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Effect of the Tax Rate on Economic Growth: A Panel Analysis

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Abstract
The tax has a vital role in the economy. All the progress of the country depends upon tax collection and tax policy. This study is to find the impact of tax revenue on the economic growth of the USA, UK, India, and Kenya. The current study explored tax structure is different in developed and developing countries. It clears that developed countries such as the UK and the United States have a powerful, effective, and efficient system for tax collection. A significant source of tax revenue is collected through direct taxes. Moreover, if we compare it with developing countries, developed countries collect more tax revenue, and many individuals pay taxes in developed countries. The PMG ARDL techniques are used to find the objective of the study. The outcome of the study indicates that tax has positive and significant related to economic growth.
Keywords: Taxation; Economic Growth; PMG; Panel Least Square; Granger Causality

1. Introduction

Tax revenue is a significant source of revenue to any government and facilities the government to finance its development and non-development projects. Tax structure and the system is an influential and considerable source to explore domestic resources. An efficient tax system considers essential to boost economic growth and economic development. There are different objectives to collect tax, such as reducing inequality, alleviating poverty, financing public projects, and defense spending (Musgrave, 2008). In a country, taxes are collected from residents who are employed or doing some business, investors, and companies. Therefore, taxes are considered a key indicator in nation's total revenue. The government uses this revenue to provide services to the citizens and finance government activities (Sun et al., 2020), (N. Iqbal et al., 2020). Every country has a different tax structure and different laws regarding tax. Some countries consider progressive taxes are more suitable for their economy and it will bring income equality to the economy. However, some economies focus on the regressive tax system, and it has an advantage to these counties because it encourages investors and people in business (Abbas et al., 2020). There are two different points of view about the tax rate, such as high and low tax rates applicable in the economy. Some studies such as (Margalioth, 2003) suggested high tax rates have a negative

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impact on economic growth because it discourages the investment environment. Moreover, a high tax rate decreases the general public's purchasing power, and their involvement in economic activities diminishes, such as reduction in consumption and spending level. As tax rate increase then growth decrease because this discourages investment, savings, and innovations. The leading indicators to measure economic performance are current account, unemployment, inflation, and economic development. Higher inflation will lead the government to increase taxes on goods (Hanif et al., 2019). A higher part of revenue in developed countries comes from taxes as compared to developing countries.

The other school of thought suggests that high tax rates bring economic growth and benefit economic activities. Many studies explored the same rests such as (Mamatzakis, 2005) and they believed it brings more income equality in society. Moreover, high tax rate makes possible for the government to spend of development and production project and it will enhance economic growth.

Every policy regarding the economy has some short-run and long-run impacts, such as tax revenue and tax rate behave differently in these periods (Qayyum et al., 2019), (Sahban & Abbas, 2018). Determination of tax rate, fiscal policy plays an essential role in expansionary or contractionary policy(Anser, Mohsin, et al., 2020). Exogenous growth theory is an important one in the study of taxes. It suggests there is no long-run relationship between taxes and economic growth, and this impact is the only temporary basis (Solow 1970; Lee & Gordon, 2005). The second economic model is endogenous growth theory, which suggests that taxes policy always has some long-run effects and impacts the economy in the long run. Many studies explored the same results for the long-run period (Lucas, 1988; Rebelo, 1993). Additionally, direct and indirect taxes also fluctuate the tax revenue, so it is essential to give weightage to both types of taxes. Some countries have more direct taxes in their tax revenue, and many more rely on indirect taxes. However, an efficient and developed tax system always gives importance to more direct taxes. Here, there is a controversy that different results or outcomes from the taxes impact growth. Some significant research studies such as those (McCarton, 2006 and Mamatzakis, 2005) explored direct taxes have a positive and significant impact on economic growth. There are also some studies, such as (Margalioth, 2003) negative relationship between these two factors. Different factors affect the tax policy, such as population, income level, inflation rate, unemployment, corruption, and efficient tax collection structure. Taxes are not the only source of revenue for a government. State-owned corporations and revenue from the central bank also contribute a significant part to revenue for a country. The government increases or decreases tax rates to stabilize the economy.

Our research will analyze the relationship between revenue, policy for taxes, and economic performance. The analysis of these variables will be used to compare the economies of the UK, the USA with Kenya and India. This research will help countries to recover during an economic crisis.

2. Literature review

To explore the relationship between tax and economic growth (Marsden, 1984) established a significant research study. The study employed the twenty countries and used the cross-sectional data in the estimation process. Furthermore, both low-income and higher-income countries employed and estimation portion employed panel least square technique. The

empirical analysis found the tax rate has the opposite relationship to the economic growth of these countries (Anser, Abbas, et al., 2020), (W. Iqbal et al., 2020), (Iram et al., 2020).

Easterly et al., (1993) explored the relationship between different tax types and their impact on economic growth. Developing countries employed for this purpose found an inverse relationship between income tax and economic development. Moreover, domestic and income tax caused a reduction in domestic investment and business activities (Abbas et al. 2020b.

Skinner (1988) examined the Sub-Sahara African counties based on tax revenue and its implications. The current study employed time series data over the period 1965 to 1973 and found some significant results. Regression analysis was used in the research and indicated that tax has an inverse relation with economic growth. The behavior of different taxes was also examined in the study and suggested income taxes, corporate taxes, import and export taxes have negative nexus with the economic growth of Sub-Sahara African counties. In another Study by (Branson et al.,2001) explored the different tax types and their impact on the economy of New Zealand over the period 1946 to 1995. A study found direct tax is more significant to boost the economic activities in New Zealand.

In another study, Martin and Fardmanesh (1990) tried to explore the impact of tax on the budget deficit and fiscal expenditure. The study used panel data analysis and employed 76 high, middle, and lower-income countries. Moreover, a study was limited over the period 1972 to 1981. There were some significant findings of the study, such as more taxes reduced the economic growth of all levels of income countries. However, high tax rates increased government spending and reduced the budget deficit of these economies. Mendoza et al. (1995) found the impact of the tax rate on investments and economic growth. The study was limited to 18 countries included in OECD over the period 1966 to 1990. The study found high tax revenue, stagnant economic growth, and make a negative impact on investment. In other findings, the study schussed consumption level found a positive effect on domestic assets. The study by Marsden (1983) suggested that economic planning will be affected by changes in tax policy. According to Gold (1991) change in economic growth in a country is dependent on the structure of a tax. Growth will be reduced in developing countries if total tax revenue is increased suggested by Mahdavi (2008).

The rate of taxes is dependent on the rate of inflation of a country. Higher inflation forces the government to increase the tax rate on goods. Hinrisch (1966) and Musgrave (1969) studied the relationship between tax revenue to gross domestic product (GDP). They found that it was low in developing countries. According to twenty studies, in the United States, a reduction in the average tax rate to 2.5 % resulted in a 0.2% to 0.3% increase in economic growth. An increase in the 1% tax rate in the United States resulted in a 2% to 3% reduction in long-term economic growth. Gale et al., (2014) studied the impact of tax changes on the economic growth of the US. A study found that tax is an important source of revenue for the government. The reduction in tax rate stimulates consumption and investment activities. An empirical estimation study employed 50 years of time series data and found a minor negative impact of tax increment on economic growth (Li et al., 2020).

Neog and Gaur (2020) explored the impact of taxes on the economic growth in India. The study employed the 20 states of India over the period 1991 to 2016. The study used a square estimation technique panel and found a negative relationship between service tax and state

economic growth. Moreover, property and capital transaction tax found a practical and positive impact. Furthermore, the study's authors commented on an efficient and effective tax structure required to utilize the tax revenue fully.

Duncan O. Ouma (2019) selected the economy of Kenya and explored the impact of tax revenue on economic growth. The study employed the time series data from 1964 to 2016 and regression analysis in empirical estimation. The current study found taxes have a positive impact on Kenya's economic growth, and the author suggested that the government should work on corruption alleviation to receive full benefits of tax revenue.

3. Structure of Countries

3.1 Economic performance of the United Kingdom & United States of America

The leading critical indicators used to measure economic performance are economic growth, unemployment, inflation, and current account. Economic growth is an important indicator to measure economic activity in a country. Investments and labor wages are direct to the real GDP of a nation.

The real GDP of the USA increased by 2.3% in 2019 as compared to 2018. The USA has the highest real GDP growth rate in the world. The real GDP of the USA is estimated to be 20.54 trillion USD. It is the world's largest economy. At the same time, the real GDP of the UK was estimated to be about 2.855 trillion USD. It increased 1.4% in 2019 as compared to 2018.

In the last decade, from (2010-2019), the average inflation rate in the US was 1.66%. In 2019 inflation rate was 2.3%. In the year 2010 USA has the highest inflation rate of 3%. The lowest inflation rate in the USA was in the year 2015. In 2019 inflation rate in the UK was 1.74%. The average inflation rate in the last decade in the UK was 2.06%, with the lowest of 0.37% in 2015.

The United States had the highest unemployment rate of 9.3% in the year 2010. It is due to the Iraq war, higher tax rates, and the debt ceiling crisis. In the same year, President Obama introduced tax rate cuts which are resulted in lower tax rates after 2010. The USA has the lowest unemployment rate of 3.5% in the year 2019. While the unemployment rate in the UK in the year 2019 was 3.85% which was the lowest in the decade. The highest unemployment rate was seen in 2011, which was 8.04%.

The USA has one of the most significant current account deficits in the world. In 2018 it was 491 billion USD. The main reason for the highest current account deficit was the USA trade deficit of 627 billion USD in 2018. US treasury notes are one the safest investment in the world. Due to this, investors rush to buy treasury notes during recessions. In 2019 liabilities of the UK government were estimated to be 302 billion pounds.

The real GDP of India was 2.719 trillion USD in 2018. India is the second-largest country in the world by population after China. GDP growth in 2019 was 4.18% as compared to the year 2018. India is the sixth-largest consumer market in the world. While in Kenya, GDP growth was 5.37% in 2019 as compared to 2018. The real GDP of Kenya I estimated to be 87.91 billion USD.

The inflation rate in India in 2019 was 4.76%. The highest inflation rate of 10.53% was seen in 2010, while the lowest was in 2018, about 3.43%. The average inflation rate in the last decade was 5.19%. In Kenya average inflation ratio in 2019 was 5.2 %. The lowest inflation rate was observed in 2018, which was 4.69% in the last decade. The highest inflation rate

was seen in 2011, which was about 14.02%.
The total current account deficit of India is 4.6 billion USD. At the same time, Kenya has a current account deficit of about 270 million USD.

3.2 Taxation policy of the United Kingdome & United States of America

In the United States, taxes are imposed on the net income of individuals and companies. The US has different federal and local government tax laws. In 2010 taxes amount to 28.4% of the total GDP. The main types of taxes are excise tax, sales tax, income tax, and capital gain tax. In the USA office of tax makes and reviews regulations regarding tax matters.
The average tax revenue in the USA is about to be 24 % of the total GDP. The maximum marginal tax rate in the USA is 37%. Obama administration in 2010 cut tax rates in 2010. 40.7% of tax revenue is collected from the country. In the US, there are about 143 million taxpayers.
The UK primary type of taxes includes income tax, corporation tax, inheritance tax, capital gain tax, custom duties, and excise duties. About 20% standard value-added tax is applied on most goods. Almost 31 million people in the UK pay taxes. Tax revenue in the UK compromises about 33.5% of GDP. The UK has an introductory tax rate of 20%, and the highest goes up to 40%.

3.3 Taxation policy of India & Kenya

In India, there are two types of taxes direct and indirect tax. Significant central government taxes are income tax, customs duty, and general sales tax. In India, about 146 million people pay taxes. In 2015 tax revenue was 20.52% of the country's total GDP. In Kenya, the taxation system compromises income tax, value-added tax, custom, and excise duty. The corporate tax rate is currently at a flat 30%. Tax revenue compromises 18.2% of the total GDP of Kenya.

4. Data and Methodology

Our study focuses on the effect of Tax revenue on economic growth. This analysis has four countries (India, Kenya, the United Kingdom, and the United States of America). The Variables of this study are,
GDP = Gross domestic product
TR = Tax revenue
FDI = Foreign direct investment
IR = Interest rate
GFCF = Gross fixed capital formation
INF = Inflation
The data is obtained from 1981 to 2019. The data is obtained from the world development indicator (WDI) World Bank Database.
The different econometrics techniques are used for estimation to get reliable and significant results.
In empirical estimation unit root test has an important role because most of the data set includes some consistent trend. This upward or downward trend makes the regression analysis ineffective, so the unit root test tells about the appropriate test of estimation for specific data set. So, before estimating the model, we have to conduct a unit root test that

reveals whether the data is stationary or not. Moreover, non-stationary data lead to spurious regression that mislead the coefficients. The data is stationary at level; this condition refers to the order of integration I (0), and if data is stationary at the first difference, that order of integration denotes by I (1). Here stationary data set has the following features,

- Display decrease of mean value and it varies within steady mean in the long run
- The stationary data set has a limited variance, and this data is time-invariant
- Stationary data set has decking correlogram when we increase the lag length

We used time-series data in the current study; therefore, the unit root issue may exist in the data set. There are many studies such as those (Pesaran, 2017) that suggested ADF is a good unit root test to conduct on time series data. Moreover, in his research to explore the informal economy (Bajada, 1999) also employed a unit root test that is ADP to make the data stationary.

Different unit tests are available, such as ADF, PP, and Levin and Lin (LL) tests. ADF is a widely used unit root test, and it gives appropriate results because it mechanically covers the higher-order correlation. Moreover, PP (Phillips Perron) is also effective because it automatically checks the serial autocorrelation (Perron, 1996). PP test of the unit root has some limitations, such as it does give appropriate results when sampling in very small. The unit's Levin and Lin (LL) test is an advanced and extended form of DF (Dickey-Fuller) test. Levin introduced the LL test in 1992 and Chu made some contribution to it so, it was named the Levin and Lin test of a unit root.

ARDL (Autoregressive Distributed League) is a weighing technology developed by Pasaran and Shin in 1999. It was later developed by Pasaran et al (2001). And describe the period between variables in the short term as well as in the long term. According to Pasaran et al. (2001), ARDL is more suitable than other harmonic techniques like Johanson integral and VECM (Vector Error Correction Model). It can also be applied to small sample sizes, and the procedure is flexible. Because of this possibility, we adopt the ARDL model. It shows short-term and variable-to-variability consistency trends. Variables are made up of variance distributions that represent one series over different periods. This technique is used when the variable is displayed statically mixed at a level I (0) and the first difference I (1).

According to Pasran and Shin (1997), the following equation of the ARDL model is given below,

$$Y_t = \alpha_0 + \alpha_{1t} + \sum_{i=1}^{p} \theta_i Y_{t-1} + \beta' X_t + \sum_{i=0}^{q-1} \beta_i \Delta X_{t-1} + u_t$$

$\Delta X_t = P_1 \Delta X_{t-1} + P_2 \Delta X_{t-2} + \ldots\ldots\ldots\ldots + P_i \Delta X_{t-i} + \varepsilon t$

εt and μt are error terms, and θi is the coefficient of the lagged dependent variables.

The specific model is given below:

$$GDP = f(IR, TR, FDI, INF, GFCF)$$

4. Estimation of Results

Table 1: Descriptive Statistic of the underline variables

	GDP	***FDI***	***GFCF***	***INF***	***IR***	***TR***
Mean	3.783030	1.845750	22.54294	6.420322	8.029131	14.77099

Median	3.644853	1.199474	21.68434	6.189167	7.232050	10.98099
Maximum	9.627783	17.61635	35.81288	19.70379	18.91667	26.48624
Minimum	-4.247822	-3.718103	15.41297	0.908179	0.500000	7.919453
Std. Dev.	2.571944	2.908863	4.615991	3.674294	5.635419	6.602270
Skewness	-0.186386	2.918217	0.986369	0.834673	0.234618	0.788524
Kurtosis	3.247294	13.77661	3.604426	4.089314	1.620273	1.793079
Jarque-Bera	0.992226	744.7387	21.10775	19.70105	10.53065	19.55439
Probability	0.608893	0.000000	0.000026	0.000053	0.005168	0.000057
Sum	450.1806	219.6443	2682.610	764.0183	955.4666	1757.748
Sum Sq. Dev.	780.5580	998.4550	2514.270	1593.052	3747.437	5143.616
Observations	119	119	119	119	119	119

Author's calculation by Eviews 9.5

In the above table 1, total observation numbers are 119, a mean value of GDP is 3.783030, FDI is 1.845750, Gross fixed capital formation's mean value is 22.54294, inflation means value is 6.420322, and interest rate mean value is 8.029131 and Tax revenue mean value is14.77099. Median value of GDP and FDI are 3.644853 & 1.199474, GFCF & INF are 21.68434 & 6.189167, IR and TR median values are 7.232050 & 10.98099. Maximum & Minimum values of GDP are 9.627783 & -4.247822, FDI's Maximum and the minimum value are 17.61635 & -3.718103, GFCF's maximum and minimum values are 35.81288 & 15.41297, Inflation's maximum and minimum value are 19.70379 &0.908179, IR's maximum and minimum values are 18.91667 & 0.500000, and TR's maximum and minimum values are 26.48624 & 7.919453. Std. Dev value of GDP, FDI, GFCF, INF, IR and TR are 2.571944, 2.908863, 4.615991, 3.674294, 5.63541 and 6.602270. Skewness value of GDP is -0.186386, FDI is 2.918217, GFCF is 0.986369, Inflation is 0.834673, IR is 0.234618, and Tax revenue is 0.788524. Kurtosis of GDP value is 3.247294, Kurtosis FDI value is 13.77661, GFCF's Kurtosis value is 3.604426, inflation kurtosis value is 4.089314, and IR and TR's Kurtosis vale are 1.620273 & 1.793079. Jarque Bera of GDP value is 0.992226, FDI is 744.7387, GFCF value is 21.10775, INF is 19.70105, IR is 10.53065, and TR is 19.55439. Probability of Jarque Bera for GDP is 0.608893, FDI is 0.000000, GFCF is 0.000026, INF is 0.000053, IR is 0.005168 and TR is 0.000057.

Table 2: The Results of Correlation Matrix

	GDP	***FDI***	***GFCF***	***INF***	***IR***	***TR***
GDP	1					
FDI	-0.22	1				
GFCF	0.56	-0.34	1			
INF	0.02	-0.37	0.29	1		
IR	0.44	-0.24	0.41	0.38	1	
TR	-0.39	0.56	-0.52	-0.35	-0.13	1

Author's calculation by Eviews 9.5

Table 2 explained the correlation matrix results; there is no multicollinearity in data, it also demonstrated the strength/power of the association among the selected variables. The correlation matrix among the variable GDP, FDI, GCFC, INF, IR, and TR, Table explain that there is weak relation among GDP and Inflation with 0.02 and strong association among GDP & GFCF, and FDI & TR with 0.56 value.

Table 3: The Results of Granger Causality Test

Null Hypothesis	***Obs***	***F-Statistic***	***Prob.***
FDI does not Granger Cause GDP	152	4.54919	0.0121
GDP does not Granger Cause FDI		0.32194	0.7253
GFCF does not Granger Cause GDP	152	3.23774	0.0421
GDP does not Granger Cause GFCF		4.52590	0.0124
INF does not Granger Cause GDP	152	0.52047	0.5953
GDP does not Granger Cause INF		2.14743	0.1204
IR does not Granger Cause GDP	147	2.29067	0.1049
GDP does not Granger Cause IR		3.27334	0.0408
TR does not Granger Cause GDP	116	5.94925	0.0035
GDP does not Granger Cause TR		2.39749	0.0956
GFCF does not Granger Cause FDI	152	0.36105	0.6976
FDI does not Granger Cause GFCF		0.81308	0.4455
INF does not Granger Cause FDI	152	1.78260	0.1718
FDI does not Granger Cause INF		1.85769	0.1597
IR does not Granger Cause FDI	147	0.82545	0.4401
FDI does not Granger Cause IR		1.25896	0.2871
TR does not Granger Cause FDI	116	2.57130	0.0810
FDI does not Granger Cause TR		0.30062	0.7410
INF does not Granger Cause GFCF	152	0.41048	0.6641
GFCF does not Granger Cause INF		5.65986	0.0043
IR does not Granger Cause GFCF	147	0.72319	0.4870
GFCF does not Granger Cause IR		2.04725	0.1329
TR does not Granger Cause GFCF	116	1.58881	0.2088
GFCF does not Granger Cause TR		0.98465	0.3768
IR does not Granger Cause INF	147	3.18619	0.0443
INF does not Granger Cause IR		1.11328	0.3313
TR does not Granger Cause INF	116	5.03796	0.0080
INF does not Granger Cause TR		2.67418	0.0734
TR does not Granger Cause IR	111	0.67597	0.5108
IR does not Granger Cause TR		0.19382	0.8241

Author's calculation by Eviews 9.5

Table 3 will explain the granger causality test null hypothesis that FDI does not granger cause to GDP has been rejected because probability value is 0.01, on the other null hypothesis that GDP does not granger cause of FDI. GCFC does not granger cause to GDP, null hypothesis and GDP does not granger cause both are rejected with the probability value 0.0421 & 0.0124. GDP does not granger cause IR, TR does not granger Cause GDP, GCFC does not granger cause INF, and TR does not granger cause IR, null hypotheses are rejected because their probability

values are less than the calculated value 0.05. All null hypotheses will be rejected because their probability values are more significant than the calculated and critical value of 0.05.

Table 4: The Results of Panel Least Square

Dependent Variable: GDP				
Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob.***
FDI	0.036038	0.075816	2.475339	0.0355
GFCF	0.225773	0.023022	9.806697	0.0000
INF	-0.210910	0.053278	-3.958669	0.0001
IR	0.172604	0.035817	4.819085	0.0000
TR	0.096065	0.026459	3.630694	0.0004
Akaike info criterion	4.170785	R-squared		0.468478
Schwarz criterion	4.287555	Adjusted R squared		0.449828
Log-likelihood	243.1617	Durbin-Watson stat		1.299533

Author's calculation by Eviews 9.5

Table 4 provides detail about the panel least square results, according to this table, FDI's coefficient values are 0.036038, Std. dev values is 0.075816, T-value is 2.4753 and probability is 0.0355. Coefficient values of GCFC 0.225773, Std. dev value is 0.023022, T-value and its probability value is 9.806697 & 0.0000, which indicate that FDI and GCFC both have a significant and positive relationship with GDP. INF's coefficient is -0.210910, Std. dev value is 0.053278, T-value and its probability values are -3.958669 & 0.0001, which indicates a significant but indirect relation between Inflation and GDP. Coefficient values of IR and TR are 0.172604 & 0.096065, Std. Dev dev values of IR and TR are 0.035817, 0.026459, T-values of IR and TR are 4.819085 & 3.630694, and probability values are 0.0000 & 0.0004. Both variable coefficients indicate a direct and significant relation among IR, GDP, TR, and GDP. R-square value is 0.468478 and Durbin-Waston 1.299533.

Table 5: The Long Run Results of ARDL

Dependent Variable: GDP				
Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob.****
FDI	0.306026	0.147999	2.067762	0.0407
GFCF	0.142356	0.055656	2.557811	0.0117
INF	0.147854	0.059632	2.479446	0.0145
IR	-0.211663	0.074166	-2.853914	0.0050
TR	0.057686	0.129480	2.445522	0.0467

Author's calculation by Eviews 9.5

Table 5 explained about the panel ARDL long run result, FDI and GFCF coefficient values are 0.306026 & 0.142356, Std. dev values of both variables are 0.147999 & 0.055656, T-values of both variables are 2.067762 & 2.557811, probability value of both variables are 0.0407 & 0.0117. It can explain that there is direct and significant relation among FDI, GFCF and GDP in long run. Coefficient value of INF and TR are 0.147854& 0.057686, Std.dev values of IR and TR are 0.059632 & 0.129480, T-value of IR and TR are 2.479446 &2.445522, and Probability

values of IR and TR are 0.0145 & 0.0467

Table 6: The Short Run Results of ARDL

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.**
COINTEQ01	-0.786611	0.193270	-4.070007	0.0001
D(FDI)	-0.226328	0.906530	-0.249664	0.8033
D(GFCF)	0.791257	0.446344	1.772752	0.0787
D(INF)	-0.157496	0.087624	-1.797411	0.0746
D(IR)	0.018082	0.277473	0.065168	0.9481
D(TR)	0.204422	0.278247	0.734676	0.4639
C	2.171167	0.909643	2.386834	0.0185

Author's calculation by Eviews 9.5

According to the table 6 in short run Cointegration coefficient value is -0.786611, Std.dev value is 0.193270, T-value is 4.070007 and probability value is 0.0001. FDI's coefficient value is -0.226328, Std.dev value is 0.906530, T-value of FDI is -0.249664 and probability value is 0.8033, which indicates that there is insignificant and indirect relation among FDI and GDP in short run. GFCF coefficient value is 0.791257, Std.dev value is 0.446344, T-value is 1.772752 and probability value is 0.0787 which indicate there is insignificant linkage among GFCF and GDP in short run. Inflation's coefficient value is -0.157496, Std.dev value is 0.087624, T-value is 1.797411 and its probability is 0.0746. IR's coefficient value is 0.018082, std. dev. value is 0.277473, t-value is 0.065168 and probability value is 0.9481. TR's coefficient value is 0.204422, Std. Dev. value is 0.278247, T-value is 0.734676 and probability value is 0.4639

Table 7: The Results of Walt Test

Test Statistic	*Value*	*df*	*Probability*
F-statistic	7.984160	(5, 127)	0.0000
Chi-square	39.92080	5	0.0000

Author's calculation by Eviews 9.5

Table 7 explains the Wald test, which talks about the heteroscedasticity presence/ absence in data, F statistic value is 7.984160, the probability of F-statistic is 0.000 Chi-square value is 39.92080, and its probability is 0.000.

Table 8: Cross Countries Results (Kenya)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob. **
COINTEQ01	-0.551209	0.024885	-22.15033	0.0002
D(FDI)	-2.854865	5.212820	-0.547662	0.6220
D(GFCF)	0.380014	0.039583	9.600513	0.0024
D(INF)	-0.027125	0.001530	-17.73270	0.0004
D(IR)	-0.077337	0.011846	-6.528460	0.0073
D(TR)	0.077726	0.068755	1.130473	0.3405
C	2.458021	1.792131	1.371563	0.2638

Author's calculation by Eviews 9.5

Table 8 analyzes Kenya's data; in this case, co-integration coefficient values are -0.551209, Std. dev. Value is 0.024885, T-value is -22.15033 and probability value is 0.0002. FDI's coefficient value is -2.854865, Std.dev. Value is 5.212820, T value is 0.547662, and probability value is 0.6220, which explains insignificant and indirect relationships between GDP and FDI

in Kenya. GCFC coefficient value is 0.380014, Std. dev value is 0.039583, T-value is 9.600513, and probability value is 0.0024, which explains that in the case of Kenya GFCF has a positive and direct relation with GDP. The inflation coefficient value is -0.027125, Std. dev value 0.001530, T-value is 17.73270, and probability value is 0.0004, which explain in the case of Kenya, there is an indirect but significant relation between INF and GDP. The coefficient value of IR is -0.077337, Std. dev value is 0.011846, T value is 6.528460, and probability value is 0.0073, which explains an indirect but significant relationship between interest rate and GDP in the case of Kenya. The coefficient value of TR is 0.077726, Std. dev is 0.068755, T-value is 1.130473, and probability value is 0.3405, which explains an indirect and insignificant relation between tax revenue and GDP in Kenya (Amin et al., 2021).

Table 9: Cross Countries Results (India)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob. **
COINTEQ01	-0.944347	0.023321	-44.78159	0.0000
D(FDI)	1.292253	1.256519	1.028438	0.3794
D(GFCF)	0.113860	0.037658	3.023536	0.0566
D(INF)	-0.416152	0.021663	-19.20988	0.0003
D(IR)	-0.542880	0.069680	-7.791058	0.0044
D(TR)	0.973121	0.171225	5.683272	0.0108
C	4.599115	5.879808	0.782188	0.4912

Author's calculation by Eviews 9.5

Table 9 explained a detail data analysis about Indian data, Con-integration coefficient value is -0.944347, Std.dev value is 0.023321, T-value is 44.78159 and probability value is 0.0000. The coefficient value of FDI is 1.292253, Std. dev value is 1.256519, T-value is 1.028438, and the probability value is 0.3794, which explains an insignificant and indirect relation between FDI and GDP of India. GFCF's coefficient value is 0.113860, Std.dev value is 0.037658, T-value is 3.023536 and probability value is 0.0566 which indicate direct but insignificant relation among GFCF and GDP of India. Inflation coefficient value is -0.416152, Std.dev value is 0.021663, t-value is 19.20988 and probability value is 0.0003, Coefficient value is 0.973121 Std.dev value is 0.171225, T-value is 5.683272 and probability 0.0108 which explain that there is direct and significant relation among. The coefficient value of TR is 0.973121, Std. dev value is 0.171225, T-value is 5.683272, and probability value is 0.0108, which explains a positive and direct association between TR and GDP of India (Huang et al., 2020).

Table 10: Cross Countries Results (United Kingdom)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob. **
COINTEQ01	-0.979269	0.009127	-129.2094	0.0000
D(FDI)	0.451639	0.034511	13.08666	0.0010
D(GFCF)	2.100470	0.073927	28.41287	0.0001
D(INF)	-0.095111	0.020844	-4.562979	0.0197
D(IR)	0.784845	0.074256	10.56941	0.0018
D(TR)	-0.357437	0.062575	-5.712179	0.0106
C	0.448303	3.102121	0.144515	0.8943

Author's calculation by Eviews 9.5

Table 10 describe UK's data detail about the selected variables, Co-integration coefficient

value is -0.979269, Std.dev value is 0.009127, t-value is 129.2094 and probability values is 0.0000. The coefficient value of FDI is 0.451639, Std. dev value is 0.034511 and T-value is 13.08666, and probability value is 0.0010, which explains a positive and direct relation between FDI and GDP of the UK. Coefficient value of GFCF is 2.100470, Std.dev value is 0.073927, t-value is 28.41287, and probability value 0.000, Coefficient value of IR is 0.784845, Std.dev value is 0.074256, T-value is 10.56941 and probability value is 0.0018, GFCF and IR both values explains that there is direct and significant relation among GFCF and GDP of India. The coefficient of inflation value is-0.095111, Std. dev value is 0.020844, T-value is 4.562979 and probability value is 0.0197, TR Coefficient value is -0.357437, Std. dev value is 0.062575, T-value is 5.712179, and probability value is 0.0106; both values inflation and TR indicate an indirect but significant relation among INF and TR with the GDP of the UK. These outcomes also presented by (Sun et al., 2020), (N. Iqbal et al., 2020), (Abbas et al., 2020).

Table 11: Cross Countries Results (United States of Amrica)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob. **
COINTEQ01	-0.371619	0.012654	-29.36689	0.0001
D(FDI)	0.205661	0.004291	47.92359	0.0000
D(GFCF)	0.570687	0.083202	6.859046	0.0063
D(INF)	-0.091594	0.010454	-8.761209	0.0031
D(IR)	-0.092298	0.047797	-1.931051	0.1490
D(TR)	0.124277	0.146728	0.846988	0.4592
C	1.179231	1.490148	0.791352	0.4865

Author's calculation by Eviews 9.5

Table 11 explained about USA data, co-integration's coefficient value is -0.371619, Std.dev value is 0.012654, T-value is 29.36689 and probability value is 0.0001, FDI's coefficient value is 0.205661, Std.dev value is 0.004291, T-value is 47.92359 and probability value is 0.0000, which indicate that there is direct and significant relation among US FDI and GDP. Coefficient value of GFCF is 0.570687, Std.dev value is 0.083202, T-value is 6.859046 and probability value is 0.0063, TR's coefficient value is 0.124277, Std.dev value is 0.146728, T-value is 0.846988 and its probability value is 0.4592. INF's coefficient value is -0.091594, Std.dev value is 0.010454, T-value is 8.761209 and probability value is 0.003, Coefficient of IR's value is -0.092298, Std.dev value is 0.047797, T-value is 1.931051 and probability value is 0.1490, both value Inflation and IR indicates that there is insignificant and indirect relation among Inflation, IR and GDP of USA. Thes results are in line with (Ali et al., 2021), (Yang et al., 2021).

5. Conclusion

The study's primary objective is to find the impact of tax revenue on the economic growth of the USA, UK, India, and Kenya. The current study explored tax structure is different in developed and developing countries. It clears that developed countries such as the UK and the United States have a robust, effective, and efficient system for tax collection. A big source of tax revenue is collected through direct taxes. Moreover, if we compare it with developing countries, developed countries collect more tax revenue, and many individuals pay taxes in developed countries.

Revenue from taxation is directly related to economic growth in developed countries. However, countries like India and Kenya don't have many taxpayers, but their economic growth is high compared to developed countries. In developing countries, taxation revenue and economic growth are inversely related. Lower tax rates attract investments and large projects. Big companies are more interested in building projects in such countries. It, therefore, boosts economic growth. According to the available data, inflation decreases daily in developing countries such as India and Kenya, but it is still higher than in developed countries. The overall tax has a positive relation with economic growth.

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