AN ISLAMIC ECONOMICS PERSPECTIVE ON THE DETERMINANTS OF INDEBTEDNESS AS MEASURED BY DEBT-TO-GDP RATIO; A PANEL REGRESSION ANALYSIS OF THE DATA FROM CERTAIN OIC AND NON-OIC MEMBER COUNTRIES

Thesis

Submitted to meet Graduation requirements of

Master's Degree (M.A in Economics & Business)

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ABSTRACT

This thesis aims to define common causes of indebtedness, differentiate within common causes of indebtedness, assess whether fiscal and monetary policies are on a sustainable path to control debt distress and levels, and lastly, evaluate whether the ethical foundation of Islamic economics and finance provide a better way of handling the phenomenon in terms of fiscal, monetary policies and speculative investments. To accomplish these objectives, data of specified countries are taken from the World Bank, IMF, and Central Banks in terms of Debt-to-GDP ratio as the dependent variable, and FDI (net inflows), Government revenue, Government Expenditure, Export, Stocks traded value (%GDP), Interest rate, GDP growth, Inflation, and Import as independent variables from 1990 to 2021, 32 years and 12 cross sections, establishing 384 observations for the study, the method consists pre-estimation tests of endogeneity and heteroskedasticity to validate basic assumptions of Ordinary Least Square regression and main separated estimation of Pooled OLS group wise for OIC, non-OIC countries with the adjustments by Heteroskedasticity Linear Regression with maximum Likelihood option. The study found that all the variables except inflation are significantly impacting Debt-to-GDP ratio regardless of separated estimation, however, the difference is that interest rate and stocks traded have a negative and significant relationship with debt for OIC countries while positive nexus for non-OIC countries, FDI has a positive and significant relation with debt for OIC countries while adversely it decreases debt for non-OIC countries with negative nexus. Export and economic growth have a significant and negative relationship for both types of countries, while imports have a positive relationship with debt. Government revenue and expenditure have a significant and negative relationship with debt for OIC countries while positive nexus for non-OIC countries. This study fills the gap of a comparative group-wise study of the macroeconomic determinants of indebtedness while calibrating initial theories proposed by major economists addressing the relationship among mentioned variables and results imply that governments shall formulate efficient policies to lower interest rates, avoid & decrease speculative investments and unnecessary spendings, and maximize revenues to control the debt levels and ensure the ability to service their debt.

Keywords: *Twofold definition of Indebtedness, Debt-to-GDP ratio, Endogeneity, Sequential Explanatory Design, Homogenous & Heterogeneous panel*

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LIST OF ABBREVIATIONS

ANP	: Analytic Network Process
CDSs	: Credit Default Swaps
CDOs	: Collateralized Debt Obligations
CHEER	: Capital Enhanced Equilibrium Exchange Rate
EMDEs	: Emerging Market and Developing Economies
EMU	: European Economic & Monetary Union
IFDI	: Islamic Finance Industry Indicator
IFCI	: Islamic Finance Country Index
IBC	: Intertemporal Budget Constraint
SGIER	: The State of the Global Islamic Economy Report

CHAPTER 1: INTRODUCTION

1.1. Background, Research Problem, and Significance

The global economy has gone through four broad-based waves of debt accumulation and issues risen out of it for the past 50 years. The first three waves were highly stimulated by low-interest rates, because of newly introduced financial instruments that facilitated higher rates of burrowing and caused regional and global financial crises and recessions. The fourth wave, beginning in 2010 brought with itself an all-time high of 252.3% of debt to the GDP ratio in 2020 and is projected to reach 262% in the case of Japan until 2027.

Currently, emerging markets referred to those countries with magnificent GDP growth and contribution to the global productions like the BRIC (Brazil, Russia, India, and China) which are producing roughly 30% of production globally and developing countries in the globe jointly termed as EMEDs have already accumulated a high amount of debt due to reparations needed for pandemic. This buildup brings unprecedented vulnerabilities which could be mitigated to some extent by global interest rates but to manage the debt, countries require appropriate ways to spend debts to finance purposes that would enhance outputs and ensure resilience against economic disruptions, indicating the importance of sound policies, debt management mechanisms, a framework for micro and macroeconomic policies and financial regulations. These would enhance a sustainable and controllable debt accumulation or otherwise it would cause heavy uncontrollable distress like the Greek Crisis of 2009 which yielded -6.9% decline in GDP of the country and 28.4% lower than 2005 industrial output causing bankruptcy of over 111,000 companies and all-time high rate of unemployment of 23.1% in 2012 which fled the brightest people and businesses out of the country and devalued the currency unprecedently. (World Bank, 2021)

The world today needs a better financial system that could in essence prevent catastrophic consequences arising from debt and relevant crises, while the contemporary economic system has made all its efforts to address and come up with a solution to the risen debt but has failed due to the inefficiencies in policies and reacting to abrupt shocks and many other reasons that are stipulated throughout the study. Adversely, by suggesting models applicable to three individual, enterprise, and country levels, the Islamic Economics and Finance system appropriately addresses the matter and provides reasonable solutions.

There is no clear-cut answer as to when an indebtedness begins since the sustainability and susceptibility of a country's debt may vary. However, indebtedness may be characterized as a circumstance when a nation has trouble fulfilling its external or public debt commitments, which results in defaults,

restructurings, or bailouts. According to the World Bank report (2021), there are four key signs of an impending indebtedness:

- A more than 77 percent public debt-to-GDP ratio is the breaking point for debt sustainability.
- The threshold for external debt fragility is to be a ratio of external debt to exports of more than 240 percent.
- A debt service ratio to revenue higher than 18 percent as the upper limit for fiscal flexibility
- A short-term foreign debt-to-reserve ratio of 100 percent or more to be an indicator of liquidity risk.

Therefore, according to the World Bank report, any country with any of these conditions is in a situation of high debt. (World Bank, 2021). Meanwhile, there is no definite or absolute definition of indebtedness according to Islamic Economics and Finance and debt is defined through the Shariah laws (Fiqh) as an obligation to be paid on time without the association of any kind of interest which is discussed in detail throughout the study.

This study mainly focuses on the indebtedness because the other seven types of crises have been subjects of prior studies: liquidity type bank crisis, solvency type bank crisis, the balance of payment, currency crisis, debt crisis, growth rate crisis, and financial crisis. However, not a single research has thoroughly and specifically addressed the matter at hand to comprise all the variables that are contingently and possibly have a mild or severe impact on the debt level of a country on a compound basis as the study in hand. Therefore, it contributes to filling the gap for the countries that are struggling to overcome the disastrous consequences risen out of the high debt and it is specifically designed to be of some assistance to the authorities in the Ministries of Finance and the Central Bank of the respective countries to come up with the sound Fiscal and Monetary policies to tackle indebtedness, so dealing with this issue requires a more in-depth analysis of all the variables involved.

1.2. Purpose Statement

The purpose of this study is to evaluate the existing elements within both conventional and Islamic economic systems addressing indebtedness, to determine strengths and weak points, and to identify factors and course of the behavior of those countries with both systems to reach a conclusive statement of which one provides a better way of dealing with indebtedness and finally to see how Islamic Economics and Finance brings changes and why countries with this system might not encounter harsh situations despite struggling.

1.3. Research Questions

- What are the Common Causes of Global Indebtedness?
- What are the Differentiating Factors within Common Causes of Indebtedness for OIC member Islamic Countries?
- Does the use of Unsustainable Fiscal and Monetary policies by governments cause Indebtedness?
- Does the Ethical Foundation of Islamic Economics and Finance provide an optimal way of dealing with indebtedness?

1.4. Research Objectives

Throughout this study, the ultimate objective is to provide a glimpse of different approaches by OIC and non-OIC member countries towards the management of debt and provide evidence of whether Islamic Economics and Finance provide an optimal approach or not. Achieving this objective includes obtaining these objectives:

- Identifying common determinants of indebtedness
- Determining distinguishing factors within common determinants of indebtedness, between OIC and non-OIC countries, addressing their approaches and management
- Monetary and fiscal policies impose restrictions that eventually lead to higher levels of debt; therefore, the objective is to find whether unsustainable policies cause a indebtedness or not.
- First three objectives provide the path for the ultimate objective to provide a glimpse of different approaches by OIC and non-OIC member countries towards the management of debt and provide evidence of whether Islamic Economics and Finance provide an optimal approach or not.

With the first two questions imposed, it seems obvious that some factors distinguish between those countries resisting very well against indebtedness and those who cannot. Evidence shows that Islamic countries have coped firmly against debt-driven issues and managed to save themselves from the American housing bubble crisis of 2008-2009 which spread widely and made disastrous impacts on many countries. Although the existing disparity among Islamic countries over the use of conventional and Islamic economic system brings another complexity to the matter the focus would be on the factors that Islamic countries observed while doing their effort to be on the safe side that other countries could not anticipate.

One of the common factors mostly mentioned is the level of domestic consumption called excessive domestic absorption among countries with conventional economics while Islam clearly prohibits more than necessary consumption (Efrat) and mainly focuses on consumption based on necessity (zaroorat),

another factor is interest rates which hinders the ability of debtors to repay their principle plus interest due amount and mostly ends with defaults and crisis then risen out of it while adversely Islam denies interest rates.

Therefore, surely indebtedness is not constrained solely to mentioned factors, especially with the abrupt covid-19 crisis that shook the global economy and many other factors involved which through this study are evaluated. Meanwhile, throughout the third question, it is intended to explain how inappropriate spending and borrowing while exceeding tax revenues in terms of fiscal policies end up in debt crises and how inappropriate interest rates & money supply while with the initial intention to establish price stability and maximum sustainable employment to keep inflation under control, causes debt crises on the other end.

Therefore, as concerned the question is, unsustainability of a fiscal or monetary policy refers to the situation which is based on a simple framework commonly known as intertemporal budget constraint(IBC), intertemporal meaning overtime and budget constraint meaning the balance between income and expenditure. The IBC framework implies that every individual or entity must pay for everything it purchases, it demands that the value of outstanding debt of a country must be equal to the present value of anticipated surpluses and borrowing, and spending shall not exceed excise or non-tax revenues of the country, and if it did so the fiscal policy of the country is on the unsustainable path. In terms of monetary policies which initially intends to address the balance between two situations of when to put money in the market and when to take it out, over limit money supply for the sake of debt service obviously causes high rate of inflation and adversely lowering inflation would require spiking interest rates which in turn slow down the economy and lowered tax and non-tax revenue would not contribute enough to even basic government expenditures. Therefore, it is highly important that governments shall have appropriate fiscal and monetary policies to avoid debt crises and to solve the issue these policies work well against abrupt shock and debt-driven crisis, although it worths mentioning that sometimes despite the existence of sound policies, improper enforcement of those policies causes failure to comply with intended purposes, however, political instabilities play an important role but is not the scope of this study.

Meantime conventional versus Islamic economics has always been the point of debate between ethical and self-interest courses of behavior, thus this study observing the axiological framework explains how the ontological framework of Islamic Economics and Finance constructs distinguishing features. (Haltom,2012)

One of the important principles of the Islamic Economic system is that it prohibits gambling and involving in economic transactions which contain uncertainties, to answer the question of the ethical foundation of Islam presenting an optimal way of addressing the matter, is the total value of stocks traded

as a percentage of GDP per country, evaluated through their impacts as a form of speculative investment or financial speculation on the Debt-to-GDP ratio to see how it affects the burden.

The reason behind choosing this variable to answer the question is that if we provide a narrow definition, the speculation is placing a bet on any short-term changes in prices of a commodity or an asset that fluctuates very often, and investors hugely gain or lose steeply in a short amount of time. In a broader view, speculation is a socially unproductive financial activity because resources that are devoted to the financial sector divert wealth away from other sectors of the real economy and even destroys them, therefore it comprises all those activities for which the social utility to the real economy is close to zero. This theory as emphasized by Keynes asserts that if this type of speculation (on short-term price changes) dominates entrepreneurship then society's resources are most likely ill-invested. (Epstein & Habbard, 2011)

Meanwhile, speculation is, in essence, self-feeding meaning that it would lead to more speculation and more difficulty for a real economy with uncertainty and difficult hedging and risk management ways because asset prices are driven by fear and rumor over proper assessment. If the speculation is connected to long chains of bets and inner connections between financial institutions then the financial impacts of the bets when gone wrong will create huge countrywide and whole economy-wide distress and crises that cannot be controlled easily, as stated by the Blundell Wignall and Paul Atkinson (2011) of the OECD on financial crises, "when one party to a speculative transaction makes a huge gain, another party is making a huge loss and that loss, in turn, creates a big financial firm to fail, and financial stability risk increases without adding any new equity or debt capital for the economy". [1]

Against this backdrop, although it is highly difficult to assess thoroughly the destructive capacity of speculation in an economy as it is a little element of a real economy and many factors will fade out the effects it will have, the total value of stocks traded as a percentage of GDP for a country can be a good indicator to show how much a country is involved in speculations and do they impact on the debt of the country in concern of this study or not and it is observed that the ethical foundation of Islam while prohibiting uncertainty and speculations, have provided a good solution or not.

[1] Adrian Blundell-Wignall is Deputy Director of the OECD Directorate for Financial and Enterprise Affairs, Paul Atkinson is a Senior Research Fellow at Groupe d'Economie Mondiale de Sciences Po, Paris, and Se Hoon Lee is a Financial Markets Analyst in the Financial Affairs Division of the OECD Directorate for Financial and Enterprise Affairs

1.5. Hypothesis

H1: Interest rate does not have a significant relationship with indebtedness.

H2: Countries affiliated with high inflation are more prone to face Indebtedness.

H3: Higher Exports will cause revenues that will generate revenues and decrease the indebtedness.

H4: Higher GDP growth will enable more indebtedness.

H5: Foreign Direct Investment does not have a significant relationship with indebtedness.

H6: Higher Government Expenses will make higher indebtedness for burrowing countries.

H7: Stocks traded value in terms of speculative investments, does not have a significant relationship with indebtedness.

H8: Increased Imports over exports will increase indebtedness.

H9: Higher government revenues will decrease indebtedness for the economy.

1.6. Research Limitations

There are multiple limitations to the current study, rising mostly out of the complex essence of the debt itself since the debt has a twofold definition as explained in the second chapter:

- Conceptual and operational definition of indebtedness makes it difficult to thoroughly define the multidimensional variables involved to describe the dependent variable in the study.
- To some extent, bi-directional causality exists among variables in the study, meaning that although it is intended to see the impacts of independent variables on the dependent variable, it makes it difficult to establish the exactly expected outcome.
- The data of this study are panel and obtained from secondary resources from the World Bank, while cross-checked with the International Monetary Fund database.
- Limited data sources over time within the study, as the time series dimension required data observation from the year 1990 to 2021.
- The essence of study requires sequential explanatory design but not in the sense of involving qualitative study anyhow, but for the matter of including as many as possible variables to describe the dependent variable over the course of the research because it has always been the answer from economists when asked about the possible causes of debt or any other seven types of crisis named in chapter two, that this time is different.

1.7. Study Framework

Comprising five chapters, the approach is as such:

Chapter I: Introduction

- Background, Research Problem, and Research Significance
- Purpose Statement
- Research Questions
- Research Objectives
- Hypothesis
- Research Limitations

Chapter II: Literature Review

Providing the theoretical basis of this study, overviewing previous literature that exists to provide an initial assumption for the relationship between each variable with the dependent variable to construct a hypothetical understanding necessary to assume and test the hypothesis.

Chapter III: Data and Research Methodology

Explaining how research questions are addressed by the variables and which indicators for those variables best describe the relationship and eventually answer the research question to the end, explaining the data sets used and dimensions it covers for the study, likewise the appropriate model and method of study to construct the conclusive result that would be reliable.

Chapter IV: Result Analysis and Discussion

Explaining the regression results & data analysis and justifying the direction and extent of the impact of independent variables on the dependent variable while comparing it with previous research, testing hypothesis a, and establishing an overall compound relationship between variables.

Chapter V: Conclusion

Conclusion of the results obtained, Implications for the relative authorities in the Ministries of Finance and the Central Banks, and suggestions for future research.

References

CHAPTER 2: LITERATURE REVIEW

2.1. Theoretical Framework

There are many theories explaining the relationship between variables in this study and the relationship among variables has been thoroughly evaluated already by well-known scholars, therefore, to concisely point out theories behind the initial assumption of the relationship among variables and what is found after estimation, the theories are elaborated as per relationship between each independent variable on the dependent variable of Debt-to-GDP ratio.

Addressing the relationship between Interest Rates and Debt, there are 4 theories to explain the complex relationship they have. Firstly, the Crowd-out theory developed by Richard Thomas in 1970, asserts that initially there is a positive relationship between interest rates and debt levels for countries because higher interest rates cause decreased private investments, eventually leading to a slowdown in economic growth, tax, and non-tax revenues and spiked up expenditures, and to finance the expenditure government would again approach to lenders and debt would go higher. (Heim, 2017)

Secondly the Barro-Ricardo Equivalence Theory, this theory initially proposed by David Ricardo in the early 19th century and further elaborated by Robert Barro from Harvard University Asserts that interest rates do not affect debt levels since rational consumers understand that when debt and interest rates are high, they need to save more to pay taxes and interest payments so the private investments and business activities in the country would not change much that to affect the debt level. According to this theory, higher interest rates would only change the aggregate demand for consumers, and they would save to be able to pay for the future which would increase the propensity to save. (Barrow, 1974)

Thirdly it's the Keynesian theory, initially proposed by John Maynard Keynes in the 1930s, provides another aspect of this relationship and explains that indirectly higher interest rates would negatively impact debt levels as such that when interest rates are high inflation is high as it is used by central banks as a useful way to counter inflation, in this situation with inflation the real value of debts in terms of currencies will decrease which would decrease the debt eventually. Although this theory justifies the negative relationship, it is only possible when the debt is already sustainable and boosts economic growth which will only happen when countries spend their debt finances on comprehensive revenue-generating projects which is quite difficult to achieve and specifically for the countries that are already in high debt and defaulted. (Keynes, 2007)

Lastly, the Solow-Swan Theory, this theory belongs to the Neoclassical Growth theory proposed by Robert Solow and Trevor Swan in 1956, the theory asserts that higher interest rates indirectly decrease the

debt of the countries as such that in the long-run higher interest rates will stimulate increased savings and accumulation of capital which will then be financed for productive projects by the government that could generate enough revenues and spiked up GDP output to decrease debt levels. (Swan, 1956)

The relationship between GDP growth rate, Exports, and Government's tax and non-tax revenues with debt can be explained mostly by two macroeconomic theories of Neoclassical growth theory and Keynesian theory which asserts that higher exports, GDP growth, and revenues will decrease debt levels due to the fact higher exports will stimulate higher economic growth and income which will change and increase the ability of government to repay its debt and reduce the debt to GDP ratio. (Solow, 1956)

Meanwhile addressing the theory behind export and debt, there is a theory first proposed by Raul Prebisch in the late 1950s which is called the Prebisch-Singer thesis of dependency theory. This theory indicates that when the GDP of a country is driven by trade(export) it will make the economy vulnerable to external shocks and volatility because of dependence on foreign markets and capital, which will eventually lead to dependence on external debt. Therefore, the theory asserts that there is a positive relationship between export and debt. (Prebisch, 1949)

One of the main variables in this study which constructs the justifying gap of the research is the relationship between Stocks Traded value(%GDP) and Debt levels of countries. Firstly, the Neoclassical growth theory and Keynesian theories both indicate that when trade values for stocks are high and contribute to a large amount of GDP formulation and growth, it is obvious that it would make sufficient revenues to service the debt and decrease debt levels. However, the second theory which is called the financial instability hypothesis developed by Hyman Minsky in the 1970s and 1980s, the theory asserts higher stocks traded will increase debt since it will create a speculative bubble and financial crisis as it involves more risk-taking and vulnerability to external shocks and volatility. Therefore, if a country's GDP is formulated by more percentages from stock traded value an external shock will easily create economic instability and increased levels of debt that the country cannot pay back. (Minsky, 1977)

The relationship between Foreign Direct Investments and debt is complex like any other macroeconomic variable. However, there are theories explaining this nexus supporting the result found in this study. Firstly, Financial theory (internationalization theory of FDI) originated from the work of Buckley and Casson in 1976, indicates that FDI is mostly affected by problems associated with capital markets like transaction costs, agency problems, asymmetric information, diversifications in portfolios, exchange rate changes and many more constraints. Therefore, if these constraints are appropriately addressed then the FDI would decrease the debt level and it would change it to a sustainable level and would showcase a negative relationship between them, otherwise these complications would lead to a

positive relationship as its been the case for most OIC member Islamic countries that Capital flows to the country brought with itself more cost of external financing, and risk premium which oppositely increased debt levels. (Aliber, 1970)

Secondly, the Endogenous growth theory proposed by economist Romer in 1986 and 1990, initiates a non-linear relationship between FDI and debt and further explains that FDI can have both positive and negative effects on Debt which is associated with how investments are used and if it is used as such that it would maintain fiscal balance and increase public investments it would surely change the capacity to service debt as well. (Romer, 1986)

The nexus between Imports and Debt can be explained easily by the balance of payments theory, initially proposed by Davide Hume in 1752 by the Price specie flow mechanism. This theory indicates that there is a positive relationship between imports and debt as such that if imports exceed exports, it means that the country is going into a deficit and is spending more than it should earn which obviously will establish more tendency to borrow and would increase debt levels. Adversely if exports are more than imports, it means the government is earning more than what it is spending, indicating decreased debt levels as it increases the capacity to service debt. Therefore, decreased imports will cause reduced debt levels as well. (Hume, 1752)

The relationship between Government expenditure and debt can be explained by the Ricardian theory which asserts that expenditures can affect debt levels through intertemporal budget constraint which accounts for the present value of future revenues of countries. Simply put, if a government is spending as such that its expected future revenues do not change, it means that government is not implementing a sustainable fiscal policy and if the government spending increases future value of its revenues, then the fiscal policy is sustainable. Therefore, according to the Ricardian theory, if government spending increases, it will have both a negative and positive relationship with debt which solely depends on whether the fiscal policy is sustainable or not. If the policy is appropriate then it would stimulate increased revenues which reduce the debt, otherwise, it would increase debt. (Ricardo, 1817)

2.1.1. Islamic Economics & Finance Perspective on the Indebtedness

Based on the causes of Indebtedness, it is appropriate to impose Islamic economics and finance perspective on the determinants of high debt, according to the international debt report and statistics interest payments construct a major concern for default and debt sustainability. (World Bank,2021) Therefore, addressing the matter Islamic economics argues that Interest is equivalent to Riba or Usury, it can be defined as “real or potential surplus without equivalent return not only in currency exchanges but

also in loans" and other transactions involving the exchange of products and currencies as well as loans, regardless of interest rate. (Ozsoy, 2016)

Interest on Loan

In loans, interest is expressed as a percentage or as a set payment that is applied to the principle. It is the type of interest that is most prevalent. Given that it is predicated on an ambiguous result, it inexorably brings unfairness to either the borrower or the lender.

Interest on debt is considered to be "unearned income" when a borrower's income is insufficient to cover the fixed rate. Interest in debt hurts the lender when a borrower receives an unanticipatedly large income as a result of a loan; this is known as an "unequally distributed income." Therefore, the unfairness caused by interest rates—whether they are 1% or 100%—is the same regardless of the rate. (Ozsoy, 2016)

Furthermore, under unfavorable economic situations, a borrower may suffer an injustice from a high-interest rate, while lenders may suffer an injustice from a low rate, which is often supported and promoted. The primary justification for interest being prohibited by Islam, as well as the only one specifically mentioned in the Qur'an, is as follows:

"Interest is prohibited because either the borrower or the lender would absolutely and inevitably be subjected to an injustice in any case, for its rate is fixed at the very beginning, although it is impossible to predict the outcome, profit or loss, or how much either would be." As stated explicitly "If you persist in interest, either you will wrong, or you will be wronged."

The graph below shows how marginal changes specifically the increase in interest rates, cause increased debt-to-GDP ratio, regardless of the type of the countries.

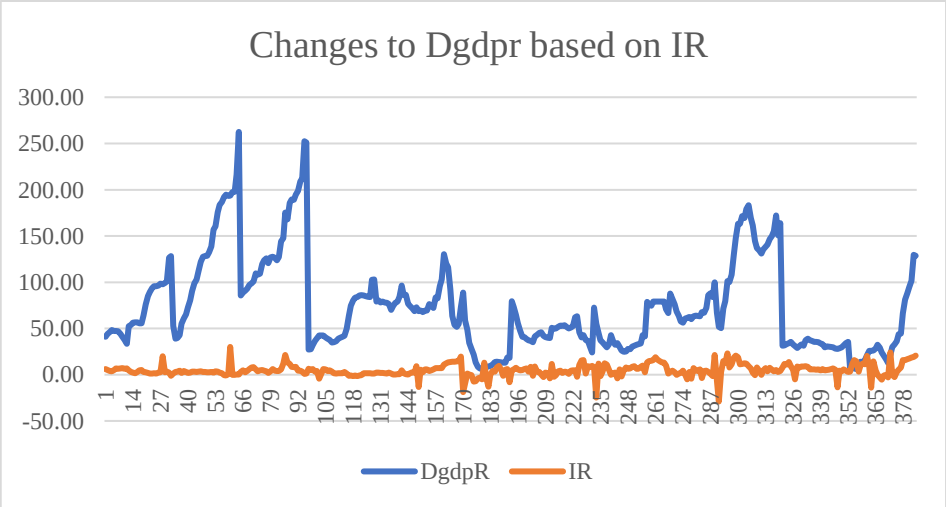

Figure 2.1 Indebtedness and Interest Rate

The Islamic Perspective on speculation in the stock market

Economically speaking, practically every commercial transaction involves speculative judgment, even in a broader sense, it is difficult to keep money in any form without making predictions about how its value will vary over time relative to other assets. Money is therefore retained on a speculative basis in this regard. (H. B. Salamon et al., 2015) As a result, there is a relationship between speculative judgment and human nature that cannot be avoided, and individuals always use it to the best of their abilities, However, what matters is the extent to its permissibility in business activities that shall be answered. To answer this question, Islamic Economics and finance provide elements of speculation that constructs prohibition bases, these elements are al-maisir (gambling), al-gharŀr (uncertainty), malpractice, unethical activities, and unearned income in speculative stock market transactions. To observe whether speculation exists in the stock market even one element is sufficient, therefore the focus here will be to evaluate al-maisir through its elements.

The element of betting indicates gambling, and The Qur'an expressly forbids gambling and maintains that this ban is unchangeable (Qur'an, 2:219; 5:90–1). This prohibition extends beyond gambling for the goal of making money; it also applies to "games of chance" or gambling for amusement and leisure. (Al-Qaradawi,1985) If playing a game of chance is prohibited even for recreational purposes, it is easier to understand this ban when someone is using gambling to make money at the cost of others. Therefore, the application of this stance includes making comparable judgments on speculative stock market trades.

When examining speculative stock market transactions, the element of betting is evidently present in such transactions in their current form. The element of illegal betting is there since speculators inject extra revenue into the market based on speculative variables like rumors and price movements.

Another element within al-maysir is taking advantage of newly beginner speculators with the fact the market is that one can always count on professional speculators to take advantage of beginners. Such experts do not follow Islamic economic principles since Islam forbids dishonest opportunism and the seizing of another person's property by misleading means.

Today's stock markets are rife with this type of exploitative behavior by expert traders who make huge gains at the cost of novice, inexperienced, and poorly educated traders. The sad and unfortunate reality is that these greedy professionals victimize (Salamon et al., 2014)any market participants who lack inside information or fundamental forecasting skills; those who only respond on impulse and rumor. (Chapra, 1985)

Therefore, investment in the stock market is a form of speculative investment with the existence of the elements of gambling, uncertainty, and unethical activities and when one side gains it's a loss for the other side, this phenomenon is disastrous when the stock traded value formulates GDP of a country, when uncertainties lead to losses, GDP is harmed, and the country is not going to be able to repay the debt with the damaged economy.

The graph below shows how an increased amount of speculative investments forms a correlation with a spiked debt-to-GDP ratio, although while decreasing, the ratio decreases as well.

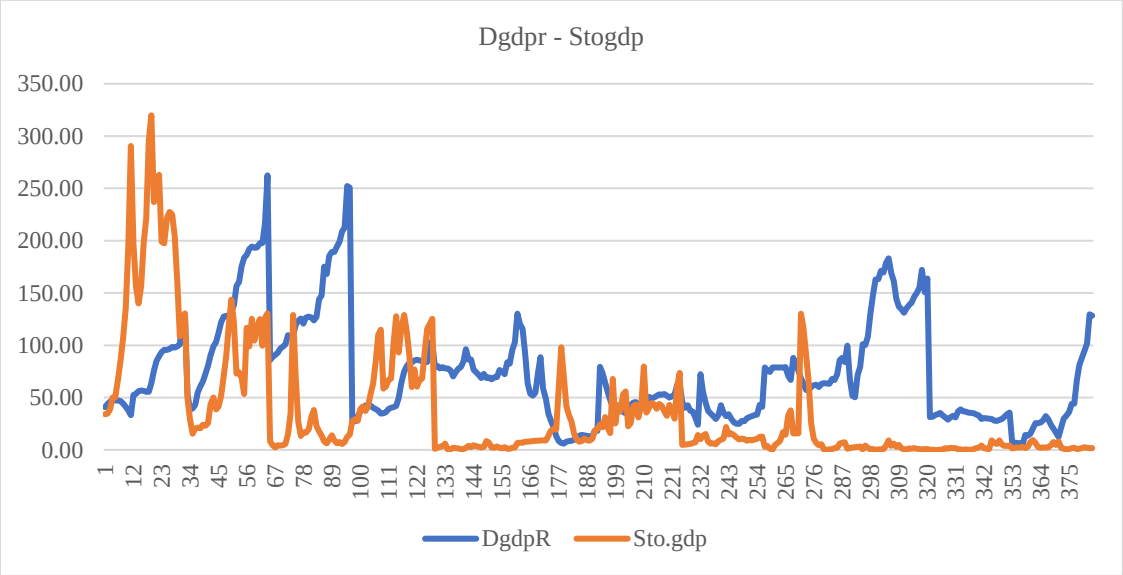

Figure 2.2 Indebtedness and Stock Traded Value 1

2.2. Empirical Review

2.2.1. Twofold Definition of Indebtedness

Indebtedness has a twofold definition of conceptual and operational definition which makes quantitative analysis of the associated issues difficult due to their multidimensionality in which indebtedness in a short period called episodes occur. Considering this fact, one of the studies by Ishihara from the world bank focuses on the complexity of doing a quantitative analysis of as well as other types to identify their two-sided definition and causality, his study suggests that crisis identification based on their characteristics and type of definition might lead to inappropriate conclusion and inconsistent policies although even the same analytical framework will be used. (Ishihara.2005) Therefore, before a depth-analysis of the indebtedness and how Islamic Economics and Finance will address the matter it is more beneficial to understand operational and conceptual definitions of the phenomena.

This study addresses the conceptual definition as an entry point to identify crisis and inability of the debtor to pay their principle plus interest obligations, while operational to be as the divider for crisis against non-crisis episodes which clearly will depend on thresholds and indicators and somehow all the time point of controversy as it is difficult to determine if the debtor is unable or does not have the intention to pay. Thus, two approaches of actual and near default events and use of debt indicators such as arrears as stated by the non-aligned Movement of Ad hoc advisory group of debt experts are suggested. Data taken from international financial statistics of IMF, World Bank, and CEIC(Asian Economic Database) were evaluated to first identify the multidimensionality of crisis since different types of crises within short periods occurred, then correlation analysis to determine the relationships involved which showed the negative relationship between indebtedness and financial crisis that through the study by the simple logic of capital inflow by debt and capital outflow by financial crisis explained and overall correlation coefficients were not sufficient to address the causality between indicators. Thus, the Granger causality test was carried out on five Asian countries mostly affected by different crises and it made it clear that currency crisis is the type that triggers most of the other relevant crises of the 7 types. (Ishihara,2005)

2.2.2. Common Factors Causing Indebtedness

Another relevant and important study on the high global debt is the one conducted by Dimsky in 2016 providing the qualitative groundwork of content analysis of historical experiences with debt over the past 50 years. This study is designed to first elaborate on certain debt-originated issues and then to answer two main questions of how they happened and what should be done in the future by economists and governments to either prevent or solve the crisis. This study claims that the international indebtedness has been a defining feature of the conventional global economy after the evaluation of the tequila crisis of Mexico (1994-1995), the Asian financial crisis (1997-1998), the credit crisis of the Russian ruble (1998-1999), Turkish crisis (2000), Argentina economic crisis (2001-2002), currency crisis of Brazilian real, and the meltdown in Uruguay (2002). Furthermore, it asserts the importance of currency crisis coinciding with indebtedness nearly all the time while providing the simple explanation of cross-border contracts of rescheduling debt payments by the debtor as the triggering point since lenders anticipate that burrowers shall bear the costs of exchange risks and this disagreement on exchange rates causes currency crisis and coinciding with the high debt. (Dimsky,2016)

The in-depth analysis of this study found several important elements causing debt-originated problems and draw a conclusion of answers given to the initial purposed questions of how it happened and what to do now. The study suggested that inefficient macro-level policies, issues between creditor and debtor in cross-border relation over exchange rates, inefficient interactions between creditors and issues

with the financial flows within the cross-border global context are among the important problems that governments should be aware of before lending.

Some scholars focused on domestic excessive absorption as the root cause of rapid debt buildup causing several types of crises, Chapra in his paper focused on two major purposes, first, to identify the magnitude of debt that causes major problems. Secondly, on how Islamic Economics and finance system can solve the matter, although his study mainly focused on excessive absorption and around this idea he developed the possibilities of solving the issue through Islam. (Chapra.1992) However, this study found that there 14 out of 45 countries among Islamic countries are severely indebted as defined by the world bank group. The study showed existing linkages between growth rate, total external debt, gross national product, exported goods and services, total debt services, and net transfer on debt. However, the stress was laid on the negative trend of net transfer on debt which was believed to be the sole reason why real resources shifted from poor to rich countries and suggested that it requires surpluses on the export side to make a balance between import and export of those poor countries. As indicated, the study mainly focused on excessive domestic public consumption, investments, and government expenditures so providing a solution to this issue is the critical point of the study and stipulated the importance of two pre-requisites, first to have a filtering mechanism that could distinguish between elements in domestic expenditure that are beneficial for the growth and those not beneficial, secondly, the importance of a system for encouraging the voluntary implementation of filtering mechanism. Addressing the matter two approaches were made to evaluate, first neo classical approach is based on enlightened philosophy and a secularist point of view, where there are no moral values attached and the only motivation is self-interest on the other side Islamic approach depends on moral and ethical foundations with an emphasis on socio-economic justice. It recalls the importance of market forces playing an eminent role on equal distribution of resources and indicates the double layer moral filtering of elements in domestic consumptions based on critical needs as zaroorat and denies consumption of unnecessary luxury goods and promotes a system of self-driven implementation of such moral filtering, while emphasizes on the existence of firm financial intermediaries to facilitate in between. (Chapra.1992)

The quintessential literature addressing solely the matter in this research is a paper by Dr. Abul Hassan who throughout his paper focused on explaining the financial crisis in global conventional financial markets and indicated the factors that cause these crises while suggesting principles of Islam and an Islamic economic system as a solution to the risen crises. (Hassan. 2016)

Although this study mainly focuses on the American Credit Crunch of 2007 as a triggering point but has the same foundation for all types of crises which Islamic economics intends to address and solve, firstly, the existence of a financial economy against a real economy is a major point of concern since

Western countries and those with conventional economic systems are separated from a real-world economy. This means that they are more focused on services rather than production and 80% percent of USA economy is now consists of the service sector and financial sector is the largest service sector in America's economy which means that participants in the financial economy are more prone to bet and gamble on what is happening in the real economy rather than taking part into it. Thus, they make a lot of money by doing nothing but just betting on the profits and losses of businesses and predictions, therefore, in financial terms shareholders don't care about the dividends itself that they would get from the real-world economy, and they are more focused on the inflated prices of those shares that will make them money over different periods.

Over time, this has shown to be a chronic disease since not participating in the real-world economy causes heavy unemployment rates and economic distress that scholars failed to provide realistic solutions for, while Islamic economics by prohibiting artificial money creation and using money as a commodity except at par is more focused on the real economy which would double the economic growth.

Secondly, the securitization of loans which were meant to be transferring them to marketable securities made the credit default swaps (CDSs) and collateralized debt obligations (CDOs) happen and it was getting sold to multiple parties. Meanwhile many banks became owners of mortgage-based securities which later turned out to be time bombs and when depositors were not able to repay due to the government policy of increasing interest rates that slowed the overall pace of the economy and because of it unemployment rate got higher and those bearing the responsibility of paying their debt obligations could not make the deposits and caused the disastrous crises and spread over the world.

Meanwhile, Islamic economics while not taking the side of a capitalistic or socialist economic system although has common elements of encouraging people to work and gain as much as they can initially prohibit treating money and loan as a commodity for trade. Meanwhile, the principle of risk-sharing in Islam addresses that banks would be more careful while choosing the clients with their businesses and investments as they would not only investigate profits the bank would make of their plans but also the loss they might bear so if the principles of Islam was implemented at first the whole crisis would have been prevented.

Thirdly, the risk-sharing factor between bank and client does not exist means a borrower can take as much money as he wants with a fixed-interest rate from the bank to scale up the business while banks do not pay attention to the repayment ability and contingencies of losses that might occur. Eventually, when a business is heavily indebted a slight increase in the interest rate and reduction in revenue can demolish the profit margin and the bankruptcy and inability to repay would happen which conventional banks do

not look for and all that matters for them are the profits they would make by issuing loans to the extent of interest rates. Therefore, this principle of risk-sharing is highly important and again as stated the whole crises would not have happened at the first place, lastly, the issue of money creation or the state of making money while doing nothing contravenes two basic regulations in Islam the law of trust and the law of prohibiting interest (riba) while solely designed to prevent the artificial creation of money out of nothing, as they are issuing promises to repay to more than cash reserves, they have and lending these promises at interest rates. (Hassan.2016)

A similar study with a more detailed approach to finding the root systematic causes of all types of global financial crises is the work by the Center of central banking research and Education of Bank Indonesia which used the qualitative method of analytic network process to identify all the possible tangible and intangible variables that could cause the crises. (Ascarya,2014) the method that was used is a theory of correct measurement used to find priority ratio from individual ratio to represent a measurement of interconnected elements in control criteria or to simplify it, ANP is the theory that allows to systematically cope with feedback and dependence and can find and combine interconnected elements as in this study tangible and intangible factors by using ratio scale.

The method was propelled in three stages, first step was in-depth interviews with scholars of Islamic economics and finance to find different views on what they think of the causes, the second step was to use initial interview data to design the ANP process and come up with questionnaires from 7 specific scholars and last step was the ANP analysis of identifying key factors causing crises. Furthermore, indicating policy recommendations based on the analysis and three principles of decomposition which intends to breakdown the problem into clusters, comparative judgments to establish a comparison between all combination of elements involved and synthesis intending to multiply the local priorities of an element in a cluster. With the method used and throughout its steps, the result of the study and conclusion made on it stipulated 5 groups of elements that are responsible for the global financial crises. Firstly, the Misbehavior of participants in economic activities such as hedonism which is defined to be as an idea of everything is right for achieving the ultimate level of self-interest, speculation, and individual interests. (Ascarya,2014)

Second, are the exogenous or external elements like political instability, social instability, business cycle demands, natural disasters like earthquakes or covid-19, and the international monetary system which all the countries apply and have to abide by the common and basic rules. Third is the factors about poor governance, administration, lack of disclosure and regulations, price control and corruption as the most important one in this series. Fourth are the inefficient fiscal and monetary systems and policies by governments, the money creation system or fiat money, the interest system by essence, reserve banking while in fraction, and the so-called system of leverages. The last group of elements pertains to budget

deficits, exaggerated taxes, over-limit government spending, and overburdened sovereign debts which is the most important one among this group.

While these elements were taken from the first step of this ANP method the following two methods defined the degree and level of effects they have and prioritized them based on that and the third step analysis depicted more importance to corruption, unsustainable fiscal and monetary system, fractioned reserve banking, money creation, the whole interest-based system, and excessive sovereign debt which goes on for multiple generations and the burden never finishes. Meanwhile, this paper concluded that if Islamic principles were applied the crises would have not happened at all, for instance, corruption is strictly prohibited in Islam there are many rules for maintaining a balanced budget and avoiding wasting wealth. In surah al Furqan the excessive government debt is strictly prohibited and overall the prohibition of Interest which brings with itself the fiat money, leverage and credit card systems and derivates, Maysir(Gambling) which brings with itself many types of speculations in stocks, foreign exchange currencies, commodities and Gharar (uncertainty) bringing many complexities like securitizations, hedging funds, insurance products and several other things that eventually contribute at certain levels to the crises. Therefore, applying the principles of Islam prevents global financial crises and those countries that are still struggling with existent hardships can start to implement the principles to stabilize their economy. (Ascarya,2014)

2.2.3. GDP Growth, Export, and Debt

While understanding the root causes of crises is part of this literature, another part intends to provide an overview of the literature that exists between the independent and dependent variables in this study. Against this backdrop, Dritsaki and Pavlos (2016) conducted a study examining the relationship between government debt, economic growth, and exports which is one of the variables that is examined in our study of indebtedness. Throughout this study the main purpose was to evaluate the elements that can minimize the sovereign debt for the sake of increase in growth and exports which eventually would increase investments and enhance competitions and obviously increased debt effects negatively on the overall performance of the countries and the data that was used were panel data from 1990 to 2014. The data were tested for stationarity to understand the consistency of data for a valid conclusion, despite this the relevance is the matter of unidirectional and bidirectional causality between the variables which was found out with unit root tests that it is unidirectional causality meaning that from exports to government debt, there is a unidirectional causality running. To simplify, it means that exports do affect debt serviceability itself while many unit root tests of LLC, Brietung, IPS, ADF-fisher, PP-fisher, and Hadri were perpetuated but it is still the matter of scrutiny as why it could not be a bidirectional causality as it seems logical and obvious that both variables effect each other on certain levels. Meanwhile, the study used Fully Modified Ordinary

Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) methods to examine the long-term relationship between variables. Meantime, the Vector Error Correction Model (VECM) is used to evaluate the causal relationship between variables. (Dritsaki and Pavlos, 2016)

Findings of the study by Nikolas suggested that there is a robust cointegration among three variables of government debt, exports, and sovereign debt and a long-term equilibrium relationship exists, this was found by regressions through FMOLS and DOLS and results showed that exports affect economic growth in 1% significance level and on the other hand, debt negatively affect the economic growth by the same percentage. Meanwhile, tests of causality found that a long-run unidirectional causality exists running from exports to growth and from exports and growth to sovereign debt which means that exports have an indirect effect on government debt by economic growth which is a matter of observation in our initial study of the relationship between government debt and exports to see how it effects and how the effect has been among OIC member countries while comparing it with conventional economic system countries with high debt defaults.

Fakile (2016), examined the Impact of Export on debt-to-GDP ratio in Nigeria with the data taken from World Bank, estimating through a time series analysis of the autoregressive distributed Lag Model and found that there is a significant negative relationship between export and debt as an increase in export decreases debt levels for Nigeria.

2.2.4. Inflation and Self-fulfilling Debt

Reinhart (2010) explored the connection between inflation and public debt. According to the study, greater inflation rates are linked to higher public debt levels. The author also discovers that there is a nonlinear link between inflation and public debt, with greater debt levels having a bigger impact on inflation, Empirical analysis using a large dataset of nations over a long period was performed to examine the data and make inferences regarding the association between inflation and public debt.

One of the important factors in evaluating debts is inflation credibility, Inflation most of the time leads to self-fulfilling debt because the high difference in currencies and changes in prices always gives a hard time for the borrower to repay their responsibility. Against this backdrop, a study conducted by Gita Gopinath from Harvard University (2013) thoroughly evaluates the role of inflation leading to self-fulfilling debt, meaning that countries without sufficient understanding barely get themselves into crises without exogenous factors involved. Meanwhile, throughout this study, a mathematical model was used as they called it a continuous model of nominal debt based on the model of Barro-Gordon which is about time-consistent monetary policies of governments as it always happens that the incentives to commit an act in the future by governments differ with incentives to keep those commitments and eventually it does

not happen and it is called the time inconsistency and the Barro-Gordon model initially with their model of involving Philip Curve addressed the matter, with the help of this model the general relationship between inflation and debt is explained in the study.

This study suggests that inflation lowers the real value of debt, to simplify it, it means that with high inflation credibility which happens by joining monetary unions such as the Euro currency union in Europe or other similar ones, debt would be effectively real and would not lead to the self-fulfilling situation but if the credit is not that much oppositely domestic currencies and the surpluses in those currencies would not be enough to repay the high debt borrowers intend to pay. Therefore, the mentioned study found that in a balanced level of inflationary commitments governments would be less exposed to the risk of domestic currency-driven sovereign debt and interconnected crises with it. Furthermore, explains that if governments are stricter with keeping their inflation low it still opts out the option to use inflation while responding to crises which are, in turn, a complex matter but the study showed with the model which is over the limit of this discussion if explained entirely, that it is optimal for governments to issue foreign currency bonds to international investors within a certain limit of inflation credibility to avoid the self-fulfilling debt. (Gopinath,2013)

2.2.5. Debt and Government Expenditure

World economies struggled and still bearing enormously deteriorating challenges made by the coronavirus pandemic and many policies and measures were used to halt this contagious disease from further spread. Countering this challenge required a lot of financial resources which were not available to the countries, but immediate fiscal transfers were needed, so the common way of financing was to get loans from IMF and the World Bank and many of the countries that are now having high defaults are among those. Therefore, it is essential to evaluate interactions between sovereign debts and the epidemic.

One of the studies that addressed this matter contributes to explaining the relationship and extent of this causal relationship by developing a model based on a small open economy along with a unit measure of similar agents and a sovereign country that takes loans from international bodies such as IMG or World bank with the possibility of default. The model within study evaluates dynamics of such economy after exposure to such a pandemic, and it resembles an epidemiological SIR model which is a model that computes the number of infected individuals with a contagious disease theoretically over a certain time and closed population, this Model divides the population into three compartments of susceptible, infected and recovered(SIR), therefore the dynamics of a small economy in three levels was evaluated with the taken data from Latin-American countries such Brazil, Argentina, etc. (Arrellano,2022)

The study found that the SIR model while integrated with the sovereign debt model replicated features of the data on fatalities, debt, consumption, spreads, and social distancing, it stipulated that the pandemic was severely associated with steep falls in consumption, disastrous fiscal situations, partial and full defaults, as the remedies and measures to tackle the pandemic were much costly to many countries with insufficient financial resources and therefore reinforcing debt for them. Meanwhile, a comparison of the model was perpetuated with a model of perfect financial markets, and it was found that lower than one-third of the social welfare cost attributed to the pandemic was due to the default risks, lastly, the study evaluated different debt relief programs by IMF and other international organizations to find the best one applicable with contingent good results.

Another paper with one of the important variables in our study by David Guerrero (2013) addressed the European debt issues as a matter of balance of payment crises with the question imposed this research was relating officially external disequilibria to the sovereign indebtedness the EMU is suffering since 2009. Is it only a balance of payment crises issue or is it more than that? It was shown that when a nation subscribing to a monetary union experiences external disequilibrium relative to its primary partner, the associated interest rate disparity grows. This was accomplished by relying on a methodology that connects the goods market to the capital market. Additionally, if these deficits continue, a balance of payments crisis might result. The results showed that this tendency appeared to be at work for the European nations receiving international help. (Guerreiro, 2013)

The paper contends that the likely causes of interest rate differentials in EMU remain a matter of speculation because it is never easy to assess a crisis on the spot. On the one hand, structural economic problems including high debt-to-GDP ratios, huge deficits, and poor growth forecasts have contributed to the general lack of faith in the market. However, political considerations like the ambiguous EMU administration have heightened this skepticism, although, one can question whether these previous economic issues are not having a domino effect, causing additional global structural imbalances in the context of currency zones.

In other words, when parties are permanently determined, the sovereign crisis may be a typical type of balance of payments crisis. By connecting the external disequilibrium to the rise in interest rate differentials, the study aimed to go further than the prior literature by showing that, first, the sovereign indebtedness has its roots in real imbalances. Secondly, that this indebtedness is a unique form of a balance of payments crisis when parities are fixed irrevocably and the CHEER (Capital enhanced Equilibrium Exchange Rate) is used as introduced by Juselius (1991, 1995), Johansen and Juselius (1992), Camarero and Tamarit (1996), and MacDonald and Marsh (1997, 2004), that allows testing jointly the international parities, PPP and UIP (Uncovered Interest Parity), through a cointegrated VAR.

2.2.6. Foreign Direct Investment and Debt

Examining the relationship between these two macroeconomic indicators is a complex inner connective variation between them with initial assumptions to establish their relationship is quite difficult. Nevertheless, the whole idea is constructed based on the sovereign risks that are associated respectively to both of indicators, now if sovereign risks associated with debt is evaluated it is quite lesser than the risks associated with FDI because FDI is chosen only if the investor is efficient in propelling the project and adversely if the project is risky then the investor would not involve in that project and it would not affect the debt structure within the economy. Therefore, it is essential to explore the different ways of transferring foreign capital such as debt finance and direct investment, but still the question remains how much it would be safe to choose any of these options specifically for the investor while addressing the sovereign risks associated to both at different levels. As indicated through the study by Monika Schnitzer (2000) that sovereign risks of FDI are more than debt then it is obvious that in case of debt, the investor will have right on a fixed amount of money but in case of FDI, investor's right will be on assets in the host country and it is riskier because assets in the host country are subject to nationalization, meaning that any new tax law or similar regulations would affect their return expectation. (Schnitzer,2000)

Throughout this paper and two strands of literature in this regard which does account for sovereign risks and some literature does not count, it is evident that in case of debt within an economy, FDIs are severally affected, and foreign investors based on the risks involved would not invest, but if they do so then it would reduce by some extent the level of debt defaults. Implying initially that it's the foreign direct investment that is affected by the Debt of a country and in this case no foreign investor would take interest in investing, therefore the question here is that why the effect of FDI is evaluated on the debt? To answer this question, the first important matter is to mitigate the sovereign risks involved in debt financing and FDI, if managed carefully then, it is highly possible that debt defaults of the economy would be alleviated since it is the case in Japan that despite the high percentage of debt to GDP ratio, the economy still makes efforts to tackle the debt level with the domestic and foreign investors holding the government bonds. Therefore, FDI inflows within an economy would tremendously have effects on the debt levels of a country and are included in this study.

Abdih (2011) investigated the connection between foreign direct investment (FDI) and public debt sustainability in emerging nations. The study concludes that FDI can aid in lowering the amount of public debt in emerging nations. The author also discovers that there is a nonlinear link between FDI and public debt sustainability, with greater FDI levels having a bigger impact on public debt sustainability.

2.2.7. Export triggered Balance of Payments and Debt

When determining whether the sovereign indebtedness affecting some EMU nations is a balance of payments problem brought on by the emergence of significant external disequilibrium concerning key partners, even while the latter has primarily been used as the explanation for the causes of the indebtedness, there is no official study linking external imbalances to the steep rise in interest rates within the Eurozone. Depending on Juselius' s (1991, 1995) CHEER method, the equilibrium exchange rate model, addresses this weakness. Theoretically, it was demonstrated that under a currency union, external imbalances between two partners (i.e., a breach of PPP between these two nations) may result in a balance of payments crisis if real adjustments are too challenging to achieve. There is evidence that external disequilibrium necessitates an increase in the interest rate differential to maintain fixed parities among members. Only real adjustments that lessen these imbalances are feasible in a monetary union since genuine imbalances cannot be addressed by monetary instruments (such as the nominal exchange rate). Then, on a long-term basis, the monetary commitments are challenged by the persistence of significant external imbalances (which translates to an inability to implement structural adjustments): the deficits worsen the net foreign asset position, increasing the amount required to service the debt, which in turn feeds the external imbalances. The deficit nation will probably be forced to leave the monetary union because of this snowball effect to devalue its currency and regain competitiveness. (Emma, 2015)

To verify the theoretical predictions empirically, a cointegration analysis between each EMU nation and Germany was performed. Except for Finland, it was discovered that there is a cointegrating long-run link between the capital market and the product market (compared to Germany). Furthermore, causality tests show that, except for the Netherlands, where it is bidirectional, causation is unidirectional and goes from PPP to UIP among the sample of nations for which cointegration is established. Finally, it was demonstrated that whereas France and Italy appear to be relatively immune to external disequilibrium, the nation's receiving aid (Greece, Ireland, and Portugal) have the highest vulnerability to it.

The findings demonstrate that Portugal, Ireland, and Greece are dealing with a balance of payments problem. They were compelled by the exorbitant interest rates they were paying to request aid from the Troika to stay in the Euro and have some more time to undertake structural adjustment programs. The former premise, however, cannot be disproved since, as Greece has shown, structural adjustment is expensive socially and is not well received by the general populace. Disequilibrium appears to have a small role for Spain and Italy, which may be explained by the fact that the so-called contagion effect accounts for a portion of the rise in their interest rates compared to Germany. Finally, despite some (moderate) pressures on interest rates in Austria, Belgium, France, Luxembourg, and the Netherlands, there is little proof that a balance of payments crisis is just getting started. Overall, the findings highlight

significant distinctions between periphery and core nations in terms of how they understand the present indebtedness.

The decline of exports concerning output is a noteworthy characteristic of numerous financial crises. Real-world exports decreased by 17 percent during the 2008 financial crisis while GDP shrank by 5 percent. Another pertinent work by Amiti (2009) explores the possibility that declining bank health may contribute to the explanation of the significant declines in exports relative to output during the current crisis. Our study is the first to reveal a relationship between a firm's growth in exports compared to domestic sales and the health of banks that provide trade credit. By utilizing a special data set that covers the Japanese financial crises from 1990 to 2010, it aimed to address measurement and endogeneity concerns by connecting exporters with the primary bank that supplies them with trade financing. Its findings are statistically and economically significant, indicating that firm-level exports during crises are significantly influenced by the state of financial institutions.

The study's fundamental empirical technique was to take advantage of the fact that, during a certain year, some businesses within a given industry depended on relatively sound banks for trade financing while others relied on less healthy institutions. It was utilized within-industry-year variation to track how the soundness of the banks that provided trade credit to a business affected its export growth. The identification is based on how banks whose health deteriorates affect their export clients within a narrowly defined industry at a moment in time thanks to the use of industry time fixed effects, which sweep out all macro and industry supply-and-demand shocks that are common to all exporters in an industry at a moment in time. (Amiti, 2009)

Traditional macroeconomic and trade models have failed to explain why exports decline during financial crises significantly more quickly than domestic output. It is now unclear why exports may react to financial crises differently than domestic output considering this. This subject was originally answered by presenting several justifications as to why it would be reasonable to anticipate that exports would be more susceptible to financial sector shocks than domestic sales. Particularly, exporters need more finance for their exports than for their domestic sales due to the higher credit default risks and longer time delays connected with overseas trading. The main contribution of this paper is the use of matched bank-firm data to test hypotheses, overcoming measurement and endogeneity problems that have plagued previous studies, and allowing identification of the transmission mechanism from the banks that provide firms with trade finance to the export behavior of those firms. It is the first to demonstrate a causal relationship between financial sector shocks and exporters, which causes exports to fall during banking crises significantly more quickly than output.

Additionally, it was demonstrated that these benefits are less pronounced for multinational corporations and businesses that export mostly by air, which is precisely the kind of variability one would anticipate if trade finance were the primary factor in the findings. Finally, it was shown that the declines in exports brought on by financial issues are quantitatively significant in comparison to the overall declines in Japanese exports during economic crisis years. The findings suggest that financial stocks are likely to play significant roles in export decreases in other countries as well, which is consistent with the data that exporters in many nations rely heavily on trade financing.

2.2.8. Speculation and Indebtedness

If a narrow definition is provided, speculation is placing a bet on any short-term changes in prices of a commodity or an asset that fluctuates very often, and investors hugely gain or lose steeply in a short amount of time, in a broader view, speculation is a socially unproductive financial activity because resources that are devoted to the financial sector divert wealth away from other sectors of the real economy and even destroys them, therefore, it comprises all of those activities for which the social utility to the real economy is close to zero. This theory as emphasized by Keynes asserts that if this type of speculation (on short-term price changes) dominates entrepreneurship then society's resources are most likely ill-invested. (Epstein and Habbard, 2011)

Meanwhile, speculation is, in essence, self-feeding meaning that it would lead to more speculation and more difficulty for a real economy with uncertainty and difficult hedging and risk management ways because asset prices are driven by fear and rumor over proper assessment. Meanwhile, if the speculation is connected to long chains of bets and inner connections between financial institutions then the financial impacts of the bets when gone wrong will create huge countrywide and whole economy-wide distress and crises that cannot be controlled easily, as stated by the Blundell Wignall and Paul Atkinson (2011) of the OECD on financial crises, "when one party to a speculative transaction makes a huge gain, another party is making a huge loss and that loss, in turn, creates a big financial firm to fail, and financial stability risk increases without adding any new equity or debt capital for the economy".

Against this backdrop, although it is highly difficult to assess thoroughly the destructive capacity of speculation in an economy as it is a little element of a real economy, and many factors will fade out the effects it will have. Still the total value of stocks traded as a percentage of GDP for a country can be a good indicator to show how much a country is involved in speculations and do they impact on the debt of the countries in concern of this study or not and it is observed that the ethical foundation of Islam while prohibiting uncertainty and speculations have provided a good solution or not.

Detragiache (2008) evaluated the relationship between stock market growth and public debt sustainability in emerging nations, the study provided that stock market growth can help to reduce the public debt levels for developing countries while it might differ for developed countries. The author also discovered that there is a non-linear link between the variables.

2.2.9. Interest Rates and Indebtedness

The initial relationship between indebtedness and interest rates throughout the reviewed literature has proven to be an adverse effect of debt directly affecting the interest rates as the lending interest rates throughout the banks means with more debt defaults interest rates would increase and would likely cause inflation, but so far, the matter of concern in this study is to determine the bi-casual effect between these two indicators. Given the complex structure of the relationship between them, the study involves two dimensions in this context, firstly with high-interest rates or to be specified when lending interest rates rise, then borrowers cannot cope with the interest payments and most likely default, banks will not be able to provide their debt as well because one of the most common ways of financing in the conventional economic system is through debt. Therefore banks, in turn, cannot pay their debt as well and eventually cause the debt triggered economy-wide disruptions that are initially generated by a household and caused by the high level of interest rates, another dimension is that when interest rates rise then the government's interest payments are costly and again comes back to increased taxes and overburdens for the nation. (De Marco,2014)

Tressel (2008) throughout a nonlinear analysis of the data taken from developing countries evaluated the impact of interest rates on the debt sustainability of those countries. The study found that increased interest rates may make it harder for the emerging nation to maintain their current levels of public debt. with higher interest rates having a higher impact on increasing debt levels for those countries.

John (1990) evaluated the impact of interest rates on the public debt of the United States of America through time series analysis and found that maintaining the United States's Current levels of Public Debt may be more challenging with higher interest rates, the non-linear relationship between these two variables provided that higher interest rates will cause higher debt levels for the country.

CHAPTER 3: METHODOLOGY

3.1. Data and Methodology

The paradigm of this study is intended to be a simple one that could avoid the complexities risen out of multidimensionality characteristics of interconnected seven types of risks. This study is designed to be an applied research method seeking to provide a solution to indebtedness. The quantitative approach of this study uses Pooled least Square, Fixed effects, and Random effects models to reach a conclusive estimate result. The data used in this study is panel data of 6 OIC member countries (Indonesia, Malaysia, Pakistan, Bangladesh, Bahrain, and Lebanon) and 6 non-OIC countries (USA, Japan, Greece, Russia, Sri Lanka, and the UK) with the highest debt defaults, making a total number of observation of 384 with 32 years from 1990 to 2021.

Taken from the world bank debt reports and IMF database the data about mentioned countries consists of debt-to-GDP ratio as the dependent variable, foreign direct investments, Inflation rate, Interest rate, and Government expenditure based on the fact that post covid-19 outbreak government expenditures skyrocketed to handle the spread, GDP growth, Exports, Government Revenues, and Stocks traded value as a percentage of GDP as independent variables. Throughout literature review the logic for choosing specified variables were already explained so it won't be restated here.

The methodology consists of performing these steps:

- Panel Unit root Tests (IPS)
- Slope heterogeneity test to determine Endogeneity within the model.
- Heteroskedasticity test
- Pooled OLS group-wise separated estimation for OIC, non-OIC countries with the adjustments by Heteroskedasticity Linear Regression with maximum Likelihood option
- Lagrange Multiplier Test to identify between Pooled OLS and Random effect model.

Table 3.1 Variable Description

Variables	Description	Source
Debt-to-GDP ratio	Entire stock of direct-government fixed-term contractual obligations. Domestic liabilities Foreign liabilities Net debt	International Monetary Fund, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.
Exports % of GDP	Value of all goods and market services provided to the rest of the world	World Bank national accounts data, and OECD National Accounts data files.
Foreign Direct Investments %GDP	Net inflow of investments within an economy 10% or higher voting stock in an enterprise Sum of equity capital, reinvestment of earnings, and other long or short-term capital shown in BOP	International Monetary Fund, International Financial Statistics and Balance of Payments
Inflation	Measured by the growth rate of the GDP implicit deflator. Rate of price changes in an economy as a whole	World Bank national accounts data, and OECD National Accounts data files
Interest Rate	Lending Interest rate, usually meeting the short and long-term needs of financing. Real lending interest rate adjusted for Inflation	International Monetary Fund, International Financial Statistics, and data files.
Government Expenditure %GDP	Recurrent Expenditure for goods and services Includes national defense and security. Excluding military expenses that are part of government capital formation.	World Bank national accounts data, and OECD National Accounts data files.
GDP growth	Percentage change of the sum of all value added by all resident producers.	World Bank national accounts data, and OECD National Accounts data files.
Government Revenue (%GDP)	Tax and non-tax revenues Excluding subsidies	The World Bank.

Stocks Traded(%GDP)	Total number of shares traded, domestic and foreign multiplied by their respective matching prices as a contribution to GDP	World Federation of Exchanges database
Imports (%GDP)	Value of all goods and services received from the rest of the world, excluding compensation of employees and investment income and transfer payments.	

3.2. Why Specified Countries and Timeframe

While the data are secondary, it is critical to avoid selection bias in the study which is possible by establishing precise, measurable inclusion and exclusion criteria that will reduce the likelihood of making arbitrary or subjective judgments that induce biased results.

To determine the factors that contribute to reduced or increased accumulation of debt for countries will require firstly those countries that faced high debt in the specified timeframe so that it could be observed what have been the values for determinant factors during the time the countries encounter debt defaults or going the debt accumulation limit as defined in the World Bank report. This is why Greece, Lebanon, Pakistan, and Sri Lanka are chosen in this category as these countries not only have a higher level of debt but have also initiated talks over rescheduling their debt (formalized). Secondly, countries that are on the edge of debt default and appealing for rescheduling, but somehow have managed to cope with the situation are Japan, the UK, the USA, and Bahrain. Lastly, countries that have encountered debt crises long before the specified timeframe and are now on a sustainable path of debt management are Indonesia, Malaysia, Russia, and Bangladesh. Thus, the whole purpose of this selection is to point out the behavior of common factors that have worked differently for three categories of countries over 32 years of experiencing two major external shocks that affected the whole world. Meanwhile, it is obvious that if we want to find out what caused or causes debt crises, we need to find the answer from the ones that experienced indebtedness, if we want to find how countries managed to control debt despite having high amounts of, we shall seek experience of those in the particular situation, and lastly, to see how countries have thoroughly managed to stay safe from debt crises it shall be sought from those who have managed this phenomenon which all are described above.

Despite the similar high volume of accumulated debt, it is quite complex to pose a question as to why Japan is not officially under a declared Indebtedness situation like Greece and other European countries, though it might be due to investors still holding government bonds of Japan. While, if common determinants of crises could be explored it is obvious that if the Interest rate for Greece has been very

high, the same factor is very low in the case of Japan, and similar other variables that are in a contrary situation to each other for selected countries. Therefore, selected countries showcase optimal subjects of study for achieving the initial objective of determining elements of Indebtedness as this would identify main causes whilst being involved with complex contrary values for different countries. (Uwe, 2014) Thirdly, most of the countries subject to this study have three conditions according to their net versus gross debt ratio:

- Net debt ratio > Gross debt ratio
- Gross debt > net debt
- Gross debt is Identical to net debt as it cannot be equal.

In the case of Japan, because net debt means the gross debt of a country minus all those cash or cash-like assets held by the government, the gross debt is much larger than the net debt which means there is no matter of liquidity for the country and with current account surpluses that Japan has accumulated over a decade, it gained a lot of foreign net reserves that in case of exposing to default the government would pay the outstanding debt and control the situation. While the matter is that why is there still this differences between two countries(Japan and Greece), where one is actively in severe debt and Japan which is predicted to declare debt default has several aspects that is preventing it while because Japan has a higher debt to GDP ratio than Greece. (Wallison, 2012)

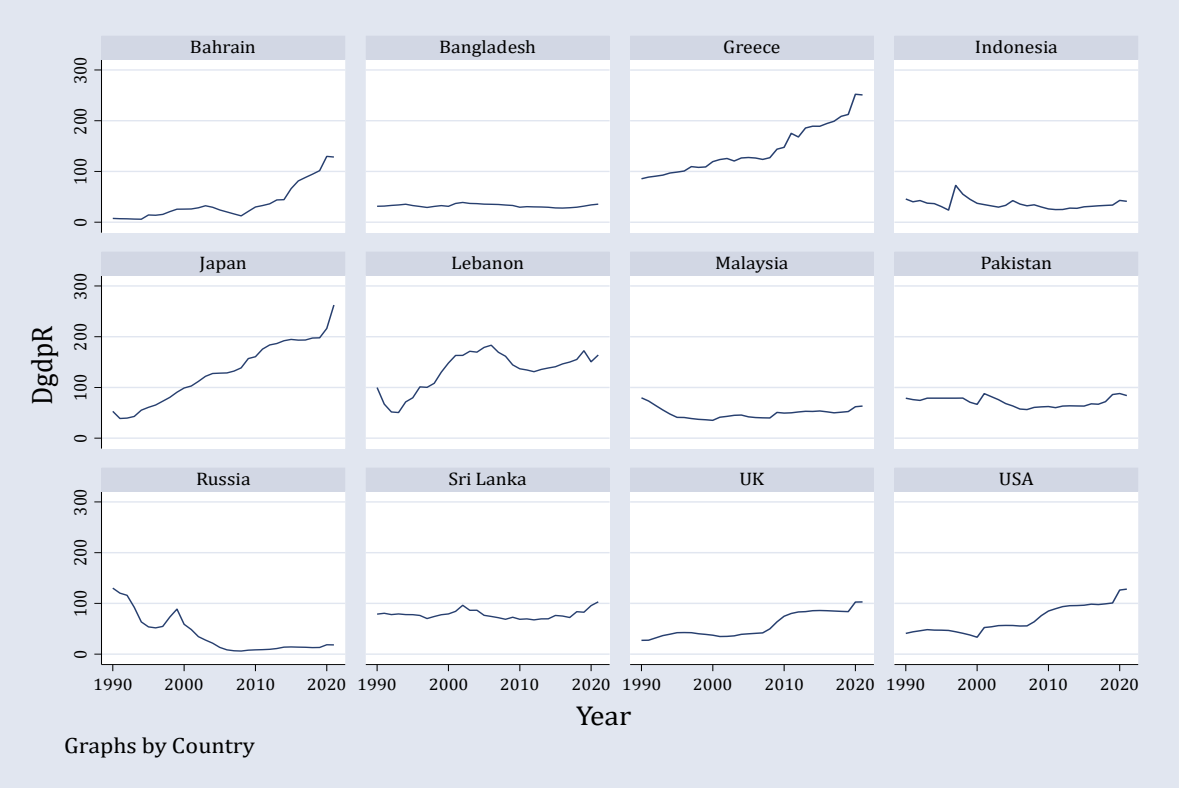

Figure 3.1 : Debt-to-GDP Ratio by Country

Countries subject to this study have two **types of monetary policy**, heteronomous and autonomous, autonomous means the central bank of the country has the freedom to make changes in the money supply as it would allow the government to use it as an instrument for controlling the economy of the country. This is the case of the USA, Japan, Indonesia, Malaysia, Sri Lanka, Russia, UK, Bangladesh while adversely Greece, Pakistan, and Bahrain are suffering from this lack of freedom by having a heteronomous monetary policy since the money supply within Greece and all else European countries is controlled through European Central Bank and the government cannot make changes that would reduce exposure to debt defaults. (Gary, 2016)

Against this backdrop, it was highly important to select countries that would induce all the differences and several diverse factors that every country by essence and structure has, and to obtain conclusive results by this study it is necessary to address all of those matters, that is why Greece, Japan, and the USA have been selected showcasing those factors. Meanwhile, the reason behind selecting Malaysia is that since 1974 with the establishment of the research center for Islamic affairs, Malaysia has developed to the level as some scholars refer to this country as global leader in Islamic Economy and finance where in 2017 its total value of Islamic financial assets was USD 1.7 trillion, the largest share it had in 2017 and continue to do so based on the reports from the State of the Global Islamic Economy Report (SGIER). Meantime, Indonesia following the tracks, is consistently developing in Islamic Finance Industry based on the same report and the Islamic Finance Industry Indicator (IFDI) by 2022 which indicated 4th in Islamic financial assets, the first country on Islamic finance country index (IFCI) in Islamic finance report 2022. Pakistan while implementing the Islamic economics and finance have the last rank in top 15 according to the report and have had major developments as well through bank and non-bank financial institutions and the sole reason for the selection of Pakistan in this study is to have a balanced panel data in terms of two group comparison between OIC and non- OIC member countries.

The reason behind choosing a specific time frame for observing the data is about the global waves of debt on a historical basis, the period from 1990 to 2021 covers the second, third, and fourth waves in the global waves of debt, this would enable us to thoroughly investigate the relationship between common and different factors & variables affecting indebtedness. The first wave of the debt culminated in the early 1980s and efforts to restructure the debt ended with the Brady plan for Latin-American countries, the plan focused on turning the syndicated loans into bonds with collaterals provided by treasury securities of the U.S. government. The second wave is between 1990 to 2000s and the crisis emerged when investor sentiments turned unpleasant in 1997-2001 while banks and corporations around the globe borrowed heavily with the financial and capital market liberalization. (Nunnekamp, 2014)

The third wave was triggered by regulatory facilities and ease specifically with burrowing and ended with the global financial crisis that spread around the globe throughout 2007 and 2009 as the bubble crises. The fourth and current wave started in 2010 entails many similarities to previous ones, as the global interest rates have been very low, boosted borrowing through the rise of regional banks, increased tendency for local currency bonds, and spiked demands for debt from the non-banking financial sector. Therefore, to sum up, firstly, including three waves of debt enables the study to be accurate regarding the factors causing the Indebtedness while comparing the differences between the waves, and secondly, post-Covid-19 pandemic borrowings multiplied and defaults as well, so it more caused the debt and since the outbreak started at the end of 2019 and lasted until the end of 2021, therefore, it is important to include those episodes of borrowings. (Gary, 2016)

Lastly, the selection of the countries as such is purposed to provide a glimpse of comparison between Islamic Economics and conventional economics through OIC members as Islamic Countries (Indonesia, Malaysia, Pakistan, Lebanon, and Bahrain) and non-OIC countries as non-Islamic countries (UK, USA, Russia, Sri Lanka, Japan, Greece, and Bangladesh).

3.3. Models and Equations

3.3.1. Unit Root Test

Since the beginning of the 1990s, there has been numerous research on non-stationary panel data analysis. Commonly the approach has been to detect endogeneity and then do stationarity tests and develop models based on that, which are the Panel ARDL pooled mean group, GMM, Arellano bond dynamic model, and many other dynamic models that have their assumptions and usage. (Frankel & Rose, 1996) The same approach is taken in this study to find the heterogeneity or homogeneity issue in the panel and then to select an appropriate static model which could provide the best reliable results along with post estimation test of LM to see if the Pooled OLS is appropriate to rely on. This approach has been taken by many authors such as Coakley & Fuertes (1997), Taylor & Sarno (1998), Lee & Wu (2001), Mark & Sul (2003), Wu & Chen (2001), Holmes (2002), Wu & Zhang (1997), Ferrier (2009) and many more other authors and scholars that avoided stationarity tests once the homogeneity proven to exist. Therefore, Unit root tests are essential to understand the order of stationarity in the data to choose the correct model that could explain the relationship. If the data have mixed order of stationarity up to the first difference or they are non-stationary then static models cannot be used for the estimation. However, one of the important steps in panel data analysis is to determine if the panel is heterogeneous or homogeneous if heterogeneous then it will be the case of endogeneity and to address that static models are not appropriate then will be

the case of stationarity tests and dynamic panel data models, if homogeneity exists then it is not necessary to do unit root tests and static models are appropriate to be performed. (Philips & Moon,1999)

3.3.2. Slope Heterogeneity Test

This test intends to detect heterogeneity or homogeneity, it is useful in detecting endogeneity due to what is termed to be unobserved time-invariant effects and variable bias. Meanwhile, there are many tests with the same intention. However, the test developed by Pesaran and Yamagata is the common one used for this purpose.

This test implicitly estimates two models and compares them, first one is the restricted model is a weighted fixed effect estimator, which imposes slope homogeneity, while the unrestricted model is a cross-sectional unit-specific OLS regression model. The test is based on the difference between the two models, large values of the test statistics imply a disagreement between fixed effects and the alternative model, and therefore the null of slope homogeneity can be rejected, but if not rejected means that the alternative model of OLS regression is appropriate for the estimation. (Pesaran & Yamagata, 2008)

$$\Delta\tilde{} = 1/\sqrt{n}\ \left(\sum_{i=1}^{n} d_i\tilde{} - k_2/\sqrt{2k_2}\right) \ldots\ldots \qquad (1)$$

$$D\tilde{}_1 = (\beta_{2i}\tilde{} - \beta\tilde{}_{2WFE})` X_{2i}` M_{1i} X_{2i} / \sigma\tilde{}^2_i\ (\beta_{2i}\tilde{} - \beta\tilde{}_{2WFE}) \qquad (2)$$

$\beta_{2i}\tilde{}$ - is the cross-sectional unit of specific estimation.

$\beta\tilde{}_{2WFE}$ – is the coefficient for the weighted fixed-effect estimator.

3.3.3. Heteroskedasticity Test

One of the basic assumptions in an OLS estimation is that it should be free of heteroskedasticity which refers to the variance of error term not being constant across observations in the panel data, which is commonly believed to be providing consistent estimation results but with the biased standard errors which eventually will lead to incorrect hypotheses testing and inferences to be made and it is a violation of the basic assumption that the model should be homoscedastic. (Breusch, 1979)

With a given linear regression, to test for heteroskedasticity, first, the residuals shall be estimated and then squared, and the estimation with the below equation should be done:

$$\mu^{\wedge 2} = \sigma_1 + \sigma_2 x_1 + \sigma_3 x_3 + \ldots\ldots\ldots + \sigma_k x_k + \text{error} \qquad (3)$$

then it is possible to easily compute the F statistic for the joint significance of all variables X_2, X_3, ..., X_K. Using OLS residuals in place of the errors does not affect the large sample distribution of the F statistic. An additional LM statistic to test for heteroscedasticity can be constructed based on through:

$LM = n * R^2_{u2}$

Under the null hypothesis, LM is distributed asymptotically as χ^2_{K-1}. This LM version of the test is called the Breusch-Pagan test for heteroscedasticity.

3.3.4. Pooled/Panel Ordinary Least Square Method

$$Dgdpr_{it} = \beta_0 + \beta_1 Exp_{it} + \beta_2 FDI_{it} + \beta_3 Inf_{it} + \beta_4 IR_{it} + \beta_5 Grate_{it} + \beta_6 rev_{it} + \beta_7 stogdp_{it} + \beta_8 Imp_{it} + \beta_9 expratio_{it} + u_{it} \ldots \quad (4)$$

$Dgdpr_{it}$ = Debt-to-GDP ratio with (i) unit of cross section and (t) time.
β_0 = Intercept for each unit of cross-section
$\beta_{1.10}$= Coefficients of the independent variables
Exp_{it} = Exports for each country over time
FDI_{it} = FDI for each country over time
Inf_{it} = Inflation for each country over time
IR_{it} = Interest Rate for each country over time
$Grate_{it}$ = GDP growth rate for each country over time
Rev_{it} = Government Revenues for each country over time
$Stogdp_{it}$ = Stocks traded value (%GDP) for each country over time
Imp_{it}= Imports for each country over time
$Expratio_{it}$ = Government Expenditure (%GDP) for each country over time
U_{it} = Error term with (i) unit of cross section and (t) time

However, pooling the data upon groups for the comparison which is the purpose of this study has a general equation while constraining the variance of the residual to be the same for both groups. (Stradner, 2018)

group 1: $y = \beta_{01} + \beta_{11}x_1 + \beta_{21}x_2 + u_1, u_1 \sim N(0, \sigma_1^2)$ …….. (5)

group 2: $y = \beta_{02} + \beta_{12}x_1 + \beta_{22}x_2 + u_2, u_2 \sim N(0, \sigma_2^2)$…….(6)

For both $y = \beta_{01} + \beta_{11}x_1 + \beta_{21}x_2 + (\beta_{02}-\beta_{01})g_2 + (\beta_{12}-\beta_{11})g_2x_1 + (\beta_{22}-\beta_{21})g_2x_2 + u, u \sim N(0, \sigma^2)$... (7)

It is meant to assess the effects of independent variables; foreign direct investment, GDP growth, interest rates, government spending, inflation, exports, imports, and stock traded value, using the panel

data at hand. Government revenue on the debt-to-GDP ratio is the reason it was chosen as the dependent variable. The debt-to-GDP ratio is the total stock of direct government fixed-term contractual obligations to others that are outstanding as of a given date. Furthermore, it includes both domestic and foreign liabilities like cash and money deposits, securities other than shares, and loans. Since debt is a stock rather than a flow, it is calculated as of a certain date, often the final day of the year and it is the gross amount of government obligations less the amount of equity and financial derivatives owned by the government.

Therefore, the Debt-to-GDP ratio is an accurate indicator for the current study as it is required for understanding the indebtedness of a country, it is needed to include domestic and foreign liabilities of the country. While the reviewed literature by Ksantini (2016) using the debt-to-GDP ratio the as the dependent variable to evaluate the determinants of European public debt, Teresa and Prior (2012) on determining the factors of local government debt and above all the debt sustainability analysis by IMF and the World Bank, as they consider the debt-to-GDP is the accurate and most common indicator for determining indebtedness in countries as they collect annual data and doing their analysis for the purpose. So far, based on the annual debt sustainability report of the joint work of the IMF and World Bank, appendix 1, the reason behind choosing independent variables in this equation addresses the relationships already explained in chapter two of the literature review. (World Bank & IMF, 2021)

The countries within the study construct 12 cross-section observations from 1990 to 2021 for 32 years and the equation shows that it is intended to use pooled or panel least square regression for the estimation while assuming that the intercept for all the countries to be similar and included in $\beta 0$. While possible that it would be otherwise, therefore, to confirm the estimation the test of Lagrange multiplier is used while observing the Bruesh-pagan value to match with the criteria set for it if more than 5% it means that the initial model of Pooled least square regression is sufficient to accurately estimate the relationship. If the BP value is less than 5% then the estimate will not be correct since it implies that the intercept for the countries are different and assuming otherwise makes specification error as defined by Gujarati (2009), that the result would show high significance for all independent variables, and a high R-square that cannot be justified. Therefore, in this case, if proven otherwise, dummy variables would be added to differentiate between intercepts for the countries and the Fixed Effects Model Least Square Dummy Variables method will be used for the accurate estimate. (Gujarati, 2009)

3.3.5. Fixed Effects Model – Least Square Dummy Variables Model

$Dgdpr_{it} = \beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_3 D_{3i} + \beta_4 D_{4i} + \beta_5 D_{5i} + \beta_6 D_{6i} + \beta_7 D_{7i} + \beta_8 D_{8i} + \beta_9 FDI_{it} + \beta_{10} Inf_{i,t} + \beta_{11} IR_{i,t} + \beta_{12} Exp_{i,t} + \beta_{13} Grate_{i,t} + \beta_{14} Rev_{i,t} + \beta_{15} Stogdp_{i,t} + \beta_{16} Imp_{i,t} + \beta_{17} Expratio_{i,t} + u_{i,t}$ ….(8)

$D_{1..8i}$ = shows dummy variables that intend to separate intercepts for each unit of the cross-section with only (i) as the observation unit but no time indicator as its constant, and all the else components describe the same as in the pooled ordinary least square method.

With time being more than variables and observing Bruesh-Pagan value, it is necessary to separate the intercept for those countries since they have different values to do that the easy way is to introduce dummy variables for the countries within the study since we have 12 subjects of study only 11 dummy variables are added to avoid falling into dummy variable trap. Lastly to determine whether the fixed effect method is appropriate or not the Hausman test shall be carried out and if proven to be otherwise, then the random effect model will be used. (Kiviet, 2007)

3.3.6. Random Effects Model

$Dgdpr_{it} = \beta_{0i} + \beta_1 FDI_{it} + \beta_2 Inf_{it} + \beta_3 IR_{it} + \beta_4 Exp_{it} + \beta_5 Grate_{it} + \beta_6 Expratio_{it} + \beta_7 Stogdp_{it} + \beta_8 Rev_{it} + \beta_9 Imp_{it} + w_{it} (\varepsilon_i + u_{it}) – \varepsilon$ (random error term) .. (9)

$B_{0,\,i}$ = Is the mean constant of all the cross-sections

W_{it} = The only difference in the random mode is that the Wit, which refers to two random error terms, one which belongs to the ordinary least square model and the second error term intends to address the randomness of the cross sections selected in case there are not sufficient data for some and due to that some are neglected from the study. While All the else components are the same as POLS and FEM models implying the same definition.

3.3.7. Selection of the Appropriate Panel Regression Model for the Study

Determining which model is the best one for the study would require tests with three phases in the process, the first common model used in panel regression is Pooled/Panel Ordinary Least Square model or method in the case that the intercept for all cross sections assumed to be as similar or close to each other. In case if the intercepts are different then the POLS would not be sufficient and would not yield conclusive and reliable result, then would divert to Random Effects Model with the Bruesh-Pagan value and Langrage Multiplier test, in the case that it is assumed that there are two randomness in the model as described. If random effect model turned out to be not appropriate due to difference in intercepts, then the second test to be done here is the Hausman test to determine whether it is good to pursue with Fixed Effect

Model or stick with the REM, to simplify this process the tests with their hypothesis is described below. (Gujarati, 2003)

Table 3.2 Panel Data Modeling

Test	Assumption	Criteria - Hypothesis	Conclusion
Langrange Multiplier Test – Breush Pagan Value	The assumption is that intercepts for cross sections are close to each other, and the Significance level is 5%	H0 – the selected model of POLS is appropriate. If BRP value > 0.05 H1 – REM shall be applied due to randomness already existing, if BRP < 0.05	Based on the Bruesh Pagan value either POLS or REM
The Durbin–Wu–Hausman test	The assumption is that the Intercepts for each unit of the cross-section are different, and the Significance Level is 5%	H0 – the random effect model is appropriate If the P value>0.05. H1 – the Fixed effect model shall be applied if the P value<0.05.	REM or FEM based on the P value

Performing the above tests needs the same procedure for both, the only difference is the assumption they have, the procedure is to first establish a hypothesis, H0 to show that the existing method is appropriate and H1 to show that the alternative is appropriate one. Secondly, a level of significance is constructed to evaluate the P value in Hausman test and Bruesh Pagan value in Lagrange Multiplier, which is in this study 0.05, thirdly, the criteria of the test are constructed as used commonly to be if P value greater than significance level then H0 would be accepted and if P value lesser than the level of significance then H1 is accepted, and alternative model shall be applied.

CHAPTER 4: RESULT ANALYSIS AND DISCUSSION

Recalling the research objectives, this study aims to address these research objectives and provide answers to these questions. Firstly, to find out common causes of indebtedness and see how some countries have managed to control this issue, secondly, to see the differentiating factors within common causes of the indebtedness for OIC member Islamic countries and non-OIC countries, thirdly, to evaluate whether the use of unsustainable fiscal and monetary policies by government cause high debt for them. Lastly, to evaluate whether the ethical foundation of Islamic economics and finance provides an optimal way of dealing with the phenomenon.

Initially, before proceeding with the estimation as defined in Chapter 3, the endogeneity must be addressed in the panel data estimation as it would steer the way to the best model that could estimate and avoid spurious and biased estimates. Firstly, the method developed by Pesaran and Yamagata (2008) enables to detect of potential endogeneity through the slope heterogeneous test, this test relies on the assumption that when there is cross-section and time series there will be a correlation between the independent variable and error term which need to be solved prior estimation. Multicollinearity would bring the issue that if they are correlated then results will be biased and the basic assumption of independence of regressors are violated. Therefore, the slope heterogeneity test is performed to provide the basis for the proceeding steps. (Pesaran & Yamagata,2008)

Heterogeneity is a major source of endogeneity which means that when there are different cross-sections, it refers to variation and differences among cross-sectional units, this variation causes dependence of variables with the error term, and one variable will affect another variable while estimation which will make the results biased. To avoid the biasness, it is important to test whether the panel is heterogeneous or homogeneous if heterogeneous then it will be the case of endogeneity and to address that static models are not appropriate then will be the case of stationarity tests and dynamic panel data models, if homogeneity exists then it is not necessary to do unit root tests and static models are appropriate to be performed. (Philips & Moon,1999)

4.1. Slope Heterogeneity Test

This test intends to detect heterogeneity or homogeneity, it is useful in detecting endogeneity due to what is termed to be unobserved time-invariant effects and variable bias. Meanwhile, there are many tests with the same intention however, the test developed by Pesaran and Yamagata is the common one used for this purpose, another type of test is proposed by Blomquist & Westerlund (2013) addressing heteroskedasticity and autocorrelation-consistent robust technique which are with different assumptions.

Table 4.1 shows the result of this test and assumes of the test as such that the null hypothesis of the panel is homogeneous and cannot be rejected since the P value is greater than 0.05. Therefore, it is concluded that the panel is homogeneous and based on the approach taken by many economists, when there is no endogeneity, a static model can explain the relationship.

Table 4.1 Testing Slope Heterogeneity

(Pesaran, Yamagata. 2008. Journal of Econometrics)	
H0: slope coefficients are homogenous	
Delta	p-value
1.747	0.081
Adj 2.157	0.061

Variables partialled out: Constant

As the p-value is greater than 0.05, it is evident that slope coefficients are homogenous upon which it is decided that the first model of Pooled OLS is estimated to determine the common factors causing indebtedness, the difference between common factors' behavior on the indebtedness within two groups of Countries that are 6 OIC member countries and 6 non-OIC countries. Based on these results it is discussed whether unsustainable fiscal and monetary policies cause indebtedness and do the ethical foundation of Islamic Economics provides an optimal way to handle debt though there are many countries that in practice work with the imposed Western systems. Meanwhile, Hypotheses are answered and cleared with the results. As the cross sections differ widely in terms of variation and close to endogeneity issue, dummies are used to differentiate between cross sections in two groups of OIC and non-OIC, specifically numbers associated with OIC need to be differentiated and it is done by dummies.

4.2. Summary Statistics and Correlation Matrix

It is critical to provide an overall vision of common descriptive statistics involved to explain the data and their variation. Therefore, to do this first a summary statistic is provided along with a correlation matrix to test whether there is multicollinearity among variables or not which is vital for the estimation.

Table 4.2 Summary Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
cid	384	6.5	3.456556	1	12
year	384	2005.5	9.245138	1990	2021
dgdpr	384	73.34107	49.78994	5.86	262.5
fdi	384	2.378229	3.343016	-5.29	33.57
exp	384	31.80818	26.41824	5.91	121.31
inf	384	14.53706	90.55609	-12.99	1490.4
ir	384	4.635104	6.326347	-28.99	24.06
stogdp	384	36.26229	55.79044	.03	319.88
grate	384	3.160052	4.84108	-26.1	38.2
exgdpra	384	14.52771	4.163201	2.36	24.21
revgdp	384	23.85516	10.16562	7.26	50.19
trgdp	384	65.94185	47.20491	15.81	220.41

The summary shows that the debt to GDP ratio as the dependent variable has a minimum value of 5.86 which is the case for the country that did not face high debt ever or at least for the specified years and a max value of 262.5% which shows that debt is near to 4 times more than their GDP and it is the case for Japan. The standard deviation for the dependent variable is lower than the mean of its values and close to the mean which indicates that the data are reliable.

Foreign direct investment (capital inflows) has a minimum value of -5.29 showing that the outflow is more than inflows for the specific year and country and a maximum value of 33.57. The same goes with inflation, when it's negative it shows that there is deflation indicating increased purchasing power parity and prices of goods and services have fallen to the specific value which can have both positive and negative effects. While the standard deviation shows the wide variation of inflation among the series.

Interest rates over the evaluated and recent years are set to negative values by some countries to incentivize more burrowing to counter excessive slow in economic growth, so when the interest rate is negative it shows that borrowers are credited interest instead of paying interest to lenders which is a strategy used mostly by Japan to accelerate GDP growth. As it is shown here the minimum value for interest rate is -28.99 percent while the maximum is 24.06 showing the two different strategies taken by central banks. Meanwhile, the standard deviation is close to the mean and shows reliability.

Meanwhile, to avoid the **multicollinearity** issue for best results the correlation matrix in Table 4.3 shows that there is no severe correlation among variables so that it would affect another variable's effect

on the dependent variable. When the correlation is mild it does not affect the coefficients within the regression, however, it still affects standard errors, as put forth by (Fabrycy, 1973) (Gujarati, 2003), Mild collinearity has an impact on the model's interpretability depending on the degree of correlation (Mild or Severe) but has no impact on the model's ability to forecast. To determine whether collinearity is mild or severe, as the criteria used by Daoud (2017) asserts values more than 0.5 to showcase strong collinearity. It solely influences the p-Values and the variance of coefficient estimations and when it is mild then estimation can be trusted.(Chennamaneni et al., 2016; Johnston et al., 2018)

While theoretically correlation exists among some variables and it cannot be denied that correlation always does exist within data, there is a mild correlation between the variables now it is appropriate to perform the pooled OLS estimation, Pooled OLS estimation assumes that there is no panel structure and is only a cross-section analysis. Addressing this, dummies are used to first differentiate between two types of countries secondly to separate different values associated with these two types, it also presumes that time-specific effects or individual effects that would change the outcome of variables which might be wrong and lead to biased results. Therefore, it must be cross-checked whether it's appropriate or not.

Table 4.3 Correlation Matrix

	DGDPR	Exgdpra	EXPORT	FDI	GRATE	INF	IR	REVGDP	STOGDP	IMP
DGDPR	1.000000	0.416013	-0.261837	0.003216	-0.358895	-0.297223	0.091602	0.393054	0.141958	-0.181591
Exgdpra	0.416013	1.000000	-0.041851	0.099726	-0.412997	-0.352532	-0.013040	0.309146	0.245783	-0.039917
EXPORT	-0.261837	-0.041851	1.000000	0.383865	0.209995	-0.016798	-0.074330	0.070941	-0.167149	0.184482
FDI	0.003216	0.099726	0.383865	1.000000	0.222196	-0.082839	0.051649	0.071453	-0.072944	0.449473
GRATE	-0.358895	-0.412997	0.209995	0.222196	1.000000	0.114481	-0.052414	-0.358103	-0.183479	0.222443
INF	-0.297223	-0.352532	-0.016798	-0.082839	0.114481	1.000000	-0.407147	-0.282182	-0.225413	-0.039709
IR	0.091602	-0.013040	-0.074330	0.051649	-0.052414	-0.407147	1.000000	-0.178099	-0.238356	-0.026723
REVGDP	0.393054	0.309146	0.070941	0.071453	-0.358103	-0.282182	-0.178099	1.000000	0.350591	0.052649
STOGDP	0.141958	0.245783	-0.167149	-0.072944	-0.183479	-0.225413	-0.238356	0.350591	1.000000	-0.198601
IMP	-0.181591	-0.039917	0.184482	0.449473	0.222443	-0.039709	-0.026723	0.052649	-0.198601	1.000000

4.3. Heteroskedasticity Test

One of the basic assumptions in an OLS estimation is that it should be free of heteroskedasticity which refers to the variance of error term not being constant across observations in the panel data, which is commonly believed to be providing consistent estimation results but with the biased standard errors. Eventually it will lead to incorrect hypotheses testing and inferences to be made and it is a violation of the basic assumption that the model should be homoscedastic. To identify if heteroskedasticity exists are not, a scatter graph and the three versions of Breusch-Pagan (1979) and Cook-Weisberg (1983) are performed to first detect the issue and then to find a solution for better estimation results.

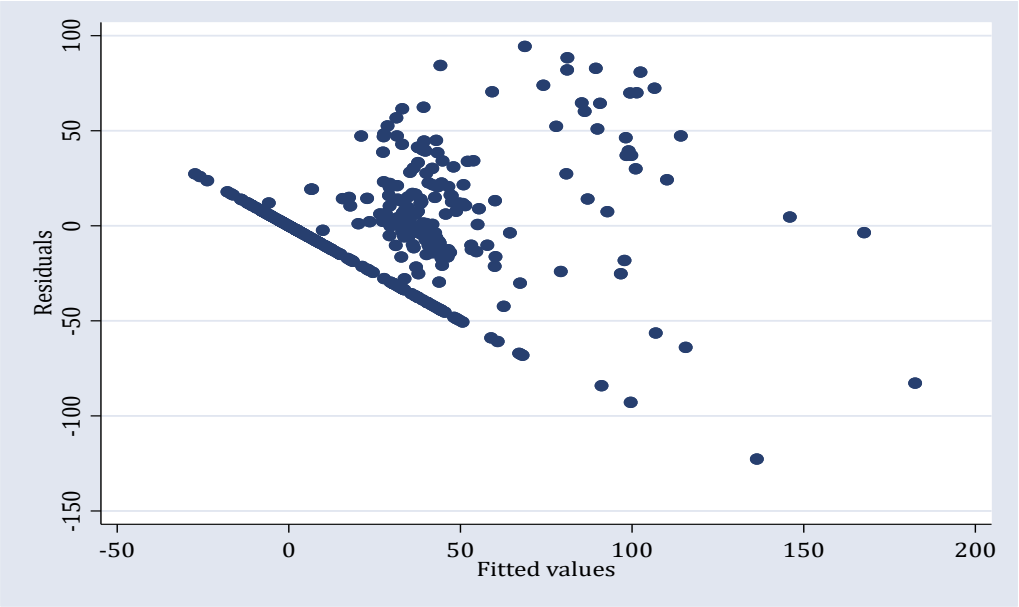

Figure 4. 1 non-Constant Variance (Heteroskedasticity)

The figure indicates a pattern of decreasing spread in the standard errors which shows that there is heteroskedasticity present in the model that should be addressed. As well as table 4.4 of the Breusch-Pagan and Cook-Weisberg test, shows that the p-value is lower than 0.05 and we can reject the null hypothesis of constant variance and shows the presence of heteroskedasticity.

Table 4.4 Breush-Pagan/Cook-Weisberg Test for Heteroskedasticity

Assumption: Normal error terms
Variable: Fitted values of dgdpr
H0: Constant variance
chi2(1) = 265.20
Prob > chi2 = 0.0000

To address the issue, the common way to solve the problem is to use Heteroskedasticity Linear Regression with a Maximum Likelihood option, although the Pooled OLS estimator is consistent with heteroskedasticity issues, and the results will not be biased but with the emergence of other issues like spatial correlation or autocorrelation. Although, it will not be a good option to be used therefore some adjustments are needed from Heteroskedasticity linear regression with Maximum Likelihood option. (Gujarati, 2003) (Wooldridge, 2010) However, the maximum likelihood option under POLS estimation provides conclusive estimation results to rely on.

Three critical assumptions of endogeneity (independence of regressors from residuals), multicollinearity (correlation among variables), and heteroskedasticity (non-constant error variance) for the Pooled OLS estimation are evaluated, it is found to be appropriate to use the POLS for estimation.

4.4. Pooled OLS Estimation

Pooled OLS is simply an OLS technique of estimation that ignores the panel structure and specific effects within the model and intercept if existing, that is why if certain assumptions are established then it is appropriate to perform the model for unbiased and consistent results, otherwise, it will provide inconsistent results, that is why tests of multicollinearity, Endogeneity, and Heteroskedasticity are performed to examine the appropriateness of POLS. When there is a group-wise effect then the Pooled estimation is not appropriate generally, however, it is possible to do separate Pooled OLS estimation for group comparison effects while conservatively taking account of heterogeneity which is why the slope heterogeneity test is performed, and when there is no heterogeneity, it is possible to use separated POLS estimation for group comparison. This approach simply defined is the method of panel data analysis in which a variable's effects across groups are evaluated using separated models and interaction terms and this interaction term shows how one variable changes depending on the value of another variable. This approach is taken by many scholars and economists for instance, Cameron & Trivedi (2005), Yip & Tsang (2007), Kiviet & Niemczyk (2007), Beckerman & Illmakunnas (2009), Angrist & Piscke (2009), Wooldridge (2010), Wooldridge (2013), Stradner & Theubl (2018), Bun & Harrison (2019).

The tables 4.5 below show the result for both OIC and non-OIC countries respectively, reason behind separating the estimation is to find the response of the dependent variable over the same variables while addressing different cross sections.

Table 4.5 POLS Estimation for OIC Countries

Dgdpr	POLS	Random effect	Fixed effect
Inf	-0.0157728	-0.0062325	-0.0038836
	(-0.361)	(0.513)	(0.677)
IR	-2.340193***	-0.3496075*	-0.3002227*
	(0.000)	(0.063)	(0.080)
Exp	-2.653603***	-1.460186***	-1.603112***
	(0.000)	(0.000)	(0.000)
Grate	-2.27109***	-0.823712***	-0.8001959***
	(0.000)	(0.000)	(0.000)
Revgdp	-0.647506***	-0.0253736	0.1687136
	(0.011)	(0.924)	(0.530)
Imp	1.522513***	-0.8768749***	-0.9852142***
	(0.000)	(0.000)	(0.000)
Exgdpra	-2.223335***	0.1082686	0.2676996
	(0.000)	(0.781)	(0.4840)
Stogdp	-0.0965039***	-0.0180387	-0.0112842*
	(0.001)	(0.068)	(0.094)
FDI	3.564999***	0.6512143**	0.525038*
	(0.000)	(0.024)	(0.064)

*Denotes significance at 10%, **significance at 5%, and *** significance at 1%.

To find the reliability of the test results, the Langrange-Multiplier test is performed to see if the POLS is appropriate or not with the null hypothesis of POLS being appropriate. When heteroskedasticity was tested it was found that the model suffers from the heteroskedasticity, however, the issue was solved with Heteroskedasticity Linear regression with the Maximum Likelihood option for better results, therefore as it is not necessary to provide an LM test again when the model is already adjusted with heteroskedasticity, but the model might contain autocorrelation and other unobserved factors which shall be addressed. Meanwhile, if it is determined that POLS is better than the Random Effect model then there is no need to proceed further and only POLS should be used.

Table 4.6 Langrange Multiplier Test of Breusch-Pagan Value

dgdpr[cid,t] = Xb + u[cid] + e[cid,t]

Estimated results:

	Var	SD= sqrt(Var)
dgdpr	2903.522	53.88434
e	752.152	27.42539
u	0	0
Test: Var(u) = 0		
	chibar2(01)	0.00
	Prob > chibar2	1.0000

The P-value is bigger than 0.05 which means that the POLS is appropriate for estimation while adjusted for heteroskedasticity.

The result shows that all the variables except inflation are significant at a 1% significance level in the case of OIC countries, using separate estimations to differentiate between OIC and non-OIC countries, both estimations indicate that inflation is not significantly affecting the debt-to-GDP ratio. However, it cannot be entirely accepted as inflation do affect dependent variable but in this study due to these reasons it is insignificant:

- Unbalanced panel and missing specifically for inflation, which makes the sample size lower for this variable.
- The variable is insignificant only in the determined 95% confidence interval, which means that if the interval is lowered, then inflation is significant, although, practical decisions shall not be made based on it.

Furthermore, the result as provided is such that an increase in the interest rates for the OIC countries would decrease the debt for these countries since the rates of interest in Islamic countries and OIC countries are generally lower than other countries, so up to a specific time in the short run increasing interest rates will decrease the debt to GDP ratio for OIC countries. So, a one percent increase in interest rates will decrease the debt-to-GDP ratio by -2.34 percent which is subject to the limit that it only decreases up to a certain level due to the complex combination of other macroeconomic variables and fiscal and monetary policies of governments.

4.4.1. Interest Rate and Debt

Addressing the relationship between Interest Rates and Debt, there are 4 theories to explain the complex relationship they have. Firstly, the Crowd-out theory developed by Richard Thomas in 1970, asserts that initially there is a positive relationship between interest rates and debt levels for countries since higher interest rates cause decreased private investments, eventually leading to a slowdown in economic growth, tax, and non-tax revenues and spiked up expenditures, and to finance the expenditure government would again approach to lenders and debt would go higher.

Secondly the Barro-Ricardo Equivalence Theory, this theory initially proposed by David Ricardo in the early 19th century and further elaborated by Robert Barro from Harvard University Asserts that interest rates do not affect debt levels since rational consumers understand that when debt and interest rates are high, they need to save more to pay taxes and interest payments. Therefore, the private investments and business activities in the country would not change much that to affect the debt level. According to this theory, higher interest rates would only change the aggregate demand for consumers, and they would save to be able to pay for the future which would increase the propensity to save.

Thirdly it's the Keynesian theory, initially proposed by John Maynard Keynes in the 1930s, provides another aspect of this relationship and explains that indirectly higher interest rates would negatively impact debt levels as such that when interest rates are high inflation is high as it is used by central banks as a useful way to counter inflation, in this situation with inflation the real value of debts in terms of currencies will decrease which would decrease the debt eventually. Although this theory justifies the negative relationship, it is only possible when the debt is already sustainable and boosts economic growth which will only happen when countries spend their debt finances on comprehensive revenue-generating projects which is quite difficult to achieve and specifically for the countries that are already in high debt and defaulted.

Lastly, the Solow-Swan Theory, this theory belongs to the Neoclassical Growth theory proposed by Robert Solow and Trevor Swan in 1956, the theory asserts that higher interest rates indirectly decrease the debt of the countries as such that in the long-run higher interest rates will stimulate increased savings and accumulation of capital which will then be financed for productive projects by the government that could generate enough revenues and spiked up GDP output to decrease debt levels.

4.4.2. GDP Growth, Exports, and Government Revenues and Debt

The relationship between GDP growth rate, Exports, and Government's tax and non-tax revenues with debt can be explained mostly by two macroeconomic theories of Neoclassical growth theory and

Keynesian theory which asserts that higher exports will decrease debt levels due to the fact higher exports will stimulate higher economic growth and income which will change and increase the ability of government to repay its debt and reduce the debt to GDP ratio. Therefore as per the result, a one percent change in export will decrease the debt-to-GDP ratio by -2.65 percent, a one percent increase in economic growth will decrease Debt by -2.27 percent, and one point increase in revenues of the government as a percentage of GDP will decrease the debt levels by -0.64 percents which are lower than expected because domestic revenues mostly are not sufficient to pay the high amounts of debt countries accumulate for big investments governments intend to accomplish.

Meanwhile addressing the theory behind export and debt, there is a theory first proposed by Raul Prebisch in the late 1950s which is called the Prebisch-Singer thesis of dependency theory. This theory indicates that when the GDP of a country is driven by trade(export) it will make the economy vulnerable to external shocks and volatility because of dependence on foreign markets and capital, which will eventually lead to dependence on external debt. Therefore, the theory asserts that there is a positive relationship between export and debt. (Prebisch, 1950)

4.4.3. Stocks Traded Value and Debt

One of the main variables in this study which constructs the justifying gap of the research is the relationship between Stocks Traded value(%GDP) and Debt levels of countries. There are two major theories explaining this relationship. Firstly, the **Neocla**ssical growth theory and Keynesian theories both indicate that when trade values for stocks are high and contribute to a large amount of GDP formulation and growth, it is obvious that it would make sufficient revenues to service the debt and decrease debt levels. However, the second theory which is called the financial instability hypothesis developed by Hyman Minsky in the 1970s and 1980s, the theory asserts higher stocks traded will increase debt since it will create a speculative bubble and financial crisis as it involves more risk-taking and vulnerability to external shocks and volatility. Therefore, if a country's GDP is formulated by more percentages from stock traded value an external shock will easily create economic instability and increased levels of debt that the country cannot pay back.

The estimation results show that for OIC countries one percent increase in stock traded value will decrease the debt-to-GDP ratio by -0.096 percent which is due to the situation that OIC countries are not involved in stock trades as per what the value of the stock trades are for the non-OIC countries and construct enormous amounts of GDP, therefore it supports the theories of Keynesian and Neoclassical growth theory that it will decrease debt level. However, if more risks are taken this will trigger heavy losses and a positive relationship between stocks traded and debt.

4.4.4. FDI and Debt

The relationship between Foreign Direct Investments and debt is complex like any other macroeconomic variable. However, there are theories explaining this nexus supporting the result found in this study. Firstly, Financial theory (internationalization theory of FDI) originated from the work of Buckley and Casson in 1976, indicates that FDI is mostly affected by problems associated with capital markets like transaction costs, agency problems, asymmetric information, diversifications in portfolios, exchange rate changes and many more constraints so therefore if these constraints are appropriately addressed then the FDI would decrease the debt level and it would change it to a sustainable level and would showcase a negative relationship between them. Adversely, these complications would lead to a positive relationship as its been the case for most OIC member Islamic countries that Capital flows to the country brought with itself more cost of external financing, and risk premium which oppositely increased debt levels.

Secondly, the Endogenous growth theory proposed by economist Romer in 1986 and 1990, initiates a non-linear relationship between FDI and debt and further explains that FDI can have both positive and negative effects on Debt which is associated with how investments are used and if it is used as such that it would maintain fiscal balance and increase public investments it would surely change the capacity to service debt as well. (Romer, 1990)

As per our result, it is evident that for the OIC countries, there is a positive relationship between FDI and debt as a one percent increase in FDI(%GDP) increases debt to GDP ratio by 3.56 percent which shows the imperfections and inability of the countries to control the capital flows as what was the case of Indonesia's debt crisis of 1997 which was triggered by capital inflows and outflows and made disastrous consequences.

4.4.5. Imports and Debt

The nexus between Imports and Debt can be explained easily by the balance of payments theory, initially proposed by Davide Hume in 1752 by the Price specie flow mechanism. This theory indicates that there is a positive relationship between imports and debt as such that if imports exceed exports, it means that the country is going into a deficit and is spending more than it should earn which obviously will establish more tendency to borrow and would increase debt levels. Adversely if exports are more than imports, it means the government is earning more than what it is spending, indicating decreased debt levels as it increases the capacity to service debt. Therefore, decreased imports will cause reduced debt levels as well. As per our estimation results a one percent increase in imports will increase debt to GDP ratio up to 1.52 percent. (Hume, 1752)

4.4.6. Government Expenditure and Debt

The relationship between Government expenditure and debt can be explained by the Ricardian theory which asserts that expenditures can affect debt levels through intertemporal budget constraint which accounts for the present value of future revenues of countries. Simply put, if a government is spending as such that its expected future revenues do not change, it means that government is not implementing a sustainable fiscal policy and if the government spending increases future value of its revenues, then the fiscal policy is sustainable. Therefore, according to the Ricardian theory, if government spending increases, it will have both a negative and positive relationship with debt which solely depends on whether the fiscal policy is sustainable or not. If the policy is appropriate then it would stimulate increased revenues which reduce the debt, otherwise, it would increase debt. As per our estimation results a one percent increase in spending would decrease debt level up to -2.22 percent which showcases the implementation of optimum fiscal policies by the OIC member countries it should be considered that this is the case only because the results are shown jointly for 6 OIC countries and it might be different by cross-section and country basis.

The R-squared of this estimation is 0.54 which can be said 54%, this typically explains that all the variables included in the study jointly contribute to defining debt to GDP ratio by 54%, although 9 variables, 3 main variables, and 6 control variables are added to maximize the r-square. Furthermore, to define macroeconomic determinants of debt indebtedness it is still an ambiguous issue that needs more research due to the complex and twofold nature and definition of the debt.

Table 4.7 POLS Estimation for non-OIC Countries

Dgdpr	POLS	Random effect	Fixed effect
Inf	-0.0355869	0.0165581	0.0151608
	(0.105)	(0.284)	(0.334)
IR	1.246622**	0.3846313***	0.4564345**
	(0.026)	(0.004)	(0.021)
Exp	-0.265749***	-0.0167406	0.0135375
	(0.001)	(0.895)	(0.929)
Grate	-0.7341172*	-0.9495803***	-0.9823764***
	(0.087)	(0.000)	(0.000)
Revgdp	1.394496***	1.36222***	1.563409***
	(0.000)	(0.001)	(0.000)
Imp	0.8336807***	1.219084***	1.331597***
	(0.000)	(0.000)	(0.000)
Exgdpra	1.705775***	2.9377024***	3.184926***

	(0.015)	(0.000)	(0.000)
Stogdp	0.1002912***	0.1243839***	0.1185251***
	(0.007)	(0.000)	(0.001)
FDI	-2.879642***	-0.8467991***	-0.8019522**
	(0.000)	(0.000)	(0.055)

*Denotes significance at 10%, **significance at 5%, and *** significance at 1%.

The result implies that all the variables are significant at different levels of 1%, 5%, and 10% significant at the specified 95% confidence interval level, except for the inflation which is close to but more than 10% level.

The interest rate for the non-OIC countries is shown to have a positive significant relationship with debt at a 5% significance level, as a one percent increase in interest rate will increase the debt by 1.24 percent which is consistent with the theory of Crowd-out, asserting that when interest rates are higher it will cause deprived private investments and incentives and a slowdown in economic growth and GDP which then, in turn, causes fewer taxes and revenues and failure to service debt and pay back.

Exports have a significant negative relationship with debt and are consistent with both theories of neoclassical growth and Keynesian, asserting that higher exports will decrease debt levels since higher exports will stimulate higher economic growth and income which will change and increase the ability of governments to repay their debts and reduce the debt to GDP ratio.

GDP growth rates have a significant negative relationship at a 10% significance level which shows a mild impact of growth rate on the debt levels since non-OIC countries are all developed countries and for developed countries, it is hard to achieve more growth since they are already developed, therefore the P-value of 0.087 indicates the minor impact of growth rate on debt level for these countries. However, it reduces debt by -0.7 percent when the growth rate is increased by one percentage point.

This result for GDP growth rate is consistent with both theories of Keynesian and Neoclassical theory with the same line of reasoning as provided for exports since increased growth rates will generate revenues and revenues will increase the capacity of governments to repay their debts.

Revenues, which commonly is referred to as tax and non-tax revenues of governments is found to have a significant positive relationship with debt for the non-OIC countries at the 1% significance level. Further indicates that a one percentage point increase in revenues will increase the debt to GDP ratio by 1.39 percent which can be explained by the Endogenous growth theory and neoclassical theory, these theories imply that government revenues can have both negative and positive relationship with debt depending on the productivity of revenues and fiscal balance of the economy. If the revenue exceeds

spending, then the fiscal balance is in surplus, and the surplus will lead to the ability to repay debt or to even give loans to other agents or countries, but if the spending exceeds revenue, then It will be the opposite case for the debt. Meanwhile, the theory further explains that the relationship relies on the productivity of revenues, if revenues are used in again revenue productive activities, then it will have a negative relationship with the debt level of the country, but if revenues are wasted then it will have a positive relationship with debt levels which is the case for non-OIC countries, indicating the unsustainable fiscal policies these countries implement.

Imports are shown to have a positive relationship with debt at a 1% significance level, indicating that an increase of one percent in imports(%GDP) will increase the debt up to 0.83 percent. This result is consistent with the theory of balance of payments by David Hume which asserts that higher imports indicate more spending and less earnings and if a country is not earning as much as it is spending then obviously going into a deficit situation which will make it difficult for the country to repay its debt and overcome indebtedness and default eventually.

Government Expenditures are shown to have a significant positive relationship with debt at the 1% significance level and an increase of one percent in expenditure would increase debt levels by 1.7 percent. This result is consistent with the theory of Ricardian David Ricardo, asserting that if a government is spending as such that its expected future revenues do not change, it means that the government is not implementing a sustainable fiscal policy, and if the government spending increases future value of its revenues, then the fiscal policy is sustainable. Therefore, according to the Ricardian theory, if government spending increases, it will have both a negative and positive relationship with debt which solely depends on whether the fiscal policy is sustainable or not. If the policy is appropriate then it would stimulate increased revenues which reduce the debt, otherwise, it would increase debt. This result showcases the inappropriateness of fiscal policies of non-OIC countries jointly and is subject to 6 including cross-sections and countries. However, it might be different on a country-to-country basis which is beyond the research scope of this study as this study is mainly focused on the differences between 6 OIC member countries and 6 non-OIC countries with specified governance systems.

Stocks traded value is shown to have a significant positive relationship with debt at a 1% significance level and a one percent increase in stocks traded value increases debt to GDP ratio by 0.1 percent. This result is consistent with the financial instability hypothesis developed by Hyman Minsky in the 1970s and 1980s, the theory asserts higher stocks traded will increase debt since it will create a speculative bubble and financial crisis as it involves more risk-taking and vulnerability to external shocks and volatility. Therefore, if a country's GDP is formulated by more percentages from stock traded value an external shock will easily create economic instability and increased levels of debt that the country cannot pay back.

Now with the result shown for the stocks traded value for non-OIC countries, it is evident that stocks cause more debt which proves the initial hypothesis of financial speculation that if one side is gaining the other side of this transaction is losing capital. Therefore, the financial speculation hypothesis is valid for these countries as they are more involved with stock trades compared to Islamic countries within OIC and other countries that initially prohibit stock investments based on speculation and it turns out to be a valid point for Islamic economics. (Minsky, 1970)

FDI has a significant negative relationship with debt at 1% significance level, as a one-point increase in FDI will decrease -2.85 percent in debt level which is quite opposite to the case of OIC member countries as it was triggering high debt and defaults for those countries due to complications combined as explained before. For non-OIC countries it is decreasing the debt levels and this result is consistent with the theory of financial theory (internationalization theory of FDI) indicating that FDI is mostly affected by problems associated with capital markets like transaction costs, agency problems, asymmetric information, diversifications in portfolios, exchange rate changes and many more constraints. Therefore, if these constraints are appropriately addressed then the FDI would decrease the debt level and it would change it to a sustainable level and would showcase a negative relationship between them, otherwise these complications would lead to a positive relationship as its been the case for most OIC member Islamic countries that Capital flows to the country brought with itself more cost of external financing, and risk premium which oppositely increased debt levels.

The R-Square of the estimation is 0.63 or 63% which shows that combinedly all the variables explain the dependent variable debt-to-GDP ratio by 63%, although this percentage provides a good estimation for the real-world data, it is still less than the expected percentage since 9 variables are included to explain the dependent variable, this is due to the twofold definition of indebtedness and complexity of determining exact variables that could cause debt defaults and crisis.

The results seem consistent with the theories already established by economists and scholars to define the relationship between dependent variables and independent variables. However, what is important is the reliability of the results, and shows that it is necessary to provide the Langrage Multiplier Breusch-Pagan test. Although many tests were performed to ensure that there is no violation of the assumptions of basic common effect Pooled/Panel Ordinary Least Square estimation.

4.5. Hypothesis Testing

With the found results, now it is possible to evaluate the null hypotheses initially assumed which is explained briefly in the table below:

Table 4.8 Hypothesis Testing

Hypothesis	OIC countries		Non-OIC countries		Supporting Theory
	Coefficient	P-Value	Coefficient	P-Value	
H1: Interest Rates not having significant relationship with Indebtedness	-2.34	0.000	1.24	0.026	OIC – Solow Swan theory NOIC – Crowd Out Theory
H2: Inflation causes more debt	-0.15	0.361	-0.03	0.105	Debt deflation theory
H3: Higher exports will reduce Debt levels	-2.65	0.000	-0.26	0.001	Keynesian and Neoclassical growth
H4: GDP growth decreases Debt levels	-2.27	0.000	-0.73	0.087	Keynesian and Neoclassical growth
H5: FDI is not affecting Debt	3.56	0.000	-2.87	0.000	Endogenous, Financial theory
H6: Speculative investments does not have significant relationship with Debt	-0.09	0.001	0.10	0.007	OIC – Neoclassic, Keynesian NOIC – Financial Instability theory
H7: Higher government expenses increased Debt	-2.22	0.000	1.70	0.015	Ricardian theory
H8: increased Imports lead to increased Debt	1.52	0.000	0.83	0.000	Balance of Payments
H9: Higher government revenues decrease Debt	-0.64	0.011	1.39	0.000	OIC – Neoclassic , Keyn

The estimation results test the initial hypothesis, as for the Interest rate, the hypothesis is rejected for OIC member countries as the coefficient is -2.34 which indicates a negative relationship and an increase in interest rates will decrease debt for those countries, although this hypothesis is accepted for non-OIC countries with coefficient is 1.24, indicating positive relationship. For the Export, Government Revenue, and GDP growth the initial hypothesis is correct for both types of countries with negative coefficients showing negative relationship. For FDI the proposed hypothesis is accepted for non-OIC countries with a negative coefficient, but for OIC member countries it is rejected with a positive coefficient.

For Speculative investments, the null hypothesis is rejected for OIC countries with negative coefficients, while accepted for non-OIC countries with positive coefficients. For import, the null

hypothesis is accepted for both types of countries with positive coefficients which means that increased imports will surely lead to increased debt levels. For Government expenditures, the null hypothesis is rejected for OIC countries with negative coefficients and relationships, while it is accepted for non-OIC countries with positive coefficients and relationships. Lastly, for government revenues, the null hypothesis is accepted for OIC countries with a negative coefficient, while it is rejected for non-OIC countries as it is proved that higher government revenues do not contribute to reducing debt levels and inversely cause more increased debt.

4.6. Obtained Research Objectives

The estimation results provided answers to the research questions and the objectives for this research are fulfilled, it is more elaborated below for each question.

4.6.1. Common Causes of Indebtedness

The common causes of the indebtedness are found to be the interest rate, FDI, Government Expenditure, Government Revenue, Export, GDP growth, stocks traded value (speculative investments), and Import. However, Inflation seems not to be significantly related to the debt in the 95% confidence interval.

4.6.2. Differentiating Factors within Common Causes of indebtedness for both types of countries.

The differentiating determinants are found to be the interest rate, FDI, Stocks traded value, Government Revenue, and Government Expenditure:

- Interest rate is decreasing debt levels for OIC countries with a negative coefficient, indicating that increasing interest rates for OIC countries up to a certain limit based on the supported theory will decrease the debt levels, however increasing interest rates for non-OIC countries will increase debt.
- FDI has been proven to increase the debt level for OIC countries with a positive coefficient, while it decreases the debt for non-OIC countries which is consistent with the null hypothesis.
- Government expenditure is another differentiating factor that is leading to decreased debt levels for OIC countries while increasing debt for non-OIC countries.
- Stocks traded value has been proved to provide a different result for both types of countries, it is increasing debt levels for non-OIC, affirmative to the theory of financial instability due to high volume of speculative investments leading to heavy losses to the economy while it is opposite for OIC countries as the coefficient is negative and indicates that OIC countries are not associated with speculative investment to alter their GDP and economic growth trends.

- Government revenue is another differentiating factor within common causes, it is leading to decreased debt levels for OIC countries as the negative coefficient shows a negative relationship while it increases debt for non-OIC countries which is due to several fiscal policies that are taken which does not affect debt levels and is be explained in answer to the third research question.

4.6.3. Unsustainable Fiscal and Monetary Policies Causing Indebtedness

As simply unsustainability of a fiscal or monetary policy refers to the situation which is based on a simple framework commonly known as intertemporal budget constraint(IBC), intertemporal meaning overtime and budget constraint meaning the balance between income and expenditure. The IBC framework implies that every individual or entity must pay for everything it purchases, it demands that the value of outstanding debt of a country has to be equal to the present value of anticipated surpluses and borrowing, and spending shall not exceed excise or non-tax revenues of the country. If it did so the fiscal policy of the country is on the unsustainable path and same framework goes with monetary policy which initially intends to address the balance between two situations of when to put money in the market and when to take it out. Over the limit money supply for the sake of debt service obviously causes high rate of inflation and adversely lowering inflation would require spiking interest rates which in turn slow down the economy and lowered tax and non-tax revenue would not contribute enough to even basic government expenditures. (Haltom, 2012)

Evaluating the estimation results, Interest rate, Government Expenditure, and Government Revenue can provide insights to observe whether the selected governments are consistent with their sustainable path with their fiscal and monetary policies or not:

- **Interest rate** is one of the important tools to implement monetary policies, it entails both positive and negative relationships with debt levels as explained before. For OIC countries lower interest rates showcase a sustainable monetary policy although not for the long run which is constrained to the short-run effects as explained by the debt report of the World Bank (2022) asserting that interest rate is not entirely defining debt levels and with the combination of other factors even the most appropriate interest rate driven monetary policy will not be sustainable in the long-run.

Lower interest rates according to the IBS framework decrease the cost of borrowing for governments, and paying less interest for the debt means a lower budget deficit which will make governments able to repay their debt and avoid debt growth. However, consistent lower interest rates will increase demand for government bonds and excessive issuance of bonds will again indebt the economy to its private investors.

For the OIC countries, the result shows that interest rates lead to a sustainable monetary policy since it is decreasing debt levels for the economy as they are lower in comparison to other countries and is associated with a negative coefficient indicating that debt will decrease upon every unit increase of interest rates. However, this is subject to short-run effects and is proven that in the long run, it would dismantle the sustainable path.

For non-OIC countries, the results assert that the monetary policy these countries implement is not on a sustainable path due to the associated positive coefficient indicating that upon every unit increase in interest rates, debt will increase. This goes back to the IBS framework explaining the relationship that with higher interest rates the government will have to pay more interest, and this severely affects the budget deficit as the government will not be able to repay its debt. Therefore, it is highly important to find out when to put money in the market by lowering interest rates and when to take it out by raising interest rates.

This phenomenon can be explained thoroughly by two sets of activities governments perform through their monetary policies, firstly, the open market operations in which governments buy or sell securities to either increase the money supply and lower interest rates or to decrease the money supply and increase interest rates which are due to the inverse relationship between them. When governments buy securities they simply put more money in the market and lower interest rates while when they sell bonds and other forms of securities, they take out money from the market which increases interest rates which both are correlated with demand for the securities as when it's taken out, it will increase the demand and lenders will simply increase the yields for more profit and vice versa. Secondly, through Discount Rates central banks capacitate commercial banks to lend more, when the discount rate is lower, then private banks are charged lower in providing loans, this will increase borrowing and decrease market interest rates. Adversely when the discount rate is high, private banks will provide lower loans and will increase demand for loans and increase market interest rates. To simplify this relationship table below provides a brief:

Table 4.9 Monetary Policies through Interest Rate

	Interest Payments	Budget balance	Borrowing	Situation for Debt
Higher interest	High interest paid	Deficit	Growth slowdown	Not sustainable
*Lower Interest	Less interest paid	Surplus	Increased growth	Sustainable

Money Supply, Interest rate

	Operation	Money Supply	Interest Rate	Situation for Debt
Open Market	*Securities bought	Increased	Decreased	Sustainable (SR)
	Securities sold	Decreased	Increased	Not Sustainable-LR

Discount Rate (Central and Private Banks)

Operation	Lending Capacity	Interest Rate	Situation for Debt
High Discount rate	Decreased	Increased	Not Sustainable
*Low Discount rate	Increased	Decreased	Sustainable (SR)

*Denotes the monetary policy for OIC member countries

Note: Debt situation relies on the combination of other factors and is subject to short-run and long-run changes abbreviated by SR and LR respectively.

Source: The World Bank Debt Report (2022).

- Government Expenditure and Revenue construct essential parts of a sound fiscal policy to counter debt growth and crises. It is explained simply by the Intertemporal budget constraint when expense exceeds revenue then the government will not have the liquidity needed to pay its debt, therefore an appropriate fiscal policy according to the World Bank debt Report (2022) has common features of firstly, increasing the tax base and rates for both excise and non-tax revenue, and reducing tax deductions and exemptions as this would maximize revenue. Secondly, to improve compliance and administration of taxes by preventing tax evasion and improving tax collections. Thirdly, it is proven to be good practice for developing countries to privatize public assets and services**,** this would decrease the cost of maintaining public assets and services and additionally, it would generate revenue. Lastly, reducing unnecessary public expenditures and subsidies as this would save more money for the government to finance its debt and interest payments.

For the OIC countries in terms of fiscal policies, it is explained by the negative coefficient of the government revenue, indicating that these economies have some common features of a sound fiscal policy asserting that when revenue increases debt decreases. Meanwhile, the expense has a negative coefficient as well which shows that when expense increases, inversely the debt will decrease for these countries which can be due to several factors such as reallocating subsidies, mobilizing private sector financing for infrastructure through blended finance, and doing effective spending while ensuring high quality and impact which could rejuvenate expected revenues.

For non-OIC countries, both revenues and expenditures cause increased debt, asserting that these countries are facing a lack of sound fiscal policy to counter debt growth and crises, as is shown by the positive coefficients for both. Although initially it is expected revenues to reduce the amount of debt, however in the case of non-OIC countries revenues are not sufficient to reduce debt. Therefore, it can be inferred that these countries do not have an appropriate fiscal policy. In a nutshell, to answer the third research question, it has to be mentioned that it is indeed a matter of sustainable fiscal and monetary policy

that can contribute to either increased debt levels or reduced debt levels and it is critical for governments to adapt and bring changes depending on the situations and come up with sound policies to avoid debt distress and traps.

4.6.4. Is the Ethical foundation of Islamic Economics an Optimal way to avoid Debt Distress?

Addressing all the aspects which Islamic economics imposes on dealing with indebtedness is beyond the scope of this study, while to establish this argument, two variables construct the distinguishing points, Interest rate, and speculative investments. The ethical foundation of Islamic economics and finance is based on the principles derived from the Qur'an and Sunnah, according to Islam, ethics is not only a choice for individuals it should be an obligation and social responsibility. Islam defines anything leading to the welfare of society as morally good and the principles establishing this ethics are:

Tawhid (oneness of Allah swt), Ehsan, Adl (Equity and Justice), Rahmat (Mercy), Amanah (Honesty and Trust), Khalifah (Responsibility). These principles in general and principles of prohibition of Riba, Profit, and Loss sharing, and fairness and justice in specific, construct the idea behind how Islamic economics and finance approach solving the issue of indebtedness. (Haneef, 2007; Rarick, 2009)

Islamic economics considers indebtedness a severe issue altering the growth and well-being of the nation, this perspective discredits the accumulation of debt and provides initial solutions based on the prohibition of interest implying a way of usury. The solutions consist of cutting down foreign liabilities, improving trade, implementing the profit and loss sharing system instead of adopting financing through interests, promoting Zakat & Sadaqah to reallocate capital diminishing the poverty, creating variety of funds schemes, rectifying monetary and fiscal policies to avoid speculation and waste of capital. (Thomas, 2005)The approach taken by Islamic economics and finance provides distinctive features that can be summarized as such:

Forbidding Riba

Riba, also known as interest or usury, is prohibited in Islam since it is viewed as unfair and exploitation. Islamic financial practices include Mudarabah (partnership), Musharakah (joint venture), Ijara (lease), and sukuk (Islamic bonds) promote risk- and profit-sharing. These financing methods encourage economic stability and growth more since they balance the financial institutions' and borrowers' interests and limit the use of excessive leverage. (Al-Qaradawi, 2000) Prohibition of using Money as a Commodity: Contrary to conventional economics, Islamic economics has a different perspective on the usage of money as a commodity. In conventional economics, money is viewed as a commodity with an intrinsic worth that may be sold for a profit. While money is seen as a tool for transactions and a way to

assess value in Islamic economics, money is solely used as a means of transaction and a store of value; it has no inherent value. (Eyerci, 2021)

The use of money to make money without any effort and taking risks involved will simply imply privilege to the rich and discourage the poor, it brings inequality and grounds for exploitation of the poor which makes the rich richer and the poor poorer. Therefore, Islamic economic principles state that money shouldn't be treated as a commodity that may be traded or utilized for speculation. it needs to be based on assets that are valuable in essence and of themselves yet still function as currency, like gold and silver. Additionally, money should be spent in line with Islamic ethical principles that emphasize justice, fairness, and social welfare. (M. Farooq, 2009; Khan & Bhatti, 2008)

Debt Forgiveness and Relief

Islam urges believers to repay debt as soon as possible after incurring it. However, Islam also acknowledges that unforeseen circumstances may make it impossible for debtors to repay their obligations. According to the circumstances of the debtor, Islam directs the creditors to offer a reprieve, reduction, or cancellation of the debt. This is founded on the Islamic ethical ideal of kindness and compassion, which is one of its major tenets. According to the Qur'an, if someone is experiencing adversity, the decision should be delayed until a period of ease. “If only you understood, however, that it is preferable for you to give from your right as charity”. (Qur’an 2:280)

Social Transparency, Accountability, and Wealth Redistribution

Islam places a strong emphasis on the accountability of people and institutions in social and economic matters. To aid the needy and the impoverished and to promote numerous social causes, Muslims are required by Islam to pay zakat, or alms tax, and Sadaqah, or do other voluntary charities. These methods of redistribution not only reduce inequality and poverty but also boost the economy by increasing demand. Islam also promotes waqf (endowment) and Qard Hasan (benevolent loan) as ways to provide for the needs of the community. These organizations support Muslim social cohesion and collaboration while boosting their crisis resilience. (Farooq, 2008)

Profit & Loss sharing and Interest-Based Finance

The profit and loss sharing (PLS) concept is an optimal alternative to interest-based finance (IBF). The PLS idea refers to the concept of dividing the risks associated with business and equally allocating profits between two sides of the contract. Adversely, IBF does not account for the outcome of the business, and interest payments shall be made regardless of losses in the business that trigger indebtedness whether it’s at the individual level or country level despite the differences that exist. (Farooq, 2017) Profit & Loss Sharing an idea is an optimal way of financing according to Islamic economics and finance as interest-based finance involves Riba, Maysir (gambling), and Gharar (speculation and uncertainty) which are

prohibited while understanding the severe consequences they impose. A brief comparison between them establishes distinguishing features of the PLS scheme over IBF with these arguments:

Profitability

Interest-based finance depends on the fixed amount of interest to be paid by the borrower despite any external shocks are problems that might cause losses which make the borrower unable to pay the burden, this way of financing discourages businesses, creativity, and the welfare of society, although the profit & loss sharing scheme suggests that risk of the business and profits shall be equally distributed between lender and borrower to avoid the heavy burden on one side and prohibits interest in its essence. This idea, initially addressing the individual level concern, can be implemented at the country level as well. (Daud, 2016)

Countries borrow heavily to address their expenditure and needs, which might be of any reason, now with the framework of interest-based financing, countries need to do their payments regardless of their liquidity levels which leads eventually to debt defaults and crises, the international lending agencies (World Bank, IMF, Countries, etc.) provide these loans based on a fixed rate of interest to be paid when a country defaults and is not able to pay, it becomes highly vulnerable and indebted. Commonly what happens is that debt is rescheduled with more interest payments to be made over the period, this imposes compound interest payments, and the borrower cannot repay its burden. Adversely, if the profit & loss sharing principle is implemented, firstly the whole burden will not be only on the side of the lending contract, as it would not give a chance to lender to exploit the situation, secondly, rescheduling debt will not entail compound interest and only the principal amount will be paid by the borrower. Therefore, the cost of borrowing will not indebt the borrower and inversely rescheduling debt will ensure the ability of the borrower to repay the debt.

Financial System Stability

Interest-based financing brings instability to the financial systems as it creates an enigma between the fixed amount of interest & debt to be paid and uncertain returns that are expected, this enigma provides the initial grounds for debt whether it is at the individual or country level. Adversely, the PLS concept promotes financial stability by imposing risks to both sides of the contract to ensure that enough consideration is done for a safe and sound return, and the return will be distributed equally as well, therefore, implementing the PLS scheme will promote the financial stability of a country. (Ghlamallah, 2021)

Equality

Interest-based financing will always create a layer of privilege and superiority for the lender and discourages entrepreneurs which indicates injustice and inequality in the economy, as privileged creditors exploit their ability to more indebted borrowers and impose compound interest payments that they cannot

pay. Inversely, the Profit & Loss sharing principle discredits the injustice and inequality brought by crediting ability and suggests a fair, equal, and encourages willful and obligatory charities to redistribute wealth.

Risk sharing

Interest-based financing imposes all the business-associated risks merely on the entrepreneur, this simply constructs excessive risks, and defaults due to the agency problems, moral hazards, and asymmetric information, however, the Profit & loss sharing idea equally divides the risk and minimizes the adverse selection problems and moral hazard issues. It can be justified as such that when both sides share the risks, both sides will bear the consequences as well. (Kanwal, 2022)

While concluding the approach by Islamic economics and finance on how it deals with interest rate and interest-driven debt accumulation, it should be mentioned that Islamic economic ethics are founded on the outlawing of riba because it entails the exploitation, injustice, and oppression of the needy and the impoverished, riba is seen as a serious sin in Islam. The Holy Qur'an says "Those who consume interest cannot stand on the Day of Resurrection except as one stands who is being beaten by Satan into insanity. That is because they say, 'Trade is just like interest.' But Allah has permitted trade and has forbidden interest. So, whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah. But whoever returns to dealing in interest or usury - those are the companions of the Fire; they will abide eternally therein." (2:275) Therefore, Islamic economic ethics on interest rates seek to strike a balance between the interests of individuals and society, as well as between the world and the hereafter. They exhibit the fundamental principles and characteristics of Islamic ethics, including righteousness, kindness, dependability, stewardship, and excellence.

Speculative investment is another variable presented through stocks traded value as a percentage of GDP to show the extent to which governments and nationals are involved in speculative investments despite understanding the high uncertainty involved in it. As speculative investments involve excessive risk, uncertainty, and gambling, which are against the principles of Shariah, Islamic economics and finance forbid them. Because they don't support the actual economy and could hurt other parties, speculative investments are also viewed as unjust and exploitative. (Tariq, 2020) To define the vision of Islamic economics on speculative investments here are some examples determining the current practices in speculation:

Buying and selling shares on the same day is known as day trading, and it frequently involves the use of leverage and technical analysis. Since day trading entails great volatility and unpredictability and doesn't consider the inherent worth of the assets, it is regarded as a type of Gharar (uncertainty) and Maisir (gambling).

Selling borrowed securities to later purchase them at a cheaper price is known as short selling. Since short selling includes selling something that one does not own or own and making money off others' deterioration, it is regarded as a type of Gharar (uncertainty) and riba (usury).

Financial contracts known as derivatives derive their value from how an underlying asset, such as stocks, bonds, commodities, or currencies, performs. Given their high leverage and potential for speculation, derivatives are seen as a type of Gharar (uncertainty) and Maisir (gambling) that can manipulate the market's supply and demand. (Usman, 2005)

Addressing these practices, Islamic finance and economics put forth a few different investment strategies that are focused on social responsibility, real asset backing, risk sharing, and ethical scrutiny. A few of these modes include:

Asset-based finance is a form of agreement that connects financing to the purchase or lease of a tangible asset, such as a home, automobile, or piece of equipment. Islamic economics regards asset-based financing agreements that avoid riba (interest) and Gharar (uncertainty), such as Murabaha (cost-plus financing), Ijara (lease), and Istisna (financing for manufacturing).

Profit and loss sharing, as explained thoroughly earlier, is a sort of contract where the lender and the entrepreneur divide company risks and rewards according to a set ratio. Islamic economics views profit-sharing agreements like Mudarabah (trustee finance) and Musharakah (partnership financing) as the best forms of financing because they uphold the ideals of justice and equality.

Sukuk, these Islamic bonds stand in for ownership or other rights to an underlying asset or project. Sukuk is regarded as Shariah-compliant instruments for raising cash on the capital market since they do not involve Gharar (uncertainty) or riba (interest) and offer investors a fixed or variable return dependent on the success of the asset or project.

Islamic mutual funds are collective investment vehicles that aggregate investor invests in securities, sukuk, or other assets that comply with Shariah. As they eliminate riba (usury), Gharar (uncertainty), and Maisir (gambling), and employ ethical screening procedures to exclude banned businesses, such as alcohol, gambling, pork, or weapons, Islamic mutual funds are regarded as halal ways of investing for Muslims. (Chapra, 2015)

While concluding the argument on how Islamic economics and finance address speculative investments and what factors distinguish between the approach by Islamic economics and conventional economics here is a brief comparison between the two:

Speculative investments are handled differently in conventional and Islamic economics. They are often permitted and encouraged by conventional economics since they are considered a means to improve market efficiency, liquidity, and price discovery. Conventional economics also assumes that markets are competitive and open and that investors are sensible, knowledgeable, and risk-averse. The potential risks of speculative investments, such as market instability, volatility, bubbles, and collapses, are still acknowledged by conventional economics. Therefore, believers promote some laws and interventions, including capital requirements, margin calls, circuit breakers, and taxes, to avoid or lessen the negative impacts of speculative investments. Contrarily, speculative investments are expressly outlawed in Islamic economics since they are regarded as forms of Gharar (uncertainty), Maisir (gambling), and riba (usury), all of which are against Shariah law. Islamic economics regards speculative investments as immoral, unjust, and exploitative since they entail benefitting from something without making a positive impact on society or the actual economy, taking advantage of the ignorance or misfortune of others, and generating false demand or supply. Islamic economics likewise assumes that markets are flawed and subject to manipulation and corruption and that investors are constrained by moral and religious principles. (Hosein, 1997)

Through the result of the estimation, it was found that OIC member Islamic countries are abiding by the laws and rules provided by Shariah which is how these countries are in a better situation of debt management rather than non-OIC countries.

Non-OIC Countries have drawbacks in terms of monetary policies as they have higher interest rates and use interest rates as an instrument of financing and compiling wealth while adversely it turned out to be a big problem for them exploding as the indebtedness, as shown by the interest rate coefficient in the estimation results that is not reducing the debt but oppositely increasing debt. While adversely for OIC countries the interest rate as per the amount it is imposed is not that significant to increase debt levels in the country and although in the short run, it contributes to the reduction of debt.

Likewise, speculative investments in the form of stocks traded as a percentage of GDP showed that it is contributing to the reduction of debt for those countries that are more risk-averse or prohibited due to Maysir and Gharar issues, which is the case of OIC member Islamic countries that are not investing in stocks at all or do not invest in a constructive amount. Non-OIC countries that are highly associated with stock trades they are more vulnerable to the shocks and volatilities in the stock market, and more specifically when it contributes to their GDP formulation because a small shock In the market simply dismantles the stability of growth. This situation is proved by the coefficient of stocks traded value as a percentage of GDP for non-OIC countries that shows to be not only reducing the debt but further causing an increase of debt.

CHAPTER 5: CONCLUSION

This study to find out the common causes of indebtedness and see how some countries have managed to control this issue, see the differentiating factors within common causes of the indebtedness for OIC member Islamic countries and non-OIC countries, to evaluate whether the use of unsustainable fiscal and monetary policies by government cause higher debt for them, and to evaluate whether the ethical foundation of Islamic economics and finance provides an optimal way of dealing with the indebtedness. Analyzed data of debt-to-GDP ratio as the dependent variable, export, FDI, Government expenditure and revenue, Stocks traded value, Import, inflation, Interest rates, and GDP growth as independent variables from 12 countries over 32 years to construct a comparative basis between how OIC member countries with Islamic economics and non-OIC countries with conventional economics system, approach toward indebtedness. The methodology consisted use of a unit root test, and slope heterogeneity test to determine the issue of endogeneity which clears whether static panel data models are appropriate, or has to be dynamic panel data analysis models to determine the relationship, heteroskedasticity test to see if the common ordinary least square assumption is valid or violated, Pooled ordinary least square estimation separately for both group of countries, and lastly the Lagrange Multiplier Breusch-Pagan test to check if initial estimation is valid or not. The result of the estimation found that:

- The common macro-level factors of indebtedness are interest rates, FDI, exports, government expenditures, government revenues, stock trades, GDP growth, and imports. This result answered the first research question determining the common factors of high debt.
- Meanwhile the differentiated factors that distinguish between OIC and non-OIC countries are interest rates, stock trades, FDI, government revenue, and government expenditures which demonstrates how the behavior and performance of certain countries in terms of mentioned factors cause major changes to their debt levels, answering the second research question.
- It was determined that the magnitude and composure of interest rate increase Debt to-GDP ratio for non-OIC countries while it decreases the debt-to-GDP ratio for OIC countries. Foreign direct investments trigger indebtedness for OIC countries due to the volatilities that cash inflows entail in terms of exchange rate differences, and different trade policies governments implement, while it decreases the debt-to-GDP ratio for non-OIC countries. Government revenues and expenditures decrease the debt levels for OIC countries while they increase for OIC countries which determines the unsustainable fiscal policies for specified countries. Answering the third research question through the IBC framework in terms of assessing the revenue and expenditure variables for respected countries.

- Stock trades, showcase a good example of speculative investment that is prohibited in Islam and the result showed that it decreases debt levels for OIC countries because these countries are not involved in uncertain investments causing heavy losses consistent with the financial instability hypothesis while it increases the debt levels for non-OIC countries with the same reasoning provided.

5.1 Monetary and Fiscal Policy Recommendations

With the results found, it was determined that monetary policies in terms of interest rates, and fiscal policies in terms of government expenditures and revenues provide the basics to claim that OIC countries are on a sustainable path while non-OIC countries are not. Therefore, the implications of the study for central banks of non-OIC countries in terms of monetary policies and interest rates is that these countries shall lower their interest rates, to come up with expansionary monetary policies since the interest rates directly impact currency, higher interest rates imply stronger currency but eventually causes increased debt levels while even if for a short run if interest rates are lowered it would decrease debt levels despite weaker currency. Meanwhile, the governments shall be independent in terms of formulating monetary policies, having a fixed interest rate due to being a member of a union causes an inability to change interest rates which causes increased debt levels.

The government of these countries shall formulate efficient policies in terms of revenues and expenditures and fiscal policies to develop credible risk-based fiscal frameworks that would reduce debt vulnerabilities over time and build up necessary room to handle future shocks, it is highly important to formulate policies that would maximize revenues of the country and avoid unnecessary expenditures that endanger liquidity and ability to service debt.

However, a thorough analysis of Fiscal and Monetary Policies requires an advanced macroeconomic model to first do the assessment of policies and then come up with specific recommendations, although the pattern and trends of the data are like existing policies addressing variables of this study such as Economic output, Debt, Inflation, interest rate. The model that can be used for the policy analysis is New Keynesian with the Fiscal Theory of Price Level combined:

$$\text{NK-FTPL} = \varphi_{\pi}\pi_t + \varphi_x x_t + v_t - \frac{B_t}{E_t \sum_{j=1}^{\infty} \beta_j S_{t+j} P_t} \quad \ldots\ldots \quad (10)$$

π_t – Is the inflation over time.

X_t – Is the output within given time.

V_t – External shocks over time.

B_t – Government bonds(debt).

S_t – Surpluses at the end of the given time.

P_t – Prices within the given time for B.
E_t – Expected sum of surpluses.

The first part of this equation is the New Keynesian model which due to its tractability, the three equation New Keynesian (NK) model has a significant impact on policy circles. The model essentially consists of a Phillips curve, a forward-looking IS equation, and Taylor rule for the short-term interest rate, the primary policy instrument of the central bank, which is used here, this equation addresses how inflation, economic output, and external shocks determine the interest rate and based on that a government can take up specific fixed rates for to manage debt situation. The model has provided several crucial insights, including the possible merits of inflation targeting, the advantages of commitment over discretion in policymaking, and the significance of having the policy rate follow the natural or neutral rate of interest. (Liemen, 2023)

Despite its many applications, the model is insufficient for analyzing a variety of topics that have gained attention in policy circles during the past ten years. The model is unable to handle the effects of financial market disruption of the kind that shook the global economy in 2007–2009 and the influence of fiscal constraints. (Liemen, 2022) therefore, the Fiscal Theory of Price levels equation is added to address how policies affect the sustainability of government debt. The FTPL, in contrast, asserts that the entire liabilities of the government, which include both money and bonds, are what determines prices and inflation, not money (or not money alone). In a certain sense, this statement just verbalizes what we all already know (or should have known), namely, that the government's monetary policy will occasionally be significantly influenced by the government's fiscal conduct. (Coleman et al., 2021)

Calibrating the suggested model with debt management requires observing whether the countries have monetary regimes or fiscal regimes, in a monetary-dominated policy environment, excessive debt levels seriously impair the efficiency of future monetary and fiscal policy and reduce available fiscal flexibility. Reaching greater debt-to-GDP ratios leads to explosive dynamics or to circumstances where transient policy shocks almost completely sabotage model solutions. (Liemen, 2023)

Based on the provided framework for the policy analysis, this study recommends specifically two categories of rectification to the existing framework developed through Islamic macroeconomic models. (Dumairy, 2016)

The first category was developed by Chapra (1985, 1996), The profit and loss sharing (PLS) method which makes significant inferences regarding the effectiveness, equilibrium, and stability of a pure equity-based system. Although the institutional specifics of the monetary and financial framework are ignored in

the meanwhile and the conventional policy instruments are often discussed when talking about monetary policy, except those that employ the rate of interest.

The second category offers a thorough institutional framework for an Islamic economic system's monetary or financial sector. In terms of the distribution of financial resources and the generation of money, this system has unique characteristics. The tools required to anchor and carry out monetary policy are also present in the money market. In other words, a behavioral structure connected to an institutional framework represents how the laws of Shari'ah about economic behavior have been interpreted. Al-Jarhi (1981, 1983) first presented this category, with several ensuing alterations and enhancements. Most crucially, there have been recent attempts to transition to a disequilibrium structure from the original Hicksian IS-LM structure, which is fundamentally neoclassical. (Al-Jarhi, 2020)

A good example of the successful integration of shariah law into finance is the Saxony-Anhalt Sukuk, which was released in 2004, was the first sukuk (Islamic bond) to be issued by a non-Muslim nation. It had a five-year maturity and a 100-million-euro value. Its ijarah (lease) structure served as its foundation, and its coupon rate was 3.875%. The Saxony-Anhalt Sukuk drew investors from the Middle East, Europe, and Asia and was more than three times oversubscribed. Islamic Development Bank, Kuwait Finance House, Dubai Islamic Bank, and Citigroup were a few of the purchasers. Additionally, the Luxembourg Stock Exchange listed the sukuk. Common features of this sukuk consists:

- It was based on the ijarah (lease) structure, wherein the issuer sold some state properties to a special purpose vehicle (SPV), who subsequently leased them back to the issuer for a predetermined length of time.
- It complied with both German and Sharia law, and the transaction was overseen by a Sharia board.
- It had a large international investor base.
- It attracted a diverse investor base from Europe, Asia, and the Middle East and raised $100 million with a maturity of five years and a profit rate of six-month Euribor plus 1%.
- Fitch Ratings assigned it a AAA rating, reflecting the high credit quality of the German state of Saxony-Anhalt as the obligor.

Implications and attributes of this sukuk which provides a comparative basis for non-Muslim countries over use of shariah based finance instruments to avoid debt or sustainable use of debt are:

- Compared to traditional bonds, it cut borrowing rates and diversified the state government's funding sources.

- It expanded cross-border collaboration between Germany and the Islamic world and provided new opportunities for Islamic investors.
- It established a precedent for other European nations to follow and proved the viability and inventiveness of issuing sukuk in a non-Muslim jurisdiction.
- It encouraged people in the financial industry and the public to be aware of and understand the principles and practices of Islamic finance.
- Global sukuk issuance reached a record high of $200.9 billion in 2021, up 17.5% from 2020, driven by the strong demand from Islamic investors and the low interest rate environment.
- Asia remained the dominant region for sukuk issuance, accounting for 74% of the global market share, followed by the Middle East and North Africa (MENA) with 24% and Europe with 2%.
- Indonesia, Malaysia, Saudi Arabia, Turkey and the United Arab Emirates were the top five issuers of sukuk in 2021, while Luxembourg, Germany, France, UK and Ireland were the main European issuers.

Lastly, the limitations imposed on this study made it difficult to thoroughly investigate the dynamics of the twofold definition of debt and it requires dynamic panel data analysis models to evaluate a large number of cross sections for more observations and more accurate results. Selected specific countries which suffer from large observations, thus, for the future researches it is recommended that dynamic panel models shall be selected for more accurate results.

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