INVESTIGATING TAXATION AND INCOME INEQUALITY IN NIGERIA

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Abstract

This study empirically examined the effects of taxation on income inequality in Nigeria for a 40-year time period, from 1980 to 2019. The specific objectives were to determine how value added tax, personal income tax, company income tax and custom duty affects income distribution measured by Gini index. Time series data on the underlying tax indicators was sourced from the Central Bank of Nigeria (CBN) statistical bulletin and Federal Inland Revenue. The study adopted the Ordinary Least Square technique. The test for unit root was carried out using the Augmented Dickey-Fuller (ADF) test for stationarity and the result showed that all the variables used in the study were stationary at first difference. The Johansen cointegration test result showed that the variables in the model have long run relationship. It was further revealed that value added tax and company income tax intensified income inequality in Nigeria for the period covered by the study. Personal income tax and custom duty on the contrary played a significant role in reducing income inequality in Nigeria within the period reviewed. Going by the findings from the study, it is recommended that government, through the tax authority, should put systems in check to tackle tax evasion by companies. Also, for taxation to serve the purpose of redistribution of income to bridge the wide gap between the rich and the poor, the Nigerian government should implement tax structures that are purely progressive.

Keywords: Taxation, Income inequality, Gini index, Error Correction Mechanism.

1   INTRODUCTION

Taxation is a tool for societal development and also a means by which the rewards of development are redistributed (Oladiran, 2009). It does not only generate revenue for the government, but also aids in achieving fiscal goals such as influencing the direction of societal development. Taxation, as a fiscal tool, has the capacity of enhancing a nation's development process and its economic activities, thereby improving the overall level of prosperity and economic well-being of its citizens (Anyaduba, 1999). The major reason for the imposition of tax is to raise revenue to meet government uses, to redistribute income and the administration of a country economy (Bhartia, 2009; Ola, 2001).

The principle of taxation hinges on the appropriate criteria to be applied in the development and evaluation of tax structures. Such principles are based on the application of some concepts derived from welfare economics to achieve broader objectives of social justice. This is to say that the tax system of a country should be based on sound principle since tax is a major administrative pivot of any society.

Taxation is a proven avenue by which governments fulfill their obligation to their citizenry. These obligations alongside the macroeconomic goals include the equitable distribution of income. This is to say that the yardstick for measuring a healthy economy is not just in the magnitude of national output but also the extent to which the gap between the rich and the poor is bridged. Houweling and Taylor, (2008) noted that income inequality in nations have been detrimental to the growth and development of those nations. Asides clogging the wheel of economic development, income inequality also take its negative toll on social cohesion (Veenhoven, 2008; Helliwell and Huang, 2008). Income inequality in Nigeria is paradoxical; a nation that is naturally endowed with wealth still has a large population grappling with poverty while a small group of elites live in affluence. The income gap between the rich and the poor has been an issue of great concern to policy makers. According to World Bank data in 2009, 22% of the national income is held by the poorest half in Nigeria. The Human Development Index (HDI) ranking by the World Bank (2017) left Nigeria at 156th position among 177 countries as against her 151st position in 2002. Nigeria human poverty index (HPI) for 2017 was 36.2% putting Nigeria at the 114th position in the world (Akinyele, 2009; Anderson and Martin, 2013).

Among the several efforts by the Nigerian government to curb income inequality is the introduction of the Poverty Alleviation Programme (PAP), National Economic Empowerment and Development Programs (NEEDs), pay as you earn (PAYE) amongst others (Oluwaseun,2014). These programmes and policies did not achieve the desired objective which is to reduce income inequality as a result of poor policy implementation. This has led to the quest to investigate the influence of taxation on income distribution in Nigeria. The rest of this work is sectionalized into literature review, materials and methods, results and discussion as well as conclusion and recommendations.

2.   LITERATURE REVIEW

2.1   Theoretical Framework

Benefit received Theory
This theory, otherwise known as quid pro theory, suggests that taxes should be levied according to the benefit conferred on the tax-payer. It is based on the assumption that there is a "symbiotic relationship" between tax payers and the states. The states provide certain goods

and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received (Bhartia, 2009). Since most public expenditure are made for common benefits, it is therefore difficult to calculate how much benefit accrues to an individual with the exception of cases like old age pensions. The benefit theory violates the basic principle of tax which is for the general purpose of the state and not in return for a specific service. In addition, it is widely believed that low income earners benefit more from state activities than high income earners. This invariably means that the poor will be made to pay higher taxes than the rich.

Cost of Service Theory

This theory is similar to the benefits received theory with exception of the semi-commercial relationship between the state and the citizens. It has its tenets on a balanced budget policy where the state is to give up basic protective and welfare functions to later recover the cost of the services.

Ability to pay Theory

This theory, also known as faculty theory, simply explains that an individual should be taxed according to his ability to pay. It is an optimal tax theory that examines tax liability from the aspect of a compulsory levy imposed by the state without *quid pro quo* benefits. Bhartia (2009) argued that an individual is to pay taxes just because he or she can and his relative share in the total tax burden is to be determined by his relative capacity to pay. The implication of this is that high-income earners should pay higher taxes than low-income earners. This is the most popular and plausible theory of justice and equity in taxation and is supported by both socialist and non-socialist thinkers and it became part of the theory of welfare economics (Chigbu, Akujuobi & Appah, 2012).

Expediency Theory

This theory asserts that every tax proposal must pass the test ofpracticality in terms of its efficiency, effect and economies of the instrument of taxation. Every tax proposal must pass the assessment of practicalitywhich must be considered by the authorities in deciding a tax policy (Ogbonna and Appah, 2012). The theory is based on a link between the state activities and the tax liability because it validates the imposing of taxes for providing a basis for distributing tax burden between the members of the society and also for financing state activities (Bhartia, 2009).

This theory best explains the study in that taxation is a system that provides an effective and efficient set of policy instruments to governments.

2.2 Taxation in Nigeria

Taxation according to economic theory is the process by which the government transfers resources from the private sector to the public sector for the purpose of achieving set economic and social goals. It is the act or process of being taxed (Ogbonna & Odoemelam 2015). Chellian (2001) defined tax as a tool for restraining too much consumption; increasing inventive to save and invest, mitigating economic inequalities and transferring resources from the hands of the public to the hands of the state for public investment. Taxes on the other hand are mandatory levies paid to the governmentby individuals, organizations, companies, properties or transaction to raise revenue. Tax is a burden every citizen or corporate body must bear to sustain its government (Ajie *et al*, 2014).

Abiola & Asiweh, (2012) noted that the Nigerian tax system comprises of the tax policy, tax administration and tax laws working together toattain the nation's economic goal. In Nigeria, there exist various types, forms and classes of tax but they are generally classified into direct and indirect taxes. The direct tax is a levy on personal income, corporate income or properties. Typical examples are personal income tax, company income tax, petroleum profit tax and capital gains tax. Indirect taxes are those taxesin which the burden can be shifted to others so that those who pat these taxes do not bear the whole burden but transfers it partly or wholly to others. Examples are custom and excise duties, value added tax, sales tax.

In Nigeria, the minister of finance is at the apex of tax administration in Nigeria but the Joint Tax Board (JTB) and the Federal Inland Revenue Service (FIRS) are subservient in power hierarchy to the Ministry with JTB overseeing the practical administration of tax matters. FIRS administers taxes atthe federal level while the State Internal Revenue Service (SIRS) administers taxes at the state level.

Various legislations exist in Nigeria to facilitate taxation. These include; the Personal Income Tax Amendment Act 2011, Companies Income Tax Amendment Act 2007, Petroleum Income Tax Amendment Act 2011, Companies Income Tax Amendment Act 2007 and Petroleum Profit Tax Amendment Act 2004. Others are the Capital Gains Tax Ammendment Act 2004, the Value Added Tax Ammendment Act 2007 and the Education Tax Ammendment Act 2004. The main objectives of the Nigeria Tax System amongst others are; to promote fiscal accountability and economic development, the provision of basic resources to enable government make public goods and services available, to tackle income inequality, to address market imperfections, to promote equity and justice (NTP, 2012).

The impact of taxation on inequality depends largely on the size of the system of taxation since nations with a smaller tax system has a positive impact on inequality while nations with larger size tax system have a negative impact on income inequality (Martinez-Vazquez *et al*, 2011).

Income Inequality in Nigeria
Income inequality is the disparity in the distribution of income in an economy. It can differ basically by education, gender, social and religious status. According to International Monetary Fund (IMF), the inequality can be grouped into; inequality of outcome, inequality of wealth, life-time inequality and the inequality of opportunity.

Igbuzor (2017) identified the main drivers of poverty and inequality to be retrogressive taxation, inadequate budgeting system and allocation, insufficient resource management and policy implementation, elite capture, cronyism and favouritism, and prohibitive cost of governance. Income inequality can be reduced through a range of public policies such as good governance represented by transparency and accountability, public expenditure on health, housing and education, policies of more comprehensive growth pattern, and taxation (Ilaboya and Ohonba, 2013).

The criteria for measuring income inequality are Gini index or coefficient, Theil index and Hoover index but the most popular and widely accepted is the Gini index. The index is based on Lorenz curve, taking a figure between zero and one, indicating the ratio of area between the equality line and Lorenz curve. Lee*et al* (2013) observed that Gini index is a range on which Zero (0) is perfect equality while (1) is perfect inequality. Gini index, according to Index mundi, is a measure of the extent to which the distribution of income between individuals or households in an economy deviates from perfectly equal distribution. It shows

the cumulative percentage of income against the cumulative percentage of population. For example, any particular point on this curve shows what percentage of income is in the hand of what percentage of the society members. If the distribution is completely equal, Lorenz curve is completely adjusted on the square diameter and if inequality increases, Lorenz curve turns downwards (Stiglitz & Rosengard, 2015).

2.3   Empirical Literature

Empirical studies also abound on the nexus between taxation and inequality in Nigeria. For instance Chu et al (2000) examined income distribution, tax and government social spending policies in developing nations, between 1980 and 1990. The study revealed that unlike industrialized nations, developing nations have not been able to use taxation and transfer policy to adequately address the problem of income difference.

Iris *et al* (2012), Martinez-Vazquez and Vulovic (2012) using data from 1970 to 2009 for Asian countries, examined government fiscal policies and redistribution of income. The study used panel estimation and discovered that tax systems tend to be progressive but government expenditure seems to be a more effective tool for income distribution. Personal income tax was found to have a negative impact on income inequality in Asian countries.

Using tax and macroeconomic variables from 1970 to 2009, Martinez-Vazquez et al (2012) carried out an investigation on the impact of tax and expenditurepolicy on income distribution in Asia. The study observed that faster growing countries experienced larger incomeinequalities. On the effect of globalisation on inequality, it was observed that globalisation increased income inequality. They further established that progressive personal and income taxes reduced inequality. Consumption taxes, excise taxes and custom duties were observed to haveimpacted negatively on income distribution.

Employing a dynamic general equilibrium model of the national treasury in South Africa, Erero (2015) analysed the effects in valued-added tax increment. The model comprised of a social accounting matrix (SAM). The five different simulations examined ranged from 1 to 5 percent VAT increase between the periods 2012 and 2018. The empirical result showed that an increase in VAT rate ensued by a marginal increase in GDP for the period between 2013 by 0.022% and 2018 by 0.115% respectively. The study recommended that any policy measures aimed at stimulating growth, employment and redistribution of income can consider an increase in VAT rate.

Iris, Martinez-Vazquez and Vulovic (2012) set out in their study to examine the impact of government fiscal policies impact on income inequality in Asia using a panel estimation for 150 countries between from 1970 to 2009. Their variables include. Findings from their empirical results showed that VAT was regressive in Asia because a percentage increase in goods and service's tax in Asia increased inequality of income by 0.666% as against 0.768% points in the rest of the world.

To determine VAT payments by equivalent income of ten different household's composition and sizes, Leathy *et al* (2011) in their investigation measured the distributional impacts of value-added tax (VAT) in Ireland based on the 2004 and 2005 Household Budget Survey. Micro-simulation model was used to ascertain the effect of VAT rate changes on a particular group of items and the related change in revenue. Results from their finding showed the current system to be highly regressive.

A study carried out by Ilaboya and Ohonba (2013) showed that to redistribute wealth, company income taxes in Nigeria should be harnessed effectively. In addition, they recommended that medium scale entreprises be listed and registered with the Corporate Affairs Commission (CAC) for transparency and accountability purposes as this will improve the standpoint of a positive relationship and increase the tax ratio.

Cicowiez *et al* (2009) examined the impact of poverty, economic and inequality on export taxes of both domestic and world trade reform in Argentina. They combined national CGE model, World Bank linkage model, and micro simulations. From their result, they found full trade liberalization of world trade, including import taxes and subsidies but not export taxes for both agriculture and non-agricultural goods to reduce inequality and poverty in Argentina.

Anyaduba & Otulugbu (2019) examined the impact of taxation and income inequality in Nigeria from the year 1990 to 2016 using the Cointegration and Error Correction Model technique. The results from their findings showed that Company Income Tax reduced income inequality proxied by the gini index while Value Added Tax, Custom and Excise Duty and Petroleum Profit Tax had detrimental effects on the gini index within the study period. In recommendation therefore, the study suggested that VAT be imposed on goods and services consumed by high income earners.

This study reviewed a number of related empirical works of other researchers. However, none of the studies showed the relationship between the variants of direct and indirect taxes with income inequality. Also, the study extended the time frame adapted in past studies in order to reflect the present realities on ground in Nigeria. Thus, it is the above gap and the desire to contribute to knowledge in literature that motivated this study.

3.0   METHODOLOGY
This section showed the unique processes used in obtaining and analyzing the necessary information to meet the objectives of this study. This study employed the unit root, Cointegration and ECM methods as the statistical tools. The time series data from 1980-2019 used for the study was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and Federal Inland Revenue Service (FIRS).

3.1   Model Specification
 The model is specified in alog-linear form as follows;

$$LnGINI = \beta_0 + \beta_1 VAT + \beta_2 LnPIT + \beta_3 LnCIT + \beta_4 LnCSD + e \qquad (3.1)$$
Where: GINI= Gini coefficient, VAT = Value Added Tax; PIT = Personal Income Tax; CIT = Company Income Tax; CSD = Custom Duty, Ln = Natural Logarithm, $\beta_1 - \beta_4$ = slope parameters, β_0 = Intercept parameter and e =Error term.
On the *a priori*, we expect $\beta_1 - \beta_4 < 0$.

3.2 Technique of Data Analysis
The study employed the Ordinary Least Squares (OLS) technique to obtain the estimates of the coefficients. The unit root test, cointegration test and ECM were carried out.

4   RESULTS AND DISCUSSION

The section provides empirical tests and analysis of relevant data, and a discussion of the findings.

Unit Root Test

This involves testing for the stationarity properties of each of the variables using the Augmented Dickey Fuller (ADF) test to find the existence (or otherwise) of unit root in each of the time series. The results of the unit root test are presented in the table below.

Table 1: Unit Root Test for Stationarity (Augmented Dickey Fuller)

Variables	ADF Statistic	5% Critical Value	Order of Integration
GINI	-6.1925	-2.9411	I(1)
VAT	-5.0531	-2.9365	I(1)
PIT	-4.6793	-2.9411	I(1)
CIT	-5.4562	-2.9411	I(1)
CSD	-5.0789	-2.9365	I(1)

Source: Researcher's Computation

The unit root test reported in Table I above shows that the time series were not stationary at ordinary level. Therefore, the all the variables were differenced once to attain stationarity implying that (ADF test statistics were greater than their theoretical values at order one). In absolute terms, the ADF value of each of the variable was greater than the critical value at 5%. Since the variables are stationary at order one, the next step is to conduct the co-integration test using the Johansen procedure as demonstrated in the table below.

Co-Integration Test

The results of the co-integration test using the Johansen procedure are presented in the table below.

Table 2: Johansen Co-integration Test Results

Eigen value	Trace Statistics	5% critical value	Eigen value	Max-eigen Statistics	5% critical value
0.971825	171.7974	69.81889	0.892920	85.66376	33.87687
0.854385	86.13365	47.85613	0.717007	46.24300	27.58434
0.625621	39.89065	29.79707	0.573782	23.57971	21.13162
0.471283	16.31095	15.49471	0.394900	15.29525	14.26460
0.041438	1.015698	3.841466	0.219448	1.015698	3.841466

Source: Researcher's Computation

The result of the co-integration in Table 3 was based on both the Trace Statistics and Maximum Eigenvalue. The results indicated three co- integrating equations at 5% level of significance. This suggests that there is a long run equilibrium relationship amongst the variables in the estimated model. Given the existence of co-integrating equations, the requirement for fitting in an error correction model is satisfied.

Parsimonious Error Correction Mechanism

In order to confirm the existence of a co-integrating vector among the variables, the ECM is employed. This is based on the general-to-specific rule and the results are presented on Table 4 below.

Table 3: Parsimonious ECM Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Dependent Variable: D(GINI)				
Method: Least Squares				
Sample (adjusted): 1980 2019				
Included observations: 40 after adjustments				
C	3.602707	0.086132	41.82774	0.0000
D(VAT)	0.168932	0.027442	6.156070	0.0002
D(PIT)	-0.095314	0.031912	-2.986744	0.0153
D(CIT)	0.088531	0.038165	2.319671	0.0455
D(CSD)	-0.072543	0.016029	-4.525713	0.0014
ECM(-1)	0.557341	0.174676	3.190711	0.0041
R-squared	0.628116	Mean dependent var		3.886543
Adjusted R-squared	0.516754	SD. Dependent var		0.167745
S.E. of regression	0.272435	Akaike info		-1.956449
Sum squared resid	0.163896	Schwarz criterion		-1.766748
Log likelihood	39.74588	Hannan-Quinn criter.		-1.879766
F-statistic	7.190765	Durbin- Watson stat		1.980542
Prob(F-statistic)	0.006461			

Source: *Authors' Computation*

From Table 3, above the result of the analysis showed that the regressors in the model accounted for about 63 percent of the total variation in the Gini index. The remaining 37 percent were due to factors exogenous to the model but captured by the error term. Also, the overall regression result of the dynamic model is significant at 5 percent level as revealed by the F-statistic of about 7.2. The ECM was rightly signed and is also significant. It shows that about 56 percent disequilibrium in Gini index in the previous year is corrected in the current year. However, the DW value of 1.98 shows that no autocorrelation exists in the model.

Value-added tax (VAT) exerted a significant positive influence on Gini index contrary to *a priori* expectation. From the result, a unit increase in value added tax increased the Gini index of income inequality by 0.16 units. This implies that the tax levied on goods and services when value is added to them increased income inequality in Nigeria. This corroborates the works of Leathy *et al* (2011) in Ireland and Iris *et al.* (2012) in Asia but was at variance with the submission of Erero (2015) in South Africa and Fu (2016) in China.

The coefficient of personal income tax (PIT) was rightly signed (negative) as expected theoretically in line Nyenke & Amadi (2019) and significant at 5 percent level. The result shows that a percentage increase in personal income tax reduced the Gini index by 0.09 percent. The implication of this is that the tax levied directly on the earnings of individuals has contributed to reducing income inequality in Nigeria.

Company income tax showed a positive relationship with Gini index contrary to theoretical expectation. By implication, a unit increase in company income tax increased Gini coefficient by 0.08 units. This can largely be attributed to tax evasion, tax avoidance and income understatement by companies.

The coefficient of custom duty was negatively signed as expected theoretically and significant at 5 percent level. From the result, a unit increase in custom duty reduced the gini

index by 0.07 percent. This result is in line with the findings of Cicowiez *et al.* (2009) who observed import duty to have a negative impact on GINI in Argentina. It however contradicts the submission of Anyaduba & Otulugbu (2019) who found custom and excise duties to have a positive effect on GINI in Nigeria. The implication of this is that putting a check on imported goods through imposing import duties goes a long way in redistributing income.

Diagnostic Test

A summary of the diagnostic tests is reported in the table below

Table 4: Summary of the Diagnostics Test

Test	F-statistic	Prob.	Conclusion
Jarque-Bera	0.706232	0.702496	Normally Distributed
Breusch-Godfrey Serial Correlation LM	1.913926	F(2, 19) 0.20113	No Serial Correlation
ARCH Heteroskedasticity	0.813528	F(1, 23) 0.4675	No heteroskedasticity
Ramsey RESET	2.468511	F(1, 20) 0.1318	No specification errors

Figure 1:   CUSUM Test of Stability
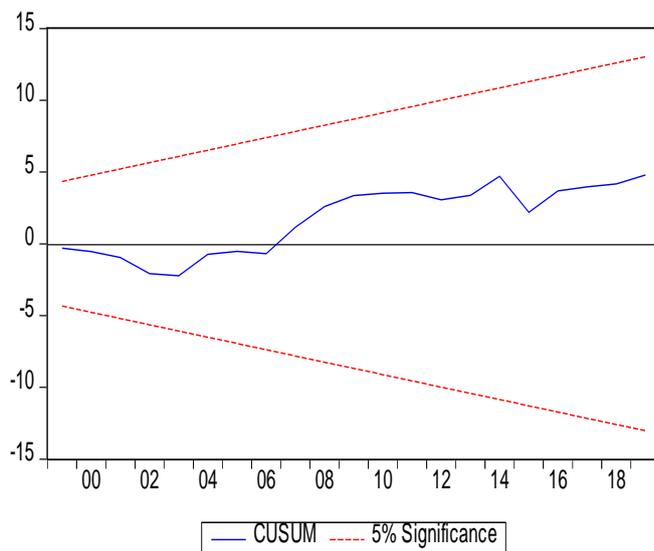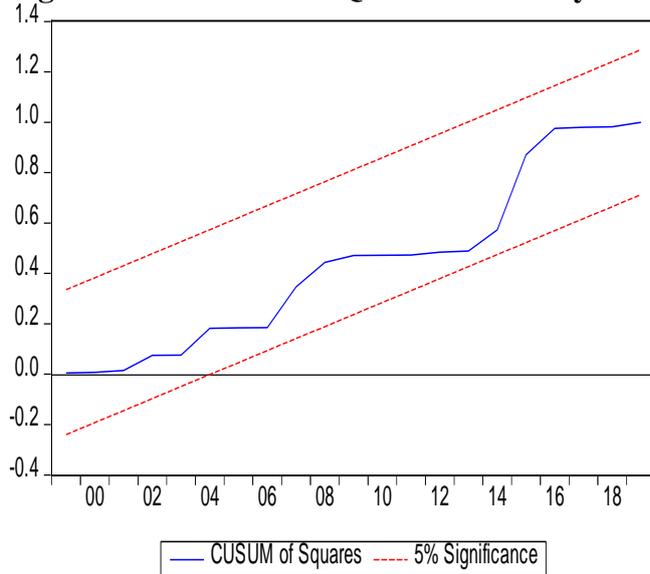
Figure 2:   CUSUMSQ Test of Stability

An observation from the results of the diagnostic test in Table 6 shows that the model scaled through the diagnostic tests as they reveal a probability value greater than 0.05 implying that the null hypotheses of normal distribution, no serial correlation, no heteroscedasticity and no specification errors are accepted based on the Jarque-Bera normality test result, Breusch-Godfrey serial correlation LM result, ARCH test result and Ramsey RESET tests respectively. Also, the stability of the parameters of the model was examined using the plots of the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residual (CUSUMSQ). The CUSUM and CUSUMSQ in figures 2 and 3 stayed within the 5 percent critical line, indicating the constancy or stability of the regression estimates throughout the period covered by the study.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The study examined empirically the relationship between taxation and income inequality in Nigeria between 1980 and 2019. The Specific effects of taxation on income inequality from value added tax, personal income tax, company income tax and custom duty was examined. Time series data on Gini Index, Value Added Tax, Personal Income Tax, Company Income Tax (CIT) and Custom Duty (CSD) were collected from secondary sources. The data set was analyzed using Unit root Test, co-integration and error correction mechanism (ECM) technique to estimate the model. The results of the analyses showed that value added tax and company income tax intensified income inequality in Nigeria for the period covered by the study. Personal income tax and custom duty on the contrary played a significant role in reducing income inequality in Nigeria within the period reviewed. Going by the findings from the study, it is recommended that government, through the tax authority, should put systems in check to tackle tax evasion by companies. Also, for taxation to serve the purpose of redistribution of income to bridge the wide gap between the rich and the poor, the Nigerian government should implement tax structures that are purely progressive.

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