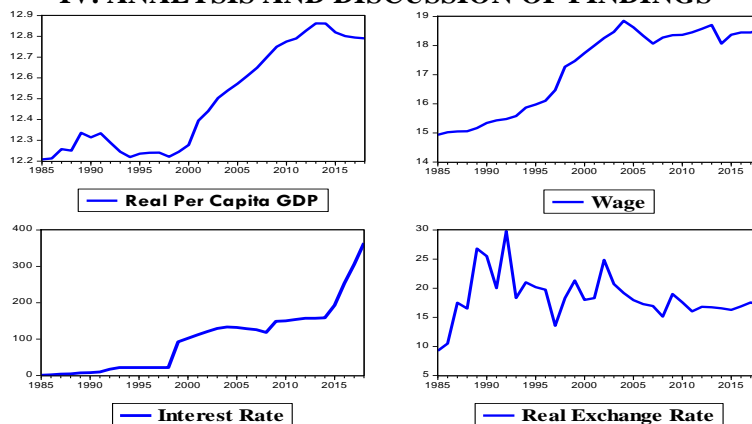
Figures 1-4: The Trend of the Variables of the study in Nigeria, 1985-2018.

Figures 1-4 showed the trend of real per capita GDP, wage % of total employment, interest rate and real exchange rate in Nigeria from 1985 to 2018. The real per capital income was rising in the early period of the study but declined between 1990 and 1995 and has been rising ever since except for a decline recorded in recent time. This shows that Nigeria's economic welfare in declining in recent time. Also, workers' wages are rising reaching its peak around year 2005 but erratic in recent time. The rate of interest is also rising but except for a minimal rate maintained between 1985 and 1998, but it has been rising ever since with a high significance in recent time. The exchange rate figure shows the erratic nature of the rate at which Naira exchange for a Dollar in the foreign exchange market. This might have had an impact on the current level of economic welfare in Nigeria.

UNIT ROOT TEST

ARDL analysis requires that the stationary test be conducted to know the order of integration. The Augmented Dickey Fuller unit root test (ADF) decision rule is that the ADF test statistics must be greater than or equal to any of its critical values in absolute terms before we can accept stationarity. In this study, 5% critical value is used. The result of the unit root test is presented in Tables 1

Table 1: Augmented Dickey Fuller unit root test

VARIABLE	LEVEL		1st Difference		Conclusion
	Test statistics	Critical values @5%	Test statistics	Critical values @ 5%	
RPC	-0.118	-2.954	-3.259	-2.957	I(1)
WGR	-1.381	-2.954	-4.502	-2.957	I(1)
INR	4.525	-1.951	-------	-------	I(0)
EXR	-4.208	-2.954	-------	-------	I(0)

Source: Author's Computation, 2020.

The result revealed that real per capita GDP (RPC) and wage rate (WGR) are stationary at level I(0) while other variables which include; interest rate (INR) and real exchange rate (EXR) are stationary at first difference I(1).

ARDL-BOUND TEST APPROACH TO COINTEGRATION

Before the estimation of the ARDL model, the first step is to determine the optimal lag length. It is necessary to know the number of lag that will sufficiently capture the dynamics of the time series; hence the study makes use of the optimal lag order selection which has a combination of various criteria. The lags are chosen where most of the information criterion is minimized.

Table 2: Optimal Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-287.1729	NA	940.9398	18.19831	18.38152	18.25904
1	-143.1012	243.1210	0.317474	10.19383	11.10991*	10.49748
2	-121.5572	30.96947*	0.236485*	9.847327*	11.49628	10.39391*

Source: Author's Computation, 2020. *indicates lag order selection by criterion

LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion. LR, FPE, AIC and HQ suggested a lag of two for the estimates.

The F-statistics results of the function of the implication of the increase in macroeconomic prices on economic welfare in the Nigeria. The F-statistics of 3.845 falls above the upper bound of critical value of 3.77 at 10% level of significance and above the lower bound of critical value of 3.23 at 5% level of significance. Hence, there is a long run relationship between macroeconomic prices and economic welfare in Nigeria. The cointegration analysis (Bound Test) is presented in Table 3.

Table 3: Bound F-test for Cointegration

Predictor Variable	Function		F-Statistic	Cointegration Results		
RPC	F(RPC|WGR, INR,EXR)		3.845****	Cointegrated		
WGR	F(WGR|RPC,INR,EXR)		1.371	---------		
INR	F(INR|RPC,WGR, EXR)		2.755****	Cointegrated		
EXR	F(EXR|RPC,WGR, INR)		4.945***	Cointegrated		
Asymptotic Critical value						
Critical Value Bounds	**1%**		**2.5%**		**5%**		**10%**
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	4.29	5.61	3.69	4.89	3.23	4.35	2.72	3.77

Source: Author's Computation, 2020.

Note: *, **, *** and **** denote stationary at 1%, 2.5%, 5% and 10% significance levels respectively. This implies that the variables in the model of the study are cointegrated because its F-statistics of 3.845 falls above the upper bound of critical value of 3.77 at 10% level of significance and above the lower bound of critical value of 3.23 at 5% level of significance.

Table 4: ARDL Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG(RPC(-1))	0.878411	0.041202	21.31958	0.0000
WGR	0.019947	0.006045	3.299889	0.0030
INR	-0.000767	0.000173	-4.439892	0.0002
INR(-1)	0.000931	0.000255	3.651515	0.0013
EXR	0.002453	0.002205	1.112160	0.2771
EXR(-1)	-0.001820	0.001686	-1.079379	0.2911
EXR(-2)	-0.002625	0.001337	-1.962951	0.0613
C	1.219558	0.506369	2.408437	0.0241
R-squared	0.987			
Durbin Watson Stat	2.590			

Source: Author's Computation, 2020

Table 4 revealed the results of the ARDL model. The result showed that the value of real per capita GDP in the previous year had positive and significant effect on the real per capital GDP in the current period at 5% significance level. This implies that the value of previous income can affect the current level of income in an economy. Also, the findings revealed that the coefficient of wage rate proxied by wage and salaried workers % of total employment at 0.0199 on real per capita GDP in the model at 0.003 probability value. This implies that wage paid to workers has a positive and significant impact on the real per capita income in Nigeria. Meaning that, one percent increase in wage of workers tends to increase the level of economic welfare by about two percent. This negates Golan et al (2001) that opined that increase in the minimum wage would lower the average annual income per adult. Contrary to Toriola et al (2020), the rate of interest showed a significant but negative impact on the real per capital GDP in Nigeria. Meaning that, one percent increases in interest rate had about 0.07 percent decline in the level of economic welfare. The implication of this is that increase in interest rate reduces the level of economic welfare in the country because increase in the lending rate increases the cost of production which tends to increase the price of the commodity produced while the end users bear the burden. The findings further showed that though the current rate of interest significantly and negatively affects the level of economic level, the rate of interest in the immediate past period however had a positive significant impact on the current level of economic welfare in Nigeria this might be as a result of macroeconomic adjustment implemented before the current year. Furthermore, the rate of foreign exchange posits an insignificant impact on the level of economic welfare in Nigeria. While the exchange rate in the current period had a positive but insignificant impact on the level of welfare in the current period, the rate of exchange in the immediate past period had a negative but insignificant impact on the current level of

economic welfare in Nigeria. This supports the findings of Toriola et al (2020) that asserted that

exchange rate fluctuation does not have a significant effect on human welfare in Nigeria.

Table 5: Diagnostic Tests

Test	F-Statistics	P-Value
Heteroskedasticity	1.328485	0.2801
Serial correlation	3.762700	0.0393

Source: Author's Computation, 2020

Table 5 showed the diagnostic tests. It reveals that the model does not have the problem of heteroskedasticity and has no problem of serial correlation. The R-square (R^2) shows the predictive power of a model and it is derived to be 0.987 using the ARDL approach. This implies that goodness of fit exists in the model. Also, as shown in table 4, Durbin Watson (DW) statistics was estimated at 2.59 while the R-squared was estimated to be 0.987. This shows that the value of the DW statistics is greater than the value of R-squared; hence, there is no problem of autocorrelation in the model.

V. CONCLUSION AND POLICY RECOMMENDATION

From the empirical findings, it is established that the level of economic welfare in Nigeria is mostly determined by the variation of the macroeconomic prices. From the ARDL estimation, the wages paid to workers and the rate of interest by the monetary authority principally determined the level of economic welfare in Nigeria. These findings absolutely conform to the Keynesian theory of wages and prices; Keynes asserted that the volume of money in circulation remains constant if wage units and the rate of interest are unaffected. The macroeconomic implication of this is that, once the wage and the rate of interest related factors are well taken care of, the economic well-being of the populace tends to be protected. More so, as shown in the trend analysis, the fluctuation of the foreign exchange rate in Nigeria is erratic and alarming, this variation affects the economy indirectly because Nigeria is still import dependent. Due to the distortions caused by these fluctuations, increase in the minimum wage (that is, increase in nominal wage) had no real effect on the level of economic welfare of the citizenry. Based on the findings, these recommendations are suggested:

- The government should religiously ensure periodic increase in the statutory minimum wage. As discovered in the findings of the study that wage rate is a principal determinant of the level of economic welfare in Nigeria. Government should also ensure proper implementation of the minimum wage policy in the non-public sector.
- Prompt payment of wages and/or salary to workers must be ensured both in the public and private sectors of the country.
- The monetary authority should introduce borrowers' friendly interest rate policy. With low lending rate, investment tends to increase and employment rate tends to increase thereby leading to increase in the volume of wage aggregately.
- Government should introduce export promotion policies that will make the Naira positively active in the foreign exchange market thereby stabilizing the rate of exchange.

REFERENCES

[1]. Andolfatto, D. & Gomme, P. (1998). Unemployment and economic welfare. Economic Review. http://clevelandfed.org/research/review/

[2]. Attanasio, O., Di Maro, V., Lechene, V. & Phillips, D. (2009). The welfare consequence of increases in food prices in rural Mexico and Colombia. Seminar at the IADB, UCL and Edepo – IFS.

[3]. Central Bank of Nigeria Statistical Bullettin (2019) Vol 25. Central Bank of Nigeria, Abuja.

[4]. Chakravarty, S. R. & Muliere, P. (2004). Welfare indicators: a review and new perspectives; measurement of poverty. International Journal of Statistics, 62(2): 247-281.

[5]. Craig, B. & Rocheteau, G. (2006). Inflation and welfare: a search approach. Federal Reserve Bank of Cleveland Policy Discussion Papers No. 12.

[6]. Dib, A. (2008).Welfare effects of commodity price and exchange rate volatilities in a multi-sector small open economy model. Bank of Canada Working Paper, No. 8.

[7]. Dingela, S. & Khoba, H. (2017). Dynamic impact of money supply on economic growth in South Africa: an ARDL approach.

Munich Personal RePEc Archive, MPRA Paper No. 82539.

[8].   Engel, C. (2014). Exchange rate stabilization and welfare. Annual Reviews of Economics online 2014.6:155-177. Downloaded from www.annualreviews.org assessed on 03/12/2020.

[9].   Golan, A., Perloff, J. M. & Wu, X. (2001). Welfare effects of minimum wage and other government policies. Department of Agricultural and Resource Economics, 207 Giannini Hall, University of California, Berkeley.

[10].   Hua, P. (2011). The economic and social effects of real exchange rate: evidence from the Chinese provinces. International Conference on Social Cohesion and Development, 20-21 January 2011, Paris, France OECD Development Centre.

[11].   Kakwani, N. (1995).Income inequality, welfare, and poverty. an illustration using Ukrainian data. The World Bank Policy Research Department Transition Economics Division.

[12].   Kakwani, N. (1997). Growth rates of per-capita income and aggregate welfare: an international comparison. University of New South Wales.

[13].   Loughrey, J. & O'Donoghue, C. (2011). The Welfare impact of price changes on household welfare and inequality 1999-2010. Discussion Paper Series, IZA DP No. 5717. Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor.

[14].   Lydon, R. & Walker, I. (2004). Welfare-to-work, wages and wage growth. Discussion Paper Series, IZA DP No. 1144. Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor.

[15].   Nkoro, E. & Uko, A. K. (2016). Autoregressive distributed lag (ARDL) cointegration technique: application and interpretation. Journal of Statistical and Econometric Methods, 5(4): 63-91.

[16].   Offer, A. (2000). Economic welfare measurements and human well-being. University of Oxford Discussion Papers in Economic and Social History, No. 34.

[17].   Pesaran, M.H., Shin, Y. & Smith, R. (2001). Bounds testing approaches to the analysis of level relationship. Journal of Applied Econometrics, 16(3). 174-18

[18].   Straub, R. & Tchakarov, I. (2004). Non-Fundamental Exchange Rate Volatility and Welfare. European Central Bank Working Paper Series No. 328.

[19].   Tiberti, L. & Tiberti, M. (2016). Food price changes and household welfare: what do we learn from two different approaches? The Journal of Development Studies, DOI: 10.1080/00220388.2016.1269888.

[20].   Toriola, A.K., Folami, R. A., Afolabi, A. O. & Ajayi, F. O. (2020). The implications of exchange rate fluctuations on human welfare in Nigeria. Bizecons Quarterly, 7: 13-25. http://www.bequarterly.rysearch.com

[21].   Weber, R. (2015).Welfare impacts of rising food prices: evidence from India. Presented at the International Conference of Agricultural Economists (ICAE), Universita Degli Studi Di Milano, August 8-14.

[22].   World Development Index (WDI, 2019). World Bank Data publication

[23].   Yağcıbaşı, O. F. & Yıldırım, M. O. (2017). Welfare implications of alternative monetary policy rules: a new keynesian DSGE model for Turkey. Review of Economic Perspectives-Národohospodářský Obzor, 17(4): 363–379. DOI: 10.1515/revecp-2017-0019.