INVESTMENT INCENTIVES AND EFFECTIVE CORPORATE TAX RATE FOR MANUFACTURING FIRMS IN KENYA

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A THESIS SUBMITTED TO THE SCHOOL OF BUSINESS, ECONOMICS AND TOURISM IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY IN BUSINESS (FINANCE) OF KENYATTA UNIVERSITY.

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DECLARATION

Declaration by Candidate

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

This Thesis is dedicated to my wife-Catherine, children (Craig, Christel and Tercio), late parents, brothers, sisters, friends, entire family and colleagues**.**

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OPERATIONAL DEFINITION OF TERMS

Capital investment incentive It is capital deduction that government allows firms in Kenya to reduce from corporate taxable income with an aim to encourage investments in physical assets and grow existing enterprises. For this study the indicators capital investment incentive are limited to investment deduction, wear and tear; industrial building; and computer-software

Corporate performance It is a measure used to evaluate the ability of a firm to use available resources and exploit opportunities to maximise profits and achieve set objectives for a specified time-frame. For this study, corporate performance is measured by profitability and financial efficiency

Custom duty incentive It is an incentive given by government that allow firms in Kenya to make deduction from taxable profits and seek refunds so as to facilitate import and export business activities.

Effective corporate tax rate It is the actual income tax paid expense incurred by a firm as a percentage of accounting profit before corporate tax in a given financial year.

Inflation It is the general increase in prices of goods and services. In this study it is the annual inflation rate in Kenya.

Investment incentive It is a benefit granted by government of Kenya aimed at stimulating investment in specific sectors of the economy

	and set up business operations. For this study the investment incentives are profit based, capital investment and custom duty.
Manufacturing firm	It is a firm that uses components, parts and raw materials to make a finished product to be sold to consumers or to other firms. For this study a manufacturing firm is a firm registered with Kenya Association of Manufacturers.
Profit based incentive	It is an incentive provided by government to allow firms deduct net operating losses from taxable income and exemption from paying corporate income tax for a given period. For this study profit based incentive is restricted to loss carryforward and tax holiday.

ABBREVIATIONS AND ACRONYMS

ACE	Allowance for corporate equity
ANOVA	Analysis of variance
ASEAN	Association of South-East Asia Nations
BRICS	Brazil, Russia, India, China and South Africa
CIT	Corporate Income Tax
DPAD	Domestic production activities deduction
ECTR	Effective corporate tax rate
EPZ	Export Processing Zones Authority
FDI	Foreign Direct Investment
FE	Fixed Effect
GDP	Gross Domestic product
G7	Greatest 7 countries in the World
G20	Greatest 20 countries in the World
IMF	International Monetary Fund
KAM	Kenya Association of Manufacturers
MSE	Micro-Small Enterprises
MTP	Medium Term Plan
NSE	Nairobi Security Exchange
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
PIT	Personal income tax

RE	Random-effect
ROA	Return on assets
ROE	Return on equity
SEZ	Special Economic Zone
SMEs	Small & Medium Enterprises
STR	Statutory Corporate Tax Rate
UNCTAD	United Nations Commission on Trade and Development
VIF	Variance inflation factor

ABSTRACT

Effective corporate tax rate is a financial policy subject of interest to firms, policy makers and researchers. The main problem is how to reduce it since it measures real level of tax burden at firm level. The Government of Kenya has implemented various investment incentives aimed at lowering effective corporate tax rate so as to influence investments, facilitate capital formation, increase productivity and grow manufacturing firms. However, effective corporate tax rate in Kenya is still a problem averaging 31.3 percent for the last 10 years and has not been declining towards zero as recommended by the World Bank. Such high effective corporate tax rate militates against desired competitive corporate environment for the manufacturing sector. The sector has deteriorated to 7.4 percent contribution to gross domestic product which is less than 15 percent as envisaged in Kenya Vision 2030. This undesirable phenomenon therefore prompted the design of this study. The general objective of the study was to determine the effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya. The specific objectives were to determine the effect of profit based incentive on effective corporate tax rate; establish the effect of capital investment incentive on effective corporate tax rate; establish the effect of custom duty incentive on effective corporate tax rate; determine the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate; and evaluate the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The theories underpinning this study were optimal corporate taxation, political power, neoclassical investment and inflation tax. The study adopted positivist philosophy and longitudinal research design. The target population was 1,092 firms registered with Kenya Association of Manufacturers. Stratified random sample of 278 firms provided secondary data for the period 2010 to 2020. Descriptive statistics were used to show attributes, quantify and describe the basic characteristics of the study variables. Inferential statistics concentrated on diagnostic tests, panel regression and test of hypothesis. The diagnostic tests focused multicollinearity, normality, homoscedasticity, linearity, stationarity, autocorrelation and model specification. The direct, intervening and moderating effect models were analysed to establish the parametric significance of the variables at level of 5 percent. Forms for data presentation were textual, tabular, graphical and charts. This study adhered to ethical standards at all stages. The findings have established that investment incentives had negative statistically significant effect on effective corporate tax rate for manufacturing firms in Kenya. The results showed that corporate performance had intervening effect while inflation had moderating effect on the relationship between investment incentives and effective corporate tax rate. The study has made some recommendations which are corporate executives should make effective corporate tax rate as part of outcome variable in the financial modelling and should develop corporate tax strategy. In addition, the National Treasury should develop a consolidated Fiscal Incentives Policy and Act; reform and implement investment incentives framework; design an appropriate profit based incentive programme as part of fiscal policy instrument; design fiscal policy that has capital investment incentive so as to provide tax advantage to manufacturing firms; design and implement robust strategic custom duty incentive policy tailored for manufacturing sector; develop a differentiated corporate tax framework; and develop and implement corporate tax-inflation adjustment framework to be part of tax system in Kenya. The study has added to finance knowledge that fiscal policy affects corporate operations. However, there is need for further investigation on other possible investment incentives that were not covered in this study.

CHAPTER ONE : INTRODUCTION

1.1 Background to the Study

Effective corporate taxation rate is a key financial measure that influences financial decisions at firm level. According to Dwenger and Walch (2014), Effective Corporate Tax Rate (ECTR) affect expansion of business ventures and overall economic growth. ECTR is the actual corporate tax paid as a percentage of pretax corporate profit. It is the financial barometer that measures size of corporate tax burden imposed by tax system on firms. Devereux and Fuest (2015) observed that, economic globalisation and growing importance of multinational firms have far reaching consequences on ECTR analysis and entire national fiscal policy. It was observed that, average corporate tax rate in European Union (EU) was on declining trend from 35 percent in 1995 to 23 percent in 2015. Therefore, reducing tax rate on corporate income is a problem that EU has continued to address over the last three decades.

According to Zolt (2015), firms attempt to lessen high ECTR problem through tax avoidance mechanisms. These mechanisms include round-tripping where domestic investors disguise as wholly controlled foreign corporation; double dipping where firms incorporate a new subsidiary so as to benefit from existing incentives; transfer pricing where goods and services are exchanged above arms-length price among subsidiary firms and companies recognize income in low tax countries while they account for expenditures in high tax jurisdictions; and fly-by-night operations where investors take advantage of policy incentives with hidden intention of making profits and then disappearing to another country that offers similar investment incentives. These schematic tax avoidances are detrimental to the economy since they are as bad as outsourcing economic activity, lead to loss of domestic investment, slows down economic growth, increase unemployment and erode corporate tax base. High ECTR puts the economy at competitive disadvantage that is likely to worsen when other

countries embrace a reduced ECTR strategy (Frank & Angaye, 2020; & Alstadsaeter, Johannese & Zueman, 2017).

Chen (2015) highlighted that, investment incentives help compensate investors whose projects produce positive externalities. Incentives are preferential treatments that deviate the tax structure and are provided for a particular tax payer and for a given purpose. Reduces tax rate was calculated by diving actual tax paid by investment profits. This compensation is measured by reduced ECTR. Therefore, when incentives fail to lower ECTR then the theoretical justification become meaningless. PWC (2016) indicated that, the essence of investment incentives is to reduce ECTR so that it is lower than Statutory Corporate Tax Rate (STR).

Miah (2016) observed that competitive advantage in Bangladesh stems from low ECTR since firms optimize benefits provided by investment incentive policies. ECTR was described as the actual tax expense divided by net operational profit before tax while STR is the legal tax rate applied on corporate profits of firms in order to determine tax liability. STR is static until the relevant law is amended. Dias and Reis (2018) argued that the effective tax rate indicates the tax volume of companies, evaluate tax planning efficiency, and trace tax avoidance practices. Therefore, every firm has a role in determining its ECTR. The variation in effective tax rate is connected to firm characteristics such as shareholder framework, incentive of managers, corporate structure, government policy business characteristics among others. ECTR was defined as a regular measure to show relationship between taxable profit and accounting profit.

Kuria (2018) study classified investment incentives into corporate income, capital allowance, VAT, excise duty and custom duty. Firm performance is a way to assess company survival and development capabilities. Fiscal incentives were described as policy instruments used by government in attracting

and sustaining investments. According to Amendola, Boccia, Mele and Sensini (2018) corporate tax rate and firm performance had statistical association in Dominican Republic. Mauda and Saidu (2019) argued that there is a relationship between investment incentives and financial performance. The predictor variables were tax incentives whose constructs included capital allowance, investment allowance and loss relief incentives granted to companies. Firm performance was defined as growth in total assets measured using profitability ratios, asset management ratios, leverage and market value ratio.

According to Abramovsky, Bird, Harris, Tyskerud, Weldeabzgi, Beyene, …& Keable-Elliott, (2018) profit and capital based incentives reduce taxable income. Computation of effective tax rate provide useful information about incentives across asset types and across tax regimes. It can be used to evaluate policy proposal before and after implementation of a given reform. Profit based incentive attract footloose investment that generate firm-specific benefits. It was observed that tax holidays as an indicator for profit based incentive benefit short term projects with low upfront investment expenditure. Capital based incentive as calibrated through investment allowances, tax credits and accelerated depreciation tend to benefit long-term investments. They favour investments that have longtime horizons.

Congressional Research Service (2019) documents that, high corporate tax liability leads investors to engage in profit offshoring; capital flight; and business inversions with intention of moving into low corporate tax rate countries. Profit offshoring is transferring earned income to a foreign country to take advantage of low corporate tax rate. The business enterprise exploit gaps and loopholes in the tax rules to shift profits to lower the amount of tax payable. Capital flight is characterised by financial resources flow out of the country to avoid high taxation and structural failures within an economy. Business inversion also called tax inversion occurs when a firm selects to have its business head-office in a

country with low corporate tax rate. It is one of the strategies firms employ to reduce corporate tax burden.

Thus, ECTR is one of the key financial tools used to address geostrategic importance of a country in the globalised competitive environment. Cecileen (2019) asserted that effective corporate tax rate affected corporate financial decisions in South Africa. It is therefore the desire of firms that ECTR should be zero since it is a cost and affects corporate performance. However, it was pointed out that the objective of zero ECTR has not been witnessed in Africa and therefore firms continuously seek to reduce it through aggressive tax avoidance, tax planning and tax management. Zero ECTR means that a firm has not paid any corporate tax and no cash balances have been paid to a tax authority.

Cevik and Miryugin (2019) argued that, the level of effective tax rate affected firm survival chances in Europe. The firm specific variables used to determine ECTR were age, size, profitability, capital intensity and debt level. Megersa (2019) argued that variation in ECTR is affected by tax incentives across businesses in Asia. Most researchers interested in financial analysis of investment incentives policy use ECTR models. It was indicated that available indicators for incentives include tax holidays, accelerated depreciation and reduced tax rates. The summary showed that in Singapore, Vietnam, Laos, Indonesia and China the average effective tax rate was dependent on investment incentives.

Osebe, Kirui, and Naibei (2019), pointed out that effective corporate tax rate is important variable not only to firms but also to public policy makers in Kenya. It characterizes an important cash outflow to firms thereby impacting major financial decisions. It was indicated that, limited studies have been conducted to investigate factors that affect ECTR in Kenya and other developing countries. It was pointed out that most of the available data is not sector specific. Therefore, this thesis established effect

of investment incentives on ECTR with corporate performance as an intervening variable and inflation as moderating variable.

Ewubare and Ozo-Eson (2019) showed that corporate taxation affects output of manufacturing firms in Nigeria. According to World Bank (2019) the importance of manufacturing sector is not only confined to its share of GDP but also provider of goods for final consumption. The report indicates that some of the framework conditions that affect industrialization include trade regimes, competitive advantage reforms, fiscal incentives for diversification and technological upgrading. It was observed that, the share of manufacturing to GDP in the world for the year 2019 averaged 12.32 percent. The average for some selected countries showed that China had 26.77 percent; USA was at 11.76 percent and Singapore stood at 19.8 percent. The comparative statistics are shown in figure 1.1 and figure 1.2 below.

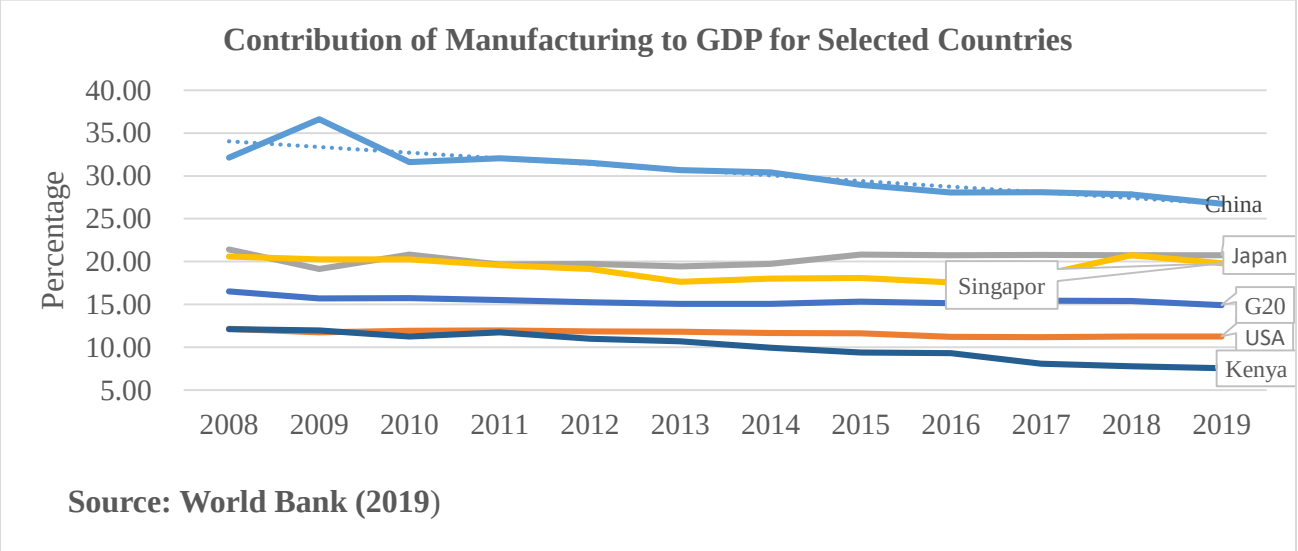

Figure 1.1: Contribution of Manufacturing to GDP for Selected Countries

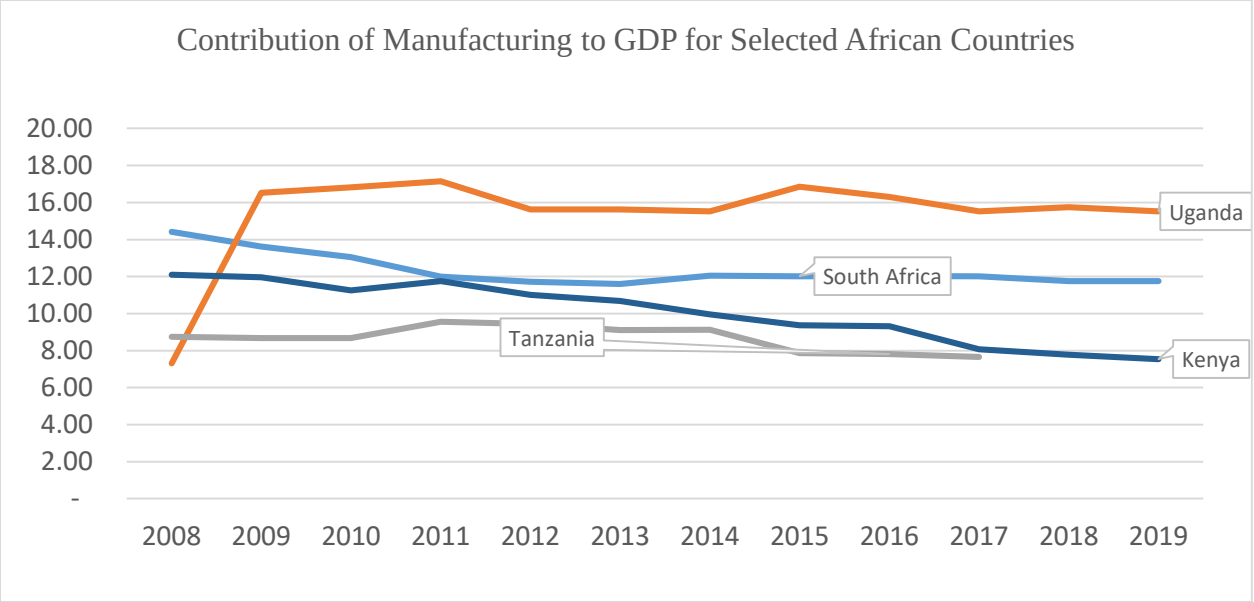

Figure 1.2 : Contribution of Manufacturing to GDP for Selected African Countries

Figure 1.2 above illustrates that Uganda had a high contribution of manufacturing to GDP increasing from 7.3 percent in 2008 to 15.5 percentage points in 2019. During the same period, the manufacturing situation in Kenya was on downward trend. The analysis showed that the change in contribution of manufacturing varies across countries. It was shown that China is one of the countries with the highest contribution of manufacturing to GDP averaging 30 percent over the last 12 years. It was indicated that most countries strive on how to increase contribution of manufacturing to GDP to 30 percent.

1.1.1 Effective Corporate Tax Rate

Effective corporate tax rate is the actual tax paid as a percentage of corporate profit before tax. Effective tax rate measures the value of cash tax paid by firms divided by the accounting profit before tax. Carreras, Dachapalli and Mascagni (2017) opined that corporate tax rate remain a problem in Africa and is a topic that requires critical analysis. Effective corporate tax rate was defined as the percentage of total tax liability over gross profits. Effective corporate tax rate is the net tax liability divided by the net profit before tax. The net tax liability is the tax payable after netting-off tax

deductions and credits. The ratio of tax liability to net profit reflects the gap between the statutory and effective corporate tax rate.

According to Congressional Budget Office (2017) the problem of high ECTR still exist across countries. ECTR is the average measure of the total amount of corporate taxes that a company pays as share of its income. It measures corporate tax burden on returns. It was reported that, the G7 countries had an average corporate tax rate of 27.2 percent; OECD member countries had a mean of 24.18 percent; and BRICS countries had an average of about 27.34 percent. The average ECTR for the G20 countries was 10.5 percent with lowest of negative 23.5 percent for Italy. The analysis showed that the average ECTR was less than the average STR for the same period. The comparative analysis between STR and ECTR for the G20 countries is shown in figure 1.3 below.

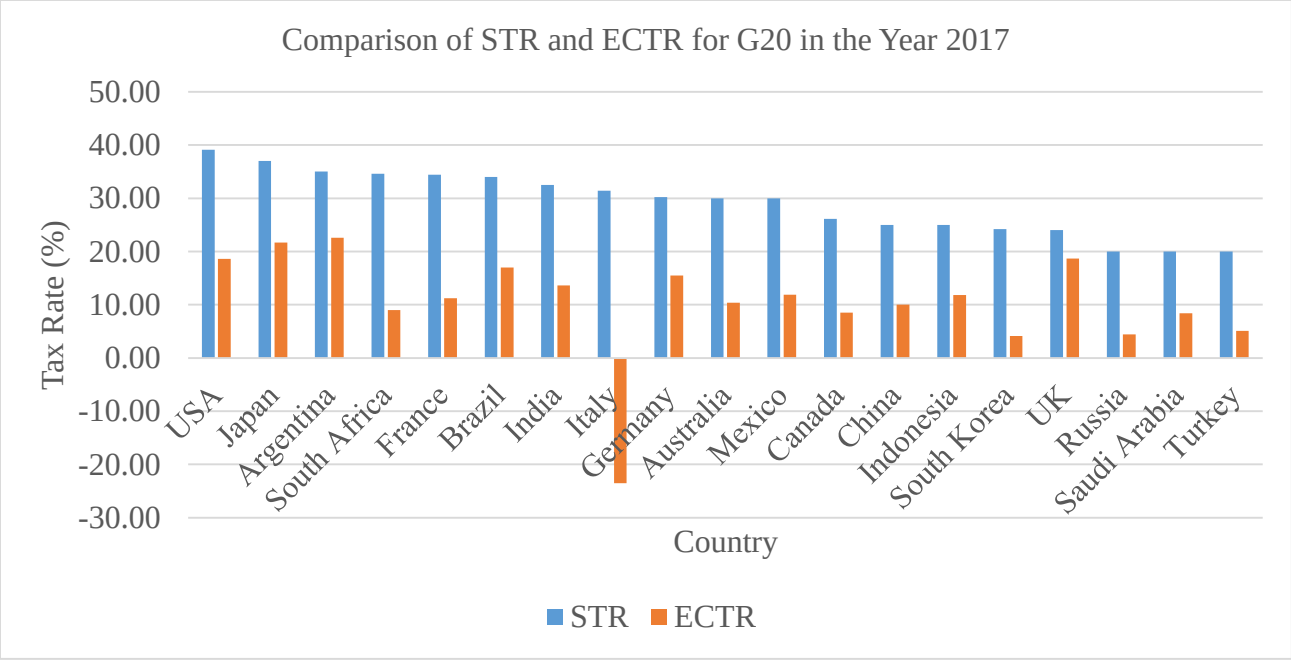

Figure 1.3 : Comparison of ECTR and STR for the G20 Countries

Source: Congressional Budget Office (2017)

The difference between STR and ECTR as reflected in figure 1.3 above is the financial measure of tax saving opportunities and competitive advantage within an economy. According to Congressional Budget Office (2017) ECTR is the percentage of corporate profits actually paid by a firm after taking into account tax breaks , deductions, exemptions, credits and preferential rates. STR is the percentage imposed by law on taxable income. Comparison of STR and ECTR gives an indication of investment incentives that exist in an economy. The difference shows how substantial tax treatment differ on corporates that have similar characteristics.

The analysis in figure 1.3 above showed that Italy had a negative ECTR. According to Congressional Budget Office (2017), the negative ECR in Italy was occasioned by introduction of fiscal measures such as participation-exemption regime on intergroup capital gains; optional consolidation of tax declaration for a group of companies including foreign subsidiaries; use of tax allowance for capital equity (ACE) and tax refunds which reduced ECTR to a greater extent.

Bourgain, Bertinelli, and Diamoutene (2018) defined ECTR as a measure of the tax burden in a retrospective sense and applies to microdata. It is an ex-post indicator determined as a ratio of corporate tax expense to a pretax income observed at firm level. It was indicated that one of the challenges facing firms in Sub-Saharan Africa within the context of globalization is that there is minimum policy analysis focusing on effective corporate tax rate. Such analysis should be twofold: analysing ECTR quantum and investigating its determinants. Unfortunately, it was observed that, studies on microdata are hardly in existence and there are few studies for comparative analysis. There is also unclear understanding of the importance of ECTR which makes it problematic for evidence based analysis. This therefore formed a backdrop for studying the nature of ECTR in Africa and was the basis for this thesis.

World Bank (2018) indicates that, African countries have not done very well in reducing ECTR with only one tax haven (Mauritius) while there are about 50 tax havens across the world. This high ECTR works against the struggle for Africa to create wealth, generate new jobs, build favourable investment climate, accumulate investment capital and stimulate active diversification of the economy. The ECTR for selected countries for the year 2018 is shown in figure 1.4 below.

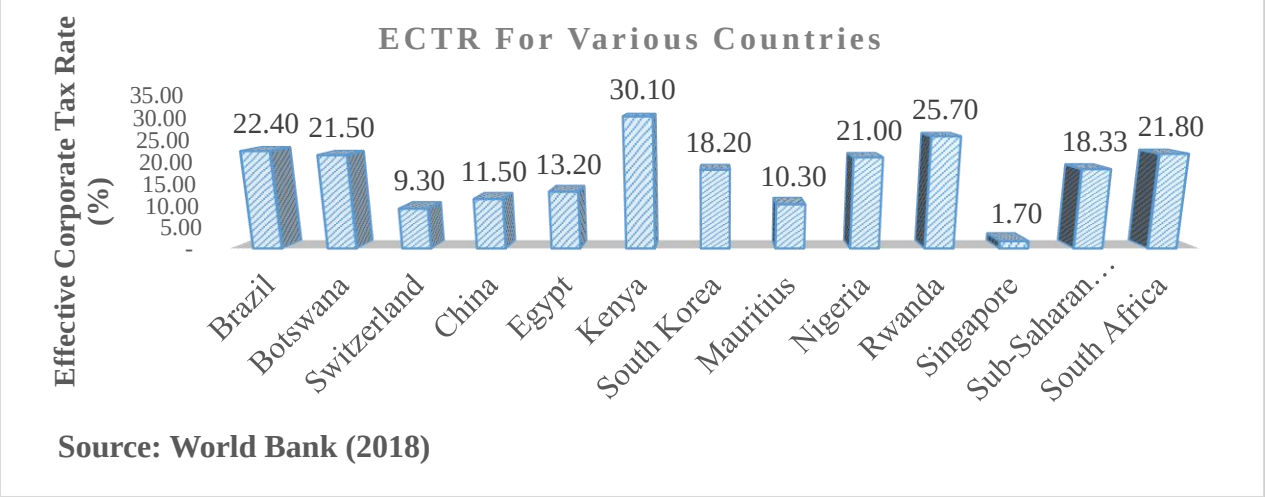

Figure 1.4 : ECTR for Various Countries

From figure 1.4 above Singapore had lowest ECTR of 1.7 percent which implies that it had the best corporate tax saving opportunities. According to OECD (2018), Singapore is one of the economies with diminishing effective corporate income tax rate in all economic sectors and uses numerous investment incentives to entice and retain investments. It is argued that, investors seek jurisdictions where they can achieve highest tax optimization opportunities, build capital and expand investment.

Lakuma (2019) assessed effect of tax policy and investment incentives. It was observed that there is sectoral variation in effective tax rate due to incentive regime in Uganda. The variables that determined effective tax rate included interest rate, tax holiday, depreciation, inflation, capital allowance and present value allowance. According to Ouma (2019), tax modernisation programme in Kenya has lowered corporate tax rate to 30 percent from 45 percent that existed in 1986. The intention is to

combat stiff global competition for investment finance and position Kenya as preferred destination for investment.

From finance theory, it is expected that in any economy ECTR should be less than STR (OECD, 2018). Effective tax rate is described as the economic profit in the absence of taxation less economic profit under taxation divided by net income. The argument for a zero-effective corporate tax rate is that when it is high it distorts the economy leading to capital flight, profit shifting and business inversion. As capital flight occurs, the workers and their jobs are left behind resulting to low demand for product and reduced wages. Corporate objective is to maximize profits after expenses and taxes. If they can maximise return by moving operational profits and money to other jurisdictions with low tax rate they will do so.

According to WB (2018) summary on world development indicators the ECTR for Kenya has marginally reduced from 33.2 percent in 2008 to 29.8 percent in 2014 and increased to 30.1 percent in 2018. This implies that Kenya has not achieved conducive tax competition environment for investors in comparison to other regional countries. The comparative analysis of ECTR for various countries in the region is as shown in figure 1.5 below.

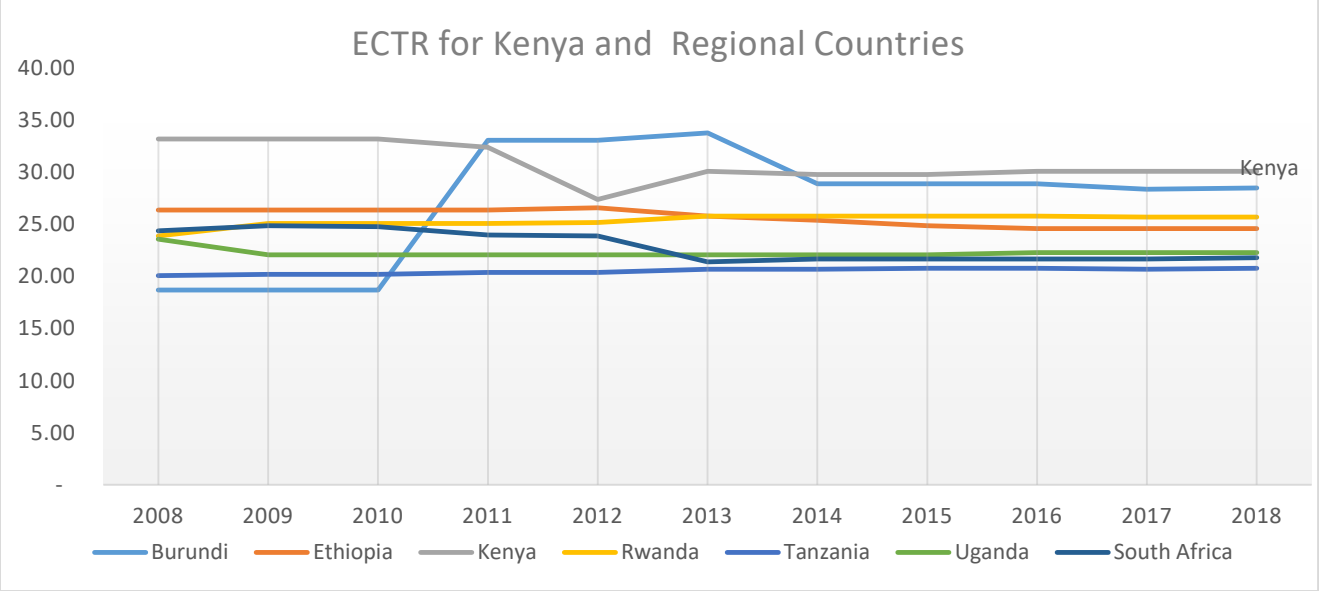

Figure 1.5 : ECTR for Kenya and Selected Regional Countries

Source : World Bank (2018).

Figure 1.5 indicates that in the last eleven years effective corporate tax rate in Kenya averaged 31.3 percentage points against the desire to make it tend towards Zero, especially for targeted sectors of the economy. This average ECTR which was highest in the region is one of the factors that puts Kenya at tremendous competitive disadvantage for business development and is likely to worsen when other countries have even lower ECTRs. According to World Bank (2018) the figure of 31.3 percent which is above STR shows there is no corporate tax saving optimization opportunity for firms in Kenya. Therefore this non-zero ECTR in itself is a problem enough that warrants financial investigation and analysis.

1.1.2 Investment Incentives

According to UNCTAD (2015), investment incentives are fiscal policy instruments deployed by government to attract and retain business investment. They are policy instrument put in place by government to influence investment projects through favourable tax treatment that affect corporate tax base and relative cost of capital. When carefully designed and targeted, incentives correct certain

market failures. They are classified into profit based, capital investment, custom duty related, value addition based, financial incentive among others. It was indicated that profit-based incentive can be evaluated using tax holiday, reduced corporate tax rate and loss carryovers. Capital investment incentive is a capital deduction that government allows firms to reduce corporate taxable income. The constructs of capital investment incentive include investment deduction, wear and tear; industrial building undertakings; intellectual property rights; research and development; and computer-software. The essence of capital investment incentive is to encourage firms to increase capital expenditure and attract physical investments that otherwise would go to other countries.

Extant literature shows that there are various investment incentives with more than one indicator (Makano, 2019; Hanappi, 2018; Thuita, 2017; Miah , 2016; and Chen, 2015). In a nutshell investment incentives are financial portfolio applied by government to attract investment in an economy so as to boost economic growth. Clark and Skrok (2019) pointed out that the magnitude of investment incentives can be measured using tax deductions, deferrals, reliefs, tax credits, duty exemptions, tax holidays and low corporate profit tax rate on targeted investments. These constitute constructs of independent variables that affect corporate tax liability.

Heitzman and Lester (2017), point out profit based incentive can be analysed using loss carry forwards as a key input in simulating effective corporate tax rate in USA. It was demonstrated that profit based incentive is associated with large corporate cash balances. Abramovsky *et al* (2018) showed that low and middle-income countries have in recent years reduced ECTR using investment incentives. Since firms are sensitive to tax problem, governments design investment incentives to lower effective corporate tax rate so as to influence location decisions by investors and business enterprises. The analysis showed that profit based incentive reduce ECTR through tax holiday and preferential tax rate

for a specific sector. However, the extent to which this incentive achieve the desired results is an area that requires an inquiry.

Olajide (2019) examined the various capital investment allowances in Nigeria. The review showed that these allowances are deducted in respect of expenses made by firms to lessen total tax payable. Meinzer, Ndajiwo, Phoya and Diakité (2019) observed that African countries grant on average 40 percent more profit based incentive than the EU member states. The profit based incentive in Africa take the form of tax holidays and special economic zones whereas those in EU are mainly sectoral and apply on capital gains. However, there was no satisfactory dataset to allow methodical panel data analyses in various economies on ECTR and investment incentives phenomena especially in Africa.

Bermperoglou, Deli, and Kalyvitis (2019) pointed out that governments use a variety of incentives to stimulate corporate activities. The constructs of fiscal incentives take the form of tax credits, subsidies for new capital and investment allowances that are aimed at reducing tax liability. Twesige and Gasheja (2019) investigated the effect of incentives on the growth of small and medium-sized enterprises (SMEs) in Rwanda. It was concluded that investment incentives remain one of the variables that must be considered for sustainable growth of the SMEs. OECD (2019) showed that capital allowances is one of the key parameters used in determining taxable profits.

The legal regimes that guide investment incentives in Kenya are provided for in laws relating to income tax, export processing zones and customs. According to Income Tax Act, Chapter 470, Laws of Kenya, capital investment incentive is a deduction allowed on capital investments, industrial buildings, computer software and wear and tear. These deductions are aimed at encouraging more capital expenditure in physical assets such as plant, machinery, equipment and buildings. They are claimable allowances deductible from operational profits.

Customs and Excise Act, Laws of Kenya (Cap 472), provide custom incentive measured in terms of duty remission, refund, rebate and drawback. Remission is a waiver of duty or refrainment from paying duty; refund is reimbursement of excess duty that has been paid; rebate is allowed in cases where goods imported into Kenya are damaged before they are cleared from customs control; and drawback is a refund of all or part of import duty paid in respect of manufactured goods which were exported. The custom incentive is granted to firms involved in export and import business. It is granted on raw materials and capital machinery imported for manufacturing of goods in a licensed customs bonded factory for export.

Kuria (2018) studied effect of custom duty incentive on the performance of EPZ firms. The study recommended that the Government of Kenya needs to consider increasing custom duty incentive so as to cut down on imports and stimulate demand for domestic products in the country. From literature, the main incentives that are available for the manufacturing sector in Kenya are as summarized in appendix I. The basic argument is that investment incentives help firms accumulate capital as long as benefits exceed costs and encourage manufacturers to expand existing establishment while at the same time attract new investments. The availability of these incentives formed the basis for selecting profit based, capital investment and custom duty incentive as independent variables for the study.

1.1.3 Corporate Performance

According to Amendola *et al* (2018) fiscal incentives affect growth, performance and productivity. Firm performance was described as the assessment of firm survival and development capability which is expressed in monetary metrics. The financial indicators for measuring performance were liquidity ratio; ratio of expenses to total assets; ratio of gross financial expenses to sales; return on assets; equity ratio; ratio of current assets to total assets; and ratio of sales to current assets. Financial efficiency

measures how successful a firm is able to turn expenses into revenue. Profitability is a financial metric that shows how a firm is available to utilise assets to generate profits. Corporate performance is a ratio between earnings before income taxes and total assets. Habrosh (2017) states the three most common metrics for financial efficiency are total asset turnover, equity turnover and fixed asset turnover.

Tennant and Tracey (2018) contend that there is functional correlation between corporate profitability and effective tax rate. Tax planning schemes are not only concentrated in multinational corporation but also among domestic firms in Jamaica. These schemes are used to influence corporate tax liability. Undie, Akpan and Sezuo (2020) argued that tax incentives as fiscal policy instruments affect firm profitability in Nigeria. Profitability can be measured by return on assets (ROA) and return on equity (ROE). It was indicated that firm-specific variables, ECTR and financial performance have a theoretical relationship. From this supporting arguments, this study conceptualised corporate performance as an intervening variable.

Salaudeen (2017) and Belz, Hagen and Steffens (2018) showed that there was relationship between profitability and ECTR. Effective tax rate can be measured by ratio tax expense to profit before tax while profitability was defined as return on assets. The study recommended the need for more research on ECTR for various economic sectors which this study attempted to address by focusing on manufacturing firms.

Vintilă, Gherghina and Păunescu (2018) studied ECTR and influential factors in the emerging European markets. The characteristics under review were leverage, firm-size, profitability, inventory intensity and capital intensity. Profitability can be measured by three indicators of ROA, ROE, and ROIC. ROA was used to measure the efficiency of capital allocation of fixed and current assets. ROE showed the ability for a firm to increase shareholder value, reserves and dividends. ROIC showed how

a company was able to use invested funds to generate returns. The context of the study was to understand ECTR variability between East and West Europe with the objective to smoothen fiscal policy in EU zone. It was observed that, within the context of corporate finance ECTR determines the connection between fiscal policy and corporate policies.

Panda and Nanda (2020), observed that corporate profitability impact effective tax rate for Indian manufacturing firms. Profitable firms have high potential of tax burden and there is an expected positive relationship between profitability and effective tax rate. Profitability can be measured as a ratio of profit before interest and tax to total assets. Effective tax rate can be measured as ratio corporate tax expense to before operating. Therefore, general finance theory points out the existence of a functional correlation between corporate performance and ECTR. It is indicated that effective tax rate is sensitive to firm characteristics such as size, profitability, growth, asset tangibility and debt-tax shield.

Delgado, Rodríguez and Arias (2018) pointed out that corporate performance is the fundamental objective for profit oriented firms. It is the extent to which a firm is able to utilise assets to make profit. The objective of a firm is to maximise profits subject to existing constraints. It was observed that there is non-linear function between firm size and ECTR in Germany. This phenomenon of non-linearity requires further analysis to understand the positive and negative points within a given distribution of firms.

Corporate financial performance is measured by profitability (Adams et al , 2020; Yanti, Hendra & Chomsatu, 2020; and Lazăr & Istrate, 2018). Understanding profitability is critical for long-term success. Profitability is mostly used as proxy for corporate performance since it allows firms to evaluate areas of strengths and weaknesses. It is a measure that shows sustainable business growth.

Kurawa and Saidu (2018) argues that corporate financial performance is critical to survival of firms and is at the heart of managerial function. It reflects how effective and efficient a firm is in managing resources. It was pointed out that in most extant literature, corporate performance is measured by ROA; ROE and return on capital employed (ROCE). In view of the foregoing literature, the study conceptualised corporate performance as an intervening variable on the relationship between investment incentives and ECTR for manufacturing firms in Kenya.

1.1.4 Inflation

Inflation is the general increase in price of goods and services in an economy. According to Spengel, Heckemeyer and Streif (2016), in computing effective tax rates one has to make assumptions on economic parameters, particularly interest rate and inflation. The general model showed sensitivity of effective tax rate to inflation is multidimensional. In the first instance, in most corporate tax system nominal return becomes large with inflation given a constant real return. Consequently, tax system do not differentiate between real returns and inflated returns. Secondly, tax system treat depreciation allowance of over useful life of assets. This leads to asymmetric treatment of returns whereas depreciation allowances are deducted at historical non-inflated value. Capital allowances become less effective in reducing tax burdens in inflationary environment. The choice of inflation as a moderating variable in this study was to show the interactive effect of inflation on effective tax rate.

iknike and Okerekeoti (2018) contend that in most economies there exist an interrelationship between inflation, firm characteristics and corporate performance for listed firms in Nigeria. Inflation was defined as persistent rise in general level of prices within an economy. It measures change in average prices of goods and services based on consumer price index for a given period of time.

Harahap, Sinaga, Manurung and Maulana (2018) asserted that changes in government policy, monetary policy and macroeconomic environment impact ECTR in Indonesia. Therefore, monetary policy, tax system and effective tax rates to a large extent have a financial relationship. Wahyuningih and Setyowati (2020) indicated that macroeconomic variables and tax rate affect tax ratio in the ASEAN Countries. It was hypothesised that inflation and taxation move in the same direction but with different magnitudes.

OECD (2019) showed that systemic risk parameters determine effective tax rate. These parameters include interest rate, inflation, pre-tax returns, net present value of capital allowances, and project life for tax purposes. It was argued that inflation interacts with provision of tax system to determine effective tax rate. This interaction addresses the question of how differences in tax systems compare across economies and the specific effect of investment incentives in a specific jurisdiction over time.

Abramovsky, Smurra and Warwick (2019), explained that changes in inflation rate affect effective tax rate at firm level. Corporate tax rate levied on nominal returns changes with inflation. Further, the value of depreciation allowances depends on initial cost which is not uprate by inflation and affects ECTR. It was concluded that ECTR has a functional relationship with inflation. From such background, the study conceptualised inflation as a moderating variable between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

The choice of inflation as moderating variable was pegged on the argument that inflation interacts with fiscal policy in determining corporate tax payable. Nominal characteristics of the tax system are not inflation indexed. Beer, Mark and Alexander (2023) argue that in an economy where significant share of government income is tax, inflation has real effects, when the tax system is not inflation neutral. Neutrality means that the impact of tax system on investment incentives and effective tax rate

does not change with inflation. The government should develop a policy for inflation indexation of the corporate tax system.

1.1.5 Manufacturing Sector in Kenya

According to Were (2016), manufacturing sector in Kenya is growing at slower rate than that of Ethiopia, Rwanda, Tanzania and Uganda. It was argued that, if this trend continues then other East Africa Countries will start to dominate manufacturing in the region. It was observed that Uganda and Tanzania are unwaveringly putting in place mechanism to make them preferred investment destinations in the region. Unfortunately it appears that Kenya seem not to be reverberating this stimulating impetus. One way of understanding this differential between countries is by researching on the corporate tax burden which is captured by ECTR.

Kariithi and Kihara (2017) indicated that, the growth rate of 3.5 percentage points for manufacturing sector in Kenya, is slower than the average for overall economy. The growth was based on the change in contribution of manufacturing to GDP. It was indicated that, many manufacturing firms in Kenya have registered stagnation, declining profits and reported profit warnings. It has been argued that such stagnation and decline is an indicator to premature deindustrialization problem. The interpretation is that there is a shrinking proportion of the manufacturing sector to GDP while at the same time the sector is still relatively under-developed. There is therefore need for evidence-based analysis in an attempt to reverse this scenario which the study has done. The essence is to understand how to create conducive business environment so as to promote growth of the manufacturing sector.

According to Kenya Economic Surveys (2018 & 2019) the percentage contribution of manufacturing sector to GDP for the years 2014, 2015, 2016, 2017, 2018 and 2019 was 10 percent, 9.4 percent, 9.3

percent, 8.1 percent, 7.8 percent and 7.5 percent respectively. Similar situation was analysed by World Bank (2019). The trend in share contribution of manufacturing to GDP is shown in figure 1.6 below.

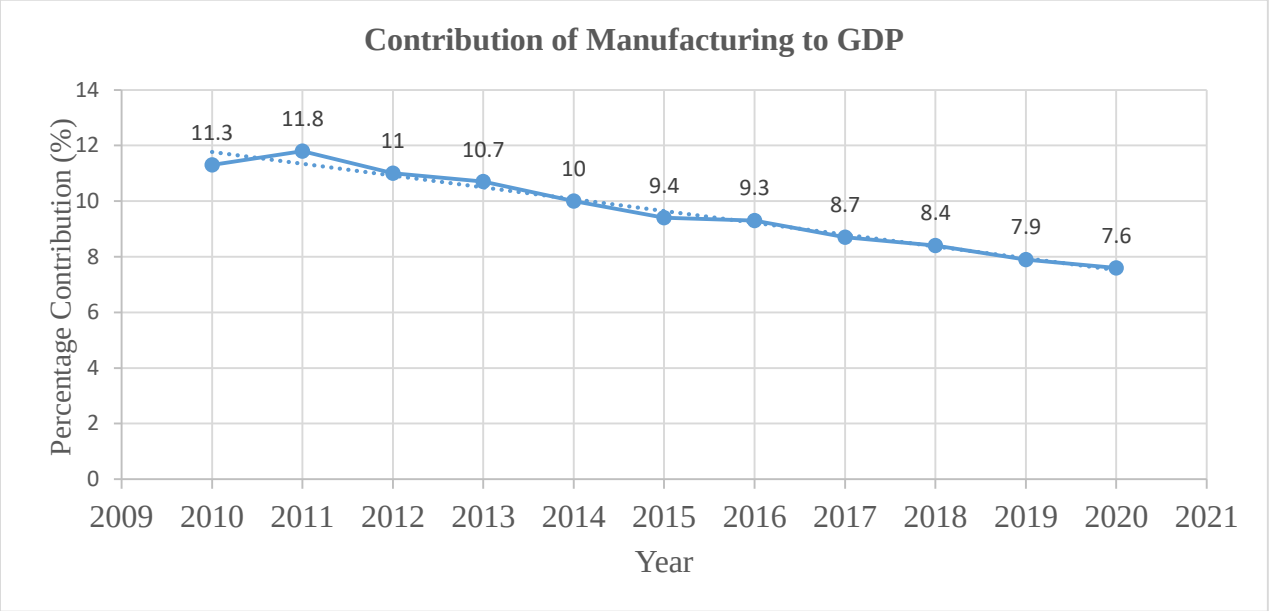

Figure 1.6 : Contribution of Manufacturing to GDP
Source : Economic Survey (2016, 2017, 2018, 2019,2020 2021 & 2022)

Figure 1.6 above shows that the contribution of manufacturing to GDP has been on a declining trend. This declining state of affairs has to be addressed since manufacturing sector has a prominent role to play in achieving targets as set in Kenya Vision 2030. The sector has been identified as the engine to create employment, generate wealth and contribute 15 percent of GDP. Performance of manufacturing sector in Kenya in terms of value of output, intermediate consumption, value addition and wages paid is shown in figure 1.7 below.

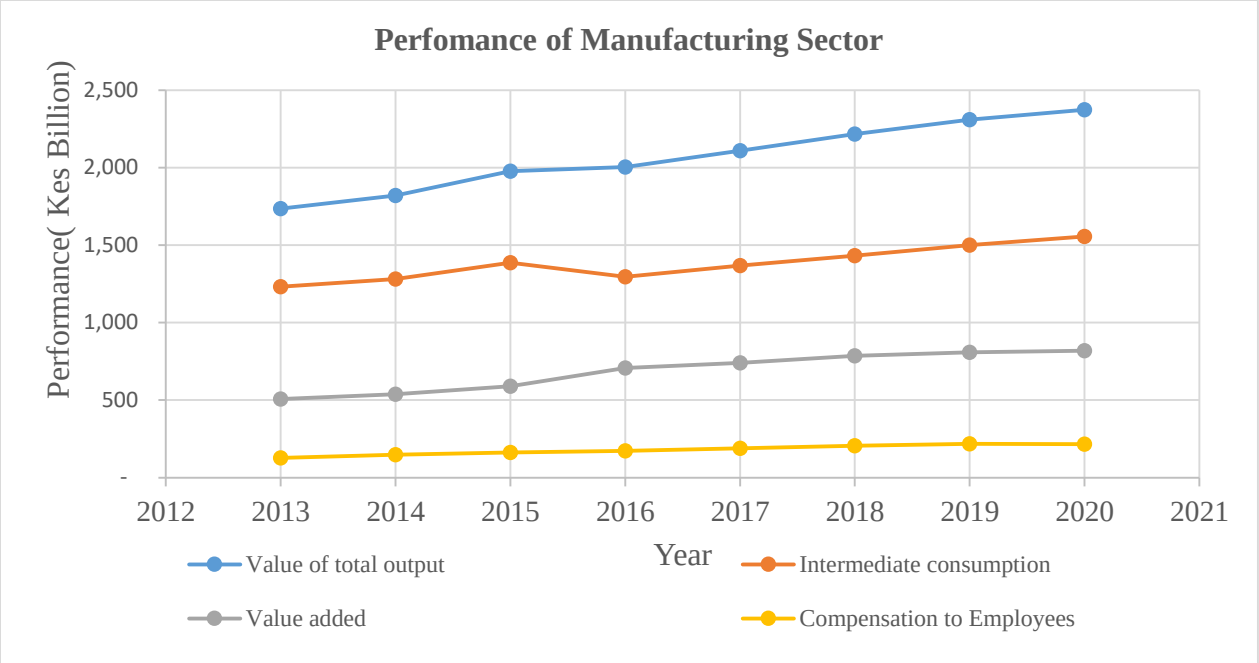

Figure 1.7 :Performance of Manufacturing Sector in Kenya
Source : Kenya Economic Survey (2015, 2017 & 2022)

Figure 1.7 above shows that there was a general increase in nominal terms on the parameters. The trend analysis shows that the value of total manufacturing output increased from Kes 1,736 billion in 2013 to Kes 2,374 billion in 2020. Over the same period value added manufacturing increased from Kes 507 billion in 2013 to Kes 818 billion in 2020. Intermediate consumption of total manufactured products increased from Kes 1,231 billion in 2013 to Kes 1,556 billion in 2020. The trend also showed compensation of employees from manufacturing out increased from Kes 127 billion in 2013 to Kes 216 billion in 2020.

According to KAM (2018), there are 1392 registered members in fourteen sub-sectors managed from nine regional offices in Mombasa, Athi-River, Eldoret, Nakuru, Naivasha, Kisumu, Nyeri, Nairobi and Thika. Eighty percent (80%) of these firms operate within Nairobi while the rest are based in other major towns across the country. This figure of 1392 comprise of 1092 ordinary membership firms and 300 associate and consultancy firms that provide support services. The membership comprises of

small, medium and large firms. It was observed that, investment into the manufacturing sector has slowed down over the last ten years. It is stated that, Kenya's challenges in attracting more investments include poor government incentives.

The choice of manufacturing for this study was informed by the critical role the sector is expected to play in the economic transformation in Kenya.

1.2 Statement of the Problem

According to OECD (2018), effective corporate tax rate in emerging economies ought to be less than statutory corporate tax rate. However, according to World Bank Report (2018), effective corporate tax rate in Kenya has averaged 31.3 percent for the period 2008 to 2018. This measure of corporate tax burden is higher than Sub-Saharan Africa (average figure of 18.0 percent) and other regional countries. Such high ECTR discourages new investments, make existing firms relocate to other, emboldens aggressive tax avoidance and enhances economic informalities ((McKay, Pirttilä & Schimanski, 2019). World Bank (2019) study indicates that high tax rate are associated with few formal business, low investment and reduces likelihood of establishing a subsidiary in an economy. This kind of scenario is what militates against Government of Kenya objective to increase investments; grow the economy; create new jobs; alleviate poverty; actively diversify the economy; foster the role of manufacturing sector in backward-forward business linkages; and transform Kenya into a newly industrialised middle income economy within the context of Vision 2030 (Government of Kenya, 2018).

Despite efforts to improve economic growth, manufacturing sector in Kenya has recorded declining profits, reducing market share and has stagnated over time (Kenya Economic Survey, 2019; Kenya Economic Survey, 2018; KAM, 2018; Karithi & Kihara, 2017; and Were, 2016). The trend shows that

contribution of manufacturing to GDP reduced from 10.8 percent in the year 2008 to 7.5 percent in 2019 which is below desired target of 15 percent. This sluggish state of affairs is a matter of concern that need investigation, given that manufacturing sector has been accorded prominence in the Kenya industrial transformation strategy. Notwithstanding, the various incentives by the Government, the contribution of manufacturing to GDP is still plummeting on downward trend and neither the average ECTR for Kenya has improved. The ECTR slightly decreased from 33.1 percentage points in 2008 to 29.8 percentage points in 2014 and increased to 30.1 percent in 2018 and average ECTR is above STR (30%). High ECTR implies that firms use corporate earnings and available cash balances to meet tax liability which is counter-productive to the economy. According to KAM (2020) more that thirty (30) companies shut down operations in Kenya. This attributed to the negative impact of uncompetitive tax and poor business environment. The companies that closed shop include Procter & Gamble; Reckitt & Benkiser; Colgate Palmolive; Cadbury; Johnson & Johnson; GlaxoSmithKline; Athi-River mining; Avon Rubber; Alpha Fine Food Ltd among others

Extant empirical literature indicated that effective corporate tax rate is an area that is under researched (Congressional Budget Office, 2018; World Bank, 2018; Delgado *et al*, 2018; OECD, 2018; & Vintlla *et al*, 2017). In addition, most studies on ECTR are in developed economies and limited in number due to lack of adequate data. Purina (2017) examined both internal and external factors as independent variables that affect effective corporate tax rate in Czech and Russian. This study conceptualised internal variables as intervening variable while external variable as moderating variable in developing economy. Andrejovska (2018) focused on direct effect of economic variables on effective tax rate in EU while this study applied inflation as moderating variable. Bánociová and Tahlová (2020) evaluated direct effect of loss amortization on effective tax rate in Slovakia. This study conceptualised loss carryover as a construct of profit based incentive. Sunarto, Widjaja and Oktaviani (2021) studied

mediating effect of performance on the relationship between corporate governance and effective corporate tax rate for quoted banks in Indonesia. This current study determined the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms within a context of a developing economy.

In Africa there are limited studies on determinants of effective corporate tax rate (Abramovsky *et al*, 2018; Adams & Balogun, 2020). Lakuma (2019) using descriptive analysis studied effect of investment incentives on ECTR in Uganda. The current study determined the effect of investment incentives on ECTR using both descriptive and inferential analysis. Calitz, Muwanga-Zake, Sithole and Steyn (2020) focused on effect of depreciation allowance and effective tax rate using anonymized macro data in South African. The study improved on this by using capital allowance as an indicator of capital investment incentive to estimate its effect using micro (firm level) panel data. Michael (2020) examined the extent to which profitability moderates the relationship between ownership structure and tax avoidance in Nigeria but did not focus on the moderating effect of market related variable which is key in analysing ECTR.

Besides conflicting findings and limited studies the current study sought to improve on the methodical gaps. For instance Ohrn (2018) used difference-in-difference analysis to show relationship between capital deduction and fiscal policy. The study used panel regression to estimate effect of capital deductions on effective corporate tax rate. Harahap, Sinaga, Manurung and Manalana (2018) used structural simultaneous modelling to estimate effect of macroeconomic environment on effective tax rate in Indonesia. Hanappi (2018) used predetermined assets parameters to simulate ECTR for 34 OECD and non-OECD Countries. This study used panel regression analysis to investigate ECTR in developing economy.

In Kenya, studies on investment incentives and ECTR are limited (Osebe *et al*, 2019; and Kuria, 2017 & 2018). For example Osebe *et al* (2019) measured effect of corporate governance on ECTR and highlighted the need for more empirical evidence to understand variables that affect ECTR. Kuria (2017) examined effect of corporate income, VAT, excise duty, custom duty and capital allowance incentives on corporate performance for EPZ firms while the current thesis conceptualised investment incentives to have direct effect on ECTR with corporate performance as the intervening variable. These limitations formed the background against which the study was formulated to determine effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya.

1.3 Study objectives

The general and specific objectives of the study are as highlighted below.

1.3.1 General Objective

To determine the effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya

1.3.2 Specific Objectives

The specific objective were:

i. To determine the effect of profit based incentive on effective corporate tax rate for manufacturing firms in Kenya.
ii. To establish the effect of capital investment incentive on effective corporate tax rate for manufacturing firms in Kenya.
iii. To establish the effect of custom duty incentive on effective corporate tax rate for manufacturing firms in Kenya.

iv. To determine the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

v. To determine the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

1.4 Study Hypothesis

The null hypotheses for the study were as stated below.

i. **H_{o1}**: Profit based incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.

ii. **H_{o2} :** Capital investment incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.

iii. **H_{o3} : C**ustom duty incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.

iv. **H_{o4} :** Corporate performance does not have a significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

i. **H_{o5} :** Inflation does not have a significant moderating effect of the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

1.5 Significance of the Study

The findings of the study are of great value to policy makers, business executives, investors, tax analysts, academicians and financial experts. The findings is to help policy makers to understand effect of investment incentives on effective corporate tax rate. This understanding help policy makers appreciate that fiscal policy and corporate policies are co-jointly important in supporting business

investment and overall economic growth. The findings of this study are key in informing design of investment incentives as fiscal policy interventions used to spur growth of manufacturing firms in Kenya. Given the declining contribution of manufacturing sector to GDP in Kenya, the findings are available to assist National Treasury in the formulation of fiscal and monetary policies that can support growth of manufacturing sector as envisaged in the Kenya Vison 2030 and the economic national transformation agenda.

Further, the findings, conclusions and recommendation become the basis upon which the Kenya Revenue Authority can review tax procedures that match international competitive environment. This will create an improved business environment for general market development in Kenya. The findings of the study are to guide business executives, tax analysts, investors and financial experts on importance of utilizing investment incentives during corporate planning before concluding that firms in Kenya are facing unprecedented tax burden. The study help managers to understand that effective corporate tax rate is a financial measure that determines the corporate tax burden imposed by national tax system. The study also help managers in understanding investment incentives as important fiscal policy instruments used in addressing corporate tax burden.

In addition, corporate performance is an important variable in designing tax management strategy at firm level. Analysis on effective corporate tax rate is one area that has huge knowledge gap. The study has made significant contribution to existing empirical literature on effective corporate tax rate. The findings of the study has added to the growing financial knowledge framework on the relationship between investment incentives and effective corporate tax rate. The study also fills knowledge and conceptual gaps on the intervening effect of corporate performance and moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate. The study is important to the academicians in strengthening the assertion that fiscal policy instruments impact

prudent financial management not only for sustainable economic growth but also for private sector development.

The study has contributed to finance theory by exploring the assertion that firms utilise investment incentives to minimise tax liability. It will also add to finance theory by showing intervening effect of corporate performance within the context of political power theory which asserts that firms exploit corporates power to lower effective corporate tax rate. Further the study has confirmed the contention that fiscal policy affects corporate operations within the background of neoclassical investment theory which is part of basic finance theory. The study has also contributed to theory by exploring the moderating effect of inflation within the framework of inflation tax theory.

1.6 Scope of the Study

The overarching conceptual space for the study was to determine effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya. The time coverage for the study was the period 2010 to 2020. The period was selected to evaluate public finance reforms in Kenya, Vision 2030 transformation agenda, fiscal reforms for mobilizing requisite resources and business investment environment for achieving the set targets. In addition, the constructs in the study are better observed over a period of time to show possible trends. The study was restricted to profit based, capital investment and custom duty incentive as independent variables. The choice of these three incentives was pegged on the argument that they are the common ones available to manufacturing firms in Kenya within the fiscal policy.

The study analysed corporate performance as an intervening variable. The scope of corporate performance was restricted to profitability and financial efficiency. The moderating effect was measured by annual inflation rate. Firm-specific data were derived from financial statements and

reports from manufacturing firms that are registered with Kenya Association of Manufacturers. The target population was 1,092 firms registered with Kenya Association of Manufacturers. Stratified random sample of 278 firms provided secondary data for the period 2010 to 2020. Data on inflation was collected from Kenya National Bureau of Statistics. The study was anchored on longitudinal research design and applied panel data regression analysis.

1.7 Limitation of the Study

One limitation to this study was unbalanced data panel since different firms commenced operations at different years. At the same time some firms did not utilise investment incentives in some years. The study also faced inherent heterogeneity across firms which may limit generalizing the findings. Nevertheless, panel data model is known to be a good analytical tool for addressing heterogeneity without necessarily observing it. Since the study entities were regularly audited and most companies operate under regulated environment, available data for the study was credible and capable of generating results that can be fitted for generalised application. Panel data regression was also able to address any missing data limitation since it did not necessarily require a balanced panel data.

Megesa, Chelule and Odhiambo (2016) states that the benefits of using panel data models is that it has ability to control heterogeneity, greater variability, less collinearity between variables, more degrees of freedom and more efficiency. Panel data is a good methodology because it is capable of identifying and measuring effects that are not detected in cross-sectional data or time series data. Panel data was also preferred to address heterogeneity among firms. Panel data analysis is able to deal with heterogeneity that arises from variation of parameter across individual firms and non-homogenous structures across firms.

1.8 Organisation of the Study

This thesis is organised in five chapters. Chapter one is on introduction which covers background to the study, discussion of key concepts, problem statement, study objectives, hypotheses, significance, scope and limitations of the study. The second chapter discusses the theoretical framework underpinning the study area, empirical literature on the study variables and formulation of conceptual model. Chapter three presents research methodology to be applied to achieve study objectives. Chapter four gives the research findings and discussions. Chapter five is on summary, conclusion and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discussed relevant literature on effective corporate tax rate, investment incentives, corporate performance and inflation. The chapter has four main sections. The first section presents the theoretical background underpinning the study. The second part explored empirical literature and past studies that are relevant to the research variables. The third part presents summary of the literature while final part provides a conceptual framework constructs to show effect of independent, intervening and moderating variables on dependent variable.

2.2 Theoretical Literature

This study was anchored on optimal corporate taxation, neoclassical investment, political power and inflation tax theories. The main theory underpinning the dependent variable as the problem variable was optimal corporate taxation while neoclassical investment, political power and inflation tax theories supported the other variables in the study.

2.2.1 Optimal Income Taxation Theory

The standard theory of optimal taxation posits that a tax system is to maximise social welfare. The development of optimal corporate tax theory suggested that the way to fix the public policy problem is to assume heterogeneity among the tax payers. Individual firms differ in innate ability to generate profits. The planner needs to ensure that a tax system does not induce those of high ability to feign being of low ability. According to Mirrlees (1971), optimal income tax theory is based on the principle of utilitarianism. This principle is hinged on the argument that the marginal corporate tax rate should not increase financial burden of tax payers.

The optimal corporate tax theory embodies an assumption that imposition of a given tax rate should create incentives, enhance efficiency and improve information sharing to maximize social welfare without increasing tax liability. It is argued that one opportunity to lessen negative effect of corporate taxation on investments and increase private investments is by government providing investment incentives. Therefore, firms utilise investment incentives so as to diminish tax liability. The theory was used in the study to explore the supposition that effective corporate tax rate is dependent on investment incentives. The theoretical principles surrounding corporate taxation were used to expound on the analysis that nonzero ECTR is in itself a problem adequate for research investigation.

Saez (2001) argued that the Mirrleesian approach captures the efficiency-equity trade-off. ECTR is a key measure of both equity and efficiency aspects. The equity principle contends that a corporate tax system should respect both horizontal and vertical circumstances of firms. The policy design should be that firms in the same circumstance need to be treated alike. The efficiency argument is that imposing tax on corporate profits is distortionary since it interferes with return on capital and distorts allocation of factor inputs. Corporate tax should not in any way discourage investments but boost capital accumulation and maximise firm value.

According to Koehne (2017), there is no widely accepted argument that corporate taxation has an advantage over taxation at the personal level. However, any tax rate that increases corporate tax burden results into productive inefficiency. Therefore, it is hard to overlook global pressure towards lowering effective corporate tax rate. Due to this growing pressure there is tax competition across countries and therefore public policy strategists need to take this trend into account. The interest of optimal corporate taxation is to eliminate deadweight loss in the economy so as to increase economic efficiency. The deadweight loss occurs when firms make less investment decisions than if there was no tax burden, which reduces well-being.

According to Menguy (2018) high effective corporate tax rate reduces capital flow in terms of bank deposits, FDI in physical assets and portfolio investments. The optimal tax theory proposes that investment incentives should be designed so as to reduce corporate tax rate with a view to retain and attract businesses within an economy. It was argued that high corporate tax rate also come with a burdensome system of enormous compliance costs, a workforce which may be declining in quality and inefficient and ineffective tax system. It is argued that zero effective corporate tax rate attempts to eliminate cash hoarding, stimulate business expansion and eliminate stockpiling abroad. The reverse may be true.

According to Quak (2018) optimum income tax is a calibration of the trade-off between corporate efficiency and equity within an economy. It is a balance between fiscal policy and lowering corporate tax rate to optimize increased investments, corporate profits and economic growth. It is argued that firms utilise existing investment incentives to reduce tax liability, improve financial efficiency and enhance profitability. It was pointed out the theory does not address the institutional framework that determines individual response to tax policy changes. It is further argued that this institutional framework should be part of the optimisation model especially for opportunity to avoid tax in the of context international taxation.

According to Fleurbaey and Maniquet (2018) optimal income tax theory is anchored on utilitarian social welfare function. The theory assumes that individual firms have identical preferences. This is actually unrealistic. When firms investment preference changes, it becomes difficult to perform sensitivity analysis from utilitarian maxim. In addition, the theory assumes full information disclosure. However, it may not be possible for the government to have information about investment plan, funding level and liquidity position for each firm.

Optimal tax theory measures the trade-off between revenue generation and lowering corporate tax rate. Berg and Hebous (2021) argued that efficiency as espoused by the theory is a narrow criterion to evaluate the impact of tax competition. Therefore, critiques observe that tax competition leads to sub-optimally low tax rates on mobile production factors. In addition, the optimal tax rate is a sovereign choice. However, country modeling is not impervious to global variation, information asymmetry and cross-border spillovers. Global variation evidence suggest that country size and governance structure are important determinants of jurisdictional tax optimality. The cross border spillovers arise since it is not possible to have all firms with homogenous corporate structure. Therefore, cross-border spillovers such as capital flight, profit shifting and business inversion will continue to exist.

According to An and Coady (2022), one limitation of the optimal tax system is the failure to appreciate the multi-dimensional information asymmetry that is inherent and characterises tax payers. Because of asymmetry information problem one is not able to determine a corporate tax schedule that will be optimal to every corporate tax payer. Optimal tax theory can work effectively on presupposition that government has full information on every tax payer, on every business opportunity available in the economy to business enterprises and individual firm-level liquidity plan.

2.2.2 Neoclassical Theory of Investment

The Neoclassical investment theory was pioneered by Jorgenson in 1963. The theory states that a combination of sound fiscal policy and investment incentives promote private investment. This was premised on the fact that, investment incentives create certain tax deductions which lower effective corporate tax rate at firm level. It is argued that, good fiscal policy raises level of income and increases expected output of firms and stimulate investment. Therefore, firms favour investment incentives since they lead to reduction in effective corporation tax rate and increase corporate performance. This

argument was applied in this study to estimate direct effect of investment incentives and intervening effect of corporate performance on ECTR for manufacturing firms in Kenya.

Parys (2012) in expounding on neoclassical investment theory argued that firms simultaneously take into account both tax related factors and non-tax factors when making investment decisions. Economies reduce corporate tax rate since firms are mobile and are free to locate in jurisdictions with lowest tax burden. The argument is that it is difficult to ignore investment incentives when investigating corporate taxation in developing economies. Federici, Parisi and Elliott (2015) points out that the nexus between taxation and investment incentives have shown that there is need to move from macro-modeling to micro-analysis. The micro-analysis allows investigation on effect of taxation across firms with different characteristics. Further, the association between taxation and investment incentives is a global concern that should be examined from both government and firm perspective as they make decisions.

Munongo, Akanbi and Robinson (2017) stated that according to neoclassical investment theory, firms continue accruing capital provided the benefits outweigh costs. The theory proposes that investment inducements boost development and investments. This is premised on the argument that investment incentives reduce ECTR. It was observed that the use of incentives to attract FDI improves benefit of corporates in a jurisdiction that have adopted a given set of investment incentives. However, this has external cost implications for investors in other competing economies that do not have similar incentives.

Girardi (2021) provided a critique of the neoclassical investment theory. It was observed that the assumption that investment decisions are instantaneous and costless is not tenable. It was argued that investment decisions are dynamic and subject to adjustment process. Muresianu (2021) examined tax

reform and infrastructure investment. It was argued that neoclassical theory focuses on supply side view. Supply siders believe that investment activities are motivated by increased after tax returns. However, sometimes corporate tax rate cuts are temporary and may not be useful economic policy since they do not address long-term investment returns.

2.2.3 Political Power Theory

Siegfried (1972) postulated that as firm size increases effective corporate tax rate reduces. Political power is defined as peculiar ability of a firm to take advantage of fiscal policy incentives and tax optimization opportunities to lower effective corporate tax rate. Political power theory postulates that large and high performing firms possess substantial resources, have capacity to engage in tax planning, take advantage of fiscal policy and organise activities to optimize tax savings. Firms take advantage of investment incentives to lower effective corporate tax rate. This proposition suggests that there is a converse association between ECTR and firm size.

Hansson, Porter and Perry (2012) pointed out that investment decisions are sensitive to tax rate. As a consequence countries are lowering corporate tax rate in order to retain and attract investments. Similar position was espoused in effective tax literature (Devereux *et al*, 2015). The disparity among economies on the level of ECTR is substantial. It is argued that both economic and political factors influence the level of ECTR in an economy. Delgado et al (2018) pointed out that there is non-linear positive association between firm size and ECTR. This non-linearity effect is a phenomenon which requires investigation to determine the positive and negative points within any sample distribution. Moreover, corporate performance as measured by ROA influence ECTR. This position was used to inform application of corporate performance in the study as an intervening variable.

Poli (2019) reiterated that large firms organise activities to achieve maximum tax savings, have resources to manage tax processes and engage in tax planning as postulated by political power theory. The exponents argue that globalisation of business enterprises confers tax advantage on firms. Firms with good corporate policies lobby for favourable tax policies, exploit opportunities in the taxation code and have good corporate tax strategy that help them reduce tax liability. Therefore, the study hypothesised that corporate performance has intervening effect on ECTR. Firms with high profits tend to have large absolute book value tax differences. As a result, the ECTR of tax favoured firms is likely to decrease while ECTR for tax disfavoured firms will be increasing. This leads to tax avoidance effect.

In contrast to political power theory, Belz, Hagen and Steffens (2019) argues that large firms are subject to large public visibility and scrutiny. This cause them to be exposed to tax authorities actions. The outcome is that there is positive size-ECT relationship the tax authority will focus on high profit making firms to maximise revenue collection at the minimum administration costs. Bachas, Brockmeyer, Dom and Semelet (2023) showed that the relationship between firm power and tax liability is not necessary. This is because some fiscal incentives are deducted from tax breaks while others are deducted from the tax liability itself.

2.2.4 Inflation Tax Theory

Mankiw (1987) reported a striking positive relationship between tax burden and inflation. This relationship therefore led to inflation tax theory which postulates that effective tax rates move together with nominal interest rate and inflation level. The theory suggest a positive relationship between inflation rate and effective tax rate. The proposition is that interaction between firm operations and existing fiscal policy substantially impact corporate tax burden. The effect of inflation on investment depends on balancing the change in cost of capital (interest rate) against the change in earnings that

firms can afford to pay. The assertion is that there is a relationship between fiscal and monetary policy. The fiscal policy in parameterised through tax rate while monetary policy is reflected through interest rate and inflation.

Calvo and Leiderman (1992) in expounding inflation tax theory states that the first order condition for effective public policy is that corporate income tax and seigniorage should be equal at each point in time. The implication is that tax rates should move together with interest rate and inflation. Monetary seigniorage is debt monetization and is likely to be used by government to meet inflation targets. Dogru (2013) posits that inflation is a random unsystematic walk that move together with effective tax rates within an economy. It is argued that inflation causes imperfect indexation in the tax code especially for developing countries. This implies that inflation does not affect all firms with equal intensity since firms may be at different level of growth and price of inputs vary from firm to firm.

Dhaliwal, Gaertner, Lee, and Trezevant (2015), argued that, the presence of price changes in the market cause changes in real corporate tax rate at firm level. It was pointed out that the interaction between tax rules and inflation changes corporate tax burden because allowable deductions are not inflation indexed. Consequently, firms are likely to face high ECTR in the presence of inflation. Wahyuningih and Setyowati (2020) point out that inflation and effective tax rates have a theoretical relationship and they move in same direction but at different financial speed. Therefore, economies with stable inflation are likely to have less tax burden. The inflation tax theory was used in this study to support the concept that inflation moderates effect of investment incentives on effective corporate tax rate.

According to Beer et al (2023) inflation is important neutrality so that the impact of tax system on investment incentives and effective tax rate does not change with inflation. It is argued that, the main

tax distortion due to inflation include failure to adjust parameters of the fiscal policy in line with inflation; temporal difference effect from time lag within which tax refunds are made; and taxing nominal rather real corporate profits. Tax system that is not sensitive to inflationary pressure has tremendous impact on effective corporate tax rate. Inflation erodes the real value of investment incentives. Therefore, inflation should be part of structural components of tax system. Indexing tax payable and fiscal parameters is important. That indexing can entail annual inflation adjustment which could be sufficient. Without inflation adjustment, losses carried forward from the previous years become meaningless in determining the actual tax to be paid. The government should develop a policy on inflation indexation of the corporate tax system. This will entail developing framework for inflation adjustment unit to be incorporated into corporate profits. To achieve this there is need for inflation-tax adjustment model that should be part of tax administration. The essence is to entrench and have tax system that embraces inflation neutrality principle.

According to Beer et al (2023) inflation erodes net present value of depreciation allowance and investment deduction since they are not treated as immediate deductible expenses. Investment allowances are sometimes deducted from taxable income over a long period of time and are usually valued based on historical cost of assets. Therefore, government should have inflation-adjusted tax system. However, it may be costly to administer, open opportunities for tax fraud and adjustment dates may be manipulated. Israel and Brazil are some of the countries that have attempted to adopt this approach but there are challenges relating to information asymmetry, technological changes and tax administration.

2.3 Empirical Literature

The empirical literature discussed past studies that point to profit-based incentive, capital investment incentive, custom duty incentive, corporate performance and inflation as variables that have empirical effect on effective corporate tax rate.

2 .3.1 Profit-Based Incentive and Effective Corporate Tax Rate

Quak (2018) analysed impact of tax competition in low and middle income countries for the period 2006 to 2016. It was pointed out that effective tax rate should be computed as the actual tax paid after taking in to account allowable tax deductions. The objective at firm level is to reduce effective tax rate through tax holidays, aggressive tax planning and tax breaks. The results from the 65 countries showed that tax holiday reduced corporate profit tax rate by average of 7 percent. The study was based on comparative analysis while the current study used panel data regression analysis.

Lisztwanova and Ratmanova (2018) assessed the impact of selected items in reducing tax base and corporate income rate in the Czech Republic. The objective was to establish the value of tax savings attributed to tax credits. The analysis used pyramidal decomposition of data and functional methodology in assessing intensity of observed changes for the period 2005 to 2015. It was found out that loss carryovers was significant factor that affect corporate income tax payable. However, the impact of selected factor differs from sector to sector. The current study had a different conceptualisation, context and methodology. The current study used panel regression to investigate investment ncentives and effective corporate tax rate in developing economy.

Abramovsky *et al* (2018) reviewed investment incentives for low and middle-income countries. The analysis showed that incentives such as tax holidays, preferential reduced tax rate and loss carry overs are fiscal mechanisms used to attract footloose (unrestricted) investments that generate profits. The

review showed loss carry-forward schedule was used to reduce future taxable profits until the balance is zero, albeit subject to limited number of years. The analysis used case study to assess how investment incentives were applied in Ethiopia and Ghana. The review did not narrow down to any specific sector which the current study attempted to address by focusing on effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya.

Lakuma (2019) examined effect of various incentives schemes on effective tax rate in Uganda. The study adopted Devereux and Griffith (2003) model to calculate effective tax rate. It was concluded that difference in effective tax rate was driven by a mix of fiscal incentives, tax administration and preferential treatment. Preferential treatment was calibrated by tax holiday. The descriptive analysis showed that tax holiday effectively reduce tax rate to a single digit percent. The study did not use any inferential analysis to analyse the impact of investment incentives on effective corporate rate. This is a gap the study attempted to address by using panel regression and test of hypothesis.

Undie, Akpan and Sezuo (2020) examined effect of tax incentives and tax planning on corporate performance (profitability) in Nigeria. It was indicated that effective tax rate is one of the measures used to determine effectiveness of fiscal incentives. The study used *ex-post facto* research design. The multiple regression results revealed that firms take advantage of tax holidays to reduce tax liability. The research focused on firms operating in free trade zones. This study had a different conceptualization and context, that investment incentives had direct effect on effective corporate tax rate; corporate performance had intervening effect and inflation had moderating effect on the relationship between investment incentives and effective corporate tax rate.

Bánociová and Tahlová (2020) evaluated the importance of net loss amortization as tax planning strategy to lower effective tax rate in Slovakia. The study focused on how firms compensate for high

tax liability by amortising tax loss to reduce effective corporate tax rate. The study used descriptive analysis based on firm specific data for the period 2015 to 2017. It was concluded that firms utilise loss amortization to reduce income tax payable. The main limitation of the study was that no inferential analysis was carried out. This gap was addressed in the current by using panel egression and tax loss carryovers was a construct of profit based incentive.

Khamisan and Christina (2020) analysed corporate governance, tax loss carryforward, and financial distress on effective tax rate. Data was derived using purposive sampling of 162 firms listed on Indonesian Stock Exchange. Tax avoidance was measured using cash effective tax rate (CETR). CETR was computed as a ratio of amount of cash spent to pay taxes to profit before tax. Tax loss was measured as dummy variable. The results showed that loss carryforward had no influence on effective tax rate. The study used cross sectional multiple regression. The study improved on this analysis by using panel regression and applied loss carryforward as a construct of profit based incentive in different economic context in Kenya.

Reschiwati and Mujito (2023) analysed fiscal loss in strengthening factors affecting tax avoidance. Tax avoidance was computed as actual payment of tax as percentage of corporate profit before tax. Fiscal loss was calculated as part of compensation made by the tax payer. Companies experiencing financial losses in one accounting period got relief to pay less corporate tax. The study used data from 102 companies listed on Indonesian Stock Exchange. Data was analysed using panel regression model. The results showed that fiscal losses influence effect of profitability on effective corporate tax rate. The conceptual and context difference is that this study used fiscal losses as construct of profit based incent to estimate its effect on ECTR for a developing economy in Africa.

2.3.2 Capital Investment Incentive and Effective Corporate Tax Rate

Ohrn (2018) analysed corporate investment and financial policy response to domestic production activities deduction (DPAD) in USA. It was found out that, DPAD is a capital investment expenditure that firms deduct from taxable income as part of manufacturing expenses. The study used quasi-experimental design and difference-in-difference analysis to estimate the confounding variable effect of investment and financial policy. It was observed that, DPAD cause exogenous difference in effective corporate tax rate. The current study however applied panel regression, stratified random sampling to minimize cause-effect variations and with no factor confounding in the analysis.

Abramovsky *et al* (2019) simulation analysis showed that tax systems that have provision of depreciation allowance on physical assets translate into substantial difference in ECTR across activities, sectors, markets and source of finance in Myanmar. It was observed that tax incentives led to reduced tax rate. The study did not support reduced tax rate and argued that tax authorities may need to deploy strategies to stop activities that lead to low ECTR. It was pointed out most jurisdictional tax systems do not refund unused capital allowances but instead allow losses to be deducted from other normal operational profits and any balance is carried forward. Hence actual ECTR may even become negative if taxable profits from other investments are eligible for loss offset. The current study applied panel regression data analysis instead of simulation approach.

Hanappi (2018) examined ECTR for investments in end-user computers, R&D assets and pre-packaged software showed much larger variation. The analysis used survey data collected from 36 OECD and non-OECD countries. The analysis was based on OECD model for calculating forward looking effective tax rate. The results showed maximum ECTR investments in software was high, reaching 65.2 percent due to difference between fiscal and economic depreciation. The study was based on cross country comparative analysis while this study used firm specific panel data.

Congressional Budget Office (2018) estimated effective tax rate for different types of intangible assets. It was established that purchased software reduced effective tax rate by 37 percent because of applicable cost recovery from taxable income. The study has improved on this conceptual and contextual gaps by applying computer software deduction as an indicator of capital investment incentive for manufacturing firms in Kenya.

Calitz *et al* (2020) analysed depreciation allowances in South Africa using anonymized data from South African Revenue Service for the period 2014 to 2017. Cost-benefit analysis showed that ECTR varied substantially among sectors from as low as 18.5 percent to 24.5 percent due to depreciation allowances. The study examined the effect of incentives on effective tax rate at individual project. Marginal effective tax rate was measured as the difference between pre-tax return and post-tax return. It was also established that investment allowances of 8.6 billion ZAR reduced corporate tax liability by 2.4 billion ZAR. One limitation of the study was that it used available data at macro level and such data was not firm specific. This present study used firm specific data with depreciation allowance as a construct of capital investment incentive.

2.3.3 Custom Duty Incentive and Effective Corporate Tax Rate

Ghazanchyan, Klemm and Zhou (2018) reviewed cost-benefit of fiscal incentives in attracting capital and in supporting business diversification strategy in Cambodia. The study reviewed fiscal incentives applicable in Cambodia. It was pointed out that custom relief reduce upto 50 percent of taxable profit realised from goods produced and exported. The study analysed tax incentive in Cambodia which is a different business environment from Kenya. Instead of cost-benefit analysis this study used panel data regression analysis.

Oluwole, Adekunle and Olusola (2020) examined effect of tax incentives on growth of manufacturing firms in Nigeria. The study employed *ex-post facto* research design. Data was collected on corporate income tax incentive, capital allowance incentive, custom duty, excise duty incentive and ROA for the period 2013 to 2018. The regression model results established that an increase in custom incentive by one unit increases return on asset by 0.44 units in Nigeria. This study focused on effect of custom duty incentive on firm performance. The present study however focused on establishing the effect of custom duty incentive on ECTR.

Kuria (2018) analysed effect of custom duty incentive on performance of EPZ firms. The study used correlation research design with a sample size of 86 registered EPZ firms in Kenya. Primary data was collected using questionnaire and analysed using multiple regression. It was revealed that custom duty incentive had significant effect on performance of EPZ firms in Kenya. It was recommended that policy makers need to implement strategic investment incentives targeting specific industry so as to positively contribute to economic growth as envisaged in the Kenya Vision 2030. The study focused on effect of custom duty incentive on performance while this study was on effect of custom duty incentive on ECTR for manufacturing firms.

Undie *et al* (2020) surveyed impact of tax planning and incentives on profitability of 54 companies in free trade zones of Nigeria. It was pointed out that one of the important tools for analyzing tax incentives is using ECTR modelling. The multiple regression results established that import, export and excise duties are statistically significant in predicting firm profitability. The study focused on investment incentives and corporate performances for firms operating in free trade zones. However, the current study was on effect of custom duty incentive on ECTR for manufacturing firms in Kenya while corporate performance was conceptualised as an intervening variable.

Haris and Seid (2021) examined an overview of tax system in Ethiopia. The review also examined recent policy and revenue trends in Ethiopia It was pointed out that custom duty incentive allows eligible firms preferential rates and refund of duty paid on imported material used in production of export goods in Ethiopia. It was pointed out that, there are few studies that have examined the effect of custom duty on effective corporate tax rate. In addition, there are limited studies on effect of custom duty incentive on ECTR in Kenya which the study attempted to bridge such empirical gaps.

2.3.4 Investment Incentives, Corporate Performance and Effective Corporate Tax rate

Carreras *et al* (2017) analysed ECTR and firm size in South Africa. The study used panel data from 408,767 firms for the period 2010 2013. ECTR was defined as the ratio of tax liability to gross profit. It was found that, medium sized firms face lowest ECTR compared to small firms in South Africa. The results showed non linearity relationship between profitably and ECTR. This current study improved on this empirical findings by determining intervening effect of corporate performance on the relationship between investment incentives and ECTR.

Vintilă *et al* (2018) showed that corporate performance is correlated with ECTR in Romania, Hungary, Poland, Bulgaria and Slovenia. ECTR was computed as total income paid divided by earnings before interest and tax. Corporate profitability was measured by ROA, ROE and ROIC. The study was carried out in emblematical countries formerly of communist ideology which created empirical and contextual gaps for the study. This study examined direct effect of corporate performance on ECTR while the current study used corporate performance as an intervening variable. It was also acknowledged that studies on ECTR are limited due to inadequate data and therefore this study has filled part of such empirical gaps and framework.

Dias and Reis (2018) studied the effect of nominal tax rate on effective tax rate with firm characteristics as control variables. The study analysed results based on 1,530 companies from five countries. Effective tax rate was calculated as ratio of actual tax paid to accounting earnings before tax. It was found out that firm characteristics such as ROA had controlling effect on the level of effective tax rate in 5 EU countries (Denmark, Slovenia, Finland, Luxembourg and UK). Effective tax rate is a measure used to point out the tax volume of companies, evaluate tax planning efficacy and trace tax avoidance practices. The study used firm characteristics as control variable while this study applied corporate performance as an intervening variable.

Hamzah, Hamid, Zawawi, Shamsuddin and Azali (2020) analysed the moderating effect of ownership structure on the relationship between reinvestment allowance and firm performance. Firm performance was measured as a percentage of net accounting income divided by total assets. The analysis was two-fold. Firstly, the study evaluated the effect of investment incentives on performance. Secondly, it examined the effect of moderating effect of ownership structure on the relationship between incentives and performance. The panel regression results showed that foreign ownership structure moderated the effect of capital incentive and ECTR on performance of firms in Malaysia. This study provided the basis for applying corporate performance as intervening variable on the relationship between investment incentives and ECTR.

Adams *et al* (2020) examined effect of corporate performance on effective corporate tax rate for listed firms in Nigeria. Data was collected for the period 2012 to 2018. The result showed that corporate performance had positive significant influence on ECTR in Nigeria. Corporate performance was measured by ROA while ECTR was computed as income tax expense plus deferred tax expense divided by income before interest and tax. This study had a different conceptualisation whereby capital

incentive was an independent variable, corporate performance was the intervening variable and ECTR was the dependent variable.

Michael (2020) examined the moderating effect of profitability on the relationship between ownership structure and tax avoidance in Nigeria. Tax avoidance was measured by effective tax rate while profitability was measured by ROA. The generalised least squares revealed that ROA had positive moderating effect on ECTR. However, in this study profitability and financial efficiency are constructs of corporate performance as intervening variable on relationship between investment incentives and ECTR for manufacturing firms.

Sunarto, Widjaja and Oktaviani (2021) analysed the effect of company size and leverage on tax avoidance with profitability as intervening variable. The study used data from 21 mining companies listed on Indonesian Stock Exchange for the period 2016-2018. Effective tax rate was measured a percentage of tax paid divided by pretax income. The study used partial least square analysis. The results showed that profitability had no mediating effect on the statistical and financial connection between corporate governance and effective corporate tax rate in Indonesia. In this study it was hypothesised that corporate performance had moderating effect on the relationship between investment incentives and ECTR.

Nathania, Wijaya, Hutagalung and Simorangkir (2021) analysed influence of firm size and leverage on tax avoidance with profitability as intervening variable for mining firms listed on Indonesian Stock Exchange. The results established that profitability had intervening effect on the relationship between firm size and ECTR. The study used structural equation modelling while this thesis used panel regression. The study conceptualised corporate performance had intervening effect on the relationship between investment incentives and ECTR for manufacturing firms in Kenya.

Wang, Wilson, Zhang and Zou (2022) surveyed political cost and tax avoidance in USA. The study collected data from sin firms whose analysis was carried out using ordinary least squares. Sin firms are organisations perceived negatively for manufacturing, licensing and distributing harmful products such alcohol, gambling, tobacco and firearms. Tax avoidance was measured as a ratio of cash paid to pretax income after deducting special items. The results showed sin firms exhibit low tax avoidance than non-sin firms. The regression results revealed that there was a positive relation between tax incentives and financial performance. This study focused on both sin and non-sin manufacturing firms.

Reschiwati et al (2023) analysed fiscal loss in strengthening factors affecting tax avoidance. Tax avoidance was computed as actual payment of tax as percentage of corporate profit before tax. Fiscal loss was calculated as part of compensation made by the tax payer. Companies experiencing financial losses in one accounting period got relief to pay less corporate tax. The study used data from 102 companies listed on Indonesian Stock Exchange. Data was analysed using panel regression model. The results showed that fiscal losses influence effect of profitability on effective corporate tax rate. The conceptual and context difference is that this study used fiscal losses as construct of profit based incentive to estimate its effect on ECTR for a developing economy in Africa.

2.3.5 Investment Incentives, Inflation and Effective Corporate Tax rate

Rojas, Rodríguez and Samper (2017) investigated determinants of ECTR in Italy. The study collected data from 62 tourism firms for the period 2008 to 2013. Effective corporate tax rate was defined as tax liability as a percentage of taxable profits. The study used dynamic panel data regression and established that due to the intervening effect of financial year of reference, geographical location and sector type, firms with greater capital assets bear low ECTR. This was because, wear and tear is deducted from taxable profits. The findings provided empirical support for the study by focusing on manufacturing firms with inflation as moderating variable in a developing economy.

Purina (2017) studied effect of both internal and external variables on ECTR in Czech and Russia. Data was collected from 13 firms with largest market capitalisation at Praque Stock Exchange in 2016 in Czech Republic. Another set of data was collected from 16 largest firms listed at Moscow Stock Exchange. The internal variables were firm economic situation (characteristics) while external factors were macro-variables (legislation, inflation, exchange rate, tax index and oil prices). The fixed panel regression results showed that both firm characteristics and macro-variables affect ECTR. The study conceptualised inflation as external variable with moderating effect within a different context of developing economy in Africa.

Congressional Budget Office (2017) simulated effective corporate tax rate for the G-20 countries. Effective corporate tax rate was measured by actual tax paid to tax authority in a country of operation relative to income earned in that country of operation. The results showed that ECTR vary at firm level due to changes in tax system, cost recovery allowances, interest rates, inflation, asset depreciation and economic conditions across countries. ECTR was found to be sensitive to inflation rate because it increases nominal value of payments. For instance, the results showed that due to inflation rate of 2.5 percent, USA had the fourth-highest effective corporate tax rate. The study used simulation approach based on predetermined parameters while this study used panel regression with inflation as moderating variable.

Andrejovska (2019) analysed effective tax rate in the context of the microeconomic determinants at firm level and macroeconomic conditions. The study used linear regression using data from Eurostat database of 252 firms that had business operations in EU. The macroeconomic model result showed that inflation rate was not statistically significant determinant of effective tax rate in EU. Inflation was not an appropriate indicator for company's decision on effective corporate tax rate. It was argued that interest expense deduction compensate the tax deformation caused by inflation. Nevertheless, it

was recommended that any government policy should take into account prevailing macroeconomic environment since they affect manufacturing capacity of firms. The study focused on effective tax rate in the context of economic determinants while this study investigated moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate.

Harahap et al (2018) studied the impact of public policy and macroeconomic variables on effective tax rate in Indonesia. The study used data from companies listed on Indonesia Stock Exchange for the period 2010-2015. Effective corporate tax rate was defined as tax paid as a percentage of earnings before interest expense, tax and depreciation allowance. The simulation of monetary policy showed that an increase in inflation by 10 percent led to increase in effective tax rate by 2.28 percent. The study used structural equation modeling while this study used panel data regression to show the moderating effect of inflation on the relationship between investment incentives and effective corporate taxation rate in developing economy.

OECD (2020) model estimated effective tax rate for various countries using three category of variables. These were asset specific, macroeconomic environment and tax related. The constructs of macroeconomic variables were real interest rate, nominal interest rate and inflation. The asset specific indicators were pre-tax rate of return and economic depreciation. The tax relate indicators were present value of capital allowance, share of initial investment expensed, inventory valuation method and project life time. The OECD model used predetermined variable parameters, not sector specific and did not use firm level data. These are therefore the conceptual, contextual, empirical and methodological gap that the study attempted to improve on.

According to Beer et al (2023) inflation erodes the net present value of depreciation allowance and investment deduction since they are not treated as immediate deductible expenses. They can be

deducted from taxable income over a long period of time and are valued based on historical cost of asset. One solution to taxing inflated profits is by computing tax payable by converting nominal profits into fiscal units. This fiscal unit is what is called inflation-adjusted unit account. Such approach could address the problem. The review focused on how taxing inflated income impacts effective corporate tax rate. The gap in the review is that it was based on simulating approach using OECD data base. The study improved on this by using inflation as moderating variable on the relationship between investment incentives and effective corporate taxation rate for manufacturing firms in developing economy.

2.4 Summary of Empirical Literature

The summary of reviewed literature indicated the objective of the study, key findings research gap and how the study filled identified research gaps. The reviewed empirical literature is as summarized in table 2.1 below.

Table 2.1 : Summary of Reviewed Literature

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
1. Reschiwati and Mujito (2023)	Analysis fiscal loss compensation in strengthening factors affecting tax avoidance for companies listed on Indonesian Stock Exchange.	Companies experiencing financial losses in one accounting period get relief to pay less corporate tax. Fiscal losses influence effect of profitability on effective corporate tax rate.	The study was conducted in Asia using fiscal losses as intervening variable	The conceptual and context difference is that this study used fiscal losses as construct of profit based incent to estimate its effect on ECTR for a developing economy in Africa
2. Beer, Mark and Alexander (2023)	The impact on taxing inflated income on effective tax rate.	Inflation erodes the net present value of depreciation allowance and investment	The gap in the review is that it was based on simulating	. The study improved on this by using inflation as moderating variable on the

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
		deduction since they are not treated as immediate deductible expenses.	approach using OECD data base.	relationship between
3. Wang, Wilson, Zhang and Zou (2022)	Political cost and tax avoidance : Evidence from Sin Firms	The results showed sin firms exhibit low tax avoidance than non-sin firms.	The study collected data from sin firms whose analysis was carried out using ordinary least squares financial performance.	The study focused on both sin and non-sin manufacturing firms
4. Haris & Seid (2021)	Survey on tax system in Ethiopia	Custom duty and other charges on imports and exports allow eligible firms preferential rates or allow claims of back duty payments on imported material used in production	The survey focused on tax revenue, tax system and policy reforms in Ethiopia using descriptive review	The study has shown effect of incentives on effective corporate rate in Kenya using inferential statistics
5. Nathania, Wijaya, Hutagalung & Simorangkir (2021)	Effect of firm size and leverage on ECTR with profitability as intervening variable for listed firms on Indonesian Stock Exchange	Profitability had intervening effect on the relationship between firm size and ECTR	The study applied structural equation model with performance as an intervening variable but did not show the effect of investment incentives on ECTR	The study used panel regression to establish effect of investment incentives on ECTR with corporate performance as intervening variable.
6. Sunarto, Widjaja & Oktaviani (2021)	Mediating effect of profitability on the relationship between corporate	The sobel test results showed that profitability does not have mediating effect of the	The study focused on mediating effect of profitability for listed banks	The study has determined intervening effect of corporate performance for

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
	governance and effective corporate tax rate for listed banks in Indonesia	relationship between corporate factors and ECTR for listed banks in Indonesia	in Indonesia which a different economic context	manufacturing firms in a developing economy
7. Adams & Balogun, (2020).	Analysis of effective corporate tax rate for listed firms in Nigeria.	The result showed that corporate performance had positive significant influence on ECTR in Nigeria.	Corporate performance was measured by ROA while ECTR was computed as income tax expense plus deferred tax expense divided by income before interest and tax.	This study had a different conceptualisation whereby capital incentive was an independent variable, corporate performance was the intervening variable and ECTR was the dependent variable
8. Bánociová & Tahlová (2020)	Importance of loss amortization as tax planning strategy to lower effective tax rate in Slovakia	Utilisation of loss amortization reduced effective tax rate at firms level	The study used descriptive analysis but did not use any inferential statistics	The study used inferential statistics to analyse effect of investment incentive on effective corporate tax rate with tax losses as a construct of profit based incentive
9. Calitz, Muwanga-Zake, Sithole & Steyn (2020)	Analysis of depreciation allowances in South Africa	Deprecation and investment allowances reduces corporate income tax rate in the economy	The study focused on depreciation allowance and used anonymized macro data from the South African Revenue Services which is not firm specific	Has improved on use of capital allowance as an indicator of capital investment incentive to estimate its effect using micro (firm level) panel data
10. Hamzah, Hamid, Zawawi, Shamsuddin & Azali (2020)	Effectiveness of reinvestment allowance and tax attributes on corporate	Results showed that directorship of a firm moderated effect of ECTR on firm performance.	The study focused on ownership as moderating variable and performance as	Capital investment incentive is the independent variable, corporate performance was the intervening

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
	performance in Malaysia.		dependent variable which provides conceptual gap.	variable and ECTR is the dependent variable to improve on the conceptual and contextual gaps.
11. Khamisan & Christina (2020)	Financial distress, tax loss carry forward, corporate governance and tax avoidance	Financial distress, tax loss carry forward and corporate governance had no effect on ECTR.	The analysis used cross sectional multiple regression with loss carry forward as an independent variable in Asia	The study used loss carryforward as a construct of profit based incentive in Kenya which is a different context and conceptualisation.
12. Michael (2020)	Moderating effect of profitability on the relationship between ownership structure and tan tax avoidance in Nigeria	Profitability had a positive moderating effect on ECTR	The regression analysis did not focus on the moderating effect of market related variable which is key in analysing ECTR	The study used inflation as market related moderating variable on ECTR
13. Organisation for Economic Cooperation and Development (2020)	Effective tax rate for various countries using three category of variables.	Asset specific, macroeconomic environment and tax related system affect ECTR	The study applied OECD model which used predetermined parameters at country level but not for individual sector and firms	The study used panel regression with inflation as moderator, corporate performance as intervening variable and investment incentives as independent variable for manufacturing firm in a developing economy
14. Oluwole, Adekunle and Olusola (2020)	Effect of tax incentives on the growth and development of	Corporate income tax incentives, capital allowance incentives, custom duty incentive and	The study focused on direct effect of investment incentives on	The study focused on direct effect of investment incentives on ECTR with

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
	manufacturing firms in Nigeria	excise tax incentives have positive significant effect on ROA	performance, growth and development of firms	corporate performance as intervening variable
15. Undie, Akpan and Sezuo (2020)	Impact of tax planning and tax incentives on profitability on companies in free trade zones	Tax incentives have improved corporate performance of firms operating in free trade zones	The study focused on investment incentives and corporate for firms operating in free trade zones	The study focused on investment incentives and ECTR for manufacturing firms.
16. Abramovsky, Smurra & Warwick. (2019)	Analysis of effective tax rates for CIT and PIT in Myanmar	The analysis showed depreciation allowance on physical assets translate into substantial difference in ECTR across activities, sectors, markets and source of finance	The study examined effect of both personal and corporate tax reliefs on effective tax rates in Myanmar.	The study focused on effect of investment incentives on effective tax rates at corporate level
17. Andrejovska (2019)	Effective tax rate in the context of both microeconomic determinants and macroeconomic conditions for firms in EU	Macroeconomic variables are statistically significant determinants of effective tax rate in EU	The focus was on direct effect of macroeconomic variable on effective tax rate in EU	The study used inflation as moderating variable on ECTR in a developing economy
18. Lakuma (2019)	Tax burden of various incentives schemes in Uganda	tax holidays and preferential income tax rate lower effective tax burden and inflation surge has adverse effect on effective tax rate	The study did not carry out any inferential analysis to show the effect of investment incentives on ECTR	The study has determined effect of investment incentives on ECTR using both descriptive and inferential analysis
19. Abramovsky, Bird, Harris, Tyskerud,	Review of corporate tax incentives for	Profit-based incentive reduces effective corporate	The review was a case study to assess how	The study adopted quantitative analysis focusing

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
Weldeabzgi, Beyene,, …& Keable-Elliott. (2018)	investment in low and middle income countries	tax rate and its impact differ by sector and cluster	investment incentives were applied in Ethiopia and Ghana.	on effect of investment incentives on ECTR for manufacturing firms in Kenya
20. Congressional Budget Office (2018)	How taxes affect incentive to invest in new intangible assets	Purchased software had effective rate at 37 percent because of applicable cost recovery from taxable income	The analysis described how recovery of intangible assets affect effective tax rate in USA	The study applied computer software deduction as an indicator of capital investment incentive on ECTR for manufacturing firms in Kenya
21. Dias and Reis (2018)	To understand the relationship between effective tax rate and nominal rate with firm characteristics as control variable	Firms have ability to decrease tax payable through tax management in 5 EU countries.	The study did not establish the effect of corporate performance as an intervening variable on ECTR and was carried out Europe.	This study has determined the intervening effect of corporate performance on ECTR in developing economy
22. Ghazanchyan, Klemm and Zhou (2018)	Tax incentives in Cambodia	Tax holiday differs materially across sectors and country in offering deferral and tax exemptions	The paper reviewed costs and benefits of investment incentives on attracting capital and diversification strategy in Cambodia.	This study has established direct effect investment incentives on effective corporate tax rates in Kenya.
23. Harahap, Sinaga, Manurung and Manalana (2018)	Impact of public policy and macroeconomic variables on effective tax rate in Indonesia	Combined macroeconomic variables increase in GDP by 5 percent, increase in inflation by 5 percent and depreciation of exchange rate by 5	The study used structural simultaneous modelling to estimate effect of macroeconomic environment on effective tax rate	The study used panel data regression while inflation was a moderating variable

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
		percent increased effective tax rate by 1.31 percent		
24. Hanappi (2018)	Loss carry forward provision: Measuring effects of tax symmetry and automatic stabilisation	Profit-based incentive offset tax liability and reduces effective corporate tax rate	Using simulation method the study used predetermined specific capital assets parameters to estimate ECTR for 34 OECD and non-OECD Countries	The study applied firm level panel data regression to estimate ECTR in Kenya
25. Hanappi (2018)	OECD model for estimating effective tax rate based on OECD countries and Selected Partner Economies	Investments in software leads to large differences in ECTR across countries.	The empirical results was based on 36 OECD and Selected Partner Economies but was not Sector specific. tax rates	The study narrowed down to establish the effect of computer software deduction as an indicator of capital investment incentive on ECTR for manufacturing firms in Kenya.
26. Kuria (2018)	Effect of custom duty incentive on corporate performance of EPZ firms in Kenya	Custom duty incentive have significant effect on performance of registered EPZ firms in Kenya	The effect of custom duty incentive on ECTR was not evaluated and performance was dependent variable	The study conceptualised custom duty incentive to have direct effect on ECTR while corporate performance is the intervening variable for manufacturing firms in Kenya
27. Lisztwanova and Ratmanova (2018)	Assessment of factors influencing corporate income tax liabilities in selected sectors in Czech Republic	Loss carryovers is significant factor that affect corporate income tax payable in Czech Republic	The study was conducted to assess factors influencing tax liability in Europe	The study was conceptualised in Africa with focus on investment incentives and effective corporate tax rate

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
28. Ohrn (2018)	Effect of corporate taxation on investment and fincial policy: Evidence from DPAD in USA	Capital deductions cause reduction in effective tax corporate rate and lower corporate tax rates stimulate increase in investment	The study used difference-in-difference analysis to show relationship between capital deduction and fiscal policy	The study used panel regression to estimate effect of capital deductions on effective corporate tax rate
29. Quak (2018)	Impact of international tax competition on low and middle income countries	Data from 99 countries showed that 65 have reduced corporate income tax rate by 7 percent	The study was focused on country comparative analysis but did not concentrate on a specific sector by use of firm-specific data.	The study focused on use of firm-specific data from manufacturing firms
30. Vintilă, Gherghina & Păunescu (2018)	Effective corporate tax rate and influence factors: Empirical evidence from emerging European markets of Bulgaria, Hungary, Poland Romania and Slovenia	There is positive direct relationship between ECTR and profitability, debt, capital assets, inventory	The study was carried out in former communist ideology countries in Europe	The study was carried out in Kenya which is a different economic context
31. Carreras, Dachapalli & Masccagni (2017)	Effective corporate tax burden and firm m size in South Africa: Firm-level analysis	Medium sized firms face lowest effective corporate tax rate while small firms are experiencing highest effective corporate tac rate	The study did not examine the effect of incentives on ECTR	The study determined the effect of incentives on ECTR
32. Congressional Budget Office (2017)	Corporate tax rate for the G-20 countries using various parameters.	ECTR vary at firm due to country changes in tax system	The review only simulated ECTR using country specific parameters in	The study used panel regression analysis to investigate ECTR in developing economy

Researcher	Study objective	Key Findings	Research Gaps	How the Study has Filled Research Gaps
			developed economies	
33. Purina (2017)	Effective tax rates and firm m size in South Africa: Firm-level analysis	Firm internal factors affect ECTR more than external variables	The study used both internal and external as independent variables in developed economy	The study conceptualised internal variables as intervening variable while external variable as moderating variable in developing economy
34. Rojas, Rodríguez & Samper (2017)	Determinants of tax burden in the tourism sector in Italy	The finding showed that there is a relationship between ECTR and financing structure.	The research was in Europe using dynamic panel model in tourism sector while controlling for sub-sector type and financial year of reference.	The research was undertaken on manufacturing firms using panel data with inflation as moderating variable

Source: Empirical Literature Review (2022)

2.5 Conceptual Framework

According to Imenda (2014), conceptual framework shows how research problem is to explored and specific direction of relationship between and among variables. The study conceptualized that effective corporate tax rate as dependent variable was directly influenced by investment incentives as independent variables. In the framework, corporate performance was the intervening variable while inflation was the moderating variable. This conceptualization is as shown in figure 2.1 below.

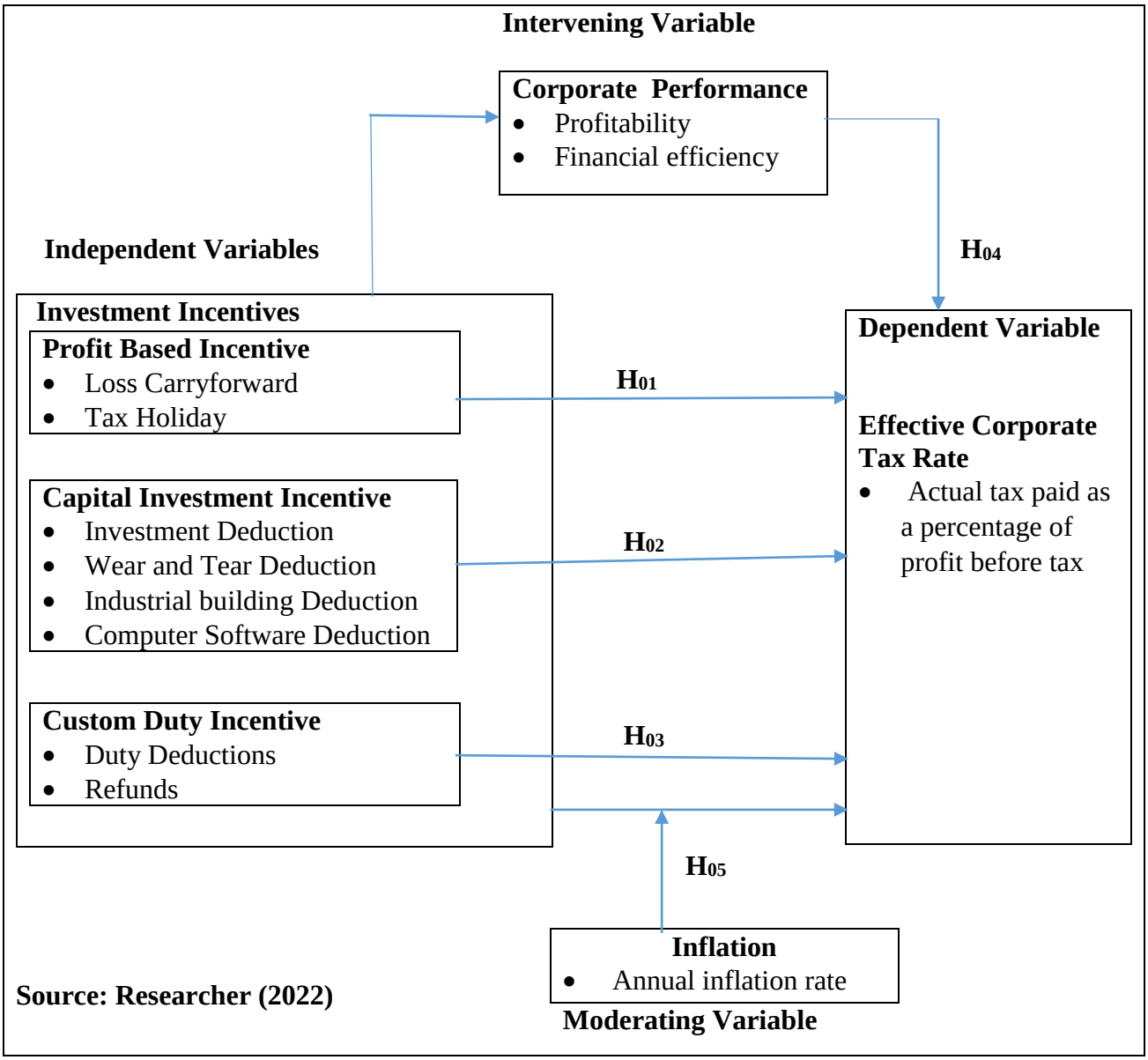

Figure 2.1 : Conceptual Framework

Effective corporate tax rate was measured by actual tax paid as a percentage of profit before tax. Effective tax rate was the dependent variable as shown in figure 2.1 above. H_{01} shows the direct effect of profit-based incentive on effective corporate tax rate; H_{02}, shows the direct effect of capital investment incentive on effective corporate tax rate and H_{03}, shows the direct effect of custom duty incentive on effective corporate tax rate. The intervening conceptual model is captured by hypothesis H_{04}. The moderating effect is the interactive product effect of inflation and investment incentives on

effective corporate tax rate. Therefore, H_{05} shows the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

Variation in effective tax rate is due to variation in investment incentive regime across countries. It was shown that investment incentives affect effective corporate tax rate. The analysis used loss carry forward and tax holiday as a constructs of profit based incentive Capital investment incentive was proxied by investment deduction; wear and tear deduction; industrial building deduction; and computer software deduction. Custom duty was measured by duty deductions and refunds

The conceptual framework also showed that corporate performance had intervening effect on the relationship between investment incentives and effective corporate tax rate. Corporate performance was measure by profitability and financial efficiency. It was conceptualised that there is moderating effect of inflation on the relationship between investment incentives and effective corporate taxation rate. The extant empirical literature and theory was used to develop the above conceptual framework for this study.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter presents research methodology which entailed research philosophy, design, and empirical model, target population, sampling technique, data collection, data analysis, diagnostic tests and ethical considerations. The chapter begins with discussion and justification of research philosophy and design underpinning the study. It further provides direct, intervening and moderating empirical models for the study. It also highlighted target population for the study, sampling procedure, research instrument, data collection procedure, data analysis, presentation and relevant diagnostic tests. The chapter closes with ethical consideration for the study.

3.2 Research Philosophy

According to Burrell and Morgan (2016), research philosophy entails four main areas of assumptions that underpin any given study. These areas of assumptions are epistemology, ontology, axiology and methodology. Epistemology is concerned with validity, scope and method of generating knowledge. It can be deductive, inductive or abductive. Ontology focuses on logical approach, relationships, concepts and characteristics of a study area. Ontology can either be objective or subjective. Axiology is the value system that influence research process and can be either ethical or aesthetic. Methodology is the strategy, procedure and technique for data processing. It can be quantitative or qualitative. These assumptions therefore informs the kind of philosophy which are positivism, realism, interpretivism and pragmatism.

Saunders et al (2019) state that philosophy of a given research is a set of norms, assumptions, principles and beliefs that guide how data on given phenomenon is to be collected, analysed and interpreted to solve a particular problem. It is argued that positivism is used in cases where epistemic

assumption is deductive, with objective ontology, value free axiology and quantitative methodology. The study adopted positivism since its assumption was based on deductive approach, objective analysis, ethical grounding and quantitative methodology. The positivism philosophy was appropriate since independent, intervening and moderating variables were observable, quantifiable and measureable. The study also applied empirical methods and quantitative analysis.

The relevance of positivistic philosophy for this study was that its epistemology was based on established financial theories and had research hypotheses. According to Saunders *et al* (2019), positivistic epistemology is applied in cases where study area has established principles, certain practicum, observable credible data, has causality explanations and generate generalizable findings. These attributes were well fitted for the study. Based on this positivist epistemology the study adopted deductive approach.

Park, Konge and Artino (2019) contend that ontology for positivist paradigm allows for explanation and prediction in a casual framework, to analyse causal inferences that show associations and correlations. Further, the study adopted positivist ontology since its analysis was based on proportionate stratified sampling coupled with objective quantitative data analysis. Moreover, the study ontology took objective approach since the study was supported by theoretical, conceptual and empirical framework such that using the same methodology different researchers are likely to arrive at similar results.

In terms of axiology, the study was undertaken in a value-free, neutral and detached environment since the researcher was not part of the variables and data in the study. It is argued that positivist philosophy is used when the researcher is neutral and independent of the phenomenon being

researched and is not part of research occurrences and datasets. The positivistic philosophy was also justifiable since the researcher was externally independent of unit of analysis.

3.3 Research Design

Saunders *et al* (2019) pointed out that research design encompasses methodology, strategy and timeframe for information gathering on a specific or generalisable phenomenon. It is the overall configuration of techniques by which data is collected, procedures for analysis, evidence for data gathering and how such evidence is to be interpreted. The essence of research design is to achieve study objectives, test the hypotheses and propose recommendations to address study problem. It is argued that from time horizon perspective a research design can either be cross-sectional or longitudinal.

The study therefore applied longitudinal research design. As elucidated by Cooper and Schindler (2014), longitudinal design was adopted since the study made observations over a period of time from sampled firms to determine cause-effect associations between the variables after data analysis. The essence was to establish direct effect of investment incentives on effective corporate tax rate together with intervening effect of corporate performance and the moderating effect of inflation. The quantitative results were used to test the hypotheses and helped to achieve study objectives.

Wang, Beal, Chan, Newman, Vancouver and Vandenberg (2017), clarified that the three aspects of longitudinal research design are conceptual, methodological, and practical. As a concept, longitudinal research design is where data are collected over span of time on the same variables from different entities. The essence of longitudinal research was to improve on the validity of inferences achieved by using both cross-sectional approach and assessing the changes over time that may affect variables. The methodological aspect is to determine the number of measurement, time interval, meaningful sample

size and configure measurement properties of the variables. In practice, the researcher must develop an implicit relationship with participating firms to get data for the study period.

3.4 Empirical Model

According to Cooper *et al* (2014), empirical model is a mathematical representation of a system construct to study a phenomenon. The study utilized panel data regression model so as to establish direct cause-effect relationship between investment incentives and effective corporate tax rate. In addition, the study was poised to test corporate performance intervention and moderation of inflation on the relationship between investment incentives and effective corporate tax rate. The empirical model was based on the Devereux and Griffith (2003) model for estimating ECTR. The empirical models were used to estimate direct effect, intervening effect and moderating effect.

Spengel, Schmidt, Heckemeyer, and Nicolay (2020) pointed out that one can use the Devereux and Griffith, 2003) model framework in analysing effective tax rate. This is because the model can treat any gains and losses from selling and acquisition of assets. It is also useful tool in analysing the long-term measure of taxation. The model is relevant to this study since it is based on standard financial modelling posting that fiscal incentives affect effective corporate tax rate. Fiscal incentives deduction can also be discounted. It is argued that the model allows calculation of CTR even in the presence of incentives such as tax holidays.

3.4.1 Direct Effect Model

The direct effect model for the study utilized panel data regression model to determine direct effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya. The direct effect relationship is as shown in model 3.1.

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t \quad \text{.....Model 3.1}$$

Where:

Y_{it} is the effective corporate tax rate for firm i at time t;

X_{1it} is the profit based incentive for firm i at time t;

X_{2it} is the capital investment incentive for firm i at time t;

X_{3it} is the value of custom duty incentive for firm i at time t; and

μ_t is the error term to take care of stochastic variations across time period of analysis.

The parameters β_1, β_2, and β_3 measures the amount of variation in Y_{it} as a result of a unit change in X_{1it}, X_{2it} and X_{3it} respectively. The composite index for a variable was computed using geometric mean of respective indicators. The geometric mean was calculated using the n^{th} root of the observations. The data capture was for individual construct before computing a composite index to show the overall effect.

Chakrabartty (2017) pointed out that a composite index is constructed by combining indicators together. It was argued that geometric mean approach is one of the best methods for computing composite index especially even when indicators are not in the same dimension. This is because poor performance in any component indicator gets directly reflected in geometric mean. In other words, a low value of one chosen indicator does not get linearly compensated by high values in another.

According to Vogel (2020) geometric mean is a measure of central tendency with wide application in finance and social sciences. The formula for computing geometric (GM) is as follows:

$$G.M = \sqrt[n]{Z_1 Z_2 Z_3 \ldots\ldots Z_n} \quad \text{for } Z_i \geq 1$$

Where Z_i is the construct of variable X_i for firm i at a given point;

$Z_1 Z_2 Z_3 \ldots\ldots Z_n$ is the product of the constructs;

$\sqrt[n]{}$ is the nth root of the product; and

n is the number of constructs for each variable.

Cruz and Kreft (2019) reviewed literature to enable computation of geometric mean of data sets containing zeros. In computing geometric mean for data sets with zero values the researcher should add one (1) to each of the observations, compute the geometric mean of this shifted data and then subtract one from the result.

3.4.2 Intervening Effect Model

Intervening effect model was used to compare the relationship between dependent and independent variables before and after adjustment for intervening variable. The study applied the four stage approach suggested by Baron and Kenny (1986) on mediation analysis. The intervening effect model tested hypothesis H_{04}. Intervening occurs when the strength and direction effect of predictor variables on dependent variable varies as a function of another variable. The intervening variable was corporate performance denoted by $\mathbf{C_{it}}$. The intervening effect analysis involved conducting four panel regressions to determine the significance of coefficients at each of the stages.

Stage I: Conducted a panel regression of investment incentives (as independent variables) and effective corporate tax rate (dependent variable) as reflected in model 3.1. The intention of this analysis was to establish whether investment incentives were statistically significant predictors of effective corporate tax rate for manufacturing firms in Kenya. The panel regression analysis was based on model 3.1 as shown below.

$$\mathbf{Y_{it}} = \beta_0 + \beta_1 \mathbf{X_{1it}} + \beta_2 \mathbf{X_{2it}} + \beta_3 \mathbf{X_{3it}} + \mu_t \quad \textbf{……Model 3.2}$$

Where:

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the level capital investment incentive for firm i at time;

$\mathbf{X_{3it}}$ is value of custom duty incentive for firm i at time t; and

μ_t is the error term across time period of analysis for firm i at time t.

Stage II: Conducted a panel regression of investment incentives and corporate performance as reflected in model 3.2.

$$\mathbf{C_{it}} = \beta_0 + \beta_1 \mathbf{X_{1it}} + \beta_2 \mathbf{X_{2it}} + \beta_3 \mathbf{X_{3it}} + \mu_t \quad \textbf{……Model 3.2}$$

Where:

$\mathbf{C_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the level capital investment incentive for firm i at time;

$\mathbf{X_{3it}}$ is value of custom duty incentive for firm i at time t; and

μ_t is the error term across time period of analysis for firm i at time t.

The aim at stage II was to establish whether investment incentives had statistical significant effect on corporate performance for manufacturing firms in Kenya. Corporate performance was determined by computing the geometric mean of profitability and financial efficiency. Profitability was computed as net profit before tax divided by total assets. Financial efficiency was calculated as gross profit divided by total assets.

Stage III: Conducted a panel regression of corporate performance and effective corporate tax rate as reflected in model 3.3 below.

$$\mathbf{Y_{it}} = \beta_0 + \beta_1 \mathbf{C_{it}} + \mu_t \quad \textbf{……Model 3.3}$$

Where:

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{C_{it}}$ is the corporate performance for firm i at time; and

μ_t is the error term across time period of analysis for firm i at time t;

The aim at stage III was to establish whether corporate performance had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

Stage IV: Conducted a panel regression of investment incentives, corporate performance and effective corporate tax rate as reflected in model 3.4 below.

$$\mathbf{Y_{it}} = \beta_0 + \beta_1\mathbf{X_{1it}} + \beta_2\mathbf{X_{2it}} + \beta_3\mathbf{X_{3it}} + \beta_4\mathbf{C_{it}} + \mu_t \quad \textbf{……Model 3.4}$$

Where:

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the level of capital investment incentive for firm i at time t;

$\mathbf{X_{3it}}$ is value of custom duty incentive for firm i at time t;

$\mathbf{C_{it}}$ is the corporate performance for firm i at time t;

μ_t is the error term across time period of analysis for firm i at time t.

The aim of stage IV was determine whether investment incentives had statistical significant effect on effective corporate tax rate when regressed together with corporate performance as intervening variable. Stage 1 to 3 were used to ascertain the existence of zero order associations amongst the variables. The intervening effect was determined by comparing the relationship before and after adjusting for corporate performance. The intervening effect is said to exist when β_4 in model 3.4 is statistically significant. The null hypothesis was that the model coefficient, $\beta 4$, was not statistically significant and the null was to be rejected if the p-value of the coefficient was less than 0.05.

Stage 1 to 3 were used to ascertain the existence of zero order associations amongst the variables. This allowed the analysis to move to stage IV. At stage IV a panel regression was conducted based on model 3.4 of the study. The aim of stage IV was to determine whether both investment incentives and

corporate performance had statistical significant effect on effective corporate tax rate. The four steps are summarised in table 2.3 below.

Table 2.3 : Summary of Four Stages for Intervening Effect Model

Stage	Model	Outcome	Interpretation
1	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ .....Model 3.I	If β_1, β_2 and β_3 in model 3.I are significant	There is a relationship that can be intervened
		If β_1, β_2 and β_3 in model 3.I are not significant	There is no relationship that can be intervened
II	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……Model 3.I $C_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……..Model 3.2 $Y_{it} = \beta_0 + \beta_1 C_{it} + \mu_t$ Model 3.3 $Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 C_{it} + \mu_t$ .....Model 3.4	If β_1, β_2 and β_3 in model 3.1 and in model 3.2 are significant If β_1 in model 3.3 is also significant If β_1, β_2 and β_3 in model 3.4 are not significant but β_4 is significant	Total intervening effect
III	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……Model 3.I $C_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……..Model 3.2 $Y_{it} = \beta_0 + \beta_1 C_{it} + \mu_t$ Model 3.3 $Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 C_{it} + \mu_t$ .....Model 3.4	If β_1, β_2 and β_3 in model 3.1 and in model 3.2 are significant If β_1 in model 3.3 is also significant If β_1, β_2 and β_3 in model 3.4 are significant but less than coefficients in model 3.1 and β_4 in model 3.4 is significant	Partial intervening effect
	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……Model 3.I $C_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ ……..Model 3.2	If β_1, β_2 and β_3 in model 3.1 are significant	No mediation

	$Y_{it} = \beta_0 + \beta_1 C_{it} + \mu_t$ Model 3.3 $Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 C_{it} + \mu_t$ .....Model 3.4	If β_1, β_2 and β_3 in model 3.2 are not significant If β_1 in model 3.3 is significant If β_1, β_2 and β_3 in model 3.4 are not significant and β_4 in model 3.4 is not significant	

Source : Baron and Kenny (1986)

3.4.3 Moderating Effect Model

Rockwood and Hayes (2020) pointed out that moderation occurs when the effect of a variable to another depends on another variable. It was argued that moderating effect can be modelled by getting the product effect of independent variables and moderating variable. In the study inflation was the moderating variable, denoted by $\mathbf{M_{it}}$. The moderating effect model evaluated the effect of inflation on the relationship between investment incentives and effective corporate tax rate. The moderating effect is as shown in model 3.5.

$$\mathbf{Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 M_{it} + \beta_5 X_{1it} * M_{it} + \beta_6 X_{2it} * M_{it} + \beta_7 X_{3it} * M_{it}} + \mu_t \quad \text{.....Model 3.5}$$

Where:

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the capital investment incentive for firm i at time t;

$\mathbf{X_{3it}}$ is the value of custom duty incentive for firm i at time t;

$\mathbf{M_t}$ is the level of inflation at time t;

$\mathbf{X_{1it} * M_t}$ is the interactive product of profit based incentive and inflation for firm i at time t;

$\mathbf{X_{2it} * M_t}$ is the interactive product of capital investment incentive and inflation for firm i at time t;

$\mathbf{X_{3it} * M_t}$ is the interactive product of custom duty and inflation for firm i at time t; and

$\boldsymbol{\mu_t}$ is the error term take care of stochastic variations at time t.

The parameters $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \beta_5 \beta_6$ and β_7 are parameters (coefficients) for the moderating effect. These parameters measured the amount of change in $\mathbf{Y_{it}}$ due to a unit change in the respective variables. The study applied the approach proposed by Rockwood *et al* (2020). The hypothesis for the moderating effect analysis was H_{05}. It was framed that inflation did not have a significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The moderating effect was said to exist when coefficients β_5, β_6 and β_7 are statistically significant. The null hypothesis was to be rejected if the p-value of the coefficients was less than 0.05. This implied that there was full moderation. If one of the coefficients β_5, β_6 and β_7 was not statistically different from zero, then there was partial moderation. The model parameters were assessed at 5 percent level of significance.

3.4.4 Summary of Test of Hypothesis

The study had five hypotheses which are profit based incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya **($\mathbf{H_{o1}}$)**; capital investment incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya **($\mathbf{H_{o2}}$);** custom duty incentive did not have significant effect on effective corporate tax rate for manufacturing firms in Kenya **($\mathbf{H_{o3}}$)**; corporate performance did not have a significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya **($\mathbf{H_{o4}}$)**; and inflation did not have a significant moderating effect on the relationship between

investment incentives and effective corporate tax rate for manufacturing firms in Kenya (**H_{o5}**). A summary for testing the hypotheses is as represented in table 3.1.

Table 3.1 : Summary of Model Specification and Interpretation

	Objective	Hypothesis	Model	Interpretation
i.	To determine the effect of profit based incentive on effective corporate tax rate for manufacturing firms in Kenya	H_{01}		Reject **H_{o1}** if β_1 is statistically different from zero. P-value < 0.05
ii.	To establish the effect of capital incentive on effective corporate tax rate for manufacturing firms in Kenya	H_{02}	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_t$ (Model 3.1)	Reject **H_{o2}** if β_2 **is** statistically different from zero. P-value < 0.05
iii.	To establish the effect of custom duty incentive on effective corporate tax rate for manufacturing firms in Kenya.	H_{03}		Reject **H_{o3}** if β_3 **is** statistically different from zero. P-value < 0.05
iv.	To determine the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.	H_{04}	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 C_{tit} + \mu_t$ (Model 3.4)	Reject **H_{o4}** if β_4 **is** statistically different from zero. P-value < 0.05
v.	To determine the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.	H_{05}	$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 M_{it} + \beta_5 X_{1it} * M_{it} + \beta_6 X_{2it} * M_{it} + \beta_7 X_{3it} * M_{it} + \mu_t$ (Model 3.5)	Reject **H_{o5}** if β_5, β_6 and β_7 are statistically different from zero. P-value < 0.05 for each coefficient

Source: Researcher (2021)

3.5 Target Population

Smith, Thorpe and Jackson (2015) defines population as the total set of entities that a given research is to draw data from so as to make conclusions about a phenomenon. It was pointed out that, the

accuracy of conclusions from a sample depends on whether it has the same characteristics as the population from which it was drawn. According to Asiamah, Mensah and Oteng-Abayie (2017) target population is a group of firms, individuals or participants with specific characteristics of interest and relevance to a given study. It is a group of firms that a study intends to conduct research on and draw conclusions and recommendations from.

The target population for the study were firms registered with Kenya Association of Manufacturers (KAM). As members of KAM, selected firms provided the required data for the study. According to KAM (2020), there were 1,392 registered members segmented in thirteen sectors. Out of this there are 300 firms that are not involved in manufacturing but provided consultancy and financial services. Therefore, 1,092 are ordinary registered members. These were the firms that formed the target population for the study. They were registered in thirteen (13) sub-categories of building, mining and construction; chemical and allied; fresh produce; food and beverage; energy, electrical and electronics; leather and foot wear; metal and allied; motor vehicle and accessories; paper and boards; pharmaceutical and medical equipment; plastics and rubber; textile and apparels; and timber, wood and furniture. The 1, 092 target population are as shown in appendix I.

3.6 Sampling Design

According to Etikan and Bala (2017) sampling is the selection of representative units to be studied out of the target population. The study adopted stratified random sampling technique to select participating firms. Sample size was determined using Saunders, Lewis and Thornbill (2012) published sampling table as shown in appendix V.

Stratified random sampling was used because the target population was heterogeneous **(**Singh & Masuku, 2014). Firms registered by KAM are categorized into groups (strata) as shown in table 3.2 above and sample units were selected at random from each stratum. Stratified random sampling is also

justified on the basis that the sub-sectors are non-overlapping and are categorised into thirteen (13) distinct strata. The study had a sample of 279 firms selected at 5 percent error of margin from the sub-sectors as shown in table 3.2 below.

Table 3.2 : Subsectors of Firms Registered by KAM

S/No	Sub-Sector	Number of firms	Proportion in Target Population	Sample Size
1.	Building, mining and construction	58	5.31	15
2.	Chemical and allied	113	10.35	29
3.	Fresh produce	21	1.92	5
4.	Food and beverage	270	24.73	69
5.	Energy, electrical and electronics	67	6.14	17
6.	Leather and foot wear	18	1.65	5
7.	Metal and allied	114	10.44	29
8.	Motor vehicle and accessories	77	7.05	20
9.	Paper and boards	86	7.88	22
10.	Pharmaceutical and medical equipment	35	3.21	9
11.	Plastics and rubber	108	9.89	27
12.	Textile and apparels	85	7.78	22
13.	Timber, wood and furniture	40	3.66	10
	Total	**1092**	**100**	**279**

Source: Kenya Association of Manufacturers (2020).

The desired sample was allocated proportionately among the thirteen strata (sub-sectors). The study therefore used proportionate stratified random sampling. This was to ensure that the sample was directly proportional to the entire population of the strata.

3.7 Data Collection Instrument

Data collection is the process of gathering and measuring information on variables in a study in a systematic way (Saunders *et al,* 2009). The data collection covered the period 2010 to 2020. According to Saunders *et al* (2009), data collection instrument is a tool used for gathering data. The study opted for secondary data which was collected using document review analysis. Saunders et al (2019)

identified the three types of secondary data as documentary, surveys and multiple sources. The study used documentary secondary data. Secondary data was preferred because of its suitability for financial analysis, measurement validity and coverage ability. It is argued that secondary data is suitable for financial analysis because it has been processed and subjected to reliability and validity test by third parties such as accountants, auditors and tax authority. It is also likely to be free of measurement bias and deliberate distortions.

Data on investment incentives, corporate performance and effective corporate tax rate was collected from financial statements and relevant reports for the sampled firms. Profit based incentives was estimated by collecting data on amount of losses deducted from corporate profits to determine tax paid and amount of savings derived tax holiday. To determine value on capital investment incentive, data was collected on amount of investment value deductible from taxable profit; value of wear and tear deductible from taxable profit; amount incurred on acquisition of computer software; and amount of industrial building deduction from taxable profit.

Value on custom duty incentive was estimated by collecting data on amount of custom refunds deducted from taxable profit and duty exempted from taxable profit. To estimate corporate performance data was collected on total gross corporate profits pretax profit and total assets. Data on inflation was collected from Kenya Economic Survey. Data collected was checked for ability to be measured so as to ensure that it was analysed and provide valid conclusions. The collected data was summarized using data collection guide (Appendix IV). The data was arranged as a panel so as to show both cross-sectional and time series characteristics.

3.7.1 Operationalisation and Measurement of Variables

Tariq (2015) argued that, operationalisation is defining variables into quantifiable indicators and designing precise measures for various theoretical constructs. It makes variables empirically and quantitatively measureable. In this study the dependent variable was the effective corporate tax rate. The independent variables were investment incentives proxied by profit based, capital investment and custom duty. The corporate performance and inflation were intervening and moderating variables respectively. The operationalisation and measurement of the study variables is as shown in table 3.3 below.

Table 3.3 : Operationalisation and Measurement of Variables

Type of Variable	Variable	Operationalisation	Measurement	Measurement Scalef
Dependent	Effective corporate tax rate	Actual income tax paid as a percentage of profits before tax	Income tax expense paid divided by accounting profit before tax expense for a given financial year.	Interval
Independent	Profit based incentive	Loss carry-forward	Amount of losses deductible from corporate profit	Interval
		Tax holiday	Amount of savings derived from tax holiday	Interval
	Capital investment incentive	Investment deduction	Amount of investment value deductible from taxable profit	Interval
		Wear and tear deduction	Amount of wear and tear deductible from taxable profit	Interval
		Computer software deduction	Amount incurred on acquisition of computer software	Interval
		Industrial building deduction	Amount of industrial building deduction from taxable profit	Interval
	Custom duty incentive	Refund	Amount of refund deducted from taxable profit	Interval

Type of Variable	Variable	Operationalisation	Measurement	Measurement Scalef
		Exemption	Amount of duty exempted from taxable profit	Interval
Intervening	Corporate performance	Profitability	Pretax profit divided by total assets	Ratio
		Financial efficiency	Total gross corporate profits divided by total assets	Ratio
Moderating	Inflation	Inflation level	Annual inflation rate	Ratio

Source: Researcher (2020): Modification from Theoretical and Empirical Framework

3.8 Data Collection Procedure

Before commencement of data collection, authority for the research was given by Kenyatta University which was then presented to National Council for Science Technology and Innovation (NACOSTI). Upon approval and receiving research permit from the NACOSTI, communication was done to KAM. The research safeguarded privacy, confidentiality, security and safety of data collected from sample firms that are registered with KAM.

The data collection covered the period 2010 to 2020. The study used secondary data which involved document review. Data on investment incentives, corporate performance and effective corporate tax rate was collected from financial statements and relevant reports for the sampled firms. Data on inflation was collected from Kenya Economic Survey. The collected data was summarized through use of data collection guide (Appendix IV). The data were arranged as a panel data so as to show both time aspect and cross-sectional characteristics.

3.9 Data Analysis and Presentation

Data analysis involves reducing collected data to a manageable size, create summaries, examine patterns and apply statistical techniques on unit of analysis (Cooper et al, 2014). The unit of analysis for the study was individual firm. Collected data were checked for errors, simplified, organized and tabulated to make it easier for analysis. The data was analyzed and interpreted to measure the effect of investment incentives, corporate performance and inflation on effective corporate tax rate for manufacturing firms in Kenyan. Data collected was analysed using descriptive and inferential statistics.

As stated by Kaur, Stoltzfus and Yellapu (2018) descriptive statistics are vital for organising, summarizing and allow for simplified interpretation of research data. In this study descriptive statistics were used to express attributes of various constructs in the study. This was used to quantify and describe the basic characteristics of the study variables. Descriptive statistics entailed computing measures of central tendencies and variability. The measures of central tendency involved computing mean and averages to show centre value of data distribution. Measures of dispersion (variability) used in analysis were standard deviation, mean deviation and variance. This descriptive statistics formed the basis for further inferential analysis.

Garg and Goyal (2018) point out that inferential statistics encompass procedures that help a researcher to examine accuracy of results, test hypotheses, make decisions, draw conclusions and suggest recommendations that can provide solutions to the problem at hand. The inferential statistics included, regression outcome, t-tests, f-test and test of hypotheses. As indicated by Senthilnathan (2019), the study used inferential analysis to measure the extent to which variables are related, strength and direction of that relationship. Panel regression analysis was used to investigate the nature, direction and magnitude of relationships.

According to Sarafidis and Wansbeek (2020) panel data is repeated measurement on the same unit of observation at different points in time. It has ability to control for unobserved heterogeneity (variation in datasets) and endogeneity (explanatory variables being correlated to error term) due to omitted variables and measurement error. It is also able to estimate association between variables from microdata without suffering aggregating bias and using small number of time series observations. The study adopted panel data regression since it can model both common and individual firm characteristics and was able to handle more information, more variability and it is more efficiency. It also combines both time and cross-sectional series.

Sarafidis et al (2020) argue that panel data is favoured because it can detect and measure statistical effects that pure cross-sectional or time series data may not be able to address. The empirical, intervening and moderating models were analysed to establish the parametric significance of the variables. Inferential statistics were used to establish key findings, make predictions, deduce conclusions, make generalisations and make recommendations about the larger population. T-test was used to assess statistical significance of parameters at significance level of 5 percent for each of the independent, intervening and moderating variables. The overall data analysis was guided by the study objectives and corresponding hypothesis.

In and Lee (2017) points out that it is important for data to be presented in effective format. The techniques for data presentation are textual, tabular, graphical and charts. Textual presentation involved elucidating results, outline changes in data movement and provided contextual information. Tables were used to present individual data in both quantitative and qualitative terms. Graphs were used to show data and information at a glance, facilitate comparison and reveal relationship within data changes over time. Line graphs and scatter diagrams were used for graphical presentation of data.

3.10 Diagnostic Tests

According to Cooper and Schindler (2014), diagnostic tests are used to establish whether or not the assumptions underlying model specification in a study have been met. The diagnostic tests were carried out at 5 percent level of significance. The diagnostic tests for the study are as highlighted below.

3.10.1 Multicollinearity Test

According to Daoud (2017) multicollinearity occurs when two or more variables in regression model are highly correlated. Test for multicollinearity is to detect unnecessary large coefficient of determination yet the coefficients are not significant. Presence of multicollinearity undermine the statistical significance of independent variables. The null hypothesis was that the study variables were correlated against the alternative that there is no multicollinearity. The study applied variance inflation facto (VIF). The study adopted a VIF > 5 as asserted by Shrestha (2020) to indicate multicollinearity is a problem. The null hypothesis was to be ejected when the VIF value was greater than 5. In the presence of multicollinearity, the correlated variables were to be transformed into logarithm form before analysis.

3.10.2 Normality Test

Alejo, Galvao, Monte-Rojas and Sosa-Escudero (2015) point out that tests for normality in panel regression is crucial. It is to ensure that error term does not have outlier effect. The study tested for normal distribution of the error term using Shapiro-Wilk test. The null hypothesis was that the error term follows normal distribution against the alternative that it does not. The error term was assumed to be normally distributed when the p-value was greater than 0.05. Pek, Wong and Wong (2018) in attempt to address normality indicated that algorithmic transformations are extremely powerful tools

for dealing with non-normal data. Therefore, in case of non-normality the study was to transform data into logarithmic values.

3.10.3 Homoscedasticity Test

According Yang, Justin and Chen (2019), homoscedasticity is critical assumption in the regression analysis which requires that the error term should have constant variance across observations, otherwise it is heteroscedasticity. Heteroscedasticity as a problem causes estimation results not to generate useful model parameters. The study tested homoscedasticity using Breusch- Pagan (1980) test. The null hypothesis was that the error terms are homoscedastic against the alternative that they are heteroscedastic. Therefore, a p-value greater than 0.05 implied absence of heteroscedasticity. The remedy for any presence of heteroscedasticity was to transform the affected model into a log-log model.

3.10.4 Linearity Test

Linearity in panel regression is the assumption that the dependent variable has straight line relationship with each of the independent variables. Linearity assumption is that the study variables had linear relationship with error term (residuals). Schreiber-Gregory, Jackson and Bader (2018) opine that checking for linearity is important. This is because fitting a linear model to data that is non-linear leads to prediction error especially when it is extrapolated beyond the range of sample data. The expected error term is assumed to be zero everywhere so that the regression accurately reflects dependent variable as predicted by independent variable. The null hypothesis was that the study variable did not depict linearity with the residual value. The null hypothesis was to be rejected if there was linearity. The study used augmented residual graphs to show the linearity between the residual in the dependent

variable and each of the other variables in the study. The remedy for non-linearity in the dataset was to transform the affected model by getting the squared values of the variables.

3.10.5 Stationarity Test

Stationarity assumption requires that time series data has same mean, variance and covariance irrespective of time factor. The stationarity test was to establish whether or not financial data exhibit trending behavior, cyclical tendency or non-stationarity. Herranz (2017) indicates that, data with unit root shows a systematic pattern that is unpredictable, may be difficult to model and lead to spurious results. The study employed Augmented-Dickey Fuller (ADF) test. The null hypothesis was that all the panels have a unit root of zero value (stationarity) against the alternative that there was non-zero unit root value. P-value greater than 0.05 implied that there is a unit root. If the non-stationarity was to be detected then logarithmic transformation was to be used to shrink nonstationary values towards zero.

3.10.6 Test for Autocorrelation

Saunder *et al* (2009) indicates that in regression analysis with time series data, autocorrelation occurs when the value of dependent variable at time t is related to the value of the previous time *t-1*. The presence of autocorrelation results into biased error terms leading to wrong inferences. The Durbin-Watson (1951) test was used to check for autocorrelation. The null hypothesis was absence of autocorrelation against the alternative hypothesis that there is presence of autocorrelation. A p-value of greater than 0.05 implied that there is no autocorrelation in the datasets. If autocorrelation was to be detected then generalised least squares was to be used.

3.10.7 Model Specification Test

The study tested for fixed effect and random effect to determine the type of model specification. According to Nwakuya and Ijomah (2017) fixed effect (FE) model controls for time-invariant difference between and among entities so that the estimated coefficients of FE model are not biased because of any omitted time variant characteristics. Conversely, random–effect (RE) model assumes that individual-specific variations across firms is a random variable that has no correlation with predictor variable. Therefore, the distinction between FE and RE is whether the unobserved individual effect represents elements that have correlation with regressors in the model. Hausman (1978) test was conducted to decide between FE and RE with a null hypothesis that RE is the preferred model against the alternative that FE model. A p-value of greater than 0.05 was to lead to rejection of RE model and therefore apply FE.

3.11Ethical Considerations

According to British Educational Research Association (2018) ethical consideration in any research entails integrity, procedural accountability and scientific responsibility; professional competence; respect for participant's dignity, rights and diversity; and social obligation of the researcher. Research must be sensitive to individual, cultural and role difference in studying a population with distinct attributes. This study ensured that ethical standards are adhered to at all stages of the study which are problem analysis, research design, data collection, data processing and analysis. The various ethical concerns observed were respondent privacy, confidentiality of data, voluntary provision of information, consent from sampled firms to participate in research and anonymity of sampled entities. To overcome threats relating to these concerns, the research ensured all ethical aspects were observed at all times during the entire research process.

CHAPTER FOUR: FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents study findings and consequential interpretations of investment incentives and effective corporate tax rate. The findings elucidate direct effect of investment incentives on effective corporate tax rate together with intervening effect of corporate performance and moderating effect of inflation. The data analysis showed descriptive and inferential statistics. The descriptive statistics entailed measures of central tendencies and variability. The inferential statistics shows results on diagnostic tests, panel regression and test of hypotheses. Data presentation has used textual, tabular, graphical and charts.

4.2 Descriptive Statistics

The descriptive statistics were used to express attributes of various variables in the study. They quantified and described the basic characteristics of the study variables. The descriptive statistics used measures of central tendencies, variability, and trend analysis. A summary descriptive statistics are shown in table 4.1 below.

Table 4.1 : Summary of Descriptive Statistics

Variable	Unit of Measure	N	Mean	Std Deviation	Minimum Value	Maximum Value
Effective Corporate Tax Rate	%	2484	21.89	8.24	9.88	37.36
Profit based incentive	Kes. M	2484	874.58	489.67	542.51	2,186.00
Capital investment incentive	Kes. M	2484	1,894.1	761.58	656.31	2,989.01
Custom duty incentive	Kes. M	2484	5,074.4	1,098.22	2,798.74	6,474.25
Corporate performance	%	2484	20.00	7.00	13.61	35.23
Annual Inflation	%	11	6.53	2.66	4.10	14.00

Source: Research Data (2023)

From table 4.1, the number of observations were 2,484 from 278 firms for the period 2010 to 2020. The total observation showed unbalanced panel data due to the fact that some firms did record use of incentives in certain years. The mean for effective corporate tax rate for manufacturing firms was estimated at 21.89 percentage points with a standard deviation of 8.24 over the study period. The minimum effective corporate tax rate recorded was 9.9 percent while the maximum was 37.4 percent. As regards to the profit based incentive, the mean value was 874.6 with minimum recorded value of 542.5 while the maximum was 2,186.0. For capital investment incentive the mean was estimated at 1,894.1. The minimum capital investment incentive was 656.3 with maximum value of 2989.0. The mean for custom duty incentive was 5,074.4. The minimum value of custom duty incentive recorded was 2,798.7 while the maximum was 6382.8.

4.2.1 Effective Corporate Tax Rate

The results showed that effective corporate tax rate for manufacturing firms in Kenya fluctuated between 37.7 percentage points in 2010 and 19.43 percent in 2020. The trend for effective corporate tax rate for the period 2010 to 2020 is as shown in figure 4.1 below

Figure 4.1 : Trend in Effective Corporate Tax Rate

Source: Research Data (2023)

Figure 4.1 above shows that there was a down ward trend for the period 2010 to 2020. The trend analysis shows that over the period effective corporate tax rate was on declining trend with some level of volatility. The effective corporate tax rate was highest in 2010 at 37.71 percent and was lowest in 2018 at 9.88 percent. However, it increased to 22.36 in 2019 which indicated volatility. The basic interpretation is that volatility in effective corporate tax rate is an indication of unpredictable corporate tax system. This impacts negatively the growth of firms which is a shared financial problem in most developing economies in Africa. It can also be deduced that firms seem not to have mechanism of smoothening such volatility.

4.2.2 Profit Based Incentive

The results show that the value of profit based incentive fluctuated between Kes 542.5 million in 2010 and Kes 1,159.3.0 million in 2020 with highest level being witnessed in 2019 at Kes 2,185.0 million. The trend analysis on profit based incentive is as shown in figure 4.2 below.

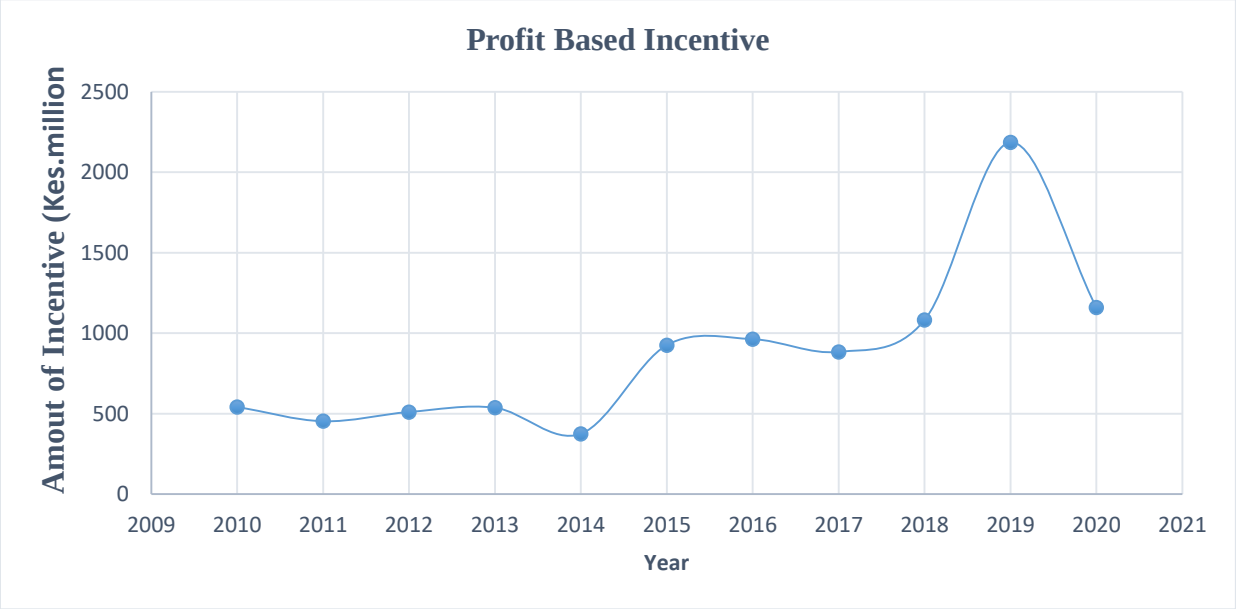

Figure 4.2: Trend in Profit Based Incentive

Source: Research Data (2023)

Figure 4.2 above indicates that there was an ascending upward trend. The trends analysis shows that over the period the profit based incentive had a moderate increase between the year 2010 and 2014. The profit based incentive was lowest in 2014 at Kes 542.5 million and highest in 2019 at Kes 2186.0 million. However, it depressed to Kes 1159.27 million in 2020. The upward trend shows that firms utilised available profit based investment as spelt out in fiscal policy and tax code. Serrato and Zidar (2023) states that proponents of tax incentives argue that increase in profit based incentive shows that firms are taking advantage of the fiscal policy.

4.2.3 Capital Investment Incentive

The results show that the value of capital investment incentive fluctuated between Kes. 656.3 million in 2010 and Kes. 2,923.5 million in 2020 with highest level being witnessed in 2014 at Kes. 2,989.0 million. The trend analysis on capital investment incentive over the period 2010 to 2020 is as shown in figure 4.3 below

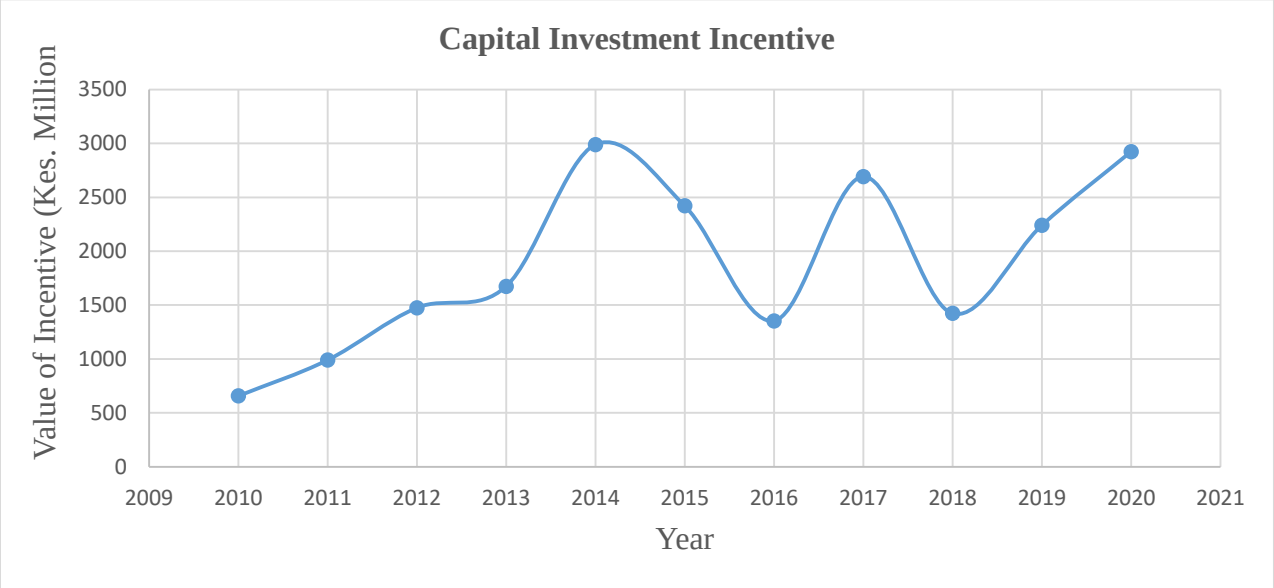

Figure 4.3 :Trend in Capital Investment Incentive

Source: Research Data (2023)

Figure 4.3 above shows that there was an upward trend. The trend over the period shows that the capital investment incentive increased between the year 2010 and 2020 with some level of volatility. The upward trend shows that firms utilised the available capital investment incentive as spelt out in fiscal policy and tax code instrument.

4.2.4 Custom Duty Incentive

The results showed that the value of custom duty incentive fluctuated between Kes. 2798.7 million in 2010 and Kes. 3,693.1 million in 2020 with highest level being witnessed in 2017 at Kes. 6,474.3 million. The trend analysis on custom duty incentive over the period 2010 to 2020 is as shown in figure 4.4 below

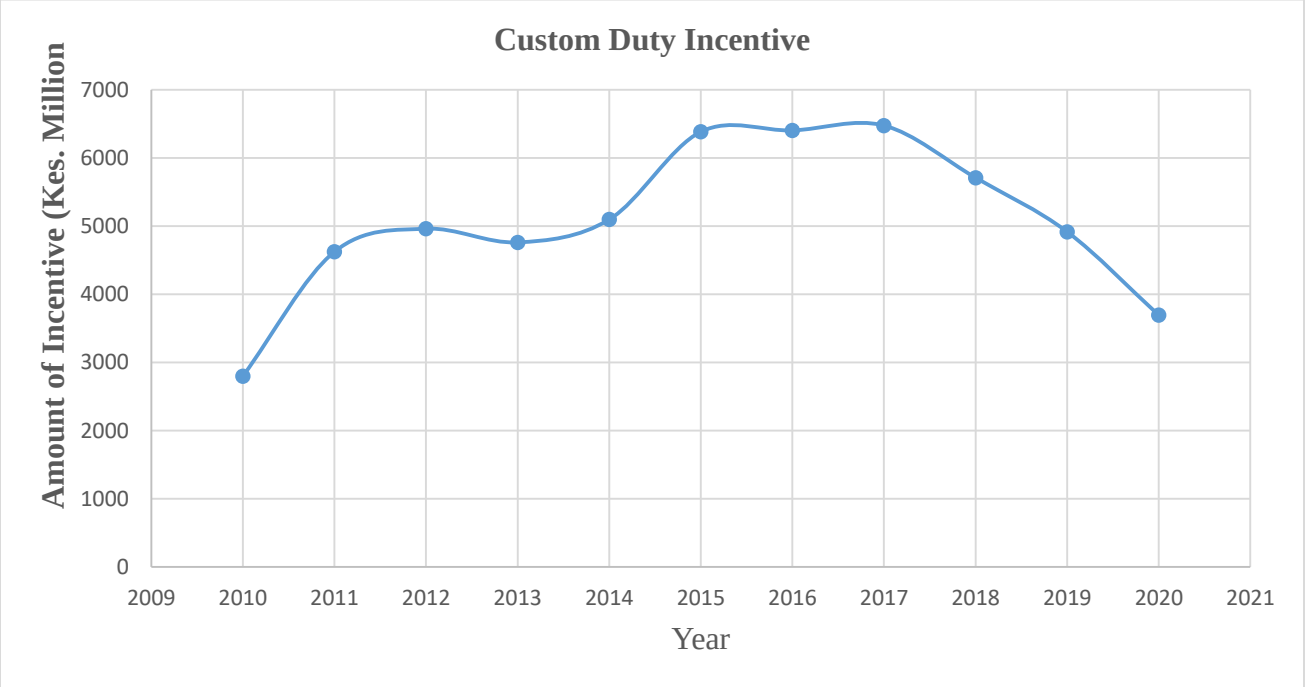

Figure 4.4 : Trend in Custom Duty Incentive

Source: Research Data (2023)

Figure 4.4 above shows that there was an upward trend with quadratic shape. The results showed that over the period the custom duty incentive increased between the year 2010 and 2017. The upward trend shows that firms have been utilizing custom duty incentive instrument as spelt out in fiscal policy and tax collection procedures.

4.2.5 Corporate Performance

The results showed that corporate performance oscillated between 35.2 percentage points in 2010 and 13.6 percent in 2020.The corporate performance over the period is as shown in figure 4.5 below

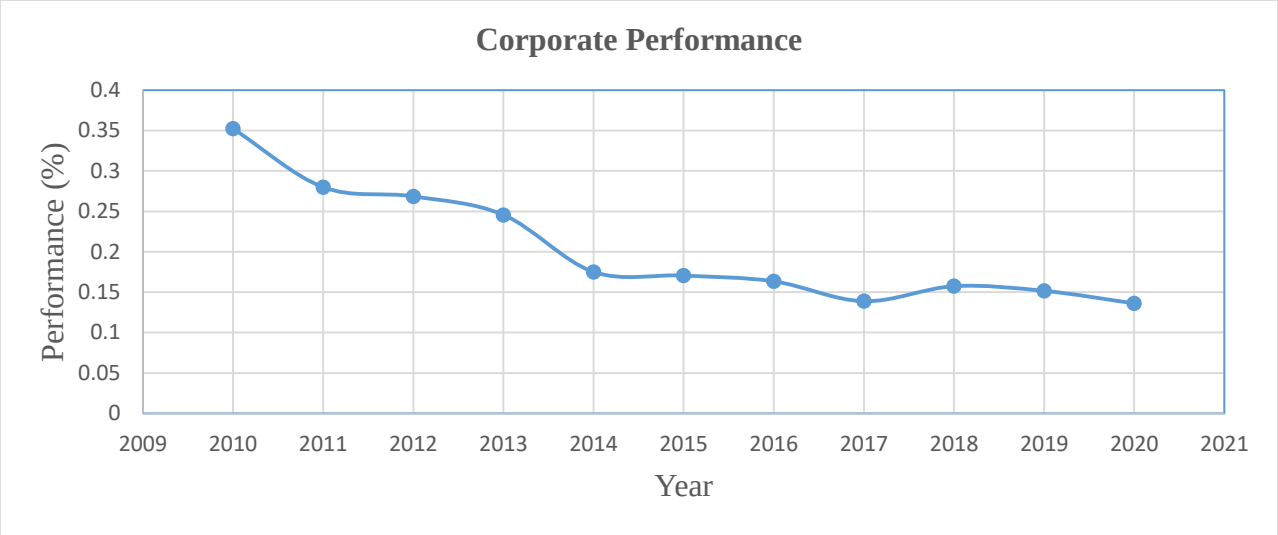

Figure 4.5 : Trend in Corporate Performance

Source: Research Data (2023)

The trends analysis shows that over the period there was reducing performance for the manufacturing firms in Kenya. This trend confirms the position that manufacturing sector in Kenya has recorded declining profits, reducing market share and has stagnated over time. The declining trend showed that its contribution to GDP has reduced over time. This sluggish state of affairs is a matter of concern that need investigation, given that manufacturing sector has been accorded prominence in the national development agenda in Kenya.

4.2.6 Annual Inflation Rate

The results showed that inflation oscillated between 4.1 percentage points in 2010 and 5.4 percent in 2020 with highest level being witnessed in 2011 at 14.0 percent. The geometric mean of inflation over the period was 6.53 percent. The level of inflation is shown in figure 4.6 below.

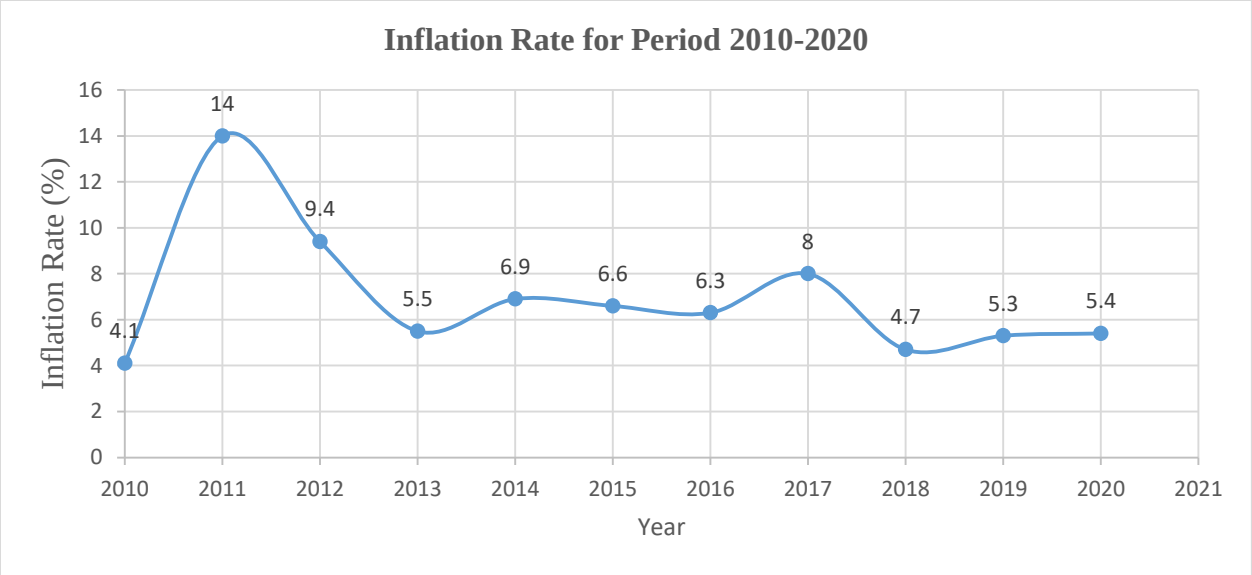

Figure 4.6 : Trend in Inflation Rate

Source: Research Data (2023)

Figure 4.6 above shows a non-stable level of inflation. The monetary policy in Kenya had a target of stable inflation estimated at 5± 2.5 percent. Therefore, a 14 percent observed in 2011 was out of planned range. The effect of such high level of inflation is that it erodes the purchasing power of cash balances held by firms. The trends analysis shows that over the period there was some level of inflation volatility. However, it attempted to stabilize between 2013 and 2016. Inflation volatility is an indication of unstable macroeconomic environment and as a source of systematic risk as it impacts negatively on growth of firms. The issue of unstable inflation is a common financial problem in most developing countries in Africa.

4.3 Inferential Statistics

This section presents results of diagnostic tests and direct effect of investment incentives as independent variables on effective corporate tax rate. It also gives result and discussion of the intervening effect of corporate performance and moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The inferential statistics tests were analysed at 5 percent level of significance.

4.3.1 Diagnostic Tests Results

According to Cooper and Schindler (2014), diagnostic tests are used to establish whether or not the assumptions underlying model specification in a study have been met. The diagnostic test were carried out at 5 percent level of significance. The results of diagnostic tests are as highlighted below.

4.3.1.1 Multicollinearity Test

The study applied variance inflation factor (VIF) as suggested by Shresha (2020). A VIF of greater than 5 was the cutting point to indicate multicollinearity was a problem. The null hypothesis was that the study variables were correlated against the alternative that there was no multicollinearity. The results for multicollinearity test are shown in table 4.2 below:

Table 4.2 : Multicollinearity Test

Variable	VIF	1/VIF
Profit based incentive	1.44	0.696
Capital investment incentive	1.40	0.714
Custom duty incentive	1.10	0.905
Mean	**1.31**	**0.763**

Source: Research Data (2023)

From table 4.2 the VIF for all the variables was within the research assumption and was less than 5. This indicated that there was no multicollinearity as asserted by Shrestha, (2020). There was no risk of multicollinearity between the independent variables. The interpretation is that the independent

variables in the study were capable of having identifiable individual coefficient in the panel regression results.

4.3.1.2 Normality Test

The tests for normality in panel regression is crucial so as to ensure that the error term does not have outlier effect. The null hypothesis was that the error term was normally distributed. The alternative hypothesis was that the error term was not normally distributed. The null hypothesis was to be rejected if the p-value for the study variables was less than 0.05. The results for Shapiro-Wilk test for normality test are shown in table 4.3 below.

Table 4.3 : Normality Test

Variable	Observations	W	V	Z	P-Value
Effective Corporate Tax Rate	2484	0.9993	0.950	-0.132	0.5526
Profit based incentive	2484	0.9990	1.415	0.889	0.1869
Capital investment incentive	2484	0.9987	1.493	1.027	0.1521
Custom duty incentive	2484	0.9987	1.776	1.472	0.0705
Corporate performance	2484	0.9987	1.856	1.585	0.0565

Source: Research Data (2023)

From table 4.3 the p-value for the effective corporate tax rate, profit based incentive, capital investment incentive, custom duty incentive and corporate performance was 0.5526, 0.1869, 0.1521, 0.0705 and 0.0565 respectively. The p-value for the study variables were greater than 0.05. Since, these p-values were greater than 0.05 the study failed to reject the null hypothesis that the error term was normally distributed. It was concluded that the error term had normal distribution and therefore the dataset was fit for panel regression analysis.

4.3.1.3 Homoscedasticity Test

Test for homoscedasticity was critical to ensure that the error term had constant variance across observations. The essence for testing homoscedasticity was to ensure the coefficients are efficient in

estimating the outcome. The null hypothesis was formulated that there was homoscedasticity against alternative hypothesis that there was heteroscedasticity. The presence of homoscedasticity means that the error term has constant variance across observations. The null hypothesis was to be accepted if the p-value for the various models were greater than 0.05. The study tested for homoscedasticity using Breusch- Pagan test for direct effect model, intervening model and moderating model. The results of homoscedasticity test for the three study models are shown in table 4.4 below.

Table 4.4 : Homoscedasticity

	Breusch-Pagan test		
Model	**Chi2(1)**	**Degree of Freedom**	**Prob > chi2**
Direct effect model	1.69	1	0.193
Intervening effect model	3.63	1	0.568
Moderating effect model	0.49	1	0.486

Source: Research Data (2023)

From table 4.4 above the chi-square of Breusch-Pagan test results for direct effect model showed X^2 of 1.69 with 0.193 as the p-value. It was observed that since 0.193 was greater than 0.05 we failed to reject the null hypothesis that the error term in the direct effect model had a constant variance across observations. Thus, we concluded that homoscedasticity was present. The results for intervening effect model showed X^2 of 3.63 with a p-value of 0.568 which was greater than 0.05. Similarly, the study failed to reject the null hypothesis that the error term in the intervening effect model had constant variance across observations. Thus, we concluded that homoscedasticity was present in the intervening effect model.

Similarly, the results for moderating effect model showed X^2 of 0.49 with a p-value of 0.486. Since 0.486 was greater than 0.05 the study failed to reject the null hypothesis that the error term in the moderating effect model had constant variance across observations. Thus, we concluded that

homoscedasticity was present in all the models of the study. The assumption of homoscedasticity therefore applies and the panel regression models were capable to generate coefficients that are efficiency in estimating the outcomes.

4.3.1.4 Linearity Test

Linearity in panel regression is the assumption that the dependent variable has straight line association with the other study variables over the period of observation. Schreiber-Gregory et al (2018) opine that checking for linearity is important since fitting a linear model to data that is non-linear leads to prediction error especially when it is extrapolated beyond the range of sample data. The results of various linearity graphs are shown in figure 4.7 to 4.11 below.

Figure 4.7 : Linearity of Profit Based Incentive and Residual Value

Source: Research Data (2023)

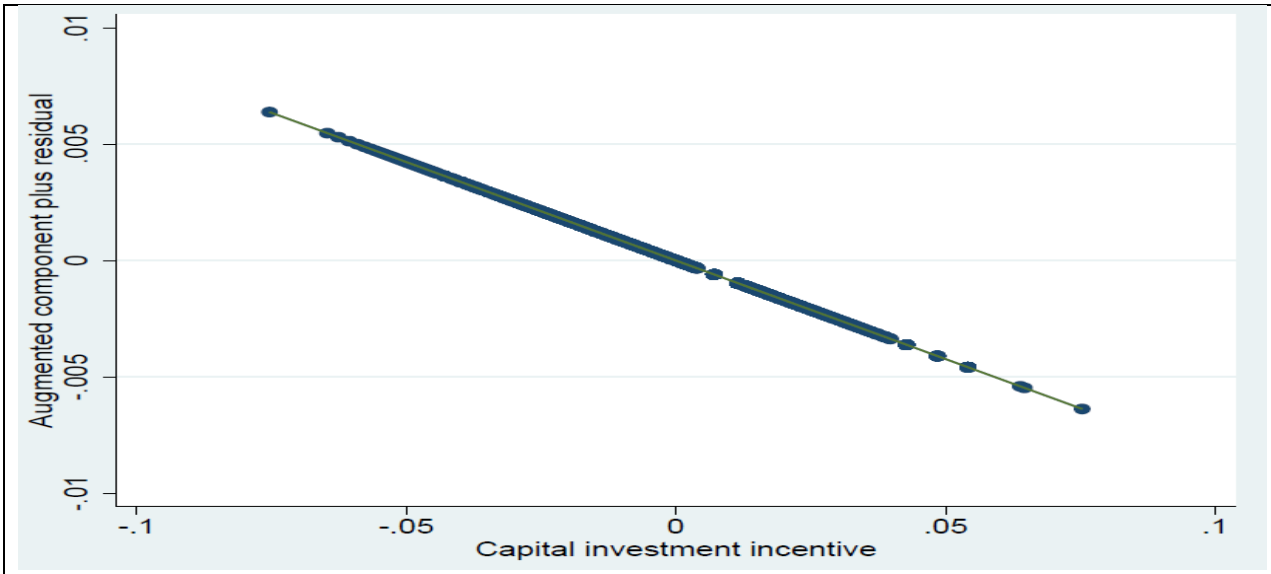

Figure 4.8 : Linearity of Capital Investment Incentive and Residual Value

Source: Research Data (2023)

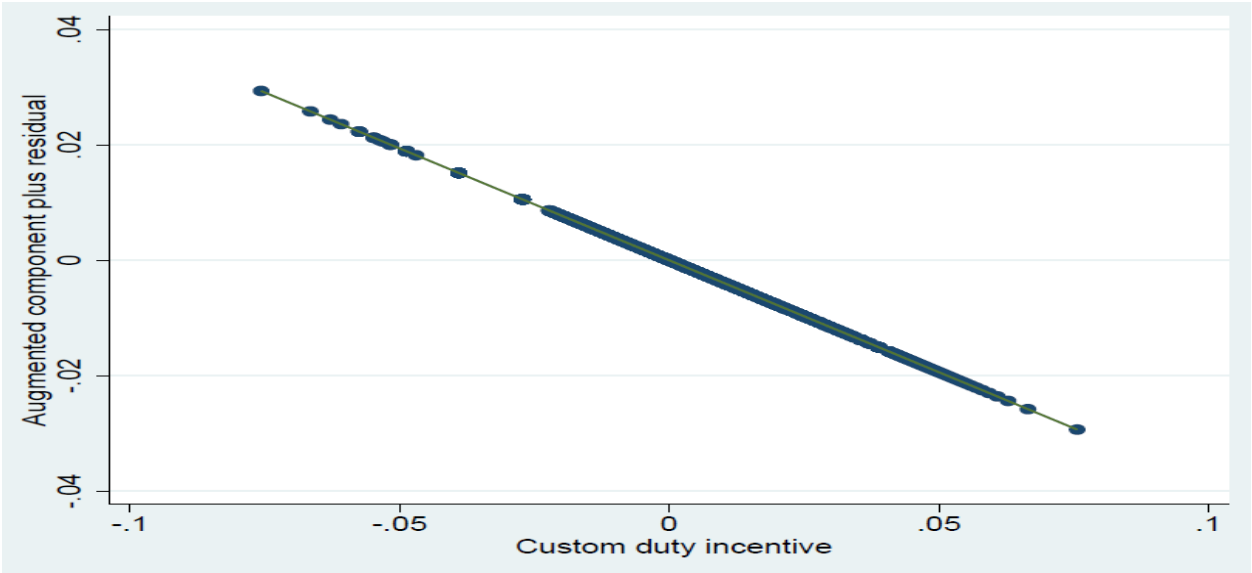

Figure 4.9 : Linearity of Custom Duty Incentive and Residual Value

Source: Research Data (2023)

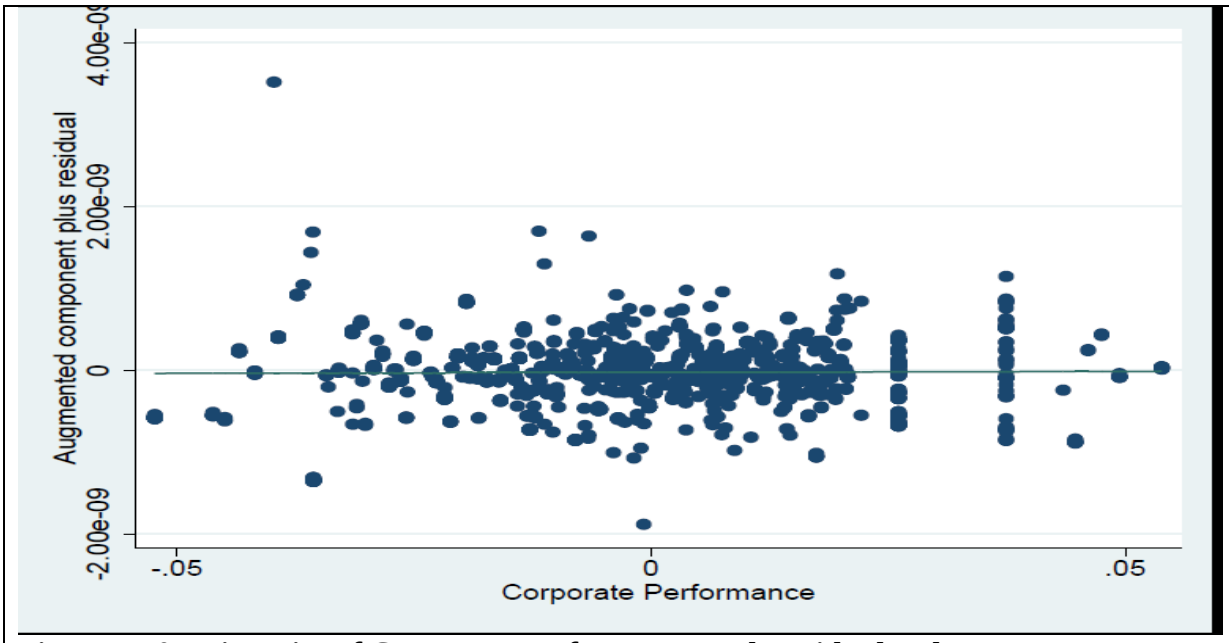

Figure 4.10 : Linearity of Corporate Performance and Residual Value

Source: Research Data (2023)

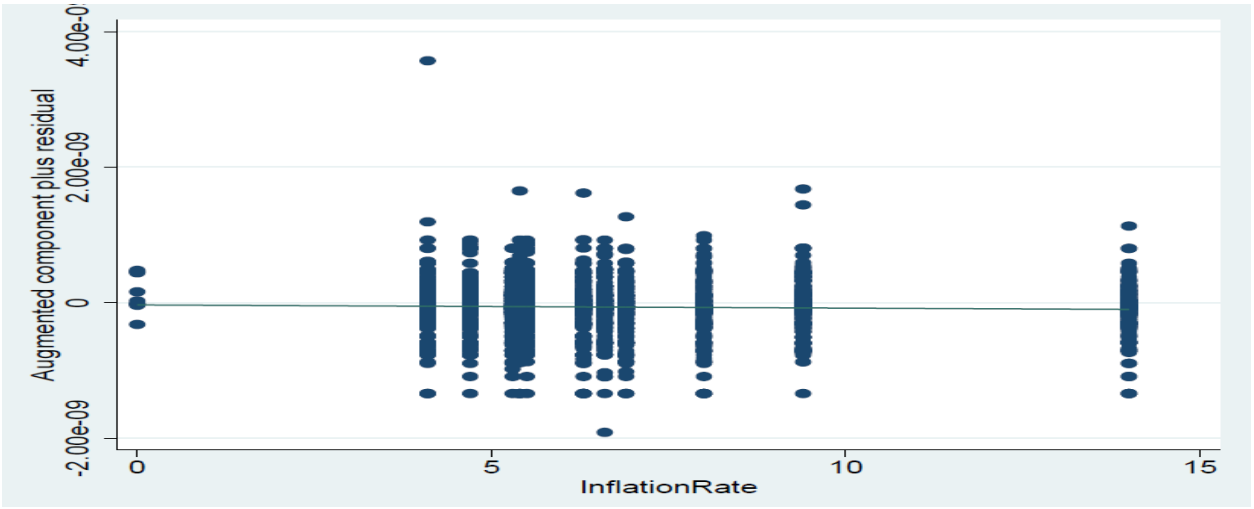

Figure 4.11 : Linearity of Inflation and Residual Values

Source: Research Data (2023)

Figure 4.7 to figure 4.11 showed the study variables had linear relationship with residual values. We therefore concluded that linearity was presence.

4.3.1.5 Stationarity Test

Stationarity test was done to ensure that time series data has same mean, variance and covariance irrespective of time factor. Stationarity exist when variables contain unit root. The null hypothesis was that the study variable had unit root against the alternative hypothesis that there was no unit root. The results are shown in table 4.5 below.

Table 4.5 : Stationarity Test

Ho: All panels contain unit roots		Number of panels = 11	
Ha: Some panels are stationary		Avg. number of periods = 218.73	
AR parameter: Panel-specific		Asymptotics: T,N -> Infinity sequentially	
Panel means: Included			
Time trend: Not included			
ADF regressions: 1 lag			
Variable		Statistic	p-value
Profit Based Incentive	W-t-bar	-33.5416	0.000
Capital Investment Incentive	W-t-bar	-32.7995	0.000
Custom Duty Incentive	W-t-bar	-34.0279	0.000
Corporate Performance	W-t-bar	-35.6456	0.000
Effective Corporate Tax Rate	W-t-bar	-33.7032	0.000

Source : Research Data (2023)

From table 4.5 above, the null hypothesis was to be accepted if the p-value was greater than 0.05 The augmented Dickey-Fuller results for stationarity test showed p-values for the study variables were less than 0.05. Consequently, the study failed to reject the null hypothesis that all the data panels had unit root of zero value (stationarity). It was therefore concluded that the datasets were stationary.

4.3.1.6 Test for Autocorrelation

The autocorrelation test was to establish that the value of dependent variable at time *t* did not have relationship with value in the previous time *t-1*. The null hypothesis was that no first order serial correlation in the error term against the alternative hypothesis that there was first order serial correlation in the error term. The null hypotheses was to be rejected if the p-value was greater than

0.05. The Durbin-Watson test was used to check for autocorrelation. The results for autocorrelation are shown in table 4.6 below.

Table 4.6 : Test for Autocorrelation

	Durbin-Watson Test	
Model	**Chi2(1)**	**Prob > chi2**
Direct effect model	0.30	0.583
Intervening effect model	0.28	0.594
Moderating effect model	0.07	0.787

Source: Research Data (2023)

From table 4.6, the results for direct effect model showed X^2 of 0.30 with a p-value of 0.583. Since 0.583 was greater than 0.05 the study failed to reject the null hypothesis that the error term in the direct effect model was related to the error in the previous year observations. Thus, we conclude that there was no autocorrelation. The results for intervening effect model showed X^2 of 0.28 with a p-value of 0.594. Since 0.594 was greater than 0.05, we failed to reject the null hypothesis that the error term in the intervening effect model had a relation to the error value of the previous year observations. Thus, we conclude that there was no autocorrelation in the intervening effect model.

Similarly, the results for moderating effect model showed X^2 of 0.07 with a p-value of 0.787. Since 0.787 was greater than 0.05 we also failed to reject the null hypothesis that the error term in the moderating effect model was related to the error value of the previous year observations. Thus, we concluded that there was no autocorrelation. The absence of autocorrelation therefore implied the panel regression models were able to generate coefficients that are efficient in estimating the outcomes.

4.3.1.7 Model Specification Test

The study tested for model specification on whether to apply fixed effect (FE) or random effect (RE) during panel regression analysis. The test for FE and RE was to determine the best model specification. Hausman test was conducted to decide between FE and RE. The null hypothesis was that RE was preferred model against the alternative that FE model was preferred. The null hypothesis was to be accepted if the p-value was greater than 0.05. The result for Hausman tests are shown in table 4.7 to 4.9 below.

Table 4.7 : Hausman Test for Direct Effect Model

Variable	**Coefficients**			
	FE (b)	**RE (B)**	**Difference (b-B)**	**Sqrt(diag(V_b-V_B) SE**
Profit Based Incentive	-0.5426	-0.5446	0.0021	0.0010
Capital Investment Incentive	-0.1378	-0.1378	0.0001	0.0009
Custom Duty Incentive	-0.4472	-0.4464	-0.0007	0.0012

b = consistent under Ho and Ha obtained from xtreg
B = inconsistent under Ha and efficient under Ho obtained from xtreg
Test: Ho: Difference in coefficient not consistent.

Chi^2 (3) = (b-B) (V_b-V_B) (b-B) =4.85

Prob> Chi^2 (3)= 0.1833

Source: Research Data (2023)

From table 4.7 the p-value for chi-square was 0.1833 which was greater than 0.05. Since 0.1833 is greater than 0.05, the study failed to reject the null hypothesis that the RE is the preferred model. Therefore, the study applied RE in the direct effect panel regression.

Table 4.8 : Hausman Test for Intervening Effect Model

Variable	**Coefficients**			
	FE (b)	**RE (B)**	**Difference (b-B)**	**Sqrt(diag(V_b-V_B) SE**
Profit Based Incentive	-0.5048	-0.5518	0.0470	0.0049
Capital Investment Incentive	-0.1388	-0.1388	0.0000	0.0034
Custom Duty Incentive	-0.5080	-0.4855	-0.0225	0.0046
Corporate Performance	-0.0779	-0.0509	-0.0270	0.0032

b = consistent under Ho and Ha obtained from xtreg
B = inconsistent under Ha and efficient under Ho obtained from xtreg
Test: Ho: Difference in coefficient not consistent.

Chi^2 (3) = (b-B) (V_b-V_B) (b-B) =223.83
Prob> Chi^2 (3)= 0.0000

Source: Research Data (2023)

From table 4.8 the p-value for chi-square was 0.000. This is because the test results shows that difference in coefficient under RE and FE are consistent. This was less than 0.05 and we failed to accept the null hypothesis that RE was the preferred model. Therefore, could not apply RE in the intervening effect panel regression but FE was used.

Table 4.9 : Hausman Test for Moderating Effect Model

Variable	FE (b)	RE (B)	Difference (b-B)	Sqrt(diag(V_b-V_B) SE
Profit Based Incentive	-0.5381	-0.5394	0.0013	0.0009
Capital Investment Incentive	-0.1280	-0.1287	0.0007	0.0007
Custom Duty Incentive	-0.4420	-0.4442	0.0022	0.0018
Inflation Rate	0.1182	0.0814	0.0368	0.0191
Inflation *Profit Based Incentive	-3.4741	-3.4392	-0.0349	0.0000
Inflation *Capital Investment Incentive	-1.1632	-1.3525	0.1893	0.0993
Inflation *Custom Duty Incentive	3.2038	2.8857	0.3181	0.1738

b = consistent under Ho and Ha obtained from xtreg
B = inconsistent under Ha and efficient under Ho obtained from xtreg
Test: Ho: Difference in coefficient not consistent.

Chi^2 (3) = (b-B) (V_b-V_B) (b-B) =11.09
Prob> Chi^2 (3)= 0.1345

Source: Research Data (2023)

From table 4.9 above, the p-value was 0.1345 which was greater than 0.05. Since 0.1345 was greater than 0.05 we failed to reject the null hypothesis that RE model is preferred. Therefore, applied RE in the moderating effect model.

4.3.2 Panel Regression Results

This section presents the study findings based on study objectives. The dependent variable was effective corporate tax rate while investment incentives were the independent variables. Corporate performance and inflation were intervening and moderating variables respectively. The first section shows the direct effect of investment incentives on effective corporate rate. The second section shows the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate. The third section shows the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate. The fourth section summarises panel regression results.

4.3.2.1 Investment Incentive and Effective Corporate Tax Rate

The general objective of the study was to determine the effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya. The empirical model 3.1 was used to estimate the direct effect of investment incentives on effective corporate tax rate. The panel regression analysis was used. A p-value of less than 0.05 was to indicate that the model is fit in estimating the effect of investment incentives on effective corporate tax rate. The results for analysis of variance (ANOVA) for model 3.1 are shown in table 4.10 below.

Table 4.10 : ANOVA for Investment Incentives and Effective Corporate Tax Rate

Source	SS	df	MS	Number of obs	2484
Model	0.6497	14	0.0464	**F (14, 2469**	265.07
Residual	0.4323	2469	0.0002	**Prob> F**	0.0000
Total	1.0819	2483	0.0004	**R-squared**	0.6005
				Adjusted R-squared	0.5982
				Root MSE	0.0132

Source: Research Data

From table 4.10 above the ANOVA results had F –statistic (14, 2469) of 265.07 with p-value of 0.000. The ANOVA yielded a p-value of less than 0.05 which indicated that model 3.1 was fit in estimating the effect of investment incentives on effective corporate tax rate. The F-statistic point out that at least

one of the variable coefficients was statistically significant. Thus, investment incentives play a role in determining variations in effective corporate tax rate. The results showed that investment incentives are statistical predictors of effective corporate tax rate for manufacturing firms in Kenya

The panel regression results generated an adjusted R-square of 0.5982.This suggested that 59.82 percentage points of the variations in effective corporate tax rate during the study period were due to changes in investment incentives. The implication is utilisation of investment incentives cause variations in tax liability for manufacturing firms in Kenya.

The findings support Munongo et al (2017) who stated that according to neoclassical investment theory, investment incentives reduce ECTR. It was observed that the use of incentives improves benefit of corporates in a jurisdiction that have adopted a given set of investment incentives. Firms continue accruing capital provided that the benefits outweigh costs. The theory proposes that investment incentives boost development and investments. The panel data regression result for model 3.1 are shown in table 4.11 below.

Table 4.11 : Panel Regression for Investment Incentives and Effective Corporate tax Rate

Effective Corporate Tax Rate	Coef	Std Error	t	P>t	95 % Confidence Interval	
Profit based incentive	-0.5548	0.0143	-38.77	0.000	-0.5828	-0.5267
Capital investment incentive	-0.1419	0.0165	-8.61	0.000	-0.1742	-0.1096
Custom duty incentive	-0.4885	0.0172	-28.48	0.000	-0.5221	-0.4549
Constant	-0.0279	0.0133	-2.10	0.036	-0.0539	-0.0019

Source: Research Data (2023)

The results from table 4.11 showed that investment incentives have statistical significant effect on and determine effective corporate tax rate for manufacturing firms in Kenya. The findings are consistent with optimal tax theory (Mirrlees, 1971). The optimal tax theory proposes that countries should

compete vigorously to lure businesses and investor by offering incentives which is likely to drive ECTR to the bottom zero level. Investment incentives impact corporate tax volume imposed on firms and amount payable in ensuing years. From the findings one is able to argue that investment incentives are significant fiscal instruments that have significant influence on effective tax liability at firm level. Business executives should therefore put in place tax optimisation strategy so at to benefit from fiscal incentives.

4.3.2.2 Profit Based Incentive and Effective Corporate Tax Rate.

The first specific objective was to establish the direct effect of profit based incentive on effective corporate tax rate for manufacturing firms in Kenya. The estimates of model 3.1 had profit based investment incentive as independent variable $\mathbf{X_{1it}}$ with $\boldsymbol{\beta_1}$ as coefficient to measure the amount of variation in $\mathbf{Y_{it}}$ as a result of a unit change in X_{1it}. This objective was analysed by regressing effective corporate tax rate on investment incentives.

From table 4.11 above, the results showed that profit based incentive had a statistical coefficient of -0.5548. The corresponding p-value was 0.0000 and t-statistic of -38.77. Since the p-value of 0.000 is less than 0.05 the results point to the fact that profit based incentive had significant statistical effect on effective corporate rate for manufacturing firms in Kenya. The coefficient -0.5548 showed negative statistical significant connective relationship between profit based incentive and effective corporate tax rate. The finding showed an inverse causality effect. Therefore, an increase in profit based incentive led to a significant direct decrease in effective corporate tax rate. The coefficient -0.5548 implied that, an increase in profit based incentive by one unit led to reduction in effective corporate tax rate by 0.55 percent.

The findings confirm that firms utilise profit based incentive to reduce effective corporate tax rate. The findings are concomitant with the findings of Quak (2018) who contends that profit based incentive erode corporate tax base and reduced corporate profit tax rate in 65 low and middle countries. The findings also support similar study by Lisztwanova et al (2018) who established loss carryovers was critical variable that affect corporate income tax payable in Czech Republic.

Similarly, the findings agree with Abramovsky *et al* (2018) review for low and middle-income countries and Lakuma (2019) on tax burden in Uganda. Further the findings are in line with analysis by Undie et al (2020); and Bánociová et al (2020). The findings in these studies established that investment incentives affect effective corporate tax rate. Effective tax rate was reduced by application of tax holidays, aggressive tax planning and tax losses.

The finding did not support Khamisan and Christina (2020) who found out that corporate governance, tax loss carryforward, and financial distress had no significant effect on effective tax rate for manufacturing firms in Indonesia. The import of this inconsistency is that profit based incentive may work in one economic condition and fail to work in another jurisdiction. This is because profit based incentive dependent of financial bottom of the firm.

4.3.2.3 Capital Investment Incentive and Effective Corporate Tax Rate

In light of the second specific objective, the study aimed at establishing direct effect of capital investment incentive on effective corporate tax rate for manufacturing firm in Kenya. The estimates of model 3.1 had capital investment incentive as independent variable $\mathbf{X_{2it}}$ with $\boldsymbol{\beta_2}$ as coefficient to measure the amount of variation in $\mathbf{Y_{it}}$ due to unit variation in X_{2it}. The panel regression results from table 4.11 showed that capital investment incentive produced a coefficient of -0.1419 with a corresponding p-value of 0.000. Since the p-value of 0.000 is less than 0.05 the results pointed to the

fact that capital investment incentive had significant statistical effect on effective corporate tax rate for manufacturing firms in Kenya. The coefficient of -0.1419 indicated a negative significant relationship between capital investment incentive and effective corporate tax rate for manufacturing firms in Kenya.

The findings showed that there was converse causality effect. Therefore, an increase in capital investment incentive had negative significant direct outcome on effective corporate tax rate for manufacturing firms in Kenya. The findings showed that manufacturing firms in Kenya utilise capital deduction to lower effective corporate tax rate. An increase in capital investment incentive by one unit reduced effective corporate tax rate by 0.142 percentage points. The findings showed that manufacturing firms utilise capital expenditure deductions to reduce effective corporate tax rate. These deductions included investment deduction; wear and tear deduction; computer software; and industrial building deduction. The deductions decimate taxable corporate profit.

The findings in the current study showed that capital expenditure deduction presents tax maximization advantage to reduce effective corporate tax rate. The financial position from this findings is capital investment incentive is an important fiscal tool so that when applied it has significant influence on effective tax liability at firm level. The findings support optimal corporate taxation theory. The interest of optimal corporate taxation is to eliminate deadweight loss in the economy so as to increase economic efficiency and reduce misallocation of investment resources. The deadweight loss occurs when firms make less investment decisions than if there was no tax burden, which reduces well-being.

The findings in this study had a convergence with neoclassical investment (Jorgenson, 1963). The interest of neoclassical investment theory is to have almost zero corporate tax on profits. Thus, capital allowable deductions and tax breaks are important elements that influence cost of capital thereby

increase economic efficiency. The theory postulated that a combination of fiscal policy and investment incentives promote private investment. This is premised on the fact that, investment incentives create certain tax deductions.

The findings are concomitant with Ohrn (2018) who analysed corporate investment and financial policy response to domestic production activities deduction (DPAD) in USA. It was found out that, DPAD is a capital investment expenditure that firms deduct from taxable income as part of manufacturing expenses. The study used difference-in-difference analysis to estimate the confounding variable effect of investment and financial policy. The current study however applied panel regression. The joint thrust of both findings is that investment incentive affect effective corporate tax rate requirements. Given the dynamic nature of effective corporate tax rate, there is need for continual policy reform on capital investment incentive framework.

The findings support the argument by Abramovsky *et al* (2019) tax systems that have provision of depreciation allowance on physical assets translate into substantial difference in ECTR across activities, sectors, markets and source of finance in Myanmar. It was observed that tax incentives led to reduced tax rate. Abramovsky *et al* (2019) did not support reduced tax rate and argued that tax authorities may need to deploy strategies to stop activities that lead to low ECTR. Nevertheless, capital investment incentives reduces effective operational taxable profits.

The findings are concomitant with Hanappi (2018) who examined variation in ECTR on the basis of investments in end-user computers, R&D assets and pre-packaged software. The results showed variation in ECTR was due to difference between fiscal and economic depreciation. The study was based on cross country comparative analysis while this study used firm specific panel data. The gist

of the outcome is that there exist empirical evidence that manufacturing firms utilise capital expenditure deductions to reduce effective corporate tax rate.

4.3.2.4 Custom Duty Incentive and Effective Corporate Tax Rate

The third specific objective was to establish the direct effect of custom duty incentive on effective corporate tax rate for manufacturing firms in Kenya. The estimates of model 3.1 had custom duty incentive denoted as $\mathbf{X_{3it}}$ with $\boldsymbol{\beta_3}$ as coefficient to measure the amount of variation in $\mathbf{Y_{it}}$ as a result of a unit change in X_{3it}. The panel regression results in table 4.11 showed a coefficient of -0.4885 for custom duty incentive with a p-value of 0.000. A p-value of 0.000 which is less than 0.05 point to the fact that custom duty incentive had significant statistical effect on effective corporate tax rate.

The value of -0.4885 indicate that custom duty incentive had an inverse causality relationship with effective corporate tax rate. Therefore, an increase in custom duty incentive had a negative significant direct effect on effective corporate tax rate. The findings showed that manufacturing firms in Kenya applied custom duty incentive to reduce effective corporate tax rate. An increase in custom duty incentive by one unit reduced effective corporate tax rate by 0.489 percentage points.

The findings indicate that custom duty incentive influence effective corporate tax rate. This concurs with Ghazanchyan et al (2018) who pointed out that custom relief reduce upto 50 percent of taxable profit realised from goods produced and exported. Further, Oluwole et al (2020) established custom duty incentive had an effect on ECTR. The findings support Kuria (2018) who recommended that policy makers need to implement strategic custom duty incentive targeting specific industry so as to positively contribute to economic growth as envisaged in the Kenya Vision 2030.

The findings also resonate with Undie *et al* (2020) who surveyed impact of tax planning in Nigeria. In addition, the results converge with Haris et (2021) who pointed out that custom duty incentive

allows eligible firms preferential rates and allow refunds of duty paid on imported material used in production of export goods in Ethiopia. The results of this thesis therefore adds to existing empirical literature that have examined the influence of custom duty on effective corporate tax rate in Africa.

The import of these findings are that manufacturing firms in Kenya consider custom duty as part of structured fiscal policy that provide tax reliefs from corporate taxes on profits. The refunds and exemptions impact effective corporate tax rate since they benefit manufacturers who utilize imported capital goods for producing exports. Custom duty incentive facilitates local manufacturing firms to utilise imported goods to produce exportable final goods. Thus, a robust custom duty framework is able to ease corporate tax burden arising from imported goods used in manufacturing. At the same time corporate executives may consider corporate tax strategy that facilitate optimum advantage of custom duty incentive which is usually calibrated through remissions, drawbacks, rebates and refunds.

4.3.2.5 Investment Incentives, Corporate Performance and Effective Corporate Tax Rate

The fourth specific objective of this study was to establish the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. To evaluate this relationship the study applied a four stage model as suggested by Baron and Kenny (1986) on mediation analysis. The analysis entailed running four separate regression models to ascertain the existence of intervening effect.

The first stage involved regressing effective corporate tax rate against investment incentives using model 3.1. The results of stage I based on model 3.1 are shown in table 4.12 below.

Table 4.12 : ANOVA for Model 3.1 for Stage I of Intervening Effect Analysis

Source	SS	df	MS	Number of obs	2484
Model	0.6497	14	0.0464	**F (14, 2469**	265.07

Residual	0.4323	2469	0.0002	**Prob> F**	0.0000
Total	1.0819	2483	0.0004	**R-squared**	0.6005
				Adjusted R-squared	0.5982
				Root MSE	0.0132

Source: Research Data (2023)

From table 4.12 above the ANOVA results had F –statistic (14, 2469) of 265.07 with p-value of 0.000. The ANOVA yielded a p-value of less than 0.05 which indicated that model 3.1 was fit in estimating the effect of investment incentives on effective corporate tax rate. The results showed investment incentives had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. Thus, this relationship could be subjected to intervening effect analysis since first order condition was achieved.

The panel regression results generated an adjusted R-square of 0.5982.This suggested that 59.82 percentage points of the variations in effective corporate tax rate during the study period were due to changes in investment incentives. The implication is that manufacturing firms utilise investment incentives to lower tax liability. Therefore, investment incentives have statistical significant effect on and determine effective corporate tax rate for manufacturing firms in Kenya.

To test for significance of each of the variables panel regression for model 3.1 was obtained. The results are shown in table 4.13 below.

Table 4.13 : Panel Regression for Model 3.1 for Stage I of Intervening Effect Analysis

Effective Corporate Tax Rate	**Coef**	**Std Error**	**t**	**P>t**	**95 % Confidence Interval**	
Profit based incentive	-0.5548	0.0143	-38.77	0.000	-0.5828	-0.5267
Capital investment incentive	-0.1419	0.0165	-8.61	0.000	-0.1742	-0.1096
Custom duty incentive	-0.4885	0.0172	-28.48	0.000	-0.5221	-0.4549
Constant	-0.0279	0.0133	-2.10	0.036	-0.0539	-0.0019

Source: Research Data (2023)

From table 4.13 above, the results showed that profit based incentive had a p-value of 0.0000 and t-statistic of -38.77. Since the p-value of 0.000 was less than 0.05 the results point to the fact that profit based incentive had significant statistical effect on effective corporate rate for manufacturing firms in Kenya. Similarly, the p-value for capital investment and custom duty incentive had p-values less than 0.05. Since the p-values were less than 0.05 the results point to the fact that capital investment and custom duty incentive had significant statistical effect on effective corporate rate for manufacturing firms in Kenya.

The panel regression results for model 3.1 as reflected in table 4.13 above can be summarised in equation form as shown below.

$$\mathbf{Y_{it} = -0.0279 - 0.5548\ X_{1it} - 0.1419X_{2it} - 0.4885\ X_{3it}} \quad \textbf{…… Model 3.1.}$$

Where:

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the capital investment incentive for firm i at time t; and

$\mathbf{X_{3it}}$ is the value of custom duty incentive for firm i at time t.

The coefficient -0.5548 showed negative statistical significant connective relationship between profit based incentive and effective corporate tax rate. The results showed negative statistical significant connective relationship between profit based incentive and effective corporate tax rate. The finding showed an inverse causality effect. Therefore, an increase in profit based incentive led to a significant direct decrease in effective corporate tax rate. The coefficient -0.5548 showed that, an increase in profit based incentive by one unit led to reduction in effective corporate tax rate by 0.55 percent.

In the same way, the finding showed an increase in capital investment incentive led to a significant direct decrease in effective corporate tax rate. Further, the coefficient -0.1419 showed that, an increase

in capital investment incentive by one unit led to reduction in effective corporate tax rate by 0.14 percent. The coefficient -0.4885 showed that, an increase in custom duty by one unit led to reduction in effective corporate tax rate by 0.49 percent. Therefore, the results in stage one showed that there was statistical significant relationship between investment incentives and effective corporate tax rate for manufacturing firms.

The second stage panel regression was conducted by regressing corporate performance against investment incentives. The intention was to fulfill the second order condition that should be satisfied for intervening effect to exist. This condition requires that there should be evidence to show investment incentives can predict corporate performance. Therefore, corporate performance was regressed against investment incentives based on model 3.2. The ANOVA results are shown in table 4.14.

Table 4.14 : ANOVA for Model 3.2 for Stage II of Intervening Effect Analysis

Source	**SS**	**df**	**MS**	**Number of obs**	**2484**
Mode	0.3911	14	0.0279	F(14, 2469)	104.71
Residual	0.6587	2469	0.0003	Prob > F	0.0000
Total	1.0498	2483	0.0004	R-squared	0.3726
				Adj R-squared	0.3690
				Root MSE	0.0163

Source : Research Data (2023)

From table 4.14 above the ANOVA results had F –statistic (14, 2469) of 104.71 with p-value of 0.000. The p-value of less than 0.05 indicated that model 3.2 was fit in estimating the effect of investment incentives on corporate performance for manufacturing firms in Kenya. The results showed that corporate performance can be analysed as an intervening variable in the relationship between investment incentives and effective corporate tax rate.

The panel regression results generated an adjusted R-square of 0.369.This suggested that 36.9 percentage points of variations in corporate performance during the study period were due to changes in investment incentives. The implication is that investment incentives affect corporate performance of manufacturing firms in Kenya. Therefore, investment incentives had statistical significant effect on and can determine corporate performance for manufacturing firms in Kenya.

To test for significance of each of the variables panel regression for, model 3.2 was obtained. The results are shown in table 4.15 below

Table 4.15 : Panel Regression for Model 3.2 for Stage II of Intervening Effect Analysis

Corporate Performance	Coef.	Std. Err.	t	P>t	95% Conf. Interval	
Profit based incentive	0.6414	0.0177	36.31	0.0000	0.6068	0.6760
Capital investment incentive	0.0402	0.0204	1.97	0.0491	0.0003	0.0801
Custom duty incentive	-0.2506	0.0212	-11.83	0.0000	-0.2921	-0.2091
Constant	0.0009	0.0164	0.06	0.956	-0.0312	0.0330

Source : Research Data (2023)

From table 4.15 above, the results showed that profit based incentive had a p-value of 0.0000 and t-statistic of 36.31. Since the p-value of 0.000 was less than 0.05 the results point to the fact that profit based incentive had significant statistical effect on corporate performance for manufacturing firms in Kenya. Similarly, the p-value for capital investment and custom duty incentive had p-values less than 0.05. Since the p-values were less than 0.05 the results point to the fact that capital investment and custom duty incentive had significant statistical effect on effective corporate rate for manufacturing firms in Kenya.

The panel regression results for model 3.2 can be constructed into equation form as shown below.

$$\mathbf{C_{it} = 0.0009 + 0.6414\ X_{1it} + 0.0402 X_{2it} - 0.2506\ X_{3it}} \quad \textbf{…….Model 3.2}$$

Where:

C_{it} is the corporate performance for firm i at time t;

X_{1it} is the profit based incentive for firm i at time t;

X_{2it} is the capital investment incentive for firm i at time t;

X_{3it} is the value of custom duty incentive for firm i at time t; and

The coefficient 0.6414 showed positive statistical significant connective relationship between profit based incentive and corporate performance. The finding showed a positive causality effect. Therefore, an increase in profit based incentive led to a significant increase in corporate performance for manufacturing firms in Kenya. The coefficient 0.641 showed that, an increase in profit based investment incentive by one unit led to increase in corporate performance by 0.64 percent.

Similarly, an increase in capital investment incentive led to a significant direct increase in corporate performance. The coefficient 0.0402 showed that, an increase in capital investment incentive by one unit led to increase in corporate performance by 0.04 percent. Conversely, the results showed that an increase in custom duty incentive by one unit led to a decrease in corporate performance by 0.25 percent. This state of inconsistency may need further research.

At the third stage a panel regression was conducted by regressing effective corporate tax rate against corporate performance. The aim was to establish the statistical significant effect of corporate performance on effective corporate tax rate for manufacturing firms in Kenya. The analysis was based on model 3.3. The ANOVA results are shown in table 4.16.

Table 4.16 : ANOVA for Model 3.3 for Stage III of Intervening Effect Analysis

Source	**SS**	**df**	**MS**	**Number of obs**	**2484**
Model	0.1972	12	0.0164	F(12, 2471)	45.89
Residual	0.8847	2471	0.0004	Prob > F	0.0000
Total	1.0819	2483	0.0004	R-squared	0.1822
				Adj R-squared	0.1783
				Root MSE	0.01892

From table 4.16 above the ANOVA results had F –statistic (14, 2471) of 45.89 with p-value of 0.000. The p-value less than 0.05 indicated that model 3.3 was fit in estimating the effect of corporate performance on effective corporate tax rate for manufacturing firms in Kenya. The results showed that corporate performance had significant effect on effective corporate tax rate. The panel regression results generated an adjusted R-square of 0.1783.This suggested that 17.3 percent of the variations in effective corporate tax rate during the study period can be attributed to changes in corporate performance incentives. Therefore, corporate performance had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

To test for significance of corporate performance, a panel regression for, model 3.3 was obtained. The results are shown in table 4.17 below.

Table 4.17 : Panel Regression for Model 3.3 for Stage III of Intervening Effect Analysis

Effective corporate tax rate	Coef.	Std. Err.	t	P>t	95% Conf. Interval	
Corporate Performance	-0.3093	0.0188	-16.49	0.000	-0.3461	-0.2726
Constant	-0.0357	0.0189	-1.89	0.059	-0.0729	0.0014

Source : Research Data (2023)

From table 4.17 above, the results showed that corporate performance had a statistical coefficient of -0.3093. The corresponding p-value was 0.0000 and t-statistic of -16.49. Since the p-value of 0.000 is less than 0.05. The results point to the fact that corporate performance had significant negative statistical effect on effective corporate tax rate for manufacturing firms in Kenya. The panel regression results for model 3.3 can be constructed into an equation as shown below

$$Y_{it} = -0.0357 - 0.3093\ C_{it} \quad \text{……Model 3.3.}$$

Where:

Y_{it} is the effective corporate tax rate for firm i at time t;

C_{1it} is the corporate performance for firm i at time t;

The coefficient -0.3093 signified negative statistical significant relationship between corporate performance and effective corporate tax rate for manufacturing firms in Kenya. An increase in corporate performance led to a significant decrease in effective corporate tax rate. The coefficient -0.3093 showed that, an increase in corporate performance by one unit led to decrease in corporate performance by 0.31 percent.

At stage IV a panel regression was conducted based on model 3.4 of the study. The aim of stage IV was to determine whether both investment incentives and corporate performance had statistical significant effect on effective corporate tax rate. The results are shown in table 4.18 below.

Table 4.18 : ANOVA for Model 3.4 of Stage IV of Intervening Effect Analysis

Source	SS	df	MS	Number of obs	2484
Model	0.6537	15	0.0436	F(15, 2468)	251.14
Residual	0.4283	2468	0.0002	Prob > F	0.0000
Total	1.0819	2483	0.0004	R-squared	0.6042
				Adj R-squared	0.6018
				Root MSE	0.01317

Source : Research Data (2023)

From table 4.18 above the ANOVA results had F –statistic (15, 2468) of 251.14 with p-value of 0.000. The p-value of less than 0.05 indicated that model 3.4 was fit in estimating the effect of investment incentives and corporate performance on effective corporate tax rate. The results showed that the corporate performance can be used for intervening effect analysis on the relationship hip between investment incentives and effective corporate tax rate. The results generated an adjusted R-square of 0.6018.This suggested that 60.18 percentage points of the variations in effective corporate tax rate during the study period were due to changes in investment incentives and corporate performance.

To test for significance of investment incentives and corporate performance, a panel regression for, model 3.4 was obtained. The results are shown in table 4.19 below.

Table 4.19 : Panel Regression for Model 3.4 for Stage IV of Intervening Effect Analysis

Effective corporate tax rate	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Profit based incentive	-0.5048	0.0176	-28.61	0.0000	-0.5394	-0.4702
Capital investment incentive	-0.1388	0.0164	-8.45	0.0000	-0.1710	-0.1066
Custom duty incentive	-0.5080	0.0176	-28.9	0.0000	-0.5424	-0.4736
Corporate Performance	-.07789	0.0162	-4.8	0.0000	-0.1097	-0.0461
Constant	-0.0278	0.0132	-2.1	0.0350	-0.0537	-0.0019

Source : Research Data (2023)

From table 4.19 above, the results showed that profit based incentive had a statistical coefficient of -0.5048. The corresponding p-value was 0.0000 and t-statistic of -28.61. Since the p-value of 0.000 is less than 0.05 the results point to the fact that profit based incentive had significant positive statistical effect in the intervening effect model. Similarly, capital investment incentive and custom duty incentive had a significant effect. In addition, corporate performance had statistical significant effect.in From the results the equation form can be constructed as shown below

$$\mathbf{Y_{it} = -0.00278 - 0.5048X_{1it} - 0.1388X_{2it} - 0.5080\,X_{3it} - 0.7789C_{it}}$$ **…….Model 3.4**

Where

$\mathbf{Y_{it}}$ is the effective corporate tax rate for firm i at time t;

$\mathbf{X_{1it}}$ is the profit based incentive for firm i at time t;

$\mathbf{X_{2it}}$ is the capital investment incentive for firm i at time t;

$\mathbf{X_{3it}}$ is the value of custom duty incentive for firm i at time t; and

$\mathbf{C_{it}}$ is the value of corporate performance for firm i at time t.

The coefficient -0.5048 showed negative statistical significant connective relationship between profit based incentive and effective corporate tax rate. The finding showed a positive causality effect in the intervening analysis. herefore, an increase in profit based incentive led to a significant increase in effective corporate tax rate for manufacturing firms in Kenya. The coefficient 0.5048 showed that,

an increase in profit based investment incentive by one unit led to decrease in effective corporate tax rate performance by 0.50 percent.

Similarly, an increase in capital investment incentive led to a significant decrease in effective corporate tax rate. The coefficient 0.1388 showed that, an increase in capital investment incentive by one unit led to decrease in effective corporate tax rate by 0.14 percent. An increase in custom duty incentive by one unit led to a decrease in effective corporate tax rate by 0.51 percent. This result also showed that an increase in corporate performance by one unit led to a decrease in effective corporate tax rate by 0.78 percent.

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Table 4.20 : Summary for Intervening Effect of Corporate Performance

Variable	Stage I: Model 3.1				Stage II: Model 3.2				Satge III: Model 3.3				Stage IV: Model 3.4			
	Coef	**Std Error**	**t**	**P>t**	**Coef**	**Std Error**	**t**	**P>t**	**Coef**	**Std Error**	**t**	**P>t**	**Coef**	**Std Error**	**t**	**P>t**
Profit based incentive	-0.558	0.014	-38.77	0.000	0.641	0.018	36.31	0.000					-0.505	0.018	-28.61	0.000
Capital investment incentive	-0.142	0.016	-8.61	0.000	0.040	0.020	1.97	0.049					-0.139	0.016	-8.45	0.000
Custom duty incentive	-0.489	0.017	-28.48	0.000	-0.251	0.021	-11.83	0.000					-0.508	0.018	-28.9	0.000
Corporate Performance									-0.309	0.019	-16.49	0.000	-0.078	0.016	-4.80	0.000
Constant	-0.028	0.013	-2.10	-0.036	0.001	0.016	0.06	0.956	-0.036	0.018	-1.89	0.000	-0.028	0.013	-2.10	0.035
N	2484				2484				2484							
F-statistics	F(14,2469)=265.07				F(14,2469)=104.71				F(12,2471)=45.89				F(15,2468)=251.14			
Prob > F	0.000				0.000				0.000				0.000			
R-squared	0.600				0.373				0.182				0.604			
Adj R-squared	0.598				0.369				0.178				0.601			
Model	**Y_{it} = -0.028 -0.558 X_{1it} -0.142 X_{2it} -0.489 X_{3it} (Model 3.1)**				**C_{it} = 0.001 +0.641 X_{1it} +0.040 X_{2it} -0.251 X_{3it} (Model 3.2)**				**Y_{it} = -0.036 -0.309 C_{1it} (Model 3.3)**				**Y_{it} = -0.028 -0.505 X_{1it} - 0.139X_{2it} -0.508 X_{3it} -0.078 C_{it} (Model 3.4)**			
Conclusion	The relationship can be subjected to intervening effect analysis				Corporate performance can be used for intervening effect analysis				There was partial intervening effect				There was full intervening effect			

Source: Research Data (2023)

From table 4.20 above, it is evident from first regression model 3.1 that investment incentives had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. The result of F –statistic (14, 2469) of 265.07 had p-statistic of 0.0000. The p-value of 0.000 implies that model 3.1 was fit in estimating relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The p-value for profit based incentive, capital investment incentive and custom duty are 0.000, 0.000 and 0.000 respectively. This implies that coefficients of the model 3.1 had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. In light of Mehmetoglu (2018) intervening effect can be analysed since there was existence of significant relationship between investment incentives and effective corporate tax rate for manufacturing in Kenya.

At the second stage regression the results had F –statistic (14, 2469) of 104.71 with p-value of 0.000. A p-value of less than 0.05 implied that model 3.2 is fit in estimating the relationship between investment incentives and corporate performance. The results showed a coefficient of 0.641 for profit based incentive with a corresponding p-value of 0.000; a coefficient of -0.040 for capital investment incentive with a p-value of 0.049: and a coefficient of -0.251 for custom duty incentive with a p-value of 0.000. The p-value for this model were less than 0.05. This implies that investment incentives had statistical significant effect on corporate performance for manufacturing firms in Kenya. The findings therefore fulfill the condition that for intervening effect to exist the investment incentives should be a significant predictor variables of corporate performance.

At the third stage the results from table 4.20 above had F –statistic (12, 2471) of 45.89. The p-value was 0.000 which was also less than 0.005. This implied that model 3.3 was fit to estimate the functional relationship between corporate performance and effective corporate tax rate for manufacturing firm in Kenya. The results generated adjusted R-square of 0.1783. This suggests that 17.84 percentage

variations in effective corporate tax rate in the study period are due to changes in corporate performance. Therefore, the panel regression analysis indicate corporate performance as intervening variable had statistical significant effect in predicting effective corporate tax rate for manufacturing firms in Kenya.

At the fourth stage, the panel regression generated F –statistic (15, 2468) of 251.14 with a p-value of 0.0000. This results implied that model 3.4 was fit in estimating the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The findings of the intervening effect model showed that profit based incentive generated a coefficient of -0.505 and p-value of 0.000; capital investment incentive yielded a coefficient of -0.139 with a p-value of 0.000 and custom duty incentive had a coefficient of -0.508 with a p-value of 0.0000.

The implication is that both investment incentives and corporate performance had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. Juxtaposition of the results showed that coefficient for direct effect of profit based incentive reduced in absolute terms from from 0.558 in model 3.1 to 0.505 in model 3.4. Similarly, direct effect of capital investment incentive reduced from 0.142 to 0.139 while the direct effect of custom duty incentive improved from 0.489 in model 3.1 to 0.508. In the presence of corporate performance, custom duty incentive had a more significant effect on effective corporate tax rate for manufacturing firms in Kenya.

From table 4.20, the adjusted R-square changed from 0.598 in the model without intervening variable to 0.601 for the model with intervening variable. From this comparative results, it meant that the explained variability in effective corporate tax rate for manufacturing firms in Kenya was improved by corporate performance. The inclusion of corporate performance gave insight to the connective

relation between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. This suggests that 60.10 percent of the variations in effective corporate tax rate in the study period can be attributed to changes in investment incentives when is regressed together with corporate performance. However, there are 39.9 percentage variations in effective corporate tax rate that were attributable to other variable outside this model. There could be need for further research to understand these other variables.

To test for significance of the change in direct effect of investment incentives due to intervention, indirect effect regression coefficients were computed as suggested by Kenny & Judd (2014). The indirect effect was obtained by getting product of stage II regression and Stage III regression. The computations are shown in table 4.21 below.

Table 4.21 : Indirect Intervening Effect of Corporate Performance

Variable	Stage II: Model 3.2 Coefficient	Stage III : Model 3.3 Coefficient	Indirect Intervening Effect
Profit based incentive	0.641	-	0.641*-0.309= -0.198
Capital investment incentive	0.040	-	0.040*-0.309= -0.012
Custom duty incentive	-0.251	-	-0.251*-0.309= 0.078
Corporate Performance	-	-0.309	
Constant	-0.028	-0.036	

Source : Research Data

From table 4.21 above the results indicated that the indirect effect of profit based incentive, capital investment incentive and custom duty incentive were -0.198, -0.012 and 0.078. This implies that increasing corporate performance by one unit led to a reduction in effect of profit based incentive on effective corporate tax rate by 19.8 percent. Similarly, increasing corporate performance by one unit led reduced influence of capital investment incentive on effective corporate tax rate by 1.2 percent.

To the contrary, increasing corporate performance by one unit increased effect of custom duty incentive on effective corporate tax rate by 7.8 percent.

The overall findings supports political power theory by Siegfried (1972). From this theory it is postulated that high firm performance reduces effective corporate tax rate. This is because high performance enables firms to take advantage of fiscal policy incentives and are able to plan operational capacity to lower effective corporate tax rate. Political power theory postulates that firms organise substantial resources, utilise human capacity to optimise tax planning and plan operational activities to maximise tax savings and use corporate power to influence public policy.

The results of stage three does not agree with Carreras *et al* (2017) who found similar results but revealed non linearity relationship between profitability and ECTR. Also, the study does not support Sunarto et al (2021) whose regression results showed that profitability had no mediating effect on the relationship between corporate governance and effective corporate tax rate in Indonesia. However, Vintilă *et al* (2018) showed that corporate performance is correlated with ECTR in Slovenia, Hungary, Bulgaria, Poland and Romania. These findings therefore cumulatively add to limited and inadequate data to support existing empirical gaps and framework on effective corporate tax rate.

The finding could be likened to Dias et al (2018) who found out that ROA control on the level of effective tax rate in five (5) EU countries (Denmark, Slovenia, Finland, Luxembourg and UK). The results also support Michael (2020) who examined the moderating effect of profitability on the relationship between ownership structure and tax avoidance in Nigeria. In addition, the study supports the findings of Nathania et al (2021) that profitability had intervening effect on the relationship between firm size and ECTR. It is therefore instructive for manufacturing firms to strategise on how

to improve corporate performance together with opitimising benefits of investment incentives to reduce effective corporate tax rate.

The findings showed that the joint influence of investment incentives and corporate performance was higher than the individual results on effective corporate tax rate for manufacturing firms in Kenya. It is apparent that corporate performance is a critical decision variable for a desired level of effective corporate tax rate. This is because as manufacturing firms plan to benefit from fiscal policy through investment incentives, corporate performance remain an important element of decision framework that facilitate maximizing returns and help in strategizing for competitive environment. The thrust of the finding is that fiscal policy must interact favourably with corporate performance strategy for any desired level of effective corporate tax rate.

Drawing from optimal tax theory (Mirrlees , 1971), The findings established the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms. This support the optimal tax theory which argues that variation in ECTR across firms implies that there exists heterogeneity. Therefore a tax system that applies flat statutory tax rate to all sectors fails to embrace tax optimality principle. Heterogeneity exist because of varying abilities; corporate capacity differential; and varying elasticity to factor inputs. It could be argued that a good tax system should have a differentiated way of taxing corporate profits.

4.3.2.6 Investment Incentives, Inflation and Effective Corporate Tax Rate

The fifth specific objective established the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The moderating effect model 3.5 had inflation denoted by $\mathbf{M_t}$ as moderating variable. Moderating effect was modelled using interactive product effect between independent variables and moderating variable.

This was based on Rockwood and Hayes (2020) who pointed out moderating effect can be modelled by getting the product effect of independent variables and moderating variable. The ANOVA results for the moderating effect model 3.5 are as shown in table 4.22 below.

Table 4.22 : ANOVA for Moderating Effect Model 3.5

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Model	0.6532	18	0.0363	**F(18, 2465)**	=	208.63
Residual	0.4287	2465	0.0002	**Prob > F**	=	0.0000
Total	1.0819	2483	0.0004	**R-squared**	=	0.6037
				Adj R-squared	=	0.6008
				Root MSE	=	0.0132

Source : Research Data (2023)

From table 4.22 above, ANOVA had F –statistic (18, 2465) of 208.63 with p-value of 0.000. Since the p-value of the model is less than 0.05, it implies that model 3.5 is fit in estimating the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results show an adjusted R-square of 0.6008. This suggests that 60.08 percent of the variations in effective corporate tax rate in the study period are due to changes in the variables in the moderating effect model.

However, there was 39.92 percent of changes in effective corporate that is attributable to other variable outside this model. There could be need for further research to understand these other variables. The overall model found out that inflation had moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. Further, the panel regression generated interactive product effect of independent variables and moderating variable based on model 3.5 are shown in table 4.23 below.

Table 4.23 : Panel Regression for Moderating Effect Model

Effective Corporate Tax Rate	Coef	Std. Err.	t	P>t	95% Conf.	Interval
Profit based incentive	-0.5501	0.0143	-38.36	0.000	-0.5783	-0.5220
Capital investment incentive	-0.1416	0.0167	-8.49	0.000	-0.1743	-0.1089
Custom duty incentive	-0.4929	0.0173	-28.55	0.000	-0.5268	-0.4591
Inflation rate	0.0098	0.0198	0.5	0.619	-0.0289	0.0485
Profit based incentive*Inflation	-1.6753	0.6543	-2.56	0.011	-2.9584	-0.3922
Capital investment incentive *Inflation	-2.4270	0.8378	-2.9	0.004	-4.0699	-0.7841
Custom duty inactive *Inflation	0.3744	0.8910	0.42	0.674	-1.3728	2.1216
Constant	-0.0282	0.0132	-2.13	0.033	-0.0541	-0.0022

Source: Research Data (2023)

From table 4.23 the panel regression results showed that the interactive product effect of profit based incentive and inflation generated a coefficient of -1.68 with a p-value of 0.011 and t-statistic of -2.56. Since 0.011 is less than 0.05, it implies that inflation had statistical significant moderation on the relationship between profit based incentive and effective corporate tax rate for manufacturing firms in Kenya. The results further showed that the interactive product effect of capital investment incentive and inflation had a coefficient of -2.43 with a p-value of 0.004 and t-statistic of -2.9. This implies that inflation had significant moderation on the relationship between capital investment incentive and effective corporate tax rate for manufacturing firms in Kenya.

The results show that the interactive product effect of custom duty incentive and inflation had a parameter coefficient of 0.37, a p-value of 0.674 and t-statistic of 0.42. Since 0.6744 was greater than 0.05, it implies that inflation had no statistical significant moderation on the relationship between custom duty incentive and effective corporate tax rate for manufacturing firms in Kenya. Thus, interactive product effect of inflation and custom duty was not significant and could be dropped from

the final prediction model. Similarly from table 4.15 inflation did have statistical significant effect on effective corporate tax rate. Therefore it could also be dropped from model 3.5.

The panel regression result based on the statistically significance coefficients of the model 3.5 was to be defined as follows:

$$Y_{it} = 0.0282 - 0.5501X_{1it} - 0.1416X_{2it} - 0.4929X_{3it} - 1.6753X_{1it}*M_{it} - 2.4270X_{2it}*M_{it} \quad \text{.....Model 3.5}$$

Y_{it} is the effective corporate tax rate for firm i at time t;

X_{1it} is the profit based incentive fir firm i at time t;

X_{2it} is the capital investment incentive for firm i at time t;

X_{3it} is the value of custom duty incentive for firm i at time t;

$X_{1it} * M_t$ is the interactive product of profit based incentive and inflation for firm i at time t; and

$X_{2it} * M_t$ is the interactive product of capital investment incentive and inflation for firm i at time t;

The results showed that model 3.5 above can be used to estimate the level of moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The coefficients of the product effect of profit based incentive and inflation was -1.6753 while coefficient for product of capital investment incentive and inflation was -2.4270. It was observed that inclusion of inflation did not change the direction of the relationship between investment incentives and effective corporate tax rate.

The negative coefficient of 1.6753 indicate showed that an increase in product effect of profit based incentive and inflation by one unit reduces effective corporate tax rate by 1.675 percent holding other variables constant. In the same vein, an increase in product effect of capital investment incentive and inflation by one unit increases effective corporate tax rate by -2.4270 percent. However, increasing

the product effect of custom duty incentive and inflation did not have statistical significant effect on effective corporate tax rate.

To measure the moderating effect the results of panel regression with and without moderating variable were juxtaposed. A comparison of the results is summarised in table 4.24 below

Table 4.24 : Comparison Results for Moderating Effect Analysis

Variable	Without Moderating Variable: Model 3.1		Without Moderating Variable: Model 3.5	
	Coefficient	**P-Value**	**Coefficient**	**P-Value**
Profit based incentive	-0.5548	0.0000	-0.5501	0.000
Capital investment incentive	-0.1419	0.0000	-0.1416	0.000
Custom duty incentive	-0.4885	0.0000	-0.4929	0.000
Inflation rate			0.0098	0.619
Profit based incentive*Inflation	-	-	-1.6753	0.011
Capital investment incentive *Inflation	-	-	-2.427	0.004
Custom duty inactive *Inflation	-	-	0.3744	0.674
	Adj R-Squared =0.5982		**Adj R-squared =0.6008**	

Source: Research Data (2023)

Table 4.24 above shows the comparative results for model 3.1 and 3.5. Model 3.1examined direct effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya while model 3.5 had inflation as moderating variable on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results showed that when inflation is introduced in the model, investment incentives still remain statistically significant since the p-value of 0.000 is less than 0.05. However, the product effect of custom duty and inflation is not significant since it has a p-value of 0.674. The resultant effect is that there was partial moderation.

Juxtaposing the results before and after introducing moderating variable, the adjusted R-square increased from 0.5982 to 0.6008. The interactive product moderating effect of investment incentives and inflation was higher than the individual results on effective corporate tax rate for manufacturing

firms in Kenya. The explained variation in the effective corporate tax rate for manufacturing firms in Kenya was enhanced by inflation. The findings provided discernment on the importance of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The resuts moderation effect is as summarised in table 4.25 below.

Table 4.25 : Summary of Moderating Effect of Inflation

		Panel Regression Results		
Analysis	**Parameter**	**Coefficient**	**P-value**	**Conclusion**
Inflation as moderating variable	Coefficient of inflation	0.0098	0.619	Inflation did not have statistical significant effect on effective corporate tax rate
	Coefficient of interactive profit based incentive*Inflation	-1.6753	0.011	Inflation had statistical significant moderating effect on the relationship between profit based incentive and effective corporate tax rate
	Coefficient of capital investment incentive *Inflation	-2.4270	0.004	Inflation had statistical significant moderating effect on the relationship between capital investment incentive and effective corporate tax rate
	Coefficient of custom duty incentive *Inflation	0.3744	0.674	Inflation had no statistical significant moderating effect on the relationship between custom duty inactive and effective corporate tax rate

Source : Research Data (2023)

Table 4.25 above shows that inflation did not have statistical significant effect on effective corporate tax rate. Inflation had statistical significant moderating effect on the relationship between profit based incentive and effective corporate tax rate. Inflation had statistical significant moderating effect on the relationship between capital investment incentive and effective corporate tax rate. However, inflation had no statistical significant moderating effect on the relationship between custom duty incentive and effective corporate tax rate. The overall findings show that inflation had moderating effect on the

relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya

From table 4.25, it is apparent that inflation is a critical decision variable for a desired level of effective corporate tax rate. This is because as manufacturing firms plan to benefit from investment incentives, inflation is an important element of systematic risk framework. Inflation adjustment has an effect on a tax situation of firms. The thrust of the finding is that fiscal policy must interact favourably with monetary policy for any desired level of effective corporate tax rate.

From financial perspective, the findings confirms the importance of inflation as an element of systematic risk in determining effective corporate tax rate. It can be argued that systematic risk has a relationship with effective corporate tax rate. Inflation being a key component of systematic risk, investors are likely to seek destinations with less systematic risk and jurisdictions with stable inflation level may be favoured.

The negative coefficients connotes that inflation attempt to wipe out the benefits arising from investment incentives. In other words, in economic situations of increasing inflation, investment incentives will have little effect on the level of effective corporate tax rate. The findings agree with the inflation tax theory Mankiw (1987) that there was a relationship between tax burden and inflation. However, interactive product effect shows a negative moderating effect of inflation on the relationship between inflation rates and effective corporate tax rate. The proposition is that interaction of existing fiscal policy substantially impact effective corporate tax rate. The fiscal policy is parameterised through investment incentive while monetary policy is reflected through inflation.

The findings agree with Wahyuningih et al (2020) who pointed out that inflation and taxation rates have empirical relationship and they move into same direction but at different financial speed. Therefore, economies with stable inflation are likely to have less tax burden. The findings are in line with Congressional Budget Office (2017) who simulated effective corporate tax rate for the G-20 countries. The results showed ECTR was found to be sensitive to inflation rate because it increases nominal value of payments.

However, the findings did not support Andrejovska (2018) analysis of effective tax rate in the context of the economic determinants. The macroeconomic model result showed that inflation rate was not statistically significant determinant of effective tax rate in EU. Inflation was not an appropriate indicator for company's decision on effective corporate tax rate. It was argued that interest expense deduction compensate the tax deformation caused by inflation. Nevertheless, it was recommended that any government policy should take into account prevailing macroeconomic environment since they affect manufacturing capacity of firms.

4.3.2.7 Summary of Panel Regression Results

This section shows summary of panel regression results for the three models in the study. The first model 3.1 had three variables to estimate the direct effect of investment incentives on effective corporate tax rate. The second model 3.4 was to estimate the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate. The third mode1 3.5 estimated the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. Table 4.26 below shows a summary of the panel regression results.

Table 4.26 : Summary of Panel Regression

Objective	Model Results	Interpretation
i. To determine the effect of profit based incentive on effective corporate tax rate for manufacturing firms in Kenya.	$\mathbf{Y_{it} = -0.028 -0.558\ X_{1it} -0.142\ X_{2it} -0.489\ X_{3it}}$ **(Model 3.1)** **Adjusted R-Square=0.5982**	Increasing profit based incentive by one unit reduces effective corporate tax rate by 0.555 percent for manufacturing firms in Kenya.
ii. To establish the effect of capital incentive on effective corporate tax rate for manufacturing firms in Kenya.		Increasing capital investment incentive by one unit reduces effective corporate tax rate by 0.142 percent for manufacturing firms in Kenya.
iii. To establish the effect of custom duty incentive on effective corporate tax rate for manufacturing firms in Kenya.		Increasing custom duty incentive by one unit reduces effective corporate tax rate by 0.489 percent for manufacturing firms in Kenya.
		59.82 percent variations in effective corporate tax rate for manufacturing firms in Kenya occur due to changes in investment incentives
iv. To determine the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.	$\mathbf{Y_{it} = -0.028 -0.505\ X_{1it} -0.139\ X_{2it} -0.508\ X_{3it} -0.078C_{it}}$ (**Model 3.4)** **Adjusted R-Square=0.6018**	Corporate performance had statistical significant negative intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya
		60.18 percent variations in effective corporate tax rate for manufacturing firms in Kenya occur due to changes in investment incentives and corporate performance
v. To determine the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.	$\mathbf{Y_{it} =-0.028 – 0.550\ X_{1it} -0.142X_{2it} -0.493\ X_{3it} + 0.010\ M_{it} -1.675\ X_{1it} *M_{it} -}$	Inflation had significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.
		60.18 percent variations in effective corporate tax rate for manufacturing firms in Kenya occur due to changes in investment incentives and corporate performance

Source: Research Data (2023)

From table 4.26 above, the results of direct effect of investment incentives on effective corporate tax rate showed adjusted-R-squared of 0.5982. This implies that 59.82 percent of the changes in effective corporate tax rate are caused by the changes in investment incentives. There are therefore changes in effective corporate tax rate that are attributable to other factors not captured by this model. The findings indicate that investment incentive influence effective corporate tax rate. This is concomitant with other findings which have shown that firms utilize investment deductions to reduce taxable income as part of manufacturing expenses.

From table 4.26 above the results showed that corporate performance had a statistical significant intervening effect on the relationship between investment incentives and effective corporate tax rate. The joint influence of investment incentives and corporate performance was higher than the individual results on effective corporate tax rate for manufacturing firms in Kenya. The results reveal that the adjusted R-square changed from 0.5982 in the model without intervening variable to 0.6018 for the model with intervening variable. This means that the explained variation in the effective corporate tax rate for manufacturing firms in Kenya was improved by corporate performance. The inclusion of corporate performance strengthened the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The thrust of the finding is that fiscal policy must interact favourably with corporate performance strategy for any desired level of effective corporate tax rate.

The comparative results revealed that the adjusted R-square increased from 0.5982 in the model without moderating variable to 0.6008 for the model with moderating variable. This findings provided discernment on the importance of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. From financial perspective, the findings

confirms the importance of inflation as an element of systematic risk in determining effective corporate tax rate. Inflation being a key component of systematic risk, investors are likely to seek destinations with less systematic risk and by interpolation jurisdictions with stable inflation level may be favoured.

4.3.3 Hypothesis Testing

This section presents findings based on the study hypotheses. The first section shows the hypotheses on relationship between investment incentives and effective corporate tax rate. The second section shows the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate. The third section shows the moderating effect of inflation on the relationship between investment incentives and effective of corporate tax rate. The fourth section summarises the test of hypotheses.

4.3.3.1 Profit Based Incentive and Effective Corporate Tax Rate

The first hypothesis of the study focused on the relationship between profit based incentive and effective corporate tax rate for manufacturing firms in Kenya. The null hypothesis **(H_{01})** was framed that profit based incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya. The study was to accept the null hypothesis when the p-value of the model is greater than 0.05. To test this hypothesis effective corporate tax rate was regressed against profit based incentive. The panel regression results are shown in table 4.27 below.

Table 4.27 : Test of Hypothesis H_{01}

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Mode	0.5015	12	0.0418	F(14, 2471)	=	177.91
Residual	0.5804	2471	0.0002	Prob > F	=	0.0000
Total	1.0819	2483	0.0004	R-squared	=	0.4635
				Adj R-squared	=	0.4609
				Root MSE	=	0.0153

Source: Research Data (2023)

From table 4.27 above the ANOVA has F –statistic (14, 2471) of 177.91 with p-value of 0.000. Since 0.0000 is less than 0.05 we fail to accept the null hypothesis, **H_{01}**. We conclude that profit based incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. The results showed an adjusted R-square of 0.4609. This suggests that 46.09 percent of the variations in effective corporate tax rate during the study period are due to changes in profit based incentive. Nevertheless, there are 53.91 percent of changes in effective corporate tax rate that is attributable to other variables.

The findings support the argument that dynamics in effective corporate tax rate are consistent with optimal tax theory (Mirrlees, 1971). The optimal tax theory proposes that countries should compete vigorously to lure businesses and investor by offering profit based incentive which is likely to drive ECTR to the bottom zero level. From the findings one is able to argue that profit based incentive though not an obligation of a firm but it provides an opportunity to minimize tax base at corporate level. Business executives should therefore put in place tax optimisation strategy so at to benefit from fiscal incentives that have components relating to profit based incentive.

4.3.3.2 Capital Investment Incentive and Effective Corporate Tax Rate

The second hypothesis of the study was on the relationship between capital investment incentive and effective corporate tax rate for manufacturing firms in Kenya. The null hypothesis **(H_{02})** was framed that capital investment incentive did not have significant effect on effective corporate tax rate for manufacturing firms in Kenya. The study was to accept the null hypothesis when the p-value of the model is greater than 0.05. To test this hypothesis effective corporate tax rate was regressed against capital investment incentive. The panel regression results are shown in table 4.28 below.

Table 4.28 : Test of Hypothesis H_{02}

Source	SS	df	MS	Number of obs	=	2484

Mode	0.1559	12	0.0130	F(14, 2471)	=	34.68
Residual	0.9260	2471	0.0004	Prob > F	=	0.0000
Total	1.0819	2483	0.0044	R-squared	=	0.1441
				Adj R-squared	=	0.1400
				Root MSE	=	0.0194

Source: Research Data (2023)

From table 4.28 above the results had F –statistic (14, 2471) of 34.68 with p-value of 0.000. Since 0.0000 is less than 0.05 we fail to accept the null hypothesis, **H_{02}**. We conclude that capital investment incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. The results further showed an adjusted R-square of 0.1400. This suggests that 14.00 percent of the variations in effective corporate tax rate in the study period are due to changes in capital investment incentive. Nevertheless, there are 86.00 percent of changes in effective corporate tax rate that is attributable to other variable outside this relationship.

The outcome in the current study demonstrated that capital expenditure deduction offers tax maximization benefit to reduce effective corporate tax rate. The financial position from this findings is that capital investment incentive is an imperative fiscal instrument. Thus, when functionally utilised it has substantial influence on effective tax liability at firm level. The results support optimal corporate taxation theory. The interest of optimal corporate taxation is to remove burdensome losses from the economy so as to increase efficiency and shrink misallocation of resources.

The findings are in congruence to Congressional Budget Office (2018) who estimated effective tax rate for different types of intangible assets. It was established that purchased software reduced effective tax rate because of applicable cost recovery from taxable income. The study has improved on this conceptual and contextual gaps by applying computer software deduction as an indicator of capital investment incentive for manufacturing firms in Kenya. The shared assertion is that capital

investment incentive framework may need constant strategic reforms to respond to dynamic effective corporate tax rate requirements.

The results resonate with Calitz *et al* (2020) cost-benefit analysis of depreciation allowances in South Africa. The results showed that ECTR varied substantially across sectors due to depreciation allowances. The study examined the effect of incentives on effective tax rate at individual project while this study investigated at corporate level. The common contention is that capital investment incentive has strategic role in determining effective corporate tax rate requirements.

4.3.3.3 Custom Duty Incentive and Effective Corporate Tax Rate

The third hypothesis was to establish relationship between custom duty incentive and effective corporate tax rate for manufacturing firms in Kenya. The null hypothesis **(H_{03})** was framed that custom duty incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya. The study was to accept the null hypothesis when the p-value of the model is greater than 0.05. To test this hypothesis effective corporate tax rate was regressed against custom duty incentive. The panel regression results are shown in table 4.29 below.

Table 4.29 : Test of Hypothesis H_{03}

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Mode	0.3842	12	0.0320	F(14, 2471)	=	113.40
Residual	0.6977	2417	0.0003	Prob > F	=	0.0000
Total	1.0819	2483	0.0004	R-squared	=	0.3551
				Adj R-squared	=	0.3520
				Root MSE	=	0.0168

Source: Research Data (2023)

The details in table 4.29 above applies and since p-value of 0.0000 is less than 0.05 we failed to accept the null hypothesis, **H_{03}**. We conclude that custom duty incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. The results further show an adjusted

R-square of 0.3520. This suggests that 35.20 percent of the variations in effective corporate tax rate in the study period are due to changes in custom duty incentive. Nevertheless, there are 64.80 percent of changes in effective corporate tax rate that is attributable to other variable outside this relationship.

The findings revealed an increase in custom duty incentive had a negative important direct impact on effective corporate tax rate. The findings showed that firms apply custom duty incentive to reduce effective corporate tax rate for manufacturing firm in Kenya. This concurs with Kuria (2018) who revealed that custom duty incentive had significant effect on performance of EPZ firms in Kenya. This empirical evidence support the argument that policy makers need to implement strategic investment incentives targeting specific industry. This go will along way as a positive contributor to economic growth as envisaged in the Kenya Vision 2030.

The results agrees with Haris et al (2021) pointed out that custom duty incentive allows eligible firms preferential rates and refund of duty paid on imported material used in production of export goods in Ethiopia. The antithesis was that there is need for strategic improvement in tax policy so as to reduce the scope of investment incentives. Nevertheless, it is evident that use of custom duty incentive impacts effective corporate tax rate.

The findings concurs with Ghazanchyan et al (2018) who reviewed cost-benefit of fiscal incentives in attracting capital and in supporting business diversification strategy in Cambodia. It is instructive to note that custom relief reduce taxable profit realised from goods produced and exported. Similarly, it agrees with Oluwole et al (2020) who examined effect of tax incentives on growth of manufacturing firms in Nigeria. The results established that an increase in custom incentive increases return on asset.

In the same vein Undie *et al* (2020) surveyed impact of tax planning and incentives on profitability of 54 companies in free trade zones of Nigeria. The results established that import, export and excise

duties are statistically significant in predicting firm profitability. The current study has revealed that custom duty incentive had statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

4.3.3.4 Investment Incentives, Corporate Performance and Effective Corporate Tax Rate

The fourth hypothesis was to establish the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The null hypothesis **(H_{04})** was framed that corporate performance did not have a significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The study tested the null hypothesis, **H_{04}** using model 3.4 . The study was to fail to reject the null hypothesis when the p-value of the model is greater than 0.05. The analysis of variance for model 3.4 are shown in table 4.30 below.

Table 4.30 : Test of Hypothesis H_{04}

Source	**SS**	**df**	**MS**	**Number of obs**	=	**2484**
Model	0.6537	15	0.0436	**F(15, 2468)**	=	251.14
Residual	0.4282	2468	0.0002	**Prob > F**	=	0.0000
Total	1.0819	2483	0.0004	**R-squared**	=	0.6042
				Adj R-squared	=	0.6018
				Root MSE	=	0.0132

Source: Research Data (2023)

From table 4.30 above the analysis of variance (ANOVA) has F –statistic (14, 2469) of 251.14 with p-value of 0.000. Since 0.0000 is less than 0.05 we fail to accept the null hypothesis, **H_{04}**. We conclude that corporate performance had a statistical significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results further show an adjusted R-square of 0.6018. This suggests that 60.18 percent of the variations in effective corporate tax rate in the study period are due to changes in investment incentives.

Nevertheless, there are 39.82 percent of changes in effective corporate that is attributable to other variable outside this model.

The findings did not support Carreras *et al* (2017) who found that, medium sized firms face lowest ECTR compared to small firms in South Africa. The results showed non linearity relationship between profitability and ECTR. This current study improves on this empirical findings having determined that corporate performance had intervening effect of corporate performance on the relationship between investment incentives and Effective corporate tax rate for manufacturing firms in Kenya.

The findings differ with Michael (2020) who examined the moderating effect of profitability on the relationship between ownership structure and tax avoidance in Nigeria. This was a different conceptual approach. However, it has similarity to the current study such that construct of corporate performance have a conditional effect on variables that affect effective corporate tax rate.

In contrast the findings of this did not support Sunarto et al (2021) whose results showed that profitability had no mediating effect on the relationship between corporate governance and effective corporate tax rate in Indonesia. On the contrary the findings support Nathania, et al (2021) who established that profitability had intervening effect on the relationship between firm size and ECTR. Although the methodology and context vary, the key conceptualisation was to analyse the intervening effect of corporate performance in functional relationship of variables that influence effective corporate tax rate.

The findings support the optimal tax theory which argues that variation in ECTR across firms implies that there exists heterogeneity. Therefore a tax system that applies flat statutory tax rate to all sectors fails to embrace tax optimality principle. Heterogeneity exist because of varying abilities; corporate

capacity differential; and varying elasticity to factor inputs. It could be argued that a good tax system should have a differentiated way of taxing corporate profits.

In contrast to political power theory Belz, Hagen and Steffens (2019) argues that large firms are subject to large public visibility and scrutiny. This cause them to be exposed to tax authorities actions. The outcome is that there is positive size-ECT relationship. Bachas, Brockmeyer, Dom and Semelet (2023) showed that the relationship between firm power and tax liability is necessary. This is because some fiscal incentives are deducted from tax breaks while others are deducted from the tax liability itself.

4.3.3.5 Investment Incentives, Inflation and Effective Corporate Tax Rate Testing

The fifth hypothesis was to establish the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The null hypothesis **(H_{05})** was framed that inflation did not have a significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The ANOVA results based on model 3.5 are shown in table 4.31 below

Table 4.31 : Test of Hypothesis H_{05}

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Model	0.6532	18	0.0364	**F(18, 2465)**	=	208.63
Residual	0.4287	2465	0.0002	**Prob > F**	=	0.0011
Total	1.0819	2483	0.0004	**R-squared**	=	0.6037
				Adj R-squared	=	0.6008
				Root MSE	=	0.01319

Source : Research Data (2023)

From table 4.31 above the analysis of variance (ANOVA) has F –statistic (18, 2465) of 208.63 with p-value of 0.0011. Since 0.0011 is less than 0.05 we fail to accept the null hypothesis, **H_{04}**. We conclude that inflation has statistical significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results

further show an adjusted R-square of 0.6008. This suggests that 60.08 percent of the variations in effective corporate tax rate in the study period are due to changes in interactive product effect of investment incentives and inflation. Nevertheless, there are 39.92 percent of changes in effective corporate that is attributable to other variable outside this model.

The import of this findings is that in an economy where significant share of government income is tax, inflation has real effects, when the tax system is not inflation neutral. According to Beer et al (2023) neutrality means that the impact of tax system on investment incentives and effective tax rate should not change with inflation. It is argued that, the main tax distortion due to inflation include failure to adjust parameters of the fiscal policy in line with inflation; timing difference effect as results of lag within which refunds are made; and taxing nominal rather real corporate profits.

Tax system that is not sensitive to inflationary pressure has tremendous impact on effective corporate tax rate. Inflation erodes the value of investment incentives. Therefore, inflation should be part of structural components of tax system. The importance is that indexing tax and fiscal parameter is important. That indexing will entail annual inflation adjustment could be sufficient. Without inflation adjustment, losses carried forward from the previous year become meaningless in determining the actual tax to be paid. The government should develop a policy for inflation indexation of the corporate tax system. This will entail developing an inflation adjustment unit to be incorporated into corporate profits. To achieve this there is need for inflation-tax adjustment framework to be part of tax administration. The essence is to entrench and have tax system that has inflation neutrality.

4.3.3.6 Summary of Hypotheses Testing

The findings were used to test the five study hypotheses using ANOVA results derived using panel regression. A summary of the five study hypotheses as shown in table 4.32 below

Table 4.32 : Summary for Test of Hypothesis

Hypothesis	Panel Results	Decision	Conclusion
H_{01}: Profit based incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.	β =-0.6515 P=0.000< 0.05	Rejected **H_{o1}**	Profit based incentive had a significant effect on effective corporate tax rate for manufacturing firms in Kenya.
H_{o2} : Capital investment incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.	β =-0.2498 P=0.000< 0.05	Rejected **H_{o2}**	Capital investment incentive had a significant effect on effective corporate tax rate for manufacturing firms in Kenya.
H_{03} : Custom duty incentive does not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya.	β =-0.5796 P=0.000< 0.05	Rejected **H_{o3}**	Custom duty incentive had a significant effect on effective corporate tax rate for manufacturing firms in Kenya.
H_{04} : Corporate performance does not have significant intervening effect on the relationship between investment incentives and effective corporate	β =-0.6515 P=0.000< 0.05	Rejected **H_{o4}**	Corporate performance had a significant intervening effect on the relationship between investment incentives and effective corporate
H_{05} : Inflation does not have significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya	**β_4** =-1.675s P=0.000< 0.05 **β_5** = -2.42 P=0.000< 0.05 **β_6** =0.374 P=0.674>0.05	Rejected **H_{o5}**	Inflation had a significant partial moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya

Source: Research Data (2023)

From table 4.32 above, the results of panel regression failed to accept **H_{01}**. Therefore, it was concluded that profit based incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. Similarly, the results of panel regression failed to accept **H_{02}**. Therefore, it was concluded that capital investment incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya. The results of panel regression failed to

accept **H_{03}**. Therefore, it was concluded that custom duty incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

Further, the results of panel regression failed to accept **H_{04}**. Therefore, it was concluded that corporate performance had a significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results of panel regression failed to accept **H_{05}**. It was concluded that inflation had a significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter has three sections. The first section presents summary of the study findings and consequential interpretations on the relationship between investment incentives and effective corporate tax rates. The second provides conclusion based on the study objectives. The third section gives recommendation while the fourth section is on contribution to knowledge. The fifth section provides suggestion for further research.

5.2 Summary

The study background highlighted importance of effective corporate tax rate as a key barometer that firms use to estimate the corporate tax burden imposed by national tax system. Firms strategise to reduce effective corporate tax rate by utilising investment incentives. Investment incentives are fiscal policy instruments provided by government to attract and retain business enterprises. The investment incentives considered in this study were profit based, capital investment and custom duty. Analysis of background literature pointed out that effective corporate tax rate vary across firms depending on level of benefit derived from investment incentives.

Review of literature indicated that unfavourable effective corporate tax rate is a concern to business enterprises since it impacts firm operations, discourages investments and cause firms to use available cash balances to pay corporate income tax. Therefore, the background presented in this thesis culminated to the statement of the problem. Study objectives and hypotheses were formulated to address the research problem. The theories underpinning this study were optimal corporate taxation, political power, neoclassical investment and inflation tax. Review of empirical literature pointed out that profit-based incentive, capital investment incentive, custom duty incentive, corporate performance

and inflation affect effective corporate tax rate. Theories and empirical literature was used to develop a conceptual framework to show the functional interrelationship among variables. The study adopted positivist philosophy and longitudinal design. Panel data for the period 2010 to 2020 was collected from firms registered with Kenya Association of Manufacturers. Descriptive and inferential statistics were used in data analysis. Panel data regression was applied to estimate empirical, intervening and moderating models. The panel regression analysis was carried out at significance level of 5 percent level.

The study sought to establish the effect of profit based incentive on effective corporate tax rate for manufacturing firms in Kenya. The panel data regression showed that profit based incentive had statistical significant negative effect on effective corporate tax rate for manufacturing firms in Kenya. The findings showed that firms utilised profit based incentive to reduce effective corporate tax rate. The analysis failed to accept the null hypothesis that profit based incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya. Based on the findings, the study concluded that profit based incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

The second objective of the study was to establish the effect of capital investment incentive on effective corporate tax rate for manufacturing firms in Kenya. The results showed that capital investment incentive had a significant negative effect on effective corporate tax rate for manufacturing firms in Kenya. The findings showed that by exploiting capital investment incentive, effective corporate tax rate was significantly reduced at firm level. The second null hypothesis was that capital investment incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya. The analysis failed to accept this second null hypothesis. It was concluded that capital

investment incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

Thirdly, the study was to establish the effect of custom duty incentive on effective corporate tax rate for manufacturing firms in Kenya. The panel data regression show that custom duty incentive had a significant negative effect on effective corporate tax rate for manufacturing firms in Kenya. The findings shows that custom duty incentive allows eligible firms preferential rates and allow refunds of duty paid on imported material used in production of export goods. The third null hypothesis was that custom duty incentive did not have a significant effect on effective corporate tax rate for manufacturing firms in Kenya. The outcomes of the analysis failed to accept the third null hypothesis. It was concluded that custom duty incentive had a statistical significant effect on effective corporate tax rate for manufacturing firms in Kenya.

The fourth objective of the study was to determine the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results revealed that corporate performance had statistical significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The outcome of the analysis failed to accept the fourth null hypothesis. Therefore, corporate performance had statistical significant intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya.

Inclusion of corporate performance strengthened the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The joint influence of investment incentives and corporate performance was higher than the individual results on effective corporate tax

rate for manufacturing firms in Kenya. The thrust of the finding is that to achieve a targeted level effective corporate tax rate, corporate performance strategy must interact favourably with fiscal policy.

Lastly, the study was to determine the moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The fifth null hypothesis was that inflation does not have a significant moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The panel data regression shows that inflation had moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results showed that the interactive product effect of investment incentives and inflation had an increased level of determination.

5.3 Conclusion

Based on the findings it was established that investment incentives determines effective corporate tax rate for manufacturing firms in Kenya. This supports the argument that dynamics in effective corporate tax rate should be core when designing investment incentive framework. From the findings one is able to argue that investment incentives are fiscal instruments that have statistical significant influence on effective tax liability at firm level. The results support the argument that investment incentives combined with appropriate corporate tax strategy is able to reduce effective corporate tax rate. Reduction in effective corporate tax rate enables firms to use cash balance to build desired level of capital stock. Business executives should therefore put in place tax optimisation strategy so as to benefit from fiscal incentives. From policy perspective there is need to develop a harmonised and consolidated investment incentives framework.

Based on the findings it can be concluded that, profit based incentive has an inverse negative significant causality effect on effective corporate tax rate. The findings support the argument that dynamic corporate tax strategy is critical in facilitating tapping into opportunities offered by profit based incentive which is likely to drive effective corporate tax rate down to the bottom. The profit based incentive impacts amount of tax levied and paid for subsequent years. From the findings one is able to argue that profit based incentive is a significant fiscal policy tool that can be utilised to reduce effective tax liability at firm level. It was observed that profit based incentive though not an obligation of the firm but it provides an opportunity to reduce tax base at firm level. Policy makers and corporate executives should understand that profit based incentive is a fiscal instrument that impact firm operations.

In light of second objective, the findings showed that there was converse connection between capital investment incentive and effective corporate tax rate. This implies that manufacturing firms utilise capital investment incentive to lower effective corporate tax rate. The analysis point out that tax systems that have capital deduction translate into substantial difference in effective corporate tax rate across firms. It can be derived that use of capital investment incentive cause variation in corporate tax payable. Manufacturing firms should strategise to utilise tax opportunity arising from capital expenditure deductions to reduce effective corporate tax rate.

Based on the findings relating to the third objective, the estimates show that custom duty incentive had a negative significant direct effect on effective corporate tax rate. The findings point out that custom duty incentive allows eligible firms preferential rates and refund of duty paid on imported material used in production of export goods. The import of these findings are that manufacturing firms in Kenya consider custom duties as part of structured fiscal policy that provide tax reliefs from corporate-level taxes on profits. The essence of custom duty incentive is to reduce corporate tax

liability on exporters of manufactured goods. There is need for a robust custom duty framework to ease the corporate tax burden arising from imported goods used in manufacturing. This will positively contribute to economic growth as envisaged in the Kenya Vision 2030. At the same time corporate executives should strategise to take advantage of custom duty incentive (remissions, drawbacks, rebates and refunds).

With regard to the fourth objective, the findings established corporate performance had intervening effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. The results further showed that when corporate performance is introduced in the model, investment incentives still remain statistically significant. The joint influence of investment incentives and corporate performance was higher than the individual effect on effective corporate tax rate for manufacturing firms in Kenya. The implication is that corporate performance is a critical decision variable for any desired level of effective corporate tax rate. This is because as manufacturing firms plan to benefit from fiscal investment incentives, corporate performance remain an important element of decision framework that facilitate maximizing returns and help in strategizing for competitive environment. The thrust of the finding is that fiscal policy must interact favourably with corporate performance strategy for any desired level of effective corporate tax rate.

Analysis based on the fifth objective revealed that inflation had moderating effect on the relationship between investment incentives and effective corporate tax rate for manufacturing firms in Kenya. This is because as manufacturing firms plan to benefit from investment incentives, inflation as an important element of systematic risk tend to impact corporate tax planning. The thrust of the finding support the proposition that fiscal policy must interact favourably with monetary policy for any desired level of effective corporate tax rate. The import of this findings is that in an economy where significant share of government income is tax, inflation has real effects, when the tax system is not inflation neutral.

Neutrality means that the impact of tax system on investment incentives and effective tax rate should not change with inflation. Tax system that is not sensitive to inflationary pressure has tremendous impact on effective corporate tax rate. Inflation erodes the value of investment incentives. Without inflation adjustment, losses carried forward from the previous year become meaningless in determining the actual tax to be paid. To this achieve there is need for inflation-tax adjustment framework which should be part of corporate tax system.

5.4. Recommendation

In light of discussion of the findings and conclusions thereof this study makes recommendation for practical application and policy consideration.

5.4.1 Recommendation for Practical Application

From the findings, the study showed that investment incentives had statistical significant effect on effective corporate tax rate. Within the context of corporate finance, effective corporate tax rate therefore is the connection between fiscal policy and corporate policy. Hence, corporate managers should understand that effective corporate tax rate is an important component of financial management. There is need therefore for corporate executives to include effective corporate tax rate in the financial modelling. The model should make investment incentives as part of input variables and effective corporate tax rate as outcome variable. This is because effective corporate tax rate is important in calibrating the tax volume of companies and evaluating tax planning efficacy.

The findings of the study showed that profit based incentive, capital investment incentive and custom duty incentive had statistical significant effect on effective corporate tax rate. Therefore, corporate executives and finance experts should develop corporate tax strategy. The essence of the strategy is to

enable firms derive benefits and optimise tax saving opportunities from investment incentives as fiscal policy instruments. The intention of corporate tax strategy is to enable firms utilise available investment incentives as one sure way of deriving maximum benefits and minimisation of corporate tax payable. This is because investment incentives are legal provisions within the tax code that can be used to reduce actual tax paid in any given financial year.

Thirdly, the study found out that investment incentives, corporate performance and inflation had significant statistical effect on effective corporate tax rate for manufacturing firms in Kenya. It is therefore recommended that manufacturing firms should have a robust financial framework for monitoring and evaluation of how effective corporate tax rate responds to investment incentives, corporate performance and inflation. This framework will provide relevant data on the level of volatility and stability of effective corporate tax rate with a view to strategise on how to smoothen it. This is because volatility in effective corporate tax is a reflection of the impact of fiscal policy on corporate financial planning.

5.4.2 Recommendation for Policy Consideration

The findings of the study revealed that investment incentives had statistical negative significant effect on effective corporate tax rate for manufacturing firms in Kenya. From the findings one is able to argue that investment incentives influence reduction in tax base at firm level. However, the investment incentives are spread in various policy and legal regimes. It is therefore recommended that the National Treasury should develop a consolidated Fiscal Incentives Policy and Act. This will harmonise the existing investment incentives and provide one stop guiding legislative framework on how to apply and utilise investment incentives in Kenya.

Further, the findings point to the fact that fiscal policy and corporate policies are co-jointly important in supporting business investment and overall economic growth. Evidence showed that there is declining contribution of manufacturing sector to GDP in Kenya. In this regard, it is recommended that the National Treasury should reform and implement investment incentives. This is because investment incentives are critical components and constructs of improved tax competition environment within an economy. Part of the reform is to develop a systematic monitoring and evaluation (M&E) framework. The M & E framework will be able to provide feedback on the effect of investment incentives on manufacturing firms and how it impacts corporate tax environment in Kenya. The feedback will facilitate design, reform and promote continuous implementation of investment incentives as a fiscal policy intervention. The M & E will also provide data and information on stability of corporate tax regime

The findings of the study revealed that profit based incentive had statistical negative significant effect on effective corporate tax rate for manufacturing firms in Kenya. From the findings one is able to argue that although profit based incentive is not an obligation of the firm but it provides an opportunity to reduce tax base at firm level. It is recommended that the National Treasury should therefore design an appropriate profit based incentive programme as part of fiscal policy instrument for incentivising firms involved in manufacturing.

The findings showed capital investment incentive had statistical negative significant effect on effective corporate tax rate for manufacturing firms in Kenya. The findings showed that firms utilize capital investment deductions to reduce taxable income. The analysis indicate that tax systems that have capital investment incentive translate into substantial difference on effective corporate tax rate for manufacturing firms in Kenya. Therefore, the National Treasury should design fiscal policy that has capital investment incentive so as to provide tax advantage to manufacturing firms. Effective corporate

tax rate determine the useful life of assets. Reduced effective corporate tax rate allows firms to utilise available balances to maintain, replace and invest more in physical assets.

The estimates of the study show that custom duty incentive had a negative significant direct effect on effective corporate tax rate. This points out that custom relief reduce taxable profit realised from goods produced and exported. The findings support possible recommendation that policy makers need to design and implement robust strategic custom duty incentive policy tailored for manufacturing sector so as to positively contribute to economic growth as envisaged in the Kenya Vision 2030.

The findings established the intervening effect of corporate performance on the relationship between investment incentives and effective corporate tax rate for manufacturing firms. This support the optimal tax theory which argues that variation in ECTR across firms implies that there exists heterogeneity. Therefore a tax system that applies flat statutory tax rate to all sectors fails to embrace tax optimality principle. Heterogeneity exist because of varying abilities; corporate capacity differential; and varying elasticity to factor inputs. It could be argued that a good tax system should have a differentiated way of taxing corporate profits. Therefore, the National Treasury should consider develop a differentiated corporate tax framework. This will entail including provision for allowance for corporate equity.

Within the context of systemic risk it has shown that inflation moderates the effect of investment incentives on effective corporate tax rate for manufacturing firms in Kenya. Thus, government should consider the effect of inflation on manufacturing firms when formulating investment incentives. Tax system that is not sensitive to inflationary pressure has tremendous impact on effective corporate tax rate. Inflation erodes the value of investment incentives. Therefore, inflation should be part of structural components of tax issues. The importance is that indexing tax as a fiscal parameter is

important. That indexing will entail annual inflation adjustment could be sufficient. Without inflation adjustment, losses carried forward from the previous years become meaningless in determining the actual tax to be paid. The government should develop a policy for inflation indexation of the corporate tax system. This will entail developing an inflation adjustment unit to be incorporated into corporate profits. To achieve this the National Treasury should develop and implement corporate tax-inflation adjustment framework to be part of tax system in Kenya. The essence is to entrench and have tax system that is inflation neutrality.

5.5 Contribution to Knowledge

The study has contributed to finance theory by exploring the assertion that firms utilise investment incentives to minimise tax liability. It has also added to finance knowledge by showing intervening effect of corporate performance within the context of political power theory which asserts that firms exploit corporates power to lower effective corporate tax rate. The study confirms the contention that fiscal policy affects corporate operations within the background of neoclassical investment theory which is part of the imperatives of basic finance theory.

The study has also contributed to empirical understanding of moderating effect of inflation within the framework of inflation tax theory. Based on inflation tax theory, the study has confirmed the assertion of causality effect of inflation on effective corporate tax rate. This means further that unstable inflation may cause firms to pay more tax within the framework of inflation tax theory. The findings also add to empirical literature that inflation and effective corporate tax rate are individually random walks and move together.

The study has made a contribution to existing empirical literature on effective corporate tax rate. The outcome of the study has added to the growing knowledge framework in financial management on the

relationship between investment incentives and effective corporate tax rate. The study also fills knowledge and conceptual gaps on the intervening effect of corporate performance and moderating effect of inflation on the relationship between investment incentives and effective corporate tax rate. In addition, there is a contribution to empirical knowledge on the understanding that firms have the ability to manage results in order to optimise tax savings.

In a macroeconomic outlook, investment incentives play a critical role in creating a competitive business environment whose focus should be on lessening effective corporate tax rate within an economy. The finding of the study will go a long way in adding to empirical literature, filling knowledge gaps and expand the range of statistical information available on effective corporate tax rate for both corporate and macroeconomic tax analysis. The study helps in strengthening the assertion that fiscal policy instruments impact prudent financial management not only for sustainable economic growth but also for private sector development.

5.6 Suggestions for Further Research

The analysis of variance showed that there are changes in effective corporate tax rate that are affected by variables outside the study models. This implies other variations in effective corporate tax rate are attributed to other variables. Therefore, there is need for further investigation on other possible investment incentives that influence effective corporate tax rate.

The antithesis of this study is that investment incentives are sometimes utilised by firms as avenues for tax avoidance. Hence, the need for further research on the antithesis that investment incentives are sometimes utilised by firms as avenues for tax avoidance and may cause unfavourable tax expenditures. In addition, further research may focus on effective corporate tax rate for non-manufacturing sectors in the economy. This is to examine the level of effective corporate tax rate

arising from heterogeneous characteristics that are sector specific. The methodology could also differ such that instead of using panel regression one may decide to carry out comparative analysis based on difference-in difference analysis.

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APPENDIX I : SUMMARY OF INCENTIVES IN KENYA

Type of Incentive	Indicator	Description
Profit based incentive	Corporate tax holiday	Zero percent corporate tax rate for first ten years for EPZ firms from date of commencing operations and further 25 percent for the next 10 years.
	Reduced Corporate tax rate for newly listed companies at NSE	Corporate tax rate of 27 percent for 20 percent of shares listed for the first three years after listing.
		Corporate tax rate of 25 percent for 30 percent of shares listed for the first five years after listing
		Corporate tax rate of 20 percent for 40 percent of shares listed for the first five years after listing
		Corporate tax rate of 25 percent for listed companies for first five years after listing
	Loss Carryforward	Losses carryover from previous period are offset from current and future profits for a subsequent period of nine years
Capital investment incentive	Industrial building deduction	10 percent granted deduction to an investor who incurs capital expenditure on industrial building
	Wear and tear	Rate of 37.5 percent on heavy earth moving self-propelling equipment (Class 1-machinery)
		30 percent on computers, photocopiers, scanners and similar electronic machinery (Class 2-machinery)
		25 percent on self-propelling machines (Class 3 - machinery)
		12.5 percent on non-self-propelling machines (Class 4-machinery)
	Farm work deduction	100 percent granted to investors who incur cost on farm work structure constructed to enhance the operations of a firm.

Type of Incentive	Indicator	Description
	Computer Software deduction	20 percent deduction is allowed to an investor who purchases computer software for business operations.
	Investment deduction	100 percent deduction on investments within Nairobi, Mombasa and Kisumu.
		150 percent deduction for investments worth Kenya shillings 200 Million outside Nairobi, Mombasa and Kisumu.
		100 percent investment deduction for manufacturing of export goods under bonded warehouses.
		100 percent investment deduction for firms in Export Processing Zones.
Custom duty incentive	Remission	Waivers of duty on goods imported for manufacturing of goods for export
	Drawback	Refund of all or part of import duty paid in respect of manufactured goods that have been exported
	Rebate	Amount allowed in cases where firms have imported goods into Kenya and have been damaged before they are delivered from custom control
	Refund	Repayment of duties already collected in respect of goods imported for manufacturing purposes.

Source: Research Data (2022)

APPENDIX II : CATEGORIES FOR COMPANIES REGISTERED BY KAM

S/No.	Sub-Sector	Number of Firms	Proportion of Population
1.	Building, mining and construction	58	4.39
2.	Chemical and allied	113	8.55
3.	Fresh produce	21	5.07
4.	Food and beverage	270	1.59
5.	Energy, electrical and electronics	67	20.42
6.	Leather and foot wear	18	1.36
7.	Metal and allied	114	8.62
8.	Motor vehicle and accessories	77	5.82
9.	Paper and boards	86	6.51
10.	Pharmaceuticals and medical equipment	35	2.65
11.	Plastics and rubber	108	8.17
12.	Textile and apparels	85	6.43
13.	Timber and, wood and furniture	40	3.03
14.	Services and consultancy	230	17.40
	Total	**1,322**	**100**

Source: Kenya Association of Manufacturers (2020)

APPENDIX III : SAMPLING TABLE

Population	Margin of Error			
	5 Percent	3 Percent	2 Percent	1 Percent
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1,000	278	516	706	906
2,000	322	696	1091	1655
5,000	357	879	1622	3288
10,000	370	964	1936	4899
100,000	383	1056	2345	8762
1,000,000	384	1066	2395	9513
10,000,000	384	1067	2400	9595

Source: SAUNDERS *et al* (2012)

APPENDIX IV: RESEARCH DATA

A) Summary of Descriptive Statistics

Year	Effective Corporate Tax Rate	Profit Based Incentive	Capital Investment Incentive	Custom Duty Incentive	Corporate Performance	Inflation
	%		Kes. Million		%	%
2010	37.3557	542.5103	656.3136	2798.7363	35.2348	**4.1**
2011	29.5672	453.3914	989.7122	4623.3648	27.9945	14.0
2012	29.4783	510.7774	1474.4729	4961.2635	26.8569	9.4
2013	31.3625	537.1489	1674.0046	4761.0092	24.5689	5.5
2014	21.2595	375.4695	2989.0038	5096.1544	17.5065	6.9
2015	15.9821	925.9607	2420.9404	6382.8351	17.0548	6.6
2016	15.9684	963.3731	1353.9116	6403.2691	16.3435	6.3
2017	12.9567	884.3983	2691.4894	6474.2510	13.8772	8.0
2018	9.8790	1082.1998	1422.4328	5709.1890	15.7406	4.7
2019	22.2619	2185.9871	2239.4570	4916.1530	15.1631	5.3
2020	19.4296	1159.2653	2923.5383	3693.0912	13.6114	5.4

Source : Research Data (2023)

B) Panel Regrssion Results

Panel Regression for Model 3.1

Source	SS	df	MS	Number of obs	=	2484
Model	0.649674	14	0.04640527	F(14, 2469)	=	265.07
Residual	0.432251	2469	0.00017507	Prob > F	=	0.0000
Total	1.081924	2483	0.00043573	R-squared	=	0.6005
				Adj R-squared	=	0.5982
				Root MSE	=	0.01323

Effective Corporate Tax Rate	Coef.	Std. Err.	t	P>t	95% Conf.	Interval
Profit Based Incentive	-0.55477	0.0143103	-38.77	0.0000	-0.58283	-0.5267
Capital Investment Incentive	-0.14191	0.0164874	-8.61	0.0000	-0.17424	-0.10958
Custom Duty Incentive	-0.4885	0.0171526	-28.48	0.0000	-0.52214	-0.45487
Year						
2010	0.031807	0.0133041	2.39	0.017	0.005718	0.057895
2011	0.027367	0.0132985	2.06	0.04	0.00129	0.053444

	2012	0.029632	0.0132942	2.23	0.026	0.003563	0.055701
	2013	0.033269	0.0132975	2.5	0.012	0.007193	0.059344
	2014	0.029159	0.0132971	2.19	0.028	0.003085	0.055234
	2015	0.029309	0.0132953	2.2	0.028	0.003238	0.05538
	2016	0.026899	0.013297	2.02	0.043	0.000824	0.052973
	2017	0.019379	0.0132934	1.46	0.145	-0.00669	0.045447
	2018	0.026492	0.0132899	1.99	0.046	0.000432	0.052553
	2019	0.028100	0.0132954	2.11	0.035	0.002028	0.054171
	2020	0.023861	0.0132896	1.8	0.073	-0.0022	0.049921
Constant		-0.02787	0.0132667	-2.1	0.036	-0.05388	-0.00185

Source : Research Data (2023)

Panel Regression for Model 3.2

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Mode	0.391089	14	0.0279349	F(14, 2469)	=	104.71
Residual	0.65867	2469	0.00026678	Prob > F	=	0.0000
Total	1.049759	2483	0.00042278	R-squared	=	0.3726
				Adj R-squared	=	0.369
				Root MSE	=	0.01633

Corporate Performance		**Coef.**	**Std. Err.**	**t**	**P>t**	**95% Conf. Interval**	
Profit Based Incentive		0.641409	0.017665	36.31	0.0000	0.60677	0.676049
Capital Investment Incentive		0.040171	0.0203525	1.97	0.049	0.000261	0.080081
Custom Duty Incentive		-0.25057	0.0211736	-11.83	0.0000	-0.29209	-0.20905
Year							
	2010	0.0004800	0.016423	0.03	0.977	-0.03172	0.032684
	2011	0.0024298	0.016416	0.15	0.882	-0.02976	0.03462
	2012	0.0039094	0.0164107	0.24	0.812	-0.02827	0.03609
	2013	-0.000161	0.0164148	-0.01	0.992	-0.03235	0.032027
	2014	-0.0055476	0.0164144	-0.34	0.735	-0.03773	0.02664
	2015	-0.0013131	0.0164121	-0.08	0.936	-0.0335	0.03087
	2016	0.0001742	0.0164143	0.01	0.992	-0.03201	0.032361
	2017	-0.0070093	0.0164098	-0.43	0.669	-0.03919	0.025169
	2018	-0.0013255	0.0164054	-0.08	0.936	-0.0335	0.030844
	2019	-0.0009434	0.0164122	-0.06	0.954	-0.03313	0.03124
	2020	-0.0045748	0.0164051	-0.28	0.78	-0.03674	0.027594
Constant		0.0009089	0.0163768	0.06	0.956	-0.0312	0.033023

Source : Research Data (2023)

Panel Regression for Model 3.3

Source	SS	df	MS	Number of obs	=	2484
Model	0.197158	12	0.01642982	F(12, 2471)	=	45.89
Residual	0.884766	2471	0.00035806	Prob > F	=	0.0000
Total	1.081924	2483	0.00043573	R-squared	=	0.1822
				Adj R-squared	=	0.1783
				Root MSE	=	0.01892

Effective Corporate Tax Rate	Coef.	Std. Err.	t	P>t	95% Conf.	Interval
Corporate Performance	-0.30933	0.0187583	-16.49	0.000	-0.34611	-0.27255
Year						
2010	0.044663	0.0189771	2.35	0.019	0.00745	0.081875
2011	0.038916	0.0189733	2.05	0.04	0.00171	0.076121
2012	0.039179	0.0189719	2.07	0.039	0.001977	0.076382
2013	0.042143	0.0189736	2.22	0.026	0.004938	0.079349
2014	0.033987	0.0189788	1.79	0.073	-0.00323	0.071203
2015	0.031695	0.0189732	1.67	0.095	-0.00551	0.0689
2016	0.028328	0.0189716	1.49	0.136	-0.00887	0.06553
2017	0.022433	0.0189746	1.18	0.237	-0.01478	0.059641
2018	0.03100	0.0189704	1.63	0.102	-0.0062	0.0682
2019	0.037397	0.0189716	1.97	0.049	0.000195	0.074599
2020	0.035886	0.0189745	1.89	0.059	-0.00132	0.073094
Constant	-0.03573	0.0189318	-1.89	0.059	-0.07285	0.001399

Source : Research Data (2023)

Panel Regression for Model 3.4

Source	SS	df	MS	Number of obs	=	2484
Model	0.653669	15	0.04357796	F(15, 2468)	=	251.14
Residual	0.428255	2468	0.00017352	Prob > F	=	0.0000
Total	1.081924	2483	0.00043573	R-squared	=	0.6042
				Adj R-squared	=	0.6018
				Root MSE	=	0.01317

Effective Corporate Tax Rate	Coef.	Std. Err.	t	P>t	95% Conf.	Interval
Profit Based Incentive	-0.50481	0.0176453	-28.61	0.0000	-0.53941	-0.47021
Capital Investment Incentive	-0.13878	0.0164273	-8.45	0.0000	-0.17099	-0.10657
Custom Duty Incentive	-0.50802	0.0175542	-28.9	0.0000	-0.54244	-0.4736
Corporate Performance	-.0778858	0.016231	-4.8	0.0000	-0.10971	-0.04606
Year						
2010	0.031844	0.0132452	2.4	0.016	0.005871	0.057817

	2011	0.027556	0.0132396	2.08	0.038	0.001594	0.053518
	2012	0.029937	0.0132354	2.26	0.024	0.003983	0.05589
	2013	0.033256	0.0132385	2.51	0.012	0.007296	0.059216
	2014	0.028727	0.0132385	2.17	0.03	0.002767	0.054687
	2015	0.029206	0.0132364	2.21	0.027	0.003251	0.055162
	2016	0.026912	0.0132381	2.03	0.042	0.000953	0.052871
	2017	0.018833	0.0132350	1.42	0.155	-0.00712	0.044786
	2018	0.026389	0.0132310	1.99	0.046	0.000444	0.052334
	2019	0.028026	0.0132365	2.12	0.034	0.00207	0.053982
	2020	0.023505	0.0132309	1.78	0.076	-0.00244	0.04945
Constant		-0.0278	0.0132079	-2.1	0.035	-0.0537	-0.0019

Source : Research Data (2023)

Panel Regression for Model 3.5

Source	**SS**	**df**	**MS**	**Number of obs**	**=**	**2484**
Model	0.653182	18	0.03628791	F(18, 2465)	=	208.63
Residual	0.428742	2465	0.00017393	Prob > F	=	0.0000
Total	1.081924	2483	0.00043573	R-squared	=	0.6037
				Adj R-squared	=	0.6008
				Root MSE	=	0.01319

Effective Corporate Tax Rate	**Coef.**	**Std. Err.**	**t**	**P>t**	**95% Conf. Interval**	
Profit Based Incentive	-0.55014	0.0143421	-38.36	0.0000	-0.57826	-0.52202
Capital Investment Incentive	-0.14158	0.0166751	-8.49	0.0000	-0.17428	-0.10888
Custom Duty Incentive	-0.4929	0.0172648	-28.55	0.0000	-0.52676	-0.45905
Inflation Rate	0.009826	0.019729	0.5	0.619	-0.02886	0.048513
Inflation Profit Based Prod	-1.67532	0.6543265	-2.56	0.011	-2.9584	-0.39223
Inflation Capital Investment Prod	-2.42701	0.8378264	-2.9	0.004	-4.06993	-0.7841
Inflation Custom Duty Prod	0.374422	0.8910175	0.42	0.674	-1.3728	2.121642
Year						
2010	0.032204	0.0132624	2.43	0.015	0.006197	0.05821
2011	0.027823	0.0132575	2.1	0.036	0.001826	0.05382
2012	0.030159	0.0132526	2.28	0.023	0.004172	0.056146
2013	0.033551	0.0132557	2.53	0.011	0.007558	0.059544
2014	0.028737	0.013263	2.17	0.03	0.002729	0.054745
2015	0.029222	0.0132648	2.2	0.028	0.00321	0.055233
2016	0.027251	0.0132565	2.06	0.04	0.001256	0.053246
2017	0.019868	0.0132587	1.5	0.134	-0.00613	0.045868
2018	0.0265	0.0132562	2	0.046	0.000505	0.052495

Effective Corporate Tax Rate		Coef.	Std. Err.	t	P>t	95% Conf.	Interval
	2019	0.028208	0.0132575	2.13	0.033	0.002211	0.054205
	2020	0.02424	0.0132479	1.83	0.067	-0.00174	0.050218
Constant		-0.02818	0.0132251	-2.13	0.033	-0.05412	-0.00225

Source : Research Data (2023)

APPENDIX V :RESEARCH LICENSE

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