Extending the Frontiers of Financial Development for Sustainability of the MENA States: The Roles of Resource Abundance and Institutional Quality

Forthcoming: Sustainable Development

Stephen T. Onifade
Faculty of Economics and Administrative Sciences,
KTO Karatay University, Konya, Turkey
E-mail: stephen.taiwo.onifade@karatay.edu.tr
ORCID ID (https://orcid.org/0000-0003-1497-7835)

Bright A. Gyamfi
Economic and Finance Application and Research Center,
İstanbul Ticaret University
E-mail: bagyamfi@ticaret.edu.tr

Ilham Haouas
College of Business, Abu Dhabi University,
P.O. Box 59911, Abu Dhabi, UAE
E-mail: Ilham.haouas@adu.ac.ae

Simplice A. Asongu
School of Economics, University of Johannesburg,
Johannesburg, South Africa
E-mails: asongusimplice@yahoo.com / asongus@afridev.org

Abstract

Resource abundance characterizes economies within the MENA region from North Africa to the Middle East. As such, to improve financial development (FD) for regional economic sustainability, this study provides a comprehensive analysis of the roles of natural resources abundance and institutional quality indicators on the region's FD while underscoring the inflationary levels and general economic growth trends amidst rising globalization. The adopted empirical strategy (CS-ARDL and AMG) is employed for potential cross-sectional dependency (CD) and slope homogeneity in the regional data spanning over two decades (2000-2020). Unlike the extant literature, two separate regional FD indicators were considered for an insightful analysis namely, banking financial services via domestic credit to private sector, and financial stability via the Z-score values showing the tendencies of default in a country's banking structure. Regardless of the FD indicator, the results reveal that natural resources, growth trends, and inflationary levels significantly spur long-run regional FD thereby invalidating the financial resource curse hypothesis in the region. Furthermore, both institutional quality levels and globalization produced detrimental impacts on FD levels. However, the interaction between institutional quality levels and natural resources shows a desirable FD-stimulating effect in the region, noticeably when FD is proxied by the Z-score. Thus, implying that stronger institutions are crucial for MENA's overall financial stability vis-à-vis reduction in the risk of default in the banking system. Hence, policy recommendations including the strengthening of institutional capacities among others, were suggested to regional authorities towards harnessing resources for sustainable regional FD.

Keywords: Natural resources, Financial development, Institutions, MENA region, Sustainable growth

JEL Classifications: Q33, P48, E44, O53, O55

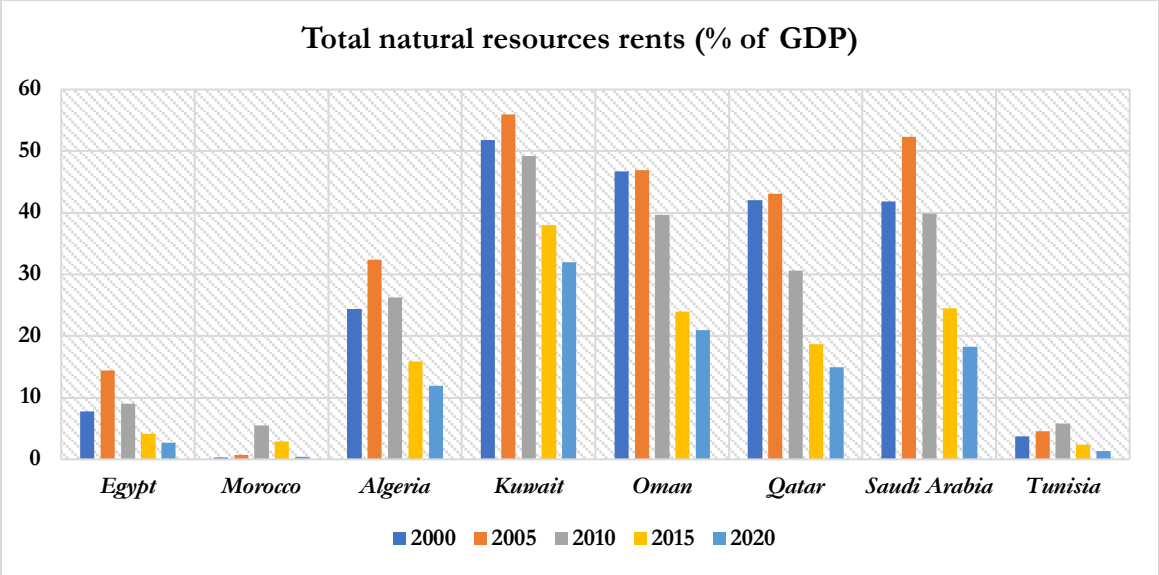
1. Introduction

Resource abundance characterizes majority of the countries across the length and breadth of the Middle East and North Africa (MENA) region from the northern part of Africa to the Middle East. As such, to extend the frontiers of financial development (FD) for economic sustainability of the region, this study provides a comprehensive analysis of the roles of natural resources abundance and institutional quality indicators on FD in the region. It is widely acknowledged that the development of the financial sector is one of the most important primary economic factors in growing economies (Sadorsky, 2010). Financial development promotes a sustainable economic growth path via capital buildup and technological advancement as more financial contracts are generated vis-à-vis higher efficient transaction cost (World Bank, 2016). There is a growing need for a more robust and systematic approach to address issues bordering on financial development of the MENA region for some important reasons.

Firstly, economic development in the bloc has been slowing. The World Bank's growth statistics indicated that the MENA region's annual gross domestic product (GDP) growth witnessed a decline from 7.90% in 2004 to about 1.20% in 2019 in the years preceding the deadly Covid-19 pandemic. In addition, during the pandemic which hit hard on the global economy, the region's growth recorded further declining performances to about -4% in the year 2020 (WDI, 2021). Thus, understanding some key growth stimulating factors is important for ensuring economic sustainability of the region. As such, a comprehensive study of issues like financial development among other possible growth enhancing factors is vital to significantly helping the region's growth rebound.

Secondly, the MENA regional economy has remained largely dependent on resource abundance especially the energy resources (oil & gas reserves). The region holds around 60% of the world's oil reserves (OPEC, 2020), with natural resources rents accounting for a sizeable proportion of the GDP in most countries in the region including Kuwait, Oman, Saudi Arabia and Qatar among others as seen in Figure 1. Besides, a significant proportion of important financial dealings revolves around activities in the resource-based industry, thereby have left the issues of economic diversification in the region under the spotlight over the years. Thus, understanding the role of resources abundance as a possible key factor in influencing financial development in the MENA region can be considered as an important direction towards ensuring a strategic regional economic diversification agenda. That is, with a more developed financial sector, financial institutions can provide more capital to various real sector activities and reduce its dependency on the primary sector and other extractive industries.

Figure 1: Contribution of Resources Rents to GDP in MENA region (2000-2020)



Source: Data obtained from the World Bank's World Development Indicator (WDI, 2021).

Thirdly, despite its slowing economic growth and less diversified economy, the MENA region has great privileges to realize its potential. The region is geographically located in the crossroads of three continents (Europe, Africa, and Asia) and increasingly opens for local and foreign educated human capital, demarking the region with great financial hub potential (OECD, 2022). As such, understanding and extending the frontiers of the key elements of financial development is considered vital to reveal the inherent economic potentials. Finally, although, academically, the literature on financial development can be said to be rich, an extended or comprehensive research within the framework of most of the economies in the MENA region is not widely common as in the rest of the world. Meanwhile, many economies in other climes especially in the advanced economies of the European Union (EU) zones and the United States (US) among others have been following the path of financial development for a more sustainable economic growth drive. Besides, many of the related studies have neglected the possible crucial roles of institutional quality in the resource abundance-FD discussion (Zaidi et al., 2019; Guan et al., 2020; Han et al., 2022). Thus, overall, it is motivated that this research can benefit the literature in the same area in general.

As such, this analysis adds to the growing literature on financial development within the unique framework of the MENA states in the following regards. Firstly, it investigates the dynamic impacts of natural resource abundance on the regional financial developments, given the presence of institutional quality. Secondly, the dynamic impacts of institutional quality on financial development are examined in retrospect of the natural resource dependency of the MENA region. Thirdly, the

study thereafter investigates the causal relationship between financial development, natural resource abundance, and the regional institutional quality indicators.

The research will be structured as follows. Section two presents the literature review and the theoretical framework. Section three explains the underlying methodology, Section four provides the estimation results and the full details of the analysis, while the Section five provides relevant concluding remarks and useful policy recommendations to stakeholders in the MENA region.

2.1. Literature Review and Theoretical Background

In this section, we began by presenting a synopsis of the theoretical background of the research before proceeding to a review of the related existing studies on the subject matter. We first present the infamous natural resource curse (NRC) theory which provides some foundations for the current study. The resource-curse conjecture often known as the paradox of plenty is a hypothesis explaining possible reasons why resource-rich countries tend to progress more slowly in economic terms, are less democratic, and generally less prosperous compared to non-resource abundant countries. The term resource curse firstly appeared in 1993 in the study from Sachs and Warner (1995) who demonstrated a negative link between natural resources and economic growth.

While resource abundance conventionally ought to imply greater blessings for a host community, the argument put forward in the NRC theory needs to be carefully examined. This can be achieved by systematically exploring the possible channel(s) by which abundance of resources can create detrimental impacts on an economy. In this vein, some of the major factors that are generating growing interest among researchers are the financial development and institutional quality channels. For instance, studies such as Khan et al. (2020), Sun et al. (2020), Onifade et al. (2021), Raghutla et al. (2022), Nathaniel (2021), Zaidi et al. (2019), and Dwumfour and Ntow-Gyamfi (2018), among others, have reviewed the resources curse argument from the financial development perspective. These studies come up with findings that natural resource abundance can hinder an economy from growing.

However, there is no consensus on the subject matter of the NRC's validity. Thus, to further understand the resource curse conjecture, more theories have been utilized to explain the phenomenon among which, the Dutch disease theory which has gained substantial relevance in the literature. The theory advances that there is a decline in a country's economic performance when specialized resource production is practiced, and the impacts can also be seen in the country's exchange rates. Another relevant theory is the political conflict theory that explains that societies in a resource-rich country tend to be more prone to conflict because they are basically competing for the resource abundance. This prolonged political conflict eventually becomes an obstacle for countries' growth.

Additionally, other theories like the rent seeking theory from Krueger in 1974 argue that people in resource-rich countries tend to accumulate wealth for themselves at the detriment of national economic interest (Krueger, 1974). The rent seeking theory has been widely corroborated by many other arguments including the corruption theory which explains that government in resource-rich countries tend to be more corrupt than those in the countries with less resources (Robbins, 2000; Kolstad & Wiig, 2009). In these regards, both rent-seeking and corruption theories collectively draw the attention of researchers to the cruciality of institutional quality in the discussion. Overall, the debate on resource abundance in terms of desired economic development and sustainability of many resource-rich nations is still an ongoing matter that warrants more scholarly inquiry with robust empirical approaches. Subsequently, we examined the state of the extant empirical literature and highlighted the relevant gaps that the current study helps to bridge.

2.2. Empirical Literature Review

2.2.1. Natural resource abundance and financial development

The first section of the empirical review examines the impact of resource wealth on financial development going by some existing findings in the literature. Khan et al. (2020) investigated the impact of natural resource abundance on financial development in a panel dataset of 87 emerging and developing countries over 1984 – 2018. Their study is perhaps the closest in comparison to our study since they did not overlook the institutional quality perspective. However, the uniqueness of the MENA's resource abundance is not accounted for, since they did not present a regional specific comprehensive analysis but rather, randomly merged the scenario of 87 countries together. Overall, the study demonstrates that natural resource abundance positively induces financial development after it reaches a particular threshold. In another study, Dwumfour and Ntow-Gyamfi (2018) also investigated the impact of natural resource abundance on financial development in a sample of 38 African countries. They utilized the system-GMM (generalized method of moments) as the primary method of analysis and their study demonstrates that natural resource rents on African countries are ambiguous. However, their study eventually concludes that institutional quality can reduce the unfavorable side effects of natural resource abundance on financial development.

In another analysis, Sun et al. (2020) investigated the relationship between natural resource abundance and financial development in the case of seven emerging economies (E-7). The group of countries they considered consists of China, Brazil, India, Mexico, Russia, Turkey, and Indonesia. Their analysis was conducted with the Augmented Mean Group (AMG) for long and short-run estimations as the main analytical approach and their study demonstrates that natural resource abundance has a negative impact on financial development, thus confirming the resource curse hypothesis. Han et al. (2022) investigated the impact of natural resources on financial development in the top ten natural resource abundant countries. The top ten countries include the United States, China, Russia, Australia, Canada, China, India, the Democratic Republic of Congo (DRC) and Saudi Arabia. The study estimates a

model framework using the fully modified ordinary least square (FMOLS) approach, in addition to panel cointegration test and panel unit root tests. The result shows that natural resource abundance reduces the progress of financial development, which confirms the resource-curse hypothesis and further supports the conclusions of Sun et al. (2020).

In another clime, Yuxiang and Chen (2011) investigated the relationship between resource abundance and financial development in case of China. The study focuses on provincial panel data in China and utilizes mineral resource abundance as a proxy for the natural resource abundance variable. The study applied the difference GMM estimator following Arellano and Bond (1991). The study argues that the positive impact of resource abundance on financial development occurs through trade openness. A major limitation to the study is that, the study neglects the potential roles that institutions can play while focusing more on the role of trade openness. This oversight is also noticeable in some other studies. In the study by Sun and Cai (2020), which also focuses on provincial data in China, it was discovered that financial development is a channel through which natural resource abundance affects economic growth as a higher degree of financial development can help the country to reduce the curse relationship between natural resources and economic growth.

In a similar study with the same sample, Khan et al. (2020b) also shared similar results as in Yuxiang and Chen (2011) where natural resource abundance imposes a negative impact on financial development in China. However, instead of conducting the research at the province level, the study took a sample at country level. Different from Yuxiang and Chen (2011), Khan et al. (2020b) incorporates the role of technological innovations, human capital, and trade openness in understanding the association between natural resource abundance and financial development. The study also applied a different method by implementing the Maki cointegration approach and Autoregressive Distributed Lag (ARDL) bounds testing approach. In case of the United States, Shahbaz et al. (2018) investigated the natural resource-financial development link in the country. The study examines whether natural resource abundance provides a positive stimulus for financial development amid the presence of education, economic growth, and capitalization as other additional factors. In estimating the model, the study implements the Vector Error Correction Model (VECM) approach. The study demonstrates that resource abundance positively impacts financial development in addition to the positive roles of education and economic progress in the US. On the contrary, capitalization negatively affects financial development in the country.

Nevertheless, the important question of overlooking the institutional influence is still present, thus prompting more research in this direction. Besides, in most of these previous studies, little attention has been given to financial development with specific considerations for the uniqueness of the MENA states. Meanwhile, Dwumfour and Ntow-Gyamfi (2018) have noted that the financial sector is a key sector that can also experience the resource curse conjecture. As such, the current study significantly extends the frontiers of financial development discussion specifically for the vast resource abundant MENA states.

2.2.2. Institutional quality and financial development

Some studies have investigated the impact of institutional quality on financial development. The majority of them have focused on other economic regions away from the MENA states (Khan et al., 2019; Abubakar et al.,2020; Abaidoo & Agyapong, 2022; Le et al., 2016; Azizi et al., 2021), with the exception of a few (Kutan et al., 2017; Cherif and Dreger, 2016). In the case of non-MENA states, for instance, Khan et al. (2019) investigated the relationship between institutional quality and financial development in the case of the United States. The study applies the ARDL method following Pesaran and Shin (1998) with Bounds testing to demonstrate that institutional quality has a positive and significant impact on financial development in the US.

Abubakar et al. (2020) investigate the impact of governance on financial development in West African countries. The region studied includes about 16 African countries. Using panel regression analysis, the study demonstrates that governance has a significant impact on financial development. The significant determinants of bank deposit to GDP ratio include voice and accountability, trade openness and interest rate. Meanwhile, the significant determinants of domestic credit to GDP ratio include government effectiveness, rule of law, and control of corruption. In another study, Abaidoo and Agyapong (2022) investigated the same nexus among 29 developing countries in Sub-Saharan Africa region using panel regression analysis. Their study also demonstrated that institutional quality has a positive impact on the financial development of the economies in the region.

In the case of Asian countries, the study from Le et al. (2016) from Asian Development Bank also demonstrates institutional quality as a significant determinant of financial development. Their conclusion is drawn from the study of 26 Asian countries over the period of 1995 – 2011. The study uses multiple proxies of financial development and applies the generalized least squares (GLS) approach as the primary estimation method. On the European side, Azizi et al. (2021) have also examined how institutional quality affects financial development among Eurasian developing economies. The sample group consists of 27 developing countries with the sample period of 1999 – 2018. They utilized the GMM as the main method of estimation and the study demonstrates that institution quality has a positive impact on financial development, given the control of democracy. Again, this finding aligns with many of the previous ones.

Table 1: Synopsis of Relevant Empirical Studies

Author(s)	Observations	Sample Studied	Approach	Findings and conclusion
Natural resource abundance and financial development				
Yuxiang and Chen (2011)	1999 – 2006	China	robust one-step system GMM estimator	Natural resources have positive effect on FD

Dwumfour & Ntow-Gyamfi (2018)	2000 - 2012	38 African countries	GMM	Impacts of natural resource rents on FD is ambiguous
Shahbaz et al. (2018)	1960 – 2016	USA	VECM	Resource abundance positively impacts FD
Khan et al. (2020)	1984 – 2018	87 emerging and developing countries	SYS-GMM	Natural resources positively induce FD
Sun et al. (2020)	1990 to 2017	E7 Countries	AMG	Natural resource abundance has a negative impact on FD
Sun and Cai (2020)	2004 – 2018	China	Linear regression & non-dynamic panel threshold model	Natural resource boost growth through FD
Khan et al. (2020b)	1987 – 2017	China	Maki cointegration and ARDL	Natural resource has a negative impact on FD
Han et al. (2022)	1974–2016	Top ten Countries	FMOLS	Natural resource abundance has a negative impact on FD
Institutional quality and financial development				
Le et al. (2016)	1995 – 2011	26 Asian countries	GLS approach	Institutional quality is a significant determinant of FD.
Khan et al. (2019)	1984 – 2016	The USA	ARDL	Institutional quality has a positive and significant impact on FD.
Abubakar et al. (2020)	2006 – 2017	16 African countries	Panel regression	Governance has a significant impact on financial development
Azizi et al. (2021)	1999 – 2018	27 Eurasian economies	GMM	Institutional quality has a positive impact on FD.
Abaidoo and Agyapong (2022)	2001 – 2018	29 countries in Sub Sahara Africa	LIML estimation technique	Institutional quality has a positive and significant impact on FD.

Note: FD, financial development; System Generalized Methods of Movements (SYS-GMM), AMG: Augmented Mean Group, FMOLS: Fully Modified OLS, Autoregressive Distributed Lag (ARDL), Vector Error Correction Model (VECM) approach, Limited information maximum likelihood (LIML) estimation technique.

2.2.3. Literature Gap

As for the MENA countries, Kutan et al. (2017) investigate the impact of institutional quality on financial development and economic growth. The study span over the period 1980 – 2012. The study also features some additional control variables such as trade openness. However, the study from Kutan et al. (2017) failed to account for the natural resource abundance that essentially characterizes a vast majority of the MEAN states in their analysis. Thus, leaving out a significant research vacuum. The study implemented the common correlated effect mean pooled (CCEP) approach as the main method for regression and demonstrates that financial development reduces economic growth in the presence of institutional quality. In other words, institutional quality inhibits the influential possibility of financial development on the economy. Cherif and Dreger (2016) also examined the relationship between institutional quality and financial development in their study of the MENA countries. The distinguishing feature of this study compared to others is the incorporation of banking and stock market indicators as two proxies of financial development. However, just like the case of Kutan et al. (2017), this study also overlooked the pertinent roles of resource abundance in the analytical framework. Thus, leaving out a significant research vacuum that the present study essentially helps to fill.

In a different study, Gazdar and Cherif (2014) had previously conducted a similar study to Cherif and Dreger (2016) regarding the impact of institutional quality and financial development in 18 MENA countries over the period of 1984 – 2007. Two proxies of financial development, as a dependent variable, are also developed, each from the banking sector and stock market, as in Cherif and Dreger (2016), except that the financial indicators are different. The study also features some control variables such as trade openness and foreign investment (direct and portfolio) in the analysis through the application of the fixed effects and random effects specifications. The study demonstrates that some institutional indicators have a significant impact on financial development. However, just as the case of Kutan et al. (2017) and Cherif and Dreger (2016), Gazdar and Cherif (2014) also overlooked the pertinent roles of resource abundance in the analytical framework. Thus, leaving out a significant research vacuum that the present study essentially helps to fill for the specific case of the MENA states. Besides, the adopted methods and analytical procedures address some analytical pitfalls that have until now been overlooked in many of the extant studies.

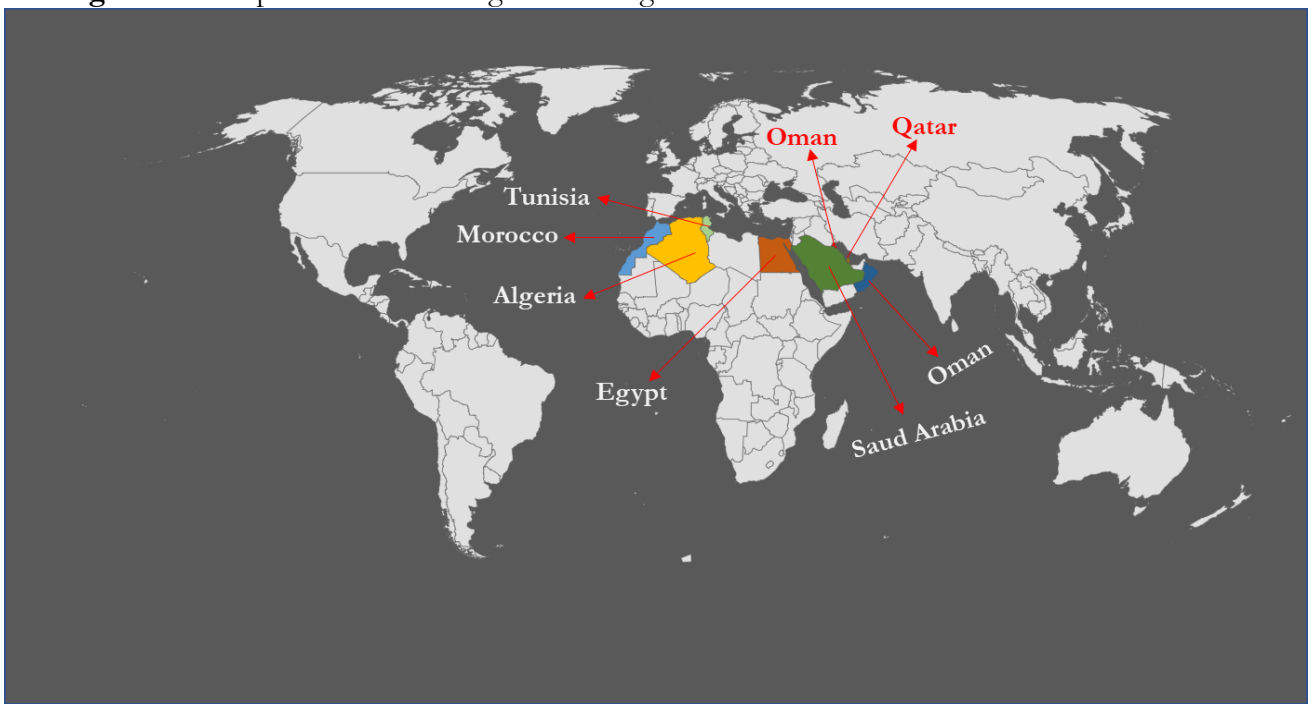
3.0. Research Methods

3.1. Data Information and Baseline Models

The data are sourced from the World Bank Global Financial Development Database (GFDD, 2021), the World Development Indicators (WDI, 2021), the World Governance Indicators (WGI, 2021), and the KOF globalization index (Gygli et al., 2021). We analyzed the updated data for the MENA region

spanning over two decades from the year 2000 up until the year 2020. We considered the general level of data point availability to minimize any limitations posed by potential bias in sample selections across the region and to ensure that the data used is up to date within a reasonable and acceptable range of observations. The sample countries covered in the current study as depicted in ***Figure 2*** include Egypt, Algeria, Oman, Kuwait, Morocco, Qatar, Saudi Arabia, and Tunisia.

Figure 2: A map of the MENA region showing the understudied countries.



Source: Authors' design

Unlike the common approach of utilizing only the banking financial service indicator to proxy financial development levels as seen in some existing studies (Guan et al., 2020; Han et al., 2022), this research adopted two indicators for a comprehensive and more insightful analytical framework of the MENA region's financial development. Firstly, we considered the popular *banking financial services* as captured by the level of *domestic credit to private sector (WDI, 2021*) as measure of financial development of the region, and secondly, we also explored another dimension of financial development from the perspective of *financial stability* as captured by using the *Z-score index of (GFDD, 2021*). Domestic credit to private sector is considered as a share of the *GDP* while the Z-score captures the tendencies of default in the individual country's banking structures. The Z-score relates the buffer of a country's

banking system in terms of the capitalization and returns to the level of volatility of those returns. Resource abundance characterizes majority of the countries across the length and breadth of the MENA region from the northern part of Africa to the Middle East. To extend the frontiers of financial development for economic sustainability in the region, a comprehensive analysis of the roles of natural resources, institutional quality, and globalization was provided in this study. We considered the following empirical baseline models:

MODEL I:

$$K_{it}= \beta_0+ \beta_1 GDPC_{it}+ \beta_2 NR_{it} + \beta_3 INF_{it}+ \beta_4 IQPO_{it} + \beta_5 IQRL_{it} + \beta_6 KOFG_{it} +\mu_{it} \quad (1)$$

MODEL II

$$K_{it}= \beta_0+ \beta_1 GDPC_{it}+ \beta_2 NR_{it} + \beta_3 INF_{it}+ \beta_4 IQPO_{it} + \beta_5 IQRL_{it} + \beta_6 KOFG_{it} + \beta_7 NR*IQPO_{it} +\mu_{it} \quad (2)$$

MODEL III

$$K_{it}= \beta_0+ \beta_1 GDPC_{it}+ \beta_2 NR_{it} + \beta_3 INF_{it}+ \beta_4 IQPO_{it} + \beta_5 IQRL_{it} + \beta_6 KOFG_{it} + \beta_8 NR*IQRL_{it}+\mu_{it} \quad (3)$$

Where NR is natural resources rents taken as a percentage of GDP, IQ represents the levels of Institutional Quality, while INF shows inflationary level. KOFG denotes the level of globalization as drawn from the KOF Globalization Index of the KOF Swiss Economic Institute, and GDPC is for economic growth given as the GDP per capita in purchasing power parity (PPP, current US dollars). K_{it} stands for financial development (FD) as viewed from banking financial services on one part, and financial development as viewed from financial stability as an alternative indicator. The first FD measure relates to overall financial growth from the level of access to funds (credits) by the private sector while the second FD measure accounts for the likelihood of nonpayment of a country's commercial banking system. The Z-score is a way to measure how stable a country's commercial banking industry is. It does this by comparing the buffer of that sector (capitalization and returns) with how much those yields change (GFDD, 2021). There are other useful proxies or indicators for financial stability such as National *Stock price volatility* that account for the average of the 360-day volatility of a nation's stock market index. However, the MENA region generally lacks sufficient and reliable data on such variables. Moreover, μ_{it} is the error term of the equations.

Havranek et al. (2016) have emphasized the significance of institutions as a major factor that must be considered in the natural resource discussion. We used the updated data from the World Governance

Indicator as initially produced by Kaufmann et al. (2010). For institutional quality (IQ) there are about six (6) individual indicators namely, the regulatory quality, control of corruption, political stability, government effectiveness, and the rule of law. All the indicators were considered, however, since we are limited by sample space in terms of data span, we carefully choose two among the IQ indicators, namely the *Rule of Law* (IQRL) and *Political Stability* (IQPO). While all the indicators are interwoven, we believe that these two variables play very significant roles in the case of the MENA country. For example, according to the WGI (2021), the rule of law reflects the overall conceptions of the degree to which representatives have trust in and comply with societal norms and, in particular, the reliability of enforcing compliance, ownership rights, the police, and the courts, as well as the possibility of crime and violence. In addition, the rule of law represents the overall impression of the degree to which representatives have trust in and conform to societal norms.

We believe that communities with a better level of adherence to the rule of laws are more likely to have better systems to check corruption and enforce efficiency in public operations. Also, places in the Middle East region are previously known for series of unrest and political tussles (Al-Shammari & Willoughby, 2019; Chau et al., 2014; Göktuğ Kaya et al., 2022) and as such, political stability indicator offers more inherent benefits for the specific case of the region. Besides, the indicator also reflects the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Moreover, the high degree of substitution among the attendant governance variables has been substantially documented in the extant governance contemporary literature (Asongu & Odhiambo, 2020, 2021; Appiah et al. 2022).

We then control for inflation and general economic growth trends. Dwumfour and Ntow-Gyamfi (2018) noted that the inflationary indices are a well-recognized indicator of FD. Apart from creating a broad analysis, controlling for these two variables is very important as there are significant disparities in inflationary pressure and income levels across countries in the MENA region (Haouas et al. 2022). Some studies relating to financial development in other climes (Guan et al., 2020; Han et al., 2022) have solely focused on export of goods and services to assess the influence of the external sector. However, utilizing the KOF index provides us a broader perspective as the index essential covers various dynamics of globalization to include globalization in trade, financial globalization and other aspects like culture and norms which when combine can affect the level at which a nation can be integrated into the global economic environment. Lastly, we interact natural resources in the region

with individual IQ proxies as represented by *LnNR*IQPO* and *LnNR*IQRL* to confirm whether IQ has any moderating roles on the extent to which NR influence FD in the MENA bloc. Following the theoretical arguments and other empirical evidence from the resources curse conjecture, the expected outcomes for the impacts of rents could be ambiguous and most likely to vary from one place to another. As for institutions, a positive sign is the expected conventional outcome as a better IQ should be necessary for a desirable level of FD.

3.2. Adopted Techniques of Empirical Analysis

3.2.1 Pre-estimation Tests (Cross-sectional Dependence (CD) and Slope Homogeneity Tests (SH))

Given the increased cross-border trade and increasing trade liberalization, CD in panel regression is expected to be present in the periods considered for this study. Thus, looking out for the presence of CD and eliminating its associated problems will improve the robustness and accuracy of estimates. Hence, the Pesaran CD, Pesaran scale LM and the Breusch-Pagan LM techniques are utilized to evaluate for the existence of CD in this panel analysis. The measurements for the four techniques are shown as:

$$\mathrm{LM} = \sum_{i=1}^{N-1}\sum_{j=i+1}^{N} T_{ij}\hat{p}_{ij}^2 \rightarrow \chi^2 \frac{N(N-1)}{2} \quad (4)$$

$$\mathrm{LM_s} = \sqrt{\frac{1}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}(T_{ij}\hat{p}_{ij}^2 - 1) \rightarrow N(0,1) \quad (5)$$

$$\mathrm{CD_p} = \sqrt{\frac{2}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} T_{ij}\,\hat{p}_{ij} \rightarrow N(0,1) \quad (6)$$

$$\mathrm{LM_{BC}} = \sqrt{\frac{1}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}(T_{ij}\hat{p}_{ij}^2 - 1) - \frac{N}{2(T-1)} \rightarrow N(0,1) \quad (7)$$

Likewise, erroneously estimating an SH whereas heterogeneity subsists might result in misleading results. Consequently, we evaluate heterogeneity by using Pesaran and Yamagata (2008) version of Swamy's (1970) SH method.

$$\tilde{\Delta}_{SH} = (N)^{\frac{1}{2}}(2k)^{-\frac{1}{2}}\left(\frac{1}{N}\tilde{S} - k\right) \quad (8)$$

$$\tilde{\Delta}_{ASH} = (N)^{\frac{1}{2}} \left(\frac{2k(T-k-1}{T+1}\right)^{-\frac{1}{2}} \left(\frac{1}{N}\tilde{S} - 2k\right) \quad (9)$$

$\tilde{\Delta}_{SH}$ and $\tilde{\Delta}_{ASH}$ represent delta tilde and the adjusted delta tilde respectively.

3.2.2. Panel unit root and Cointegration Examinations

This study next assesses the stationarity properties of the factors by utilizing the 2nd generation panel stationarity technique which are robust to CD and SH techniques. We employ a Pesaran (2007) CD augmented IPS tests which is known as CIPS technique as stationarity analysis for the study. The approach is reliable, efficient, and resonated well in several contemporary empirical studies (Gyamfi et al. 2023; Onifade & Alola, 2022). The assessment of CIPS is resultant by averaging CADF technique measurements as follows;

$$\widehat{\text{CIPS}} = \frac{1}{\text{N}}\sum_{\text{i=1}}^{\text{n}} \text{CADF}_{\text{i}} \quad (10)$$

As for the long-run relationship detection, this study capitalizes on the Durbin-Hausman cointegration technique of Westerlund (2008) to determine whether long-run co-movements exist involving financial developments and the independent factors. Different from the first-generation cointegration tests, this method is robust to CD and SH. It also generates reliable outcomes when the coefficients are integrated of a mixed order—I(0) and I(1)—provided the dependent variable is nonstationary. The test is depicted as follows:

$$DH_p = \hat{S}_n(\tilde{\varphi} - \hat{\varphi})^2 \sum_{i=1}^{n} \sum_{t=2}^{T} \hat{e}_{it-1}^2 \quad (11)$$

$$\text{and} DH_g = \hat{S}_i(\tilde{\varphi}_i - \hat{\varphi}_i)^2 \sum_{i=1}^{n} \sum_{t=2}^{T} \hat{e}_{it-1}^2 \quad (12)$$

Where DH_p = panel statistic and DH_g= group mean statistic. For DH_p, the null hypothesis of no cointegration [$H_0: \varphi_i = 1$, for all I =1] is tested against the alternative hypothesis of cointegration across all cross sections [$H_i^p: \varphi_i = \varphi, and\ \varphi < 1$]. For DH_g, the null assumption of no cointegration [$H_0: \varphi_i = 1$, for all I =1] is verified against the alternative of cointegration in some of the CD units [$H_i^p: \varphi < 1$, for at least some i].

3.2.3. Long Period Relationship and Causal linkages

3.2.3.1 CS-ARDL Technique

As the CS-ARDL method (Chudik et al., 2016; Chudik & Pesaran, 2015) is the most efficient and accurate in terms of sample diagnostic accuracy, it is used to analyze and provide the long-term strategy based on the MG method. When expressing heterogeneous time effects, the CS-ARDL technique deals with cross-sectional dependence effectively. The CS-ARDL also has the following advantages: (i) it provides the most reliable, productive, and precise results attainable in panel data evaluation. (ii) It addresses CS-ARDL issues successfully, characterizes heterogeneous time series, and eliminates the need for pre-testing the relationship between the explanatory variables. (iii) It deals with problems of slope uniformity and spillover impacts among variables. (iv) It provides both the long as well as short-haul impact (Chudik et al., 2016; Chudik et al. 2017; Chudik & Pesaran, 2015; Pesaran & Smith, 1995). The equation below depicts the CSARDL method:

$$y_{it}=\sum_{l=1}^{py} \varphi_{it}\, y_{i,\,t}+\sum_{l=0}^{pz} \beta'_{il} Z_{i,\,t-l}+\sum_{l=0}^{pt} \Psi'_{il}\, Z_{t-l}+e_{it} \quad \ldots\ldots\ldots\ldots (13)$$

where$\bar{X}_t$= $(\bar{Y}_{t-1},\bar{Z}_{t-1})l$= average cross-reliance's are proved by $\bar{Y}_t$,Z_t. Moreover, $\bar{X}_{t-1}$ represents averages of both independent as well as dependent coefficients. The variables of the average group as well as long period are exemplified as follows in (Eqs. 1,2 and 3) requirement, $p_y = 2$ and $p_x = 1$, and ARDL (1,0) requirement, $p_y = 1$ and $p_x = 0$. The CS-ARDL evaluations of the separate mean equal coefficient are then assumed by:

$$\hat{\theta}\text{CS-ARDL}_{,i}=\frac{\sum_{l=0}^{px} \widehat{\beta_{il}}}{1-\sum_{l=1}^{py} \widehat{\varphi_{il}}} \ldots\ldots\ldots\ldots (14)$$

$$\hat{\theta}\text{mean group(MG)}=\frac{1}{N}\sum_{i=1}^{N} \hat{\theta}i$$

3.2.3.2 AMG Technique and Dumitrescu and Hurlin's (2012) panel causation test

Moreover, the AMG estimator of Bond and Eberhardt (2013) is adopted for a robustness check of the outcome as this approach is also beneficial for the identified empirical pitfalls. Because the interpretation of causes is necessary in empirical research in order to provide suggestions for policy making and because other analytical procedures of causation lack the power to produce unbiased causal findings when cross-section dependency in the data is evaluated, we chose the Dumitrescu and Hurlin (2012) heterogeneous panel causality in this investigation. This was done because the heterogeneous panel test of causality is more efficient than the other standard tests of causality. Based on the results of Dumitrescu and Hurlin's (2012) panel causation test, the following three different numerical values were estimated:

$$W_{N,T}^{Hnc} = \frac{1}{N}\sum_{i=1}^{N} W_{i,T} \ldots\ldots \quad (15)$$

Where $W_{N,T}^{Hnc}$is the average value of the distinct Wald figures? As T and N nears infinity, the average figures meet consecutively with the model below, assuming that the distinct remains are originally circulated over all with the covariances being equivalent to zero, conferring to Dumitrescu and Hurlin (2012):

$$Z_{N,T}^{Hnc} = \sqrt{\frac{N}{2K}}\left(W_{N,T}^{Hnc} - K\right) \xrightarrow[N,T \to \infty]{d} N(0,1) \ldots\ldots \quad (16)$$

Where;$Z_{N,T}^{Hnc}$ is the z-values, and the N is the sum of CS, while the K is the lag's optimal length. Even, conferring to Dumitrescu and Hurlin (2012), if T slopes to infinity, the separate Wald data are dispersed initially equal, with the mean discrete Wald figures equivalent to K and the variance similar to 2K. After that, an unevenly uniform Z-values for the average Wald figures of the HNC null statement is stated out and defined as:

$$Z_{N}^{Hnc} = \frac{\sqrt{N}\left[W_{N,T}^{Hnc} - N^{-1}\sum_{i=1}^{N} E\left(W_{i,T}\right)\right]}{\sqrt{N^{-1}\sum_{i=1}^{N} Var\left(W_{i,T}\right)}} \xrightarrow[N,T \to \infty]{d} N(0,1) \ldots\ldots (17)$$

The null and alternative claim for the intended panel statistics are as follows:

$$H_0: \beta_i = 0 \; \forall \, i = 1,2, \ldots, N$$
$$H_1: \beta_i = 0 \; \forall \, i = 1,2, \ldots, N1$$
$$\beta_i \neq 0 \; \forall \, i = N_1 + 1, N_1 + 2, \ldots, N$$

In line with a normal panel data scheme.

4.0 Results

4.1. Preliminary Tests Outcomes

The results of the preliminary tests are reported in Table 2 to Table 7. We begin with the descriptive statistics and correlation matrix analysis in Tables 2 and 3 respectively. The simple correlation estimates using domestic credit to the private sector as indicator for FD level show that resource rents and inflation level are weakly negatively correlated with financial development. On the other side, the trio of economic growth, institutional quality, and globalization positively correlative with FD levels. Using Z-Score as an indicator for FD level however shows that growth levels, resource rents, and

inflation negatively correlate with FD while IQ and globalization positively weakly correlate with FD. These findings are shallow and may not necessarily reveal an in-depth representation of the true nexus among variables since the inherent statistical properties are not accounted for in a simple correlation analysis. Therefore, we analyzed the sample characteristics to be able to draw more informed conclusions.

In Tables 4 and 5, we examined the likelihood of CD and SH among variables. The obtained outcomes pointed to these deficiencies as the supporting null hypothesis for their absence were statistically rejected following the evidence from the combined Pesaran CD test, Pesaran LM test, Breuch-Pagan LM approach and the Bias-corrected Scaled LM.

Moving on, the panel unit root evidence was obtained from the CIPS technique results in Table 6. It can be deduced that the sample is characterized by more than one order of integration. There are supportive results to conclude that IQ level, inflation and globalization are all stationary at level while FD, natural resources, and Z-score are integrated of the first order. The CIPS approach is designed to conveniently handled the afore detected CD and slope homogeneity pitfalls. Given the non-uniformity in the integration order of variables, the Durbin-Hausman cointegration test was applied and the findings in Table 7 confirmed the availability of level relationship among interacting variables of our model based on the corresponding (DH) panel and group statistics.

Table 2. Descriptive statistics

	LnFD	LnGDPC	LnNR	INF	LnIQPO	LnIQRL	LnKOFG	LnZSC
Mean	1.6247	4.3649	1.1537	3.7044	1.5392	1.7091	1.8016	1.3193
Median	1.6848	4.3116	1.3810	2.8875	1.5709	1.7443	1.8070	1.3027
Maximum	2.1425	5.1511	1.7700	29.5066	1.9659	1.9174	1.8792	1.6946
Minimum	0.7756	3.5538	-0.7147	-4.8632	0.7425	1.0748	1.6841	0.9249
Std. Dev.	0.2282	0.4569	0.5668	4.1537	0.3121	0.1526	0.0423	0.1501
Skewness	-1.0176	0.0806	-1.2942	2.2561	-0.6061	-1.5457	-0.5141	0.0869
Kurtosis	4.3482	1.5527	4.2836	11.9428	2.4170	5.1958	2.7577	3.3079
Jarque-Bera	41.7206	14.8430	58.4353	702.3447	12.6663	100.6568	7.8120	0.8756

Table 3. Pairwise correlation matrix analysis

Model 1								
LnFD	1							
LnGDPC	0.1720	1						
LnNR	-0.1729	0.7051	1					
INF	-0.0493	-0.1527	0.1306	1				
LnIQPO	0.4479	0.5587	0.1153	-0.4753	1			

LnIQRL	0.4904	0.4840	-0.0341	-0.5232	0.7802	1		
LnKOFG	0.5427	0.3529	-0.1199	-0.3683	0.4521	0.7211	1	
Model 2								
LnZSC	1							
LnGDPC	-0.2503	1						
LnNR	-0.5725	0.7637	1					
INF	-0.0182	-0.1349	-0.0371	1				
LnIQPO	0.1562	0.6026	0.2828	-0.3625	1			
LnIQRL	0.1528	0.5697	0.1667	-0.2263	0.7963	1		
LnKOFG	0.3523	0.2678	-0.0779	0.1084	0.2286	0.5193	1	

Table 4: Cross-sectional Dependence

Variables	Pesaran CD	Pesaran LM	Breuch-Pagan LM	Bias-corrected Scaled LM
LnFD	9.3672*	44.2226*	366.9321*	44.0226*
LnGDPC	13.6512*	31.2719*	270.0181*	31.0719*
LnNR	15.9797*	37.0423*	313.1995*	36.8423*
INF	4.4995*	3.5454*	62.5314*	3.3454*
LnIQPO	3.8711*	7.8720*	94.9092*	7.6720*
LnIQRL	1.7189*	10.1529*	111.9773*	9.9528*
LnKOFG	22.1348*	60.8911*	491.6676*	60.6911*
LnZSC	4.1109*	17.3738*	166.0141*	17.1738*

NOTE: *<0.01 shows statistical relevance at 1% significance level

Table 5: Slope Homogeneity (SH)

Model 1			Model 2	
	COEFFICIENT			COEFFICIENT
SH ($\tilde{\Delta}$ test)	7.1234*		SH ($\tilde{\Delta}$ test)	5.3578*
SH ($\tilde{\Delta}$ adj test)	6.4501*		SH ($\tilde{\Delta}$ adj test)	4.1004*

NOTE: *<0.01 shows statistical relevance at 1% significance level

Table 6. Panel CIPS unit root test

VARIABLES	**CIPS**				
	I(0)		I(1)		Decision
	C	C&T	C	C&T	
LnFD	1.8611	-0.6245	-4.9750*	-3.4976*	I(1)
LnGDPC	-1.7340**	2.6031	-4.5832*	-3.1086*	I(0)&I(1)
LnNR	0.1082	0.0910	-5.5725*	-5.2130*	I(1)
INF	-2.042**	-1.3995***	-6.3055*	-4.7015*	I(0)&I(1)
LnIQPO	-1.2048	0.08091	-5.8970*	-4.3127*	I(1)
LnIQRL	-2.2644**	-1.5221*	-6.5685*	-4.3703*	I(0)&I(1)
LnKOFG	-2.3401*	1.8501	-3.7625*	-5.2256*	I(0)&I(1)

LnZSC	-0.4181	-1.2301	-4.3701*	-2.4541*	I(1)

NOTE: *<0.01 shows statistical relevance at 1% significance level. I(0), I(1), C and C&T denotes level, first difference, constant and constant and trend respectively.

Table 7. Durbin-Hausman Cointegration Test

Statistics	COEFFICIENT	COEFFICIENT
	Dependent variable: LnFD	Dependent variable: LnZSC
$\boldsymbol{DH_p}$	-4.0045*	-3.9034*
$\boldsymbol{DH_g}$	-5.1754*	-4.7610*

NOTE: *<0.01 shows statistical relevance at 1% significance level

4.2. Long-run Coefficients Discussions

Following the outcomes of the CS-ARDL estimations, some findings from the study standout as seen in Table 8 and Table 9. We begin the discussion from the roles of resource abundance. Across all the models, the estimation demonstrates that natural resource abundance positively and significantly affects financial development (as indicated by domestic credit to private sector and the Z-scores) in the long run, all other things being equal. When FD is viewed from domestic credits to the private sector as seen in Table 8, a 1% boost in resources rents relates to approximately 0.13%, 0.05%, and 1.20% increase in FD in the region as evidenced in model 1, 2, and 3, respectively. These outcomes suggest that the financial resources curse conjecture does not hold among the MENA states. This outcome is similar to the estimates from the Z-score proxy of FD with different magnitudes of coefficients as seen in Table 9. However, the relationship is not valid in the short run when there is no presence of the interacting variables. Overall, the finding implies that higher natural resource rent encourages more domestic credits thus stimulating the overall private sector development in the MENA states. The observed impacts of resource rents on FD in this study corroborate the results of Atil et al. (2020) for the case of Pakistani economy, Zaidi et al. (2019) for selected OECD states. Hence, the MENA states should be able to capitalize on natural resource abundance to deepen financial sector' prosperity as a catalyst for sustainable growth push via the private sector.

Moving on, in the long run across all models, institutional quality from the perspective of both the rule of law and political stability, were found to be significantly impacting the financial development of the MENA region in a detrimental way. For instance, when FD is viewed from Z-score perspective, a 1% rise in IQ level from the perspective of political stability indicator relates to approximately -0.26%, -0.40%, and -0.17% fall in FD in the region as evidenced in model 1, 2, and 3, respectively.

This finding implies that the strands of political instability that characterized the historical antecedents in many MENA states have undermined the region's financial development performances. Adequate developmental financial flows and investment confidence are often marred by political tussles and the authorities in the MENA states are better positioned for greater FD by working for a more peaceful political environment while encouraging stricter adherence to the rule of law.

On the other hand, the interaction between institutional quality level and natural resources posit that the combination of the duo has some desirable traits of stimulating FD in the MENA bloc as seen in Model II and III in Table 8 and 9. From the results, when FD is proxied by domestic credit to the private sector seen in Table 8, there is a rise of about 0.34% and 0.10% in FD as IQ interacts with natural resources from the perspective of political stability and the rule of law respectively. Incisively, the observed desirable interactive impacts are more pronounced when FD is proxied by the Z-score implying that stronger institutional quality levels are crucial for the region's overall financial stability vis-à-vis reduction in the risk of default in the banking system. Based on the study of some sub-Saharan nations, this finding corroborates the conclusion by Dwumfour and Ntow-Gyamfi (2018) that IQ can boost FD and lower possible detrimental effects of rents in the financial environment.

As for the control factors, expectedly, economic growth and inflation enhance FD for the MENA region with inflation showing minimal effect compared to the impacts of economic growth thereby supporting the studies of Han et al. (2022) and Guan et al. (2020). On the other hand, in the case of globalization, there is an observed negative significant impact of its roles on MENA region's FD. The observed impacts of globalization on FD in this study contradicts the results of Zaidi et al. (2019) for selected OECD states. However, this result can be explained by the possibility of illicit move of finance outside of the region rather than properly utilizing funds for domestic productivity. Besides, the state of institutional quality is arguably stronger among the OECD countries than the MENA region. Illicit movement of funds, money laundry activities and corruption have been documented as part of the major challenge to economic growth in many resource-rich states (Naheem, 2019; Onifade, 2022; Aluko & Bagheri, 2012; Onifade, 2023), and these issues have worsened in the era of globalization (Alldridge, 2008; Buchanan, 2004; Erdoğan et al., 2022).

Moving on, the causality flow analysis as seen in Table 11 also provided some additional information supporting the long run arguments. There is a one-way causal nexus from the region's economic growth trends to FD levels while FD granger causes inflation levels among the countries and not the other way round. The FD-inflation causal nexus is understandable as there is relatively low inflationary

pressure in many of the understudied MENA countries. For instance, inflation rates can even be a low as close to zero in places like Saudi Arabia and Qatar (WDI, 2021). Furthermore, although no direct causality was detected from neither natural resource abundance nor from institutional quality to FD, however, a bidirectional causality exists from the interaction between resource abundance and institutional quality to FD. This further illustrates the cruciality of the synergy between resource abundance and institutional quality for financial development of the MENA states.

Lastly, based on the conducted AMG estimation as an alternative sensitivity test in Table 10, the estimated models are robust, and the adopted empirical strategy (CS-ARDL and AMG) stands as a solution for detected cross-sectional dependency (CD) and slope homogeneity in the interactions among the variables.

Table 8. CS-ARDL technique (Dependent variable: LnFD)

Variables	MODEL I	MODEL II	MODEL III
LONG-RUN			
LnGDPC	1.9626**	0.8407***	1.6621*
LnNR	0.0282***	0.4768**	0.1286**
INF	0.0401*	0.0220*	0.0321*
LnIQPO	-0.0801*	-0.2988**	-0.1782*
LnIQRL	-0.9081*	-0.6680**	-0.9759**
LnKOFG	-4.2462*	-1.3707**	-4.2675*
LnNR*IQPO	-	0.3444*	-
LnNR*IQRL	-	-	0.1061*
F-STAT	0.0143*	0.0340*	0.1450**
SHORT-RUN			
ECM	-0.1459*	-0.1658*	-0.1809*
D(LnGDPC)	-0.5087	-0.5726***	-0.6151***
D(LnNR)	-0.2412***	0.4646	2.3709
D(INF)	-0.0001	-0.0014	-0.0005
D(LnIQPO)	0.0516	0.6382	0.0598
D(LnIQRL)	-0.0008	-0.0372	1.8577
D(LnKOFG)	0.2087	0.1333	0.4277
D(LnNR*IQPO)	-	-0.3874	-
D(LnNR*IQRL)	-	-	-1.5278***

NOTE: *<0.01, **<0.05, ***<0.10, shows statistical relevance at 1%, 5%, and 10% significance level respectively. D for short-run coefficients, optimal lags for CS-ARDL by using AIC.

Table 9. CS-ARDL technique (Dependent variable: LnZ-SCORE)

Variables	MODEL I	MODEL II	MODEL III
LONG-RUN			
LnGDPC	-0.9434*	-0.1734*	-1.2380*
LnNR	0.1362*	0.0551*	1.2085**
INF	0.0149*	0.0049**	0.0164*
LnIQPO	-0.2644*	-0.4066**	-0.1699*
LnIQRL	-0.3285**	-0.3344*	-0.0191**
LnKOFG	-3.5313*	-1.2941*	-4.0194*
LnNR*IQPO	-	0.0791***	-
LnNR*IQRL	-	-	0.5773**
F-STAT	0.1243**	0.1532**	0.2003*
SHORT-RUN			
ECM	-0.2664*	-0.3174**	-0.2740**
D(LnGDPC)	-0.4238	-0.4873	-0.1538
D(LnNR)	0.0661	-2.4873	-1.8393
D(INF)	-0.0018	-0.0014	-0.0037
D(LnIQPO)	0.0803	-2.3208	0.0578
D(LnIQRL)	-0.1862	-0.2491	-2.4041
D(LnKOFG)	-0.6914	-0.0150	-0.6843
D(LnNR*IQPO)	-	1.4272	-
D(LnNR*IQRL)	-	-	0.9542

NOTE: *<0.01, **<0.05, ***<0.10, shows statistical relevance at 1%, 5%, and 10% significance level respectively. D for short-run coefficients, optimal lags for CS-ARDL by using AIC.

Table 10: Robustness check AMG outcomes.

Variables	Dependent variable: LnFD	Dependent variable: LnZ-SCORE
LnGDPC	0.0531**	-0.0533*
LnNR	0.8064**	0.9023**
INF	0.0117*	0.0017*
LnIQPO	-0.4121**	-0.5709***
LnIQRL	-0.4873*	-1.1651*
LnKOFG	-1.1709*	-1.3478*
LnNR*IQPO	0.0918**	0.2984**
LnNR*IQRL	0.5152*	0.6797*
Wald test	892.200*	876.0563*
R^2	0.4279	0.5654

NOTE: *<0.01, **<0.05, ***<0.10, shows statistical relevance at 1%, 5%, and 10% significance level respectively.

Table 11: Dumitrescu and Hurlin (2012) Granger Non-causality Analysis

Dependent variable: LnFD			
	W-stat.	Zbar-Stat	CAUSALITY FLOW
LnGDPC→ LnFD	5.9491*	3.7043	LnGDPC→ LnFD
LnFD → LnGDPC	2.5153	0.1864	
LnNR→LnFD	2.3023	-0.0317	LnFD → LnNR
LnFD → LnNR	4.5781**	2.2997	
INF→LnFD	3.5804	1.2776	LnFD → INF
LnFD → INF	4.2115***	1.9241	
LnIQPO→LnFD	1.2341	-1.1260	LnFD → LnIQPO
LnFD → LnIQPO	5.2236*	2.9611	
LnIQRL→LnFD	2.9518	0.6336	LnFD → LnIQRL
LnFD → LnIQRL	4.5042**	2.2240	
LnKOFG→LnFD	3.3677**	1.0597	LnKOFG↔ LnFD
LnFD → LnKOGG	2.4942*	0.1648	
LnNR*IQPO→LnFD	1.5018**	-0.8518	LnNR*IQPO↔LnFD
LnFD → LnNR*IQPO	7.3506*	5.1401	
LnNR*IQPO→LnFD	2.5804*	0.2531	LnNR*IQPO↔LnFD
LnFD → LnNR*IQPO	5.3749*	3.1161	
Dependent variable: LnZ-SCORE			
LnGDPC→ LnZSC	4.0598**	1.7688	LnGDPC→ LnZSC
LnZSC→ LnGDPC	2.197	-0.1391	
LnNR→LnZSC	2.0418	-0.2985	LnZSC → LnNR
LnZSC → LnNR	3.9871***	1.6942	
INF→LnZSC	0.8879	-1.4808	LnZSC → INF
LnZSC → INF	4.6758**	2.3998	
LnIQPO→LnZSC	5.1769*	2.9132	LnIQPO→LnZSC
LnZSC → LnIQPO	3.3248	1.0157	
LnIQRL→LnZSC	3.6336	1.3321	LnIQRL≠LnZSC
LnZSC → LnIQRL	2.3235	-0.0100	
LnKOFG→LnZSC	4.3697**	2.0862	LnKOFG→LnZSC

LnZSC → LnKOGG	3.7858	1.4880	
LnNR*IQPO→LnZSC	2.5728	0.2453	LnNR*IQPO≠ LnZSC
LnZSC→ LnNR*IQPO	3.6360	1.3346	
LnNR*IQPO→LnZSC	1.7229	-0.6253	LnZSC → LnNR*IQPO
LnZSC → LnNR*IQPO	4.5270**	2.2474	

NOTE: *<0.01, **<0.05, ***<0.10, shows statistical relevance at 1%, 5%, and 10% significance level respectively.

5.0. CONCLUSIONS

Natural resource abundance among other issues shapes major developments in most countries of the MENA region. As such, studies on their economic impacts and future prospect continue to gain attention among researchers towards extending the frontiers of sustainable economic growth attainments for the region. We provide a comprehensive analysis of the roles of natural resources and institutional quality indicators on *FD* amidst the rising trends of globalization in the region. The study also controls for inflationary levels and the general economic growth trends in the region. The adopted CS-ARDL and AMG sensitivity checks acted as solution for the detected cross-sectional dependency (CD) and slope homogeneity in the interactions among variables for the period analyzed. From the results, regardless of the measure of FD used, natural resource significantly spurs FD of the MENA bloc in the long run, while both institutional quality levels and globalization separately produced detrimental impacts on the bloc's FD indicators. However, the interaction between institutional quality level and natural resources suggest that the impacts of the duo have some desirable traits of stimulating FD in the bloc. Incisively, the observed desirable interactive impacts are more pronounced when FD is proxied by the Z-score implying that stronger institutional quality levels are crucial for the region's overall financial stability vis-à-vis reduction in the risk of default in banking system.

5.1. Policy Implications and Suggestions

From a first start, it is recommended that the MENA authorities should focus more on effective ways of channeling resources rents for financial development via robust financial schemes that are specifically designed for private sector participations. Our finding implies that higher natural resource rents can encourage more domestic credits, and this can be advantageous in stimulating the overall

private sector development. Hence, authorities in the MENA states should be able to capitalize on their natural resource abundance to deepen their financial sector' prosperity as a catalyst for an overall sustainable growth push via the private sector. The roles and importance of private sector development in enhancing sustainable growth and development cannot be overemphasized and have been documented in several studies (Scheyvens et al., 2016; Cummings et al., 2020; Rashed & Shah, 2021).

Moving on, following the desirable interactive roles of natural resources and institutional quality level in stimulating FD in the MENA bloc, the regional authorities should further work on strengthening of their institutional capacities. Doing this would be crucial for harnessing more resource-benefits for sustainable financial development of the bloc. Besides, since the observed desirable interactive impacts are more pronounced when FD is proxied by the Z-score, building stronger institutions to efficiently utilize the available abundant resources rents would facilitate the region's overall financial stability vis-à-vis reduction in the risk of default in banking system. Furthermore, the quality of institutions can be further improved by implementing more structural reforms in addressing inefficient bureaucratic processes and loopholes in the legal system. Doing this is pertinent as inefficient bureaucratic processes and ambiguous rules can yield detrimental outcomes for financial development. Additionally, more punitive measures can be enacted to be administered without prejudice on law breakers to improve the current state of adherence to the rule of law.

Furthermore, there is also a need to boost investor confidence in the financial system. We recommend that there should be stricter consequences for bridging the rules and other guidelines within the business environment. Taking this recommended action is crucial for two major reasons. Firstly, as the MENA region continues to toe the path of globalization with the rest of the world, enacting and encouraging compliance to rules and special reforms has the potential of helping the region to attract more foreign direct investments inflow for overall regional financial development. Secondly, with a stronger level of compliance to the rules and other guidelines within the business environment, the region also stands a better chance of protecting their economies against the backdrop of any potential pollution haven scenarios especially if foreign investment inflows are channeled toward undue exploitation of the abundant resources at the expense of the region's expected environmental sustainability and overall desired economic growth.

Lastly, although the current study has provided insightful findings that are useful for policy directives for authorities of the MENA states, the study is not without its limitations. Firstly, although this study

has utilized two different proxies for financial development in the empirical analysis, there are still other proxies or indicators that may be explored in future studies. For instance, non-performing loans ratio or other similar measures. Furthermore, although the approaches adopted in the current study have generally been proved robust, they did not necessarily reflect any potential nonlinearity issues. As such, it is further recommended that future studies can explore any possibilities of nonlinearity in the subject matter not only for the sample of the MENA states, but also for other regions across the globe.

Declarations

Competing interests

The authors wish to disclose here that there are no potential conflicts of interest at any level of this study.

Funding

There is no specific funding received by the author for the study at the time of submission.

Availability of data and materials

The data for this present study are sourced from the database of World Bank Global Financial Development Database (GFDD, 2021)https://www.worldbank.org/en/publication/gfdr/data/global-financial-development-database, the World Development Indicator (WDI, 2021)(http://info.worldbank.org/), the World Governance Indicator (WGI, 2021)www.govindicators.org, and the KOF globalization index (Gygli et al. 2021).

REFERENCES

Abaidoo, R. & Agyapong, E.K. (2022). Financial development and institutional quality among emerging economies. Journal of Economics and Development, 24(3), 198-216. https://doi.org/10.1108/JED-08-2021-0135

Abubakar, Y. I., Mustapha, R. A., &Ajiboye, E. S. (2020). Impact of governance on financial development: evidence from West Africa. Hasanuddin Economics and Business Review, 3(3), 103-111. http://dx.doi.org/10.26487/hebr.v3i3.2055

Al-Shammari, N., & Willoughby, J. (2019). Determinants of political instability across Arab Springcountries. Mediterranean Politics, 24(2), 196-217

Aluko, A., & Bagheri, M. (2012). The impact of money laundering on economic and financial stability and on political development in developing countries: The case of Nigeria. Journal of Money Laundering Control.15(4), 442-457.

Appiah, M., Onifade, S. T., & Gyamfi, B. A. (2022). Building Critical Infrastructures: Evaluating the Roles of Governance and Institutions in Infrastructural Developments in Sub-Sahara African Countries. Volume 46, Issue 4 Evaluation Review, https://doi.org/10.1177%2F0193841X221100370

Alldridge, P. (2008). Money laundering and globalization. Journal of law and society, 35(4), 437-463.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.

Asongu, S. A., & Odhiambo, N. M., (2020). Governance, CO2 emissions and inclusive human development in sub-Saharan Africa. Energy Exploration & Exploitation, 38(1), 18-36.

Asongu, S. A., & Odhiambo, N. M., (2021). Enhancing Governance for Environmental Sustainability in Sub-Saharan Africa. Energy Exploration & Exploitation, 39(1),. 444-463.

Atil, A., Nawaz, K., Lahiani, A., &Roubaud, D. (2020). Are natural resources a blessing or a curse for financial development in Pakistan? The importance of oil prices, economic growth andeconomic globalization. Resources Policy, 67, 101683.

Azizi, Z., Barari, A., &Kacho, A. A. (2021). The Impact of Institutional Quality on Financial Development (Case Study: Eurasian Developing Countries). Journal of economic studies and policies, 15, 247-274.

Badeeb, R. A., Lean, H. H., & Clark, J. (2017). The evolution of the natural resource curse thesis: A critical literature survey. Resources Policy, 51, 123-134.

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *Review of Economic Studies, 47*(1), 239-253. https://doi.org/10.2307/2297111

Buchanan, B. (2004). Money laundering—a global obstacle. Research in International Business and Finance, 18(1), 115-127.

Chau, F., Deesomsak, R., & Wang, J. (2014). Political uncertainty and stock market volatility in the Middle East and North African (MENA) countries. Journal of International Financial Markets, Institutions and Money, 28, 1-19.

Cherif, M., & Dreger, C. (2016). Institutional determinants of financial development in MENA countries. Review of Development Economics, 20(3), 670-680.

Chudik, A., & Pesaran, M. H. (2015). Common correlated effects estimation of heterogeneous dynamic panel data models with weakly exogenous regressors. *Journal of Econometrics, 188*(2), 393-420

Chudik, A., Mohaddes, K., Pesaran, M. H., & Raissi, M. (2016). *Long-run effects in large heterogeneous panel data models with cross-sectionally correlated errors*: Emerald Group Publishing Limited.

Chudik, A., Mohaddes, K., Pesaran, M. H., & Raissi, M. (2017). Is there a debt-threshold effect on output growth? *Review of Economics and Statistics, 99*(1), 135-150.

Cummings, S., Seferiadis, A. A., & de Haan, L. (2020). Getting down to business? Critical discourse analysis of perspectives on the private sector in sustainable development. Sustainable Development, 28(4), 759-771.

Dumitrescu, E.-I., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling, 29*(4), 1450-1460.

Dwumfour, R. A., &Ntow-Gyamfi, M. (2018). Natural resources, financial development and institutional quality in Africa: is there a resource curse?. Resources Policy, 59, 411-426.

Erdoğan, S., Onifade, S. T., Altuntaş, M., & Bekun, F. V. (2022). Synthesizing urbanization and carbon emissions in Africa: how viable is environmental sustainability amid the quest for economic growth in a globalized world?. Environmental Science and Pollution Research, 1-14. https://doi.org/10.1007/s11356-022-18829-4

El-Katiri, L., Fattouh, B., & Mallinson, R. (2014). The Arab Uprisings and MENA Political Instability Implications for Oil & Gas Markets.

Gazdar, K., & Cherif, M. (2014). The quality of institutions and financial development in mena countries: An empirical investigation. Risk governance & control: financial markets & institutions, 4 (4-1), 65-80.

Gygli, S.,, Haelg, F., Potrafke, N.,&Sturm, J-E. (2021). The KOF Globalisation Index – Revisited, Review of International Organizations, 14(3), 543-574 https://doi.org/10.1007/s11558-019-09344-2

Global Financial Development Database, GFDD. (2021). World Bank Data. Available at: https://www.worldbank.org/en/publication/gfdr/data/global-financial-development-database. Accessed June 2022.

Göktuğ Kaya, M., Onifade, S. T., & Akpinar, A. (2022). Terrorism and Tourism: An Empirical Exemplification of Consequences of Terrorist Attacks on Tourism Revenues in Turkey. Tourism: An International Interdisciplinary Journal, 70(1), 28-42. https://hrcak.srce.hr/267971

Guan, J., Kirikkaleli, D., Bibi, A., & Zhang, W. (2020). Natural resources rents nexus with financial development in the presence of globalization: is the "resource curse" exist or myth?. *Resources Policy*, *66*, 101641.

Gyamfi, B. A., Onifade, S. T., & Ofori, E. K. (2023). Synthesizing the impacts of information and communication technology advancement and educational developments on environmental sustainability: A comparative analyses of three economic blocs—BRICS, MINT, and G7 economies. Sustainable Development. 31 (2), 744-759. https://doi.org/10.1002/sd.2416

Han, J., Raghutla, C., Chittedi, K. R., Tan, Z., &Koondhar, M. A. (2022). How natural resources affect financial development development? Fresh evidence from top-10 natural resouce abundant countries. Resources Policy, 76, 102647.

Havranek, T., Horvath, R., &Zeynalov, A. (2016). Natural resources and economic growth: A meta-analysis. World Development, 88, 134-151.

Haouas, I., Khraief, N., Cooray, A., & Onifade, S. T. (2022). Exploring the time-varying causal nexuses between remittances and financial development in MENA region. Journal of Sustainable Finance & Investment, 12(3) 1-27. https://doi.org/10.1080/20430795.2022.2112139

Kaufmann, D., Kraay, A., Mastruzzi, M., 2010. The Worldwide Governance Indicators: Methodology and Analytical Issues. World Bank Policy Research Working Paper No. 5430, The World Bank.

Khan, M. A., Atif Khan, M., ElyasAbdulahi, Shah, S. H., & Idrees Liaqat. (2019). Institutional Quality and Financial Development: The United States Perspective. Journal of Multinational Financial Management, 49(May), 67-80.

Khan, M. A., Gu, L., Khan, M. A., &Olah, J. (2020). Natural Resources and Financial Development: The Role of Institutional Quality. Journal of Multinational Financial Management, 100641.

Khan, Z., Hussain, M., Shahbaz, M., Yang, S., & Jiao, Z. (2020b). Natural resource abundance, technological innovation, and human capital nexus with financial development: a case study of China. Resources Policy, 65, 101585.

Kolstad, I., & Wiig, A. (2009). Is transparency the key to reducing corruption in resource-rich countries?. World development, 37(3), 521-532.

Krueger, A. O. (1974). The political economy of the rent-seeking society. The American economic review, 64(3), 291-303.

Kutan, A. M., Samargandi, N., &Sohag, K. (2017). Does institutional quality matter for financial development and growth? Further evidence from MENA countries. Australian Economic Papers, 56(3), 228-248.

Le, T. H., Kim, J., & Lee, M. (2016). Institutional quality, trade openness, and financial sector development in Asia: An empirical investigation. Emerging Markets Finance and Trade, 52(5), 1047-1059.

Naheem, M. A. (2019). Saudi Arabia's efforts on combating money laundering and terrorist financing:(Review undertaken in September 2017). Journal of Money Laundering Control, 22(2), 233-246.

Nathaniel, S. (2021). Natural resource abundance and broad-based financial development nexus in ASEAN countries: accounting for globalization and human capital. European Journal of Government and Economics, 10(1), 30-45.

OECD. (2020). Active with MENA: The Middle East and North Africa. Available at: https://www.oecd.org/mena/Active_with_MENA_EN.pdf

Onifade, S.T. (2023). Environmental impacts of energy indicators on ecological footprints of oil-exporting African countries: Perspectives on fossil resources abundance amidst sustainable development quests. Resources Policy, 82, 103481. https://doi.org/10.1016/j.resourpol.2023.103481

Onifade, S. T., & Alola, A. A. (2022). Energy transition and environmental quality prospects in leading emerging economies: The role of environmental-related technological innovation. Sustainable Development. 30(2), 1-13 https://doi.org/10.1002/sd.2346

Onifade, S.T. (2022). Retrospecting on resource abundance in leading oil-producing African countries: how valid is the environmental Kuznets curve (EKC) hypothesis in a sectoral composition framework? Environmental Science and Pollution Research. Environmental Science and Pollution Research. http://dx.doi.org/10.1007/s11356-022-19575-3

Onifade, S. T., Gyamfi, B. A., Ilham, H. & Bekun, F. V. (2021). Re-examining the Roles of Economic Globalization on Environmental Degradation in the E7 Economies: Are Human Capital, Urbanization, and Total Natural Resources Essential Components? Resources Policy. http://dx.doi.org/10.1016/j.resourpol.2021.102435

OPEC (2020). Organization of the Petroleum Exporting Countries. OPEC Annual Statistical Bulletin. Available at https://www.opec.org

Pesaran, H. M. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics, 22*, 265–312. https://doi.org/10.1002/jae.951

Pesaran, M. H. (2015). Testing weak cross-sectional dependence in large panels. *Econometric Reviews, 34*(6-10), 1089-1117. https://doi.org/10.1080/07474938.2014.956623

Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of econometrics*, *68*(1), 79-113.

Pesaran, M. H., Ullah, A., & Yamagata, T. (2008). A bias-adjusted LM test of error cross-section independence. *The Econometrics Journal*, *11*(1), 105-127.

Pesaran, M. H., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics, 142*(1), 50-93. https://doi.org/10.1016/j.jeconom.2007.05.010

Raghutla, C., Koondhar, M.A., Chittedi, K.R. (2022). How natural resources affect financial development development? Fresh evidence from top-10 natural resource abundant countries. Resources Policy 76.

Rashed, A. H., & Shah, A. (2021). The role of private sector in the implementation of sustainable development goals. Environment, Development and Sustainability, 23, 2931-2948.

Robbins, P. (2000). The rotten institution: corruption in natural resource management. Political Geography, 19(4), 423-443.

Sadorsky, P. (2010). The impact of financial development on energy consumption in emerging economies. Energy Policy 38 (2010), 2528 – 2535.

Shahbaz, M., Naeem, M., Ahad, M., & Tahir, I. (2018). Is natural resource abundance a stimulus for financial development in the USA?. Resources Policy, 55, 223-232.

Scheyvens, R., Banks, G., & Hughes, E. (2016). The private sector and the SDGs: The need to move beyond 'business as usual'. Sustainable Development, 24(6), 371-382.

Sun, Y., Ak, A., Serener, B., &Xiong, D. (2020). Natural resource abundance and financial development: A case study of emerging seven (E−7) economies. Resources Policy, 67, 101660.

Sun, Z., & Cai, Z. (2020). Does financial development hamper or improve the resource curse? Analysis based on the panel threshold effect model. Mathematical Problems in Engineering, 2020.

Westerlund, J. (2008). Panel cointegration tests of the Fisher effect. Journal of Applied Econometrics, 23(2), 193-233.

World Development Indicator, WDI. (2021). World Bank Data. Available at: https://databank.worldbank.org/source/world-development-indicators. Accessed June 2022.

World Governance Indicators, WGI. (2021). World Bank Data. Available at: www.govindicators.org .Accessed June 2022.

World Bank (2016). Global Financial Development Report. Available at: https://www.worldbank.org/en/publication/gfdr/gfdr-2016. Accessed June 2022.

Yuxiang, K., & Chen, Z. (2011). Resource abundance and financial development: Evidence from China. Resources Policy, 36(1), 72-79.

Zaidi, S. A. H., Wei, Z., Gedikli, A., Zafar, M. W., Hou, F., & Iftikhar, Y. (2019). The impact of globalization, natural resources abundance, and human capital on financial development: Evidence from thirty-one OECD countries. Resources Policy, 64, 101476.