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Analysing the Mediating Influence of Share Markets on the Relationship between GDP Growth and Macroeconomic Variables in MENA and Developed Countries

Salah Sa'adah (iD)
PhD Researcher, Al-Madinah International University, Malaysia
ss.saada@yahoo.com
Barjoyai Bardai
Professor, Al-Madinah International University, Malaysia

Abstract

This study examined the relationship between GDP growth and different macroeconomic variables including foreign direct investment, gross fixed capital formation, government expenditure on education, consumption expenditure, GDP per person employed, exchange rate, market capitalization, and inflation in case of MENA and developed countries. Furthermore, it tried exploring the mediating role of the share market in the relationship between economic development and various macroeconomic variables MENA & developed countries. The study has used panel data from the period of 2002-2021. The data has been taken from multiple sources i.e. World Development Indicators (WDI) by The World Bank, International Financial Statistics (IFS), several economic surveys of respective countries and Central Bank's publications. The study reveals mixed order of integration among variables. Consumption expenditure is stationary in both panels, while expenditure on education is non-stationary. Real effective exchange rate is stationary under both panels, while GDP per employed persons is non-stationary. GDP growth rate, inflation, and market capitalization are stationary for both developed and Mena countries. However, gross fixed capital formation is stationary at first difference. The correlation matrix results show a weak correlation between consumption expenditure and educational expenditure, with a 9 percent negative correlation. For Mena countries, the study found a negative association between consumption expenditure and educational expenditure, with a 23% correlation. Real effective exchange rate is negatively associated with foreign direct investment, GDP per employed person, gross fixed capital formation, inflation, and market capitalization. For developed countries, the coefficient of FDI increases GDP growth rate by 97%, while gross fixed capital formation decreases GDP growth rate by 10.2 units due to 1 unit increase in gross fixed capital formation. Consumption expenditures increase GDP growth rate by 2% due to 1 unit increase, while inflation increases it by 5.9 units. Exchange rate is also positively related with GDP growth rate, with a 1% increase in exchange rate boosting it by 29%. The study found partial mediation of market capitalization in developed countries and uni-directional causality in Mena countries.

Keywords: Market Capitalization, Mediation Analysis, Mena Countries, Economic Growth, Panel Data Analysis

1. BACKGROUND OF THE STUDY

The relationship between financial development and economic growth has piqued the interest of economists and policymakers, and it continues to be a major study area (Hamadi & Awdeh, 2019). The expanding importance of stock markets in emerging countries throughout the world has turned many scientists, researchers, politicians, and economists' attention to the reasons of stock market expansion during the previous several decades (Chiad & Hadj Sahraoui, 2021). Numerous studies on the influence of stock market development on economic growth have been conducted considering the importance accorded to stock markets across the world. According to (Nathaniel, Omojolaibi, & Ezeh, 2020), the capital market is an important role in facilitating economic progress. Furthermore, in contemporary economies, the capital market is a component of the financial system that promotes growth.

Economic development is a process that aims to improve a community's economic stability and quality of life. It refers to initiatives, acts, or policies designed to improve the community's safety and quality of life. Each community faces distinct difficulties, opportunities, and goals, thus it is critical for governments to include people, information, and opportunities into development strategies. To achieve economic development, governments must make people, information, and opportunities more available while removing barriers. Economic growth is measurable in numbers, whereas economic development is qualitative and harder to quantify. Differences in measuring methodologies can result in inequality, as certain sectors have more resources than others. (Khan, 2014)

Financial markets play an important role in linking buyers and sellers and boosting a country's economy. They help governments and corporations raise funds, track economic growth, and purchase and sell long-term debt and securities. The capital market directs savers' money into productive use, allowing firms to accumulate capital and produce goods and services. The efficient movement of money in a well-developed market decreases transaction costs, which lowers finance costs and increases investment returns. The stock market, for example, serves as a conduit for foreign investment and capital inflows for initiatives that benefit residents. The relationship between financial development and economic growth has gained significant attention from economists and policymakers. The growing importance of stock markets in emerging economies has led to numerous studies on the impact of stock market development on economic growth. The capital market is a key player in enabling economic development and is a subdivision of the financial system that drives growth. The capital market is an ideal place for investors and firms to invest and finance their operations. However, it can be harmful to economic growth when speculation dominates, leading to instability. A well-functioning stock market stimulates economic development, especially in emerging economies. An efficient market allows investors to raise long-term capital, encouraging both local and global investment. This growth improves the economy's financial development and productivity.

Endogenous growth theory suggests that internal elements like human capital, innovation, and knowledge are significant contributors to economic growth. However, the concentration of the banking sector in the market can be harmful to competition and discourage banks from operating at optimal quality levels. Stock market growth drives economic growth by directing capital to real sectors. In high-income countries, stock market expansion boosts growth, causing demand-pull and money flowing to real sectors, producing additional funds for the stock market. If money circulates, the economy grows. The capital market is a crucial place for investors and firms seeking funds to expand their businesses or finance operations. It consists of the market and institutions supporting the issuing and trading of long-term financial instruments. Economic growth is positively affected by market capitalization in both short and long run. Unlike the money market, which represents the short end of the financial system, the capital market offers governments an efficient method of financing public projects, stimulating industrial and economic growth. The market also channels savers' money into productive use over the long term, making fundraising easier for governments and corporations. (Khan & Chhapra, 2016)

A robust stock market is an important indicator of a healthy economy since it indicates that businesses are making good profits and fuelling economic growth. Rising stock prices improve consumer and investor confidence, which leads to higher spending and investment, boosting economic development even further. As the wealth increases, the business and individuals invest in stock market as speculation demand for money to increase their wealth, it can be said "The wealth effect" is considered a major link between the stock market and economic growth since it raises consumer spending and encourages growth. A falling stock market, on the other hand, might have the opposite impact, reducing consumer spending and thus impeding economic development. (Agalega & Antwi, 2013)

Stock markets are also an important source of cash for businesses, allowing them to invest in projects that generate employment, increase productivity, and drive innovation. They may be considered as a barometer of investor and corporate confidence in a country's economic prospects, showing either optimism or worries about economic stability, policy uncertainty, or foreign threats. A booming stock market can indirectly help to job creation by encouraging firms to recruit additional workers to fulfil rising demand or to support their growth ambitions.

1.2. Cluster of MENA Countries

MENA region in the past two decades according to (Hamadi & Awdeh, 2019) Has witnessed many cases of mergers and acquisitions between banks, Egypt and Lebanon as an example, while other countries has witnessed consolidation case in particular in GCC countries, the impact on the market is more concentration which will have effects on the banking sector development. However, concentration combined with pricing power is detrimental to the financial growth of MENA nations. Notwithstanding, concentration by itself is not detrimental to financial

development. Notably, this market dominance may not be the outcome of market concentration alone, but also of other variables unrelated to market concentration (e.g. product differentiation, government ownership, foreign ownership, etc.). According to (Mckee, Keulertz, Habibi, Mulligan, & Woertz, 2017) one of the most important regions in the world is the MENA region, its importance is coming from its rapidly growing population and is expected to surpass China by the year 2090. The future development of the region is expected to expose it to tremendous risk due to environmental issues. Despite having many common features among the Mena countries, they lack enough integration, further they face profound issues like demographic changes, and poor economic performance. Hence, population is the biggest challenge facing the Mena region currently and, in the future, as well. The private sector is contributing significantly to the unemployment problem, causing continued economic sluggishness. (Chowdhury et.al,2019)

Another unprecedented challenge Mena countries were facing as reported by (Mckee, Keulertz, Habibi, Mulligan, & Woertz, 2017) Is the disrupting political conflict since what has been called "Arab Spring " IN this regard, four of the Mena countries today still haven't recovered from the terrible consequences of these conflicts, Libya, Iraq, Yemen, and Syria. Likewise, (Arayssi, Fakih, & Haimoun, 2019) stated that, Mena countries had faced a disrupting political conflict since the year of 2011, this disruption had caused economic negative consequences represented in negative impacts on foreign direct investment, FDI, export, consumption, and tourism. Compared to many other developing regions throughout the world, the MENA region has experienced lower yearly growth rates in output following the Arab Spring (World Bank, 2014, as cited in (Arayssi, Fakih, & Haimoun, 2019). In addition, Instability and violence in politics have harmed macroeconomic and financial improvements. (Arayssi, Fakih, & Haimoun, 2019) concluded, in the MENA region, civil unrest decreased economic growth; It has been noticed that the negative effect was more severe for non-producing oil countries than for oil countries producers. Furthermore, the Arab Spring has harmed the stability of the region's economy, particularly because it pressurized the budget balance and raised countries debt and increased deficits in some countries. Despite this circumstance, all governance institutions have positively impacted economic growth.

From another perspective, (Emara & Mohieldin, 2020) states that financial stability affects economic growth. Moreover, financial stability could be measured using a banking crisis dummy variable, the ratio of credit to government, state-owned firms to GDP, and domestic lending to the private sector as a percent of GDP. In addition, financial stability is vital for MENA economic growth as for any other country in the world. However, no statistically significant difference has been noticed of the financial stability's impact on economic growth between oil and non-oil countries. (Jilani & Asim, 2020)

1.4. Cluster of Developed Countries

When measuring a country's development status, the World Bank takes into account non-income criteria such as life expectancy, education, and access to essential amenities such as healthcare, clean water, and sanitation. These are measured using metrics produced by the United Nations, such as the Human Development Index (HDI).

The HDI, a global development index, combines life expectancy, education, and per capita income to provide a comprehensive view of development. The World Bank also considers institutional factors like governance, political stability, and infrastructure when assessing development. A holistic approach to development includes social and human development, improved governance, and infrastructure.

Inequality can be exacerbated by corruption, with those with access to corrupt networks benefiting disproportionately. High levels of inequality can lead to social unrest and further economic instability. Furthermore, a corrupt environment may discourage innovation, as entrepreneurs may be less likely to invest in research and development when they believe success depends on bribes or political connections rather than the quality of their ideas. Strengthening legal frameworks and addressing corruption in developed countries is crucial for economic growth. Corruption is a major impediment to economic progress and societal well-being in industrialized countries. In these countries, bureaucratic inefficiencies, political influence, regulatory capture, a lack of transparency, nepotism, and other factors all contribute to corrupt behaviours (Vohra, 2001).

Capital markets in developed countries are a critical part of economic growth, capital allocation, and investment. However, they face numerous challenges, including market volatility, regulatory frameworks, high-frequency trading (HFT), liquidity, asset bubbles, corporate governance, cybersecurity, income inequality, market fragmentation, sustainability and ESG considerations, market surveillance, financial education, demographic changes, globalization, low interest rates, securitization and derivatives, technological disruption, and post-pandemic recovery. Market volatility can be caused by economic downturns, geopolitical events, or shifts in investor sentiment. Regulations in developed countries can be complex and stifle market innovation, making it essential for regulators to adapt to these changes. High-frequency trading (HFT) has become more prevalent in developed markets, raising concerns about market manipulation and systemic risks. Liquidity is crucial for smooth operation, and market freezes and panic selling can occur during crises. Asset bubbles, such as the dot-com and housing bubbles, can lead to massive market crashes and economic recessions. Corporate governance, including shareholder rights, board accountability, and executive compensation, is essential for maintaining investor trust and market integrity (Seifallah & Sami, 2014).

This study examined the relationship between GDP growth and different macroeconomic variables including foreign direct investment, gross fixed capital formation, government expenditure on education, consumption expenditure, GDP per person employed, exchange rate,

market capitalization, and inflation in case of MENA and developed countries. Furthermore, it tried explore the mediating role of the share market in the relationship between economic development and various macroeconomic variables MENA & developed countries by taking the data from 2002-2021.

3. Data and Empirical Methodology

3.1. Data Sources and Variable Description

The study has used panel data of ten developed and five MENA countries from the period of 2002-2021. The data has been taken from multiple sources i.e. World Development Indicators (WDI) by The World Bank, International Financial Statistics (IFS), several economic surveys of respective countries and Central Bank's publications.

Table 1: Data Sources and Variable Description

Variable	Variable Name	Type of Variable	Data Source
Con_exp	Consumption Expenditure	Independent	WDI, IFS
Exp_edu	Expenditure on Education	Independent	WDI, IFS, Economic Surveys
REER	Real Effective Exchange Rate	Independent	WDI, IFS
FDI	Foreign Direct Investment	Independent	WDI, Economic Surveys
GDP_emp	GDP Per Employed Person	Independent	WDI, IFS, Economic Surveys
GDP_growth	GDP Growth Rate	Dependent	WDI, IFS, Economic Surveys
GFCF	Gross Fixed Capital Formation	Independent	WDI, IFS, Economic Surveys
Inf	Consumer Price Index	Independent	WDI, IFS
MC	Market Capitalization	Independent /Mediating	WDI, IFS, Economic Surveys

3.2. Model Construction

Based on above variable selection and objectives, the study developed following econometric model.

$$GDP\_growth_{i,t} = \alpha_{i,t} + \beta_1 Con\_exp_{i,t} + \beta_2 Exp\_edu_{i,t} + \beta_3 REER_{i,t} + \beta_4 FDI_{i,t} +$$

$$\beta_5 GDP\_emp_{i,t} + \beta_6 GFCF_{i,t} + \beta_7 INF_{i,t} + \beta_8 MC_{i,t} + e_{i,t}$$

--------- (Equation 1)

Where GDP growth is GDP growth rate, Con_exp is consumption expenditure, Exp_edu is government expenditure, REER shows real effective exchange rate, FDI is foreign direct investment, GDP_emp is GDP per employed persons, GFCF is gross fixed capital formation, INF is inflation, and MC is market capitalization.

3.3. Empirical Methodology

The panel regression analysis is the first required methodology for the analysis based on panel data. The second empirical methodology which fits our research objectives is the mediation analysis introduced by (Hayes, 2022). The third empirical methodology is Granger Causality Analysis. The study has used two diagnostic analyses i.e. correlation matrix and unit root analysis. These two analyses have been used to understand the data normality and time variant properties of the data.

3.3.1. Unit Root Tests

The unit root test is a statistical hypothesis test used to evaluate whether a time series variable has a unit root in time series and panel data analysis. A unit root is a time series with a stochastic trend, which means it does not converge to a stable mean over time and has a propensity to wander without a clear long-term direction. A unit root indicates that a variable is non-stationary, which means that its statistical features (such as mean and variance) fluctuate with time.

3.3.2.1. Panel Unit Root Tests

The study has used two following tests to check the stationarity of Panel data.

a. Levin-Lin-Chu Test (LLC)

The Levin-Lin-Chu test is another test used to check the stationarity among the variables and whether variables are changing over time or not. The Levin-Lin-Chu test assumes that all individuals inside panel data have the same autoregressive coefficients. This test is an expanded form ADF test, which is used for commonly checking time series data stationarity. ADF regression is applied by the LLC test to the panel dataset. The LLC follows the basic ADF specification.

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{pi} \beta_{ij} \Delta y_{it-j} + \acute{X}_{it}\delta + \epsilon_{it}$$

Where we assume a common $\alpha = \rho - 1$, but allow the lag order for the difference terms, ρ_i, to vary across cross-sections. The null and alternative hypotheses for the tests is written as:

$$H_0: \alpha = 0$$

$$H_1: \alpha < 0$$

Under the null hypothesis, there is a unit root while no unit root under alternate hypothesis.

b. PP-Fisher Chi-square (PPF)

Fisher (1932) approach has been modified by Maddala, Wu, and Choi to derive the combine p-values for individual unit root tests. Simply if we define π_i as the p-value from any individual unit root test for cross section I, then under the null hypothesis of unit root for all N cross-sections, we have the asymptotic result:

$$-2\sum_{i=1}^{N}\log(\pi_i) \to \chi_{2N}^2$$

Choi stats that

$$Z = \frac{1}{\sqrt{N}}\sum_{i=1}^{N}\Phi^{-1}(\pi_i) \to N(0,1)$$

Where Φ^{-1} shows the inverse of the standard normal cumulative distribution function. Like other unit root tests, this test has same null and alternate hypotheses.

3.3.2. Regression Analysis

Panel Ordinary Least Squares (OLS) is a statistical approach for estimating associations among variables in panel data. Panel data, also known as longitudinal data or cross-sectional time series data, are observations on several entities (such as individuals, businesses, and nations) across time. Panel OLS is a popular method for analysing such data because it takes into account both the individual and temporal dimensions at the same time. The core idea behind Panel OLS is to expand classic OLS regression to account for both individual-specific and time-specific effects, as well as the link between the variables of interest. The model can be shown as follows:

$$Y_{i,t} = \alpha_{i,t} + \beta_1 X1_{i,t} + \beta_2 X2_{i,t} + \dots + \beta_n XN_{i,t} + e_{i,t}$$

Where:

- $Y_{i,t}$ is the dependent variable for entity (i) at time (t).

- $X1_{i,t} \dots XN_{i,t}$ are the independent variable for entity (i) at time (t).

- $\beta_1 \dots \beta_n$ are the coefficients to be estimated.

- $\alpha_{i,t}$ represents the individual-specific fixed effects or unobserved heterogeneity.

- $e_{i,t}$ is the error term.

Panel OLS is widely utilised in a variety of domains, including economics, finance, sociology, and others, where researchers aim to understand how factors interact across persons and time. While Panel OLS is a strong approach, it does make some assumptions about the data, such as no endogeneity and no omitted variable bias. The study has estimated Equation (1) by using Panel OLS technique.

3.3.3. Mediation Analysis

Mediation analysis is a statistical and causal inference approach that is used to explore the indirect effects of an independent variable on a dependent variable via one or more intermediary variables known as the mediator(s). The Independent Variable (IV), Dependent Variable (DV), and Mediators are the three variables that make up the mediation analysis. The variable IV is thought to impact the dependent variable. It is the aspect you wish to investigate. The dependent

variable (DV) is the variable you wish to understand or predict based on the independent variable. The intermediary factors that are thought to explain the link between the independent and dependent variables are known as mediators. Mediators aid in the investigation of the process or mechanism through which the independent variable influences the dependent variable. The goal of mediation analysis is to establish whether the independent variable's influence on the dependent variable is direct, indirect, or a combination of both. Mediation analysis mainly investigates three sorts of impacts. The influence of the independent variable on the dependent variable without taking into account any intermediary factors is known as direct effect. The indirect impact of the independent variable on the dependent variable is the influence of the mediator(s) on the dependent variable. It measures the independent variable's effect on the mediator(s), and then the mediator(s) on the dependent variable. Total influence refers to the whole influence of the independent variable on the dependent variable, whether it works directly or indirectly. To estimate and assess the direct and indirect effects, mediation research often use statistical approaches such as regression analysis, structural equation modelling (SEM), or bootstrapping. This study has used (Hayes, 2022) methodology to estimate the mediation analysis.

3.3.4. Granger Causality Analysis

Granger (1969) addresses whether x affects y by first determining how much of the present y can be described by past values of y and then determining if adding delayed values of x may enhance the explanation. If x helps in the prediction of y, or if the coefficients on the lagged $x's$ are statistically significant, y is said to be Granger-caused by x. It is worth noting that two-way causality is common; x Granger causes y, and y Granger causes x. It is vital to remember that "x Granger causes y" does not imply that y is the outcome or result of x. Granger causality assesses precedence and information content but does not, in the more usual sense, show causality. The estimation process of Granger Causality requires the selection of lag length. The null and alternate hypothesis are as follow:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \cdots + \alpha_l y_{t-1} + \beta_1 x_{t-1} + \cdots \beta_l x_{-l} + \varepsilon_t$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \cdots + \alpha_l x_{t-1} + \beta_1 y_{t-1} + \cdots \beta_l y_{-l} + u_t$$

For all possible pairs of (x, y) series in the group. The reported F-statistics are Wald statistics for the joint hypothesis:

$$\beta_1 = \beta_2 = \cdots = \beta_l = 0$$

Ho: x does not Granger Cause y
H1: y does not Granger Cause x
The F-statistics shows that acceptance of null or alternate hypothesis.

3. Findings and Discussion

Based on GDP per capita the study selected the developed countries. The following table shows the list of Developed and Mena countries.

Table 2: List of Developed and Mena Countries

Developed Countries	Mena Countries
Germany	Egypt
France	Jordan
Spain	Oman
Austria	Morocco
Australia	Saudi Arabia
Canada	
Japan	
Switzerland	
Hungry	
Ireland	

3.1. Descriptive Analysis

The table shows that the mean value of consumption expenditure is 1.56, median value is 1.61, maximum value is 7.44 and minimum value is -8.35. The value of standard deviation is 2.29 which shows that data is more spread out around the mean. The values of Skewness (-0.915) and Kurtosis (5.79) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 93.06 which is significant at 1 percent level.

The mean value of expenditure on education is 4.77, median value is 4.8, maximum value is 6.4 and minimum value is 2.96. The value of standard deviation is 0.72 which shows that data is more spread out around the mean. The values of Skewness (-0.60) and Kurtosis (2.89) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 12.40 which is significant at 1 percent level.

The mean value of real effective exchange rate is 86.91, median value is 97.20, maximum value is 113.20 and minimum value is -7.31. The value of standard deviation is 29.53 which shows that data is more spread out around the mean. The values of Skewness (-2.36) and Kurtosis (7.22) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 335.25 which is significant at 1 percent level.

The mean value of foreign direct investment is 5.83, median value is 2.91, maximum value is 106.60 and minimum value is -40.08. The value of standard deviation is 13.94 which shows that data is more spread out around the mean. The values of Skewness (3.32) and Kurtosis (22.36)

shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 3491.45 which is significant at 1 percent level.

The mean value of GDP per employed person is 98910.09, median value is 97341.76, maximum value is 215522.2 and minimum value is 55056.68. The value of standard deviation is 23417.45 which shows that data is more spread out around the mean. The values of Skewness (1.51) and Kurtosis (8.10) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 294.41 which is significant at 1 percent level. It shows that data has some normality issues.

The mean value of GDP growth rate is 1.89, median value is 2.03, maximum value is 24.37 and minimum value is -11.32. The value of standard deviation is 3.33 which shows that data is more spread out around the mean. The values of Skewness (0.94) and Kurtosis (14.47) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 1127.99 which is significant at 1 percent level.

The mean value of gross fixed capital formation is 23.89, median value is 23.50, maximum value is 54.30 and minimum value is 16.70. The value of standard deviation is 3.95 which shows that data is more spread out around the mean. The values of Skewness (2.86) and Kurtosis (21.25) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 3049.83 which is significant at 1 percent level.

The mean value of inflation is 1.65, median value is 1.62, maximum value is 7.95 and minimum value is -4.47. The value of standard deviation is 1.58 which shows that data is more spread out around the mean. The values of Skewness (0.46) and Kurtosis (4.83) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 35.38 which is significant at 1 percent level.

The mean value of market capitalization is 83.93, median value is 68.65, maximum value is 313.04 and minimum value is 10.29. The value of standard deviation is 59.49 which shows that data is more spread out around the mean. The values of Skewness (1.300) and Kurtosis (4.62) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 78.30 which is significant at 1 percent level.

The table 4.2.3 shows the descriptive analysis for Mena countries. The table shows that the mean value of consumption expenditure is 4.68, median value is 4.62, maximum value is 24.23 and minimum value is -9.03. The value of standard deviation is 4.31 which shows that data is more spread out around the mean. The values of Skewness (0.61) and Kurtosis (7.29) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 83.09 which is significant at 1 percent level.

The mean value of expenditure on education is 4.63, median value is 4.54, maximum value is 8.51 and minimum value is 1.65. The value of standard deviation is 1.35 which shows that data is more spread out around the mean. The values of Skewness (0.70) and Kurtosis (3.26) shows

that data of asymmetric and normally distributed. The value of Jarque-Bera test is 8.46 which is significant at 1 percent level.

The mean value of real effective exchange rate is 65.68, median value is 97.04, maximum value is 140.29 and minimum value is -1.54. The value of standard deviation is 53.45 which shows that data is more spread out around the mean. The values of Skewness (-0.29) and Kurtosis (1.25) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 14.11 which is significant at 1 percent level.

The mean value of foreign direct investment is 3.56, median value is 2.67, maximum value is 23.53 and minimum value is -2.76. The value of standard deviation is 3.67 which shows that data is more spread out around the mean. The values of Skewness (2.50) and Kurtosis (12.12) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 451.26 which is significant at 1 percent level.

The mean value of GDP per employed person is 62224.64, median value is 51232.10, maximum value is 131239.20 and minimum value is 14869.35. The value of standard deviation is 37141.82 which shows that data is more spread out around the mean. The values of Skewness (0.53) and Kurtosis (1.82) shows that data of asymmetric and normally distributed. The value of Jarque-Bera test is 10.51 which is significant at 1 percent level. It shows that data has some normality issues. The mean value of GDP growth rate is 3.74, median value is 3.55, maximum value is 19.04 and minimum value is -7.18. The value of standard deviation is 3.42 which shows that data is more spread out around the mean. The values of Skewness (0.42) and Kurtosis (6.80) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 63.37 which is significant at 1 percent level.

The mean value of gross fixed capital formation is 23.74, median value is 23.76, maximum value is 39.29 and minimum value is 11.99. The value of standard deviation is 5.97 which shows that data is more spread out around the mean. The values of Skewness (-0.004) and Kurtosis (2.25) shows that data of not asymmetric and not normally distributed. The value of Jarque-Bera test is 2.32 which is insignificant at 1 percent level. It shows that data has some normality issues which will be further testes by unit root analysis. The mean value of inflation is 3.97, median value is 2.76, maximum value is 29.50 and minimum value is -2.09. The value of standard deviation is 4.72 which shows that data is more spread out around the mean. The values of Skewness (2.31) and Kurtosis (10.81) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 343.58 which is significant at 1 percent level.

The mean value of market capitalization is 88.10, median value is 58.44, maximum value is 462.32 and minimum value is 8.74. The value of standard deviation is 89.56 which shows that data is more spread out around the mean. The values of Skewness (2.38) and Kurtosis (8.59) shows that data of not asymmetric and normally distributed. The value of Jarque-Bera test is 225.55 which is significant at 1 percent level.

Table 3: Descriptive Analysis: Developed Countries

	Consumption Expenditure	Expenditure on Education	Real Effective Exchange Rate	Foreign Direct Investment	GDP Per Employed Person	GDP Growth Rate	Gross Fixed Capital Formation	Inflation	Market Capitalization
Mean	1.5678	4.7704	86.9193	5.8354	98910.0943	1.8932	23.8958	1.6565	83.9384
Median	1.6190	4.8704	97.2038	2.9102	97341.7601	2.0377	23.5014	1.6265	68.6552
Maximum	7.4486	6.4295	113.2029	106.6026	215522.1931	24.3704	54.3044	7.9587	313.0418
Minimum	-8.3514	2.9696	-7.3109	-40.0866	55056.6888	-11.3254	16.7014	-4.4781	10.2906
Std. Dev.	2.2953	0.7214	29.5311	13.9495	23417.4531	3.3398	3.9585	1.5868	59.4967
Skewness	-0.9154	-0.6079	-2.3651	3.3208	1.5183	0.9484	2.8624	0.4664	1.3006
Kurtosis	5.7957	2.8954	7.2256	22.3614	8.1097	14.4787	21.2540	4.8374	4.6218
Jarque-Bera	93.0640	12.4085	335.2525	3491.4572	294.4137	1127.9928	3049.8348	35.3860	78.3071
Probability	0.0000	0.0020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	313.5678	954.0794	17383.8694	1167.0869	19782018.8687	378.6436	4779.1642	331.3019	16787.6791
Sum Sq. Dev.	1048.4234	103.5563	173545.3837	38723.0996	1.09E+11	2219.7051	3118.2252	501.0501	704432.2813
Observations	200	200	200	200	200	200	200	200	200

Table 4: Descriptive Analysis: Mena Countries

	Consumption Expenditure	Expenditure on Education	Real Effective Exchange Rate	Foreign Direct Investment	GDP Per Employed Person	GDP Growth Rate	Gross Fixed Capital Formation	Inflation	Market Capitalization
Mean	4.6818	4.6395	65.6856	3.5620	62224.6400	3.7460	23.7411	3.9713	88.1068
Median	4.6218	4.5465	97.0453	2.6729	51232.1000	3.5506	23.7646	2.7664	58.4403
Maximum	24.2323	8.5105	140.2971	23.5373	131239.2000	19.0473	39.2990	29.5066	462.3266
Minimum	-9.0322	1.6598	-1.5410	-2.7600	14869.3500	-7.1871	11.9934	-2.0933	8.7418
Std. Dev.	4.3112	1.3590	53.4599	3.6729	37141.8200	3.4282	5.9706	4.7275	89.5660
Skewness	0.6145	0.7007	-0.2954	2.5039	0.5343	0.4241	-0.0042	2.3143	2.3898
Kurtosis	7.2934	3.2625	1.2566	12.1227	1.8240	6.8067	2.2537	10.8126	8.5936
Jarque-Bera	83.0995	8.4692	14.1188	451.2603	10.5194	63.3754	2.3209	343.5843	225.5500
Probability	0.0000	0.0145	0.0009	0.0000	0.0052	0.0000	0.3133	0.0000	0.0000
Sum	468.1754	463.9537	6568.5570	356.1954	6222464.0000	374.6030	2374.1050	397.1263	8810.6770
Sum Sq. Dev.	1840.0360	182.8392	282938.1000	1335.5400	1.37E+11	1163.5280	3529.1030	2212.5600	794184.0000
Observations	100	100	100	100	100	100	100	100	100

3.2. Unit Root Results: Developed and Mena Countries

The following table shows the results of two-unit root tests, PPF and LLC. The first four columns of following table shows the values of developed countries while the rest four column shows the values of Mena countries. As discussed in the previous sub-section most of the financial series has always trend and intercept. Hence, the unit root has been tested under trend and intercept model. In case of developed countries four variables are stationary at first difference (expenditure on education, real effective exchange rate, GDP per employed person, and gross fixed capital formation) while, five variables (consumption expenditure, foreign direct investment, GDP growth rate, inflation, and market capitalization) are stationary at level.

The variable consumption expenditure is stationary at level in case of both panels, because the critical value of PPF test (111.391) and LLC test (-5.948) is greater than the tabulated values at 1 percent significance level in case of developed countries and the value of PPF test is 33.901 and the value of LLC is -3.714. The second variable is expenditure on education which is non-stationary at level in both tests, PPF and LLC under both panels. The problem of unit root has been resolved by taking first difference of the series. Hence, this variable is stationary at first difference where the value of PPF is 108.679 and the value of LLC is -11.071 for developed countries and the value of PPF is 58.086 and the value of LLC is -6.153 for Mena countries. The variable real effective exchange rate is stationary under PPF test while non-stationary under LLC test for developed countries. Hence, it is tested for first difference for developed and Mena countries. The variable GDP per employed persons is non-stationary at level for both panels. This variable has been tested further for first difference and result shows that it becomes stationary after taking first difference. Furthermore, GDP growth rate, inflation, and market capitalization are stationary at level for both developed and Mena countries. However, Gross fixed capital formation is stationary at first difference under both tests. Hence, the study concluded mixed order of integration among variables under PPF and LLC panel unit root tests for developed and Mena countries.

Table 4: Unit Root Results of Developed and Mena Countries

	Developed Countries				Mena Countries			
	PP - Fisher Chi-square	Levin, Lin & Chu	PP - Fisher Chi-square	Levin, Lin & Chu	PP - Fisher Chi-square	Levin, Lin & Chu	PP - Fisher Chi-square	Levin, Lin & Chu
	Level		1st Difference		Level		1st Difference	
Consumption Expenditure	111.391***	-5.948***			33.901**	-3.714**		
Expenditure on Education	9.242	0.696	77.471***	-6.968***	5.573	0.141	52.209***	-6.182***
Real Effective Exchange Rate	46.072**	-2.013	108.679***	-11.071***	14.211	-2.419	58.086***	-6.153***
Foreign Direct Investment	77.876***	-7.825***			18.698**	-2.071**		
GDP Per Employed Person	25.535	-1.730	126.963***	-7.922***	6.950	-1.007	18.942**	-3.543**
GDP Growth Rate	128.673***	-10.848***			30.106***	-4.524***		
Gross Fixed Capital Formation	12.731	-0.632	92.026***	-5.775***	12.422	-2.096**	43.880***	-4.228***
Inflation	63.979***	-7.892***			26.880**	-3.038**		
Market Capitalization	42.400**	-4.337***			5.638	0.204	64.787***	-9.714***

Note: *** shows 1% significance level, ** shows 5% significance level

3.3. Pearson's Correlation Matrix: Developed and Mena Countries

The following table explains the results of Pearson Correlation matrix for developed countries. As discussed in the previous section, it is necessary to find out the association between variables before estimating regression analysis and especially the mediation analysis. The results shows that consumption expenditure is negatively associated with educational expenditure. However, the correlation among both variables is weak which is 9 percent. The association between consumption expenditure and real effective exchange rate is negative. However, there is a weak correlation among consumption expenditure and real effective exchange rate which is only 4 percent. Consumption expenditure and foreign direct investment is positively associated with each other and the association between both variables are 21 percent. Consumption expenditure is 7 percent negatively associated with GDP per employed persons. Furthermore, consumption expenditure is positively associated with GDP growth rate, Gross fixed capital formation, inflation, and market capitalization. The level of association is 77, 31, 29, and 10 percent with consumption expenditure.

The variable expenditure on education which is positively associated with real effective exchange rate, foreign direct investment, GDP per employed person, inflation, and market capitalization. The highest association has been found in case of GDP per employed person which is 33 percent. Furthermore, the low association among expenditure on education has been found with market capitalization. The negative association between expenditure on education and GDP growth rate, gross fixed capital formation has been found.

The variable real effective exchange rate has been negatively associated with foreign direct investment, GDP growth rate, and inflation while positively associated with GDP per employed person, gross fixed capital, and market capitalization. The highest association in case of real effective exchange rate has been found with market capitalization (25 percent) while lowest association (0.5 percent) has been found with inflation.

The variable foreign direct investment is negatively associated with market capitalization while positively associated with GDP per employed person, GDP growth rate, gross fixed capital formation, and inflation. The highest association between foreign direct investment and market capitalization has been found (26 percent) while the lowest association is with gross fixed capital formation (13 percent).

The variable GDP per employed person is positively associated with market capitalization (7 percent association), gross fixed capital formation (5 percent association), and GDP growth rate (5 percent association) while negatively associated with inflation (25 percent association). Gross fixed capital formation is positively associated with inflation (6 percent association) and market capitalization (34 percent association) while inflation is negatively associated with market capitalization (24 percent associated).

Table 5: Results of Correlation Matrix: Developed Countries

	Consumption Expenditure	Expenditure on Education	Real Effective Exchange Rate	Foreign Direct Investment	GDP Per Employed Person	GDP Growth Rate	Gross Fixed Capital Formation	Inflation	Market Capitalization
Consumption Expenditure	1.0000								
Expenditure on Education	-0.0938	1.0000							
Real Effective Exchange Rate	-0.0441	0.0603	1.0000						
Foreign Direct Investment	0.2139	0.1917	-0.0977	1.0000					
GDP Per Employed Person	-0.0724	0.3354	0.0480	0.2666	1.0000				
GDP Growth Rate	0.7747	-0.1285	-0.0741	0.2246	0.0528	1.0000			
Gross Fixed Capital Formation	0.3139	-0.1869	0.0542	0.1304	0.0596	0.2940	1.0000		
Inflation	0.2997	0.1653	-0.0059	0.2576	-0.2513	0.2974	0.0636	1.0000	
Market Capitalization	0.1046	0.0011	0.2588	-0.2655	0.0779	-0.0045	0.3420	-0.2465	1.0000

The next step is to explain the results of Pearson Correlation Matrix in case of Mena countries. The results shows that consumption expenditure is negatively associated with educational expenditure. There is 23 percent correlation among both variables. The association between consumption expenditure and real effective exchange rate is negative. There is a weak correlation among consumption expenditure and real effective exchange rate which is only 10 percent. Consumption expenditure and foreign direct investment is positively associated with each other and the association between both variables are 20 percent. Consumption expenditure is 15 percent positively associated with GDP per employed persons. Moreover, consumption expenditure is positively associated with GDP growth rate, Gross fixed capital formation, inflation, and market capitalization. The level of association is 46, 2, 4, and 1 percent with consumption expenditure.

The variable expenditure on education, which is positively associated with real effective exchange rate, GDP per employed person, gross fixed capital formation, and market capitalization. The highest association has been found in case of gross fixed capital formation which is 30 percent. Furthermore, the low association among expenditure on education has been found with real effective exchange rate (19 percent association). The negative association between expenditure on education and GDP growth rate, foreign direct investment, and inflation has been found.

The variable real effective exchange rate has been negatively associated with foreign direct investment, GDP employed person, gross fixed capital formation, and market capitalization while positively associated with GDP growth rate and inflation. The highest positive association in case of real effective exchange rate has been found with inflation (28 percent) while lowest association (6 percent) has been found with GDP growth rate. The highest negative association in case of real effective exchange rate has been found with foreign direct investment (34 percent) while lowest association (7 percent) has been found with market capitalization. The variable foreign direct investment is negatively associated with GDP per employed person while positively associated with GDP growth rate, gross fixed capital formation, and inflation. The highest positive association between foreign direct investment and market capitalization has been found (31 percent) while the lowest association is with inflation (20 percent). The 7 percent negative association between foreign direct investment and GDP per employed person has been in case of Mena countries. The variable GDP per employed person is positively associated with market capitalization (6 percent association) while negatively associated with GDP growth rate (12 percent), inflation (16 percent), and gross fixed capital formation. The variable GDP growth rate is 10 percent positively associated with market capitalization while 22 percent positively associated with inflation and 10 percent with gross fixed capital formation. Gross fixed capital formation is negatively associated with inflation (36 percent association) while positively associated with market capitalization. The variable inflation is negatively associated with market capitalization (13 percent associated).

Table 6: Results of Correlation Matrix: Mena Countries

	Consumption Expenditure	Expenditure on Education	Real Effective Exchange Rate	Foreign Direct Investment	GDP Per Employed Person	GDP Growth Rate	Gross Fixed Capital Formation	Inflation	Market Capitalization
Consumption Expenditure	1.0000								
Expenditure on Education	-0.2325	1.0000							
Real Effective Exchange Rate	-0.10516	0.198751	1.0000						
Foreign Direct Investment	0.201897	-0.1565	-0.34015	1.0000					
GDP Per Employed Person	0.15577	0.232546	-0.11629	-0.07026	1.0000				
GDP Growth Rate	0.461353	-0.10832	0.067428	0.291931	-0.12396	1.0000			
Gross Fixed Capital Formation	0.02822	0.306639	-0.27976	0.183281	-0.00205	0.109834	1.0000		
Inflation	0.043043	-0.33355	0.280634	0.20334	-0.16879	0.22157	-0.3668	1.0000	
Market Capitalization	0.001161	0.296131	-0.07094	0.318133	0.066949	0.109404	0.027141	-0.13115	1.0000

3.4. Panel Regression Analysis: Panel of Developed and Mena Countries

The study split the panel into two groups, Developed countries and Mena countries. The following table explains the regression results of both panel. In case of developed countries majority of the variables are statistically significant while two variables are insignificant. The variable of expenditure on education and market capitalization are statistically insignificant. The coefficient of FDI shows that it increases GDP Growth rate in case of selected developed countries. The GDP growth rate will increase by 97 percent due to increase in FDI in those countries. Furthermore, gross fixed capital formation decreases GDP growth rate, means GDP growth rate goes down by 10.2 units due to 1 unit increase in gross fixed capital formation. Consumption expenditures increases GDP growth rate by 2 percent due to 1 unit increase. One unit increase in inflation in the selected developed countries will increase GDP growth rate of those countries by 5.9 units. Exchange rate is also positively related with GDP growth rate, meaning 1 percent increase in the exchange rate will increase the GDP growth rate of those countries by 29 percent. The overall diagnostics of panel regression for developed countries result shows that results are good and model is perfectly specified. The value of R-square shows that 64 percent variation in GDP growth rate has been explained by independent variables. The probability value of F-statistics shows that model is good fit. The values of Akaike info criterion, Schwarz criterion, and Hannan-Quinn criterion shows that model is perfectly specified. Moreover, the value of Durbin-Watson statistics shows no problem of autocorrelation in the results. Normally, the range 1.7 to 2.1 of Durbin-Watson statistics shows no problem of autocorrelation in the results.

The second column of the table shows the regression results of Mena countries. This time foreign direct investment and consumption expenditures are statistically insignificant. The coefficient of gross fixed capital formation is positively significantly related with GDP growth rate in case of Mena countries, means GDP growth rate goes up by 6.13 units due to 1 unit increase in gross fixed capital formation. However, this variable is marginally significant at 15 percent significance level. The coefficient of expenditure on education states that 1 unit increase in this variable will boost GDP growth rate by 3.2 units. Consumption expenditures decreases GDP growth rate by 1.5 units due to 1 unit increase. One unit increase in inflation in the selected Mena countries will increase GDP growth rate of those countries by 4.42 units. The value of the coefficient of GDP per employed person shows that 1 unit increase in this variable will increase GDP growth rate in Mena countries by 1.00 units. Exchange rate is also positively related with GDP growth rate, meaning 1 percent increase in the exchange rate will increase the GDP growth rate of those countries by 5.4 units. Finally, the coefficient of market capitalization is positively related with GDP growth rate of Mena countries, meaning 1 unit increase in market capitalization will increase GDP growth rate by 3.33 units.

The overall diagnostics of panel regression for Mena countries result also shows that results are good and model is perfectly specified. The value of R-square shows that 99 percent variation in

GDP growth rate has been explained by independent variables. The probability value of F-statistics shows that model is good fit. The values of Akaike info criterion, Schwarz criterion, and Hannan-Quinn criterion shows that model is perfectly specified. Moreover, the value of Durbin-Watson statistics shows some problem autocorrelation in the results of Mena countries.

Table 7: Results of Panel Regression Analysis: Developed and Mena Countries

Variable	Developed Countries				Mena Countries			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
C	1.387146	1.736611	0.798766	0.4254	-2.35E-14	2.92E-15	-8.04711	0.000
Foreign Direct Investment	0.97117	0.068095	14.26203	0.000	0.0001	1.31E-16	0.000012	1.00136
Gross Fixed Capital Formation (-1)	-1.02556	0.230318	-4.45279	0.000	6.13E-16	4.70E-16	1.303941	0.1958
Expenditures on Education (-1)	-0.0009	0.00533	-0.16876	0.8662	3.28E-17	1.13E-17	2.902657	0.0047
Consumption Expenditure	0.026353	0.010784	2.44376	0.0154	-1.50E-16	1.77E-16	-0.84741	0.3991
Inflation	5.95E-05	7.33E-06	8.114578	0.000	4.42E-20	1.38E-20	3.190678	0.002
GDP per Employed Person (-1)	-0.10515	0.04491	-2.34142	0.0202	1.00012	1.70E-16	5.87E+15	0.000
Real Effective Exchange Rate	0.294321	0.112159	2.624143	0.0094	5.45E-16	9.85E-17	5.529351	0.000
Market Capitalization	-0.0007	0.002902	-0.24099	0.8098	3.33E-16	1.24E-16	2.6779	0.0089
R-squared	0.644065				0.9900			
Adjusted R-squared	0.629156				1.0000			
S.E. of regression	2.033839				4.54E-15			
Sum squared resid	790.0714				1.75E-27			
Log likelihood	-421.168				3007.887			
F-statistic	43.2018				5.87E+30			
Prob(F-statistic)	0.000				0.000			
Mean dependent var	1.893218				3.865554			
S.D. dependent var	3.339805				3.403996			
Akaike info criterion	4.301683				-63.1134			
Schwarz criterion	4.450107				-62.8446			
Hannan-Quinn criter.	4.361748				-63.0048			
Durbin-Watson stat	2.096739				0.314548			

Note: Dependent Variable: GDP_GROWTH

Method: Panel Least Squares

Developed Countries: Total panel (balanced) observations: 200

Mena Countries: Total panel (balanced) observations: 95

Foreign Direct Investment = FDI, Gross Fixed Capital Formation = GFCF, Expenditures on Education = EDU_EXP, Consumption Expenditure = CONSUMPTION_EXP, Inflation = INFLATION, GDP per employed person = GDP_EMPLOY, Real Effective Exchange rate = EXCHANGE_RATE, Market Capitalization = MARKET_CAPT

3.5. Granger Causality Test: Developed and Mena Countries

The study further check the causality between GDP Growth rate and Market Capitalization for selected Developed and Mena countries. As discussed earlier, Granger causality test investigates the way of causality between variables. There are two possible way of causality between variables, uni-directional and bi-directional causality. If the one variable granger cause other variable only this is called uni-directional causality and if both variables causes each other it is called bi-directional causality. The study selected 2 lag length while estimating the Granger causality analysis between GDP growth rate and market capitalization. The table has two major columns, first column shows the result of Developed countries while the rest shows the results of Mena countries.

The results found two-way causality among market capitalization and GDP growth rate. Hence, in case of Developed countries the study found bi-directional causality between GDP growth rate and market capitalization. Market capitalization cause GDP growth rate and GDP growth rate also cause market capitalization. The model probability value is 0.051 of which F-statistics is 30.074 and second model probability value is 0.021 of which F-statistics is 3.943.

The second column shows the results of Mena countries and found one-way causality among market capitalization and GDP growth rate for Mena countries. Hence, the study found uni-directional causality between GDP growth rate and market capitalization. GDP growth rate cause market capitalization in Mena countries. The model probability value is 0.005 of which F-statistics is 5.587 and second model probability value is 0.079 of which F-statistics is 2.610.

Table 8: Results of Granger Causality Test: Developed and Mena Countries

| Null Hypothesis: | | Developed Countries | | | | Mena Countries | | |
	Obs	F-Statistic	Prob.	Conclusion	Obs	F-Statistic	Prob.	Conclusion
GDP Growth Rate does not Granger Cause Market Capitalization	180	30.074	0.050	Causality	90	5.587	0.005	Causality
Market Capitalization does not Granger Cause GDP Growth Rate		3.943	0.021	Causality		2.610	0.079	No Causality

3.6. Mediation Analysis: Developed and Mena Countries

One of the objectives of this study is to investigate the role of market capitalization as a mediator between GDP growth rate and control variables. The previous sub-section which is based on the panel of selected 20 countries used the mediation methodology of (Hayes, 2022) for this purpose. This sub-section also utilized the same mediation methodology in order to find out the role of market capitalization as a mediator between GDP growth rate and other control variables for Developed and Mena Countries. The study found partial mediation of market capitalization among GDP Growth rate and other control variables i.e. foreign direct investment, gross fixed capital formation, expenditure on education, expenditure on consumption, inflation, GDP per employed person, and exchange rate in case of Developed countries. The total effect is 0.8025 which is significant (p-value=0.000). The value of direct effect is 0.0269 (p-value = 0.000) that captures the impact of the pathway from the exogenous variable to the outcome while controlling for the mediator. The value of indirect effect is 0.0005 which is also significant which confirms the partial mediation of market capitalization among GDP growth rate and other control variables in case of Developed countries. The diagnostics tests are also valid, the lower bond (-0.0249) and upper bond (0.0027) values are good.

Table 9: Results of Mediation Analysis: Developed Countries

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval	t-statistics	Conclusion

				Lower Bond	Upper Bond		
Independent Variables→Market Capitalization→GDP Growth Rate	0.8025 (0.000)	0.0269 (0.000)	0.0005	-0.0249	0.0027	4.5278	Partial Mediation

The study also found partial mediation of market capitalization among GDP Growth rate and other control variables in case of Mena countries. The total effect is 0.5865 which is significant (p-value=0.000). The value of direct effect is 0.1264 (p-value = 0.000) that captures the impact of the pathway from the exogenous variable to the outcome while controlling for the mediator. The value of indirect effect is 0.0448 which is also significant which confirms the partial mediation of market capitalization among GDP growth rate and other control variables in case of Mena countries. The diagnostics tests are also valid, the lower bond (-0.0467) and upper bond (0.1752) values are good.

Table 10: Results of Mediation Analysis: Mena Countries

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t-statistics	Conclusion
				Lower Bond	Upper Bond		
Independent Variables→Market Capitalization→GDP Growth Rate	0.5865 (0.000)	0.1264 (0.000)	0.0448	-0.0467	0.1752	1.8447	Partial Mediation

4. CONCLUSION AND POLICY IMPLICATIONS

The study explores the relationship between GDP growth, macroeconomic variables, and share market mediating role in MENA and developed countries, analyzing data from 2002-2021. The study found that four variables are stationary at first difference, such as expenditure on education, real effective exchange rate, GDP per employed person, and gross fixed capital formation. The other five variables are stationary at level. Consumption expenditure is stationary in both panels, with a critical value of PPF test (111.391) and LLC test (-5.948) greater than the tabulated values at a 1 percent significance level. The second variable, expenditure on education, is non-stationary in both tests. The real effective exchange rate is stationary under both panels, while GDP per employed persons is non-stationary. GDP growth rate, inflation, and market capitalization are stationary for both developed and Mena countries. However, gross fixed capital formation is stationary at first difference. The study concludes mixed order of integration among variables under PPF and LLC panel unit root tests for both developed and Mena countries.

Moreover, for developed countries the results of Correlation matrix investigated a weak correlation between consumption expenditure and educational expenditure, with a 9 percent negative correlation. The association between consumption expenditure and real effective exchange rate is negative, with a 4 percent correlation. Consumption expenditure and foreign direct investment are positively associated, with 21 percent associations. Consumption expenditure is negatively associated with GDP per employed persons, and positively associated with GDP growth rate, gross fixed capital formation, inflation, and market capitalization. Education expenditure is positively associated with real effective exchange rate, foreign direct investment, GDP per employed person, inflation, and market capitalization. The highest association was found for GDP per employed person, while the lowest was for market capitalization. Real effective exchange rate is negatively associated with foreign direct investment, GDP growth rate, and inflation, while positively associated with GDP per employed person, GDP growth rate, gross fixed capital formation, and inflation. GDP per employed person is positively associated with market capitalization, gross fixed capital formation, and GDP growth rate, while negatively associated with inflation. Gross fixed capital formation is positively associated with inflation and market capitalization, while inflation is negatively associated with market capitalization.

For Mena countries the study found a negative association between consumption expenditure and educational expenditure, with a 23 percent correlation. The association between consumption expenditure and real effective exchange rate is negative, with a weak correlation of only 10%. Consumption expenditure and foreign direct investment are positively associated with each other, with a 20 percent association. Education expenditure is positively associated with real

effective exchange rate, GDP per employed person, gross fixed capital formation, inflation, and market capitalization. The highest association is found in gross fixed capital formation, while the lowest is with real effective exchange rate (19%).

Real effective exchange rate is negatively associated with foreign direct investment, GDP per employed person, gross fixed capital formation, and market capitalization, while positively associated with GDP growth rate and inflation. The highest negative association is found with foreign direct investment (34%), while the highest positive association is with inflation (28%).

Foreign Direct Investment is negatively associated with GDP per employed person (7%), while positively associated with, GDP growth rate (29%), gross fixed capital formation (18%), Inflation (20%), and market capitalization (31%). The highest positive association is found with market capitalization (31%), while the lowest is with inflation (20%). GDP per employed person is positively associated with market capitalization (6%), while negatively associated with GDP growth rate (12%), inflation (16%), and gross fixed capital formation (2%). GDP growth rate is 10% positively associated with market capitalization, (10%) positively associated with gross fixed capital formation, (22%) positively associated with inflation. Gross fixed capital formation is positively associated with market capitalization (3%) while negatively associated with inflation (36%). Inflation is negatively associated with market capitalization (13%).

Most of the variables in the regression analysis are statistically significant for developed countries, with the coefficient of FDI increasing GDP growth rate by 97%. Gross fixed capital formation decreases GDP growth rate by 10.2 units due to 1 unit increase in gross fixed capital formation. Consumption expenditures increase GDP growth rate by 2% due to 1 unit increase, while inflation increases it by 5.9 units. Exchange rate is also positively related with GDP growth rate, with a 1% increase in exchange rate boosting it by 29%. The overall diagnostics of panel regression for developed countries show good fit, with a 64 percent variation in GDP growth rate explained by independent variables.

Furthermore, for Mena countries the coefficient of gross fixed capital formation is positively significant with GDP growth rate, with 6.13 units increase in GDP growth rate due to 1 unit increase in gross fixed capital formation. Expenditure on education, inflation, GDP per employed person, exchange rate, and market capitalization are also positively related with GDP growth rate in Mena countries.

The study found a two-way causality between market capitalization and GDP growth rate in developed countries, with a model probability value of 0.051 and F-statistics of 30.074. In Mena countries, the study found a uni-directional causality, with a model probability value of 0.005 and F-statistics of 5.587 and 2.610, respectively.

The study found partial mediation of market capitalization in Developed countries, with a significant total effect of 0.8025. The direct effect was 0.0269, while the indirect effect was 0.0005, confirming the partial mediation of market capitalization among GDP growth rate and

other control variables. The study also found partial mediation of market capitalization among GDP growth rate and control variables in Mena countries, with a significant total effect of 0.5865. The direct effect was 0.1264, while the indirect effect was 0.0448, confirming the partial mediation.

The study concludes with reasonable policy recommendations based on its empirical results, such as building special economic zones and delivering free tax breaks to investors and firms. Furthermore, emphasis on the money supply and preserving the currency's balance between face and interior worth. Increased foreign direct investment raises the country's workforce demand.

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