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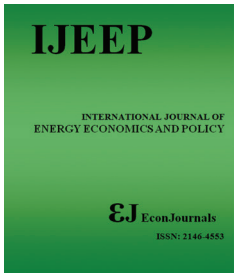

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Assessing the Influence of Energy Consumption and Islamic Financial Development on Indonesia's Economy with Dynamic ARDL Simulations Approach

Ahmad Farabi[1,2,3]*, Zamroni Salim[1], Dini Oktarina Dwi Handayani[2], Rahmat Heru Setianto[4]

[1]Research Center for Macroeconomics and Finance, National Research and Innovation Agency (BRIN), Indonesia, [2]Department of Computer Science, Kulliyyah of Information and Communication Technology (KICT) International Islamic University Malaysia (IIUM), Malaysia, [3]Islamic Economic Program, Faculty of Economics and Business, University of Indonesia, Depok, Indonesia, [4]Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia, *Email: ahma130@brin.go.id

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ABSTRACT

The purpose of this study is to evaluate the contribution of energy consumption and Islamic financial development to economic growth in the case of Indonesia. The macroeconomy variable namely gross fixed capital formation also involved in the model as control variables considering its significant contribution to economic growth continuously. The monthly data of economic growth, as dependent variable, represented by industrial price indicator. As independent variables, the data of energy consumption denoted by the amount of primary energy consumption while the data of financial development reflected by Islamic Banking financing consists of the amount of *mudharabah* and *musyarakah* financing. Moreover, the variable gross capital formation is chosen as the control variables with consideration that the variable constantly has significance contribution to economic growth and cannot be ignored. An interpolation technique performed for variable with annual range and to equalize all data to be monthly. The method of ARDL and ECM chosen as the suitable method to reach the objectives. The result concludes that energy consumption and Islamic financial development has positive contribution to Indonesia's economic growth. The cointegration exist which means there is a long-run relationship between the variables. Energy consumption and the growth of Islamic finance, as illustrated by musyarakah financing, have a long-term impact on Indonesia's economic growth. The error correction mechanism also found which reflects that there is a mechanism of adjustment when shock happen. This paper presents the latest empirical evidence of the contribution of energy consumption and Islamic financial development to economic growth in the case of Indonesia. The variable of Islamic financial development is breakdown become *mudharabah* and *musyarakah* to get deeper analysis. In addition, the involving of capital formation as control variables never been done by previous studies. To the best author's knowledge, the study that discuss this issue is limited especially in the case of Indonesia which use disaggregate Islamic financial development as well as involving capital formation as the control variables for the case study of Indonesia.

Keywords: Indonesia, Economic Growth, Energy Consumption, Islamic Financial Development, Capital Formation, ARDL
JEL Classifications: Q43, G21, G28, E22, C22

1. INTRODUCTION

Energy consumption, whether fossil or renewable, is one variable that has always been proven to contribute positively to the economy for all countries in the world, including Indonesia (Farabi et al., 2019). The relationship between energy consumption and financial growth is crucial to promoting a country's economic development (Chiu and Lee, 2020). Energy consumption is essential for economic activity since it enables the production, transportation, and provision of numerous services needed for sustained growth. Furthermore, a consistent and all-encompassing expansion of the financial sector facilitates the availability of funds for various

economic sectors, hence promoting increased investment, innovation, and the essential development of infrastructure (Otim et al., 2023). The synergy between effective energy utilization and robust financial expansion would foster a favourable setting for sustainable economic development, augment job prospects, and enhance the general well-being of society. Hence, it is imperative to incorporate energy consumption factors while examining their impact on financial development in order to establish a robust study model.

The Islamic banking system, which uses non-interest or *riba* as the operational principles, has now become a major part of the Indonesian economy, complementing the conventional banking system that previously existed. This will significantly benefit the Indonesian economy by enhancing the quality of services in the banking industry and provide alternatives for those who prioritize financial services that align and adhere to Islamic principles (Zarrouk et al., 2017). A significant obstacle facing Islamic banking in Indonesia is the need to augment its market share, which presently accounts for a mere 5% of the conventional banking market share. Regrettably, this situation is particularly unfavourable given the fact that Indonesia is recognized as the nation with the highest number of Muslim inhabitants globally, accounting for approximately 87% of its overall population of approximately 270 million individuals. Similar circumstances arise in several places where Islamic banking has not achieved complete dominance in the market, even though these countries is a Muslim majority or are even Islamic nations. Furthermore, the conventional banking system has a deep historical reputation in Indonesia, rendering it a well-established industry with an extensive network and widespread recognition. In addition, the conventional bank also possessing superior capital and facilities compared to Islamic banking.

Nevertheless, Islamic banking has played a crucial role in fostering economic progress in Indonesia, serving as an invaluable instrument within the financial sector. This is supported by other studies conducted in various nations, including Türkiye (Kazak et al., 2023), Pakistan (Shaikh, 2022), Nigeria (Tabash et al., 2022), UEA (Zarrouk et al., 2017), Malaysia (Gani and Bahari, 2021), Saudi Arabia, Kuwait, Qatar, Bahrain (Kismawadi, 2023), Nigeria (Sabiu and Abduh, 2020). In addition, Islamic banking has demonstrated more stability and resilience in confronting economic crises when compared to conventional financial systems. This is substantiated by research undertaken during the 2008/2009 financial crisis by Čihák and Hesse (2010) and Salman and Nawaz (2018). Under these circumstances, in addition to adhering to Islamic law, Islamic banking is also expected to provide a positive impact on economic expansion. Hence, it is imperative to ascertain the extent to which financial expansion, particularly in the realm of Islamic banking, contributes to the overall economic prosperity of the nation.

Banking financing is a variable that is generally considered to contribute to economic growth. This evidence, among others, was confirmed by Kihombo et al. (2021) and Alhassan et al. (2022). Previous studies that discussed the importance of financial growth, especially the banking sector, both Islamic and conventional, on economic growth mostly used total financing. This condition causes there to be still uncertainty regarding these studies because, unlike conventional banks which only have one interest-based financing scheme, there are several types of financing in Islamic banks, including financing based on receivables, financing based on leasing, *salam* financing, and financing based on profit and loss sharing. Financing of profit and loss sharing is a distinct form of financing that sets it apart from conventional banking. This study specifically examines the effects of *mudharabah* and *musyarakah*, which are types of profit and loss sharing contracts, on the contribution of Islamic banking to economic growth in Indonesia.

Since its introduced in 1997 through the establishing Bank Muamalat Indonesia, the Islamic Banking sector in Indonesia has consistently demonstrated steady expansion. Nevertheless, there is a dearth of studies examining the impact of this industry on the national economy. Until now, there is a limited amount of empirical research that examines the impact of Islamic banking, particularly *mudharabah* and *musyarakah* finance, on economic growth in Indonesia. Thus, it is anticipated that this research will enhance the existing body of information on this matter and serve as an initial stride towards closing the knowledge deficit in this domain. Furthermore, this study aims to establish a correlation between *mudarabah* and *musyarakah* funding and the long-term and short-term economic growth of Indonesia.

Specifically, this study aims to find out how Islamic Banking in Indonesia contributes to economic growth in that country by specifically using *mudharabah* and *musyarakah* financing variables as two variables with characteristics that differentiate them from Conventional Banking. Two macroeconomic variables are also involved in the regression model of this study, namely gross capital formation and primary energy consumption as control variables with the consideration that these two variables consistently contribute to economic growth of Indonesia.

The sections of this study arranged as follows. Section one reveals about background of the study including some facts and supporting data. Section two narrates the progress development of Islamic Banking in Indonesia from its establishment until now, the basic and brief concept of *mudharabah* and *musyarakah* contract and ends with literature review of previous study from the various case studies. Section three announces the data including the variables definitions, source of data, the range of the data, and the treatment to the data to get the equal time series data. Furthermore, section three also explains about the methodology selected to be used as basic analysis. Section four displays the regression result of the research and the result analysis. Finally, section five provides a concise overview of significant findings derived from this research and recommend the policy that can be taken based on the facts found by this study.

2. LITERATURE REVIEW

2.1. Islamic Banking in Indonesia

The establishment of Bank Muamalat in 1992 marked the beginning of the Islamic Banking industry in Indonesia. Following the severe harm inflicted upon the Indonesian financial system in

1997 due to a worldwide crisis, the Indonesian government merged four national banks namely PT. Bank Dagang Negara (BDN), PT. Bank Bumi Daya, PT. Bank Exim, and PT. Bapindo into a single company known as PT. Bank Mandiri. Following the financial crisis, Bank Mandiri purchased PT. Bank Susila Bakti (BSB) and reopened it as Bank Syariah Mandiri (BSM) and become the second Islamic Commercial Bank in Indonesia. After that, two of government Bank that are Bank Rakyat Indonesia (BRI) and Bank Negara Indonesia (BNI) running Islamic business unit as the part of conventional bank namely BRI Syariah (BRIS) and BNI Syariah (BNIS). The Indonesian government then merged BSM, BRIS, and BNIS to become Bank Syariah Indonesia (BSI) in 2023. With total 520,885 billion rupiahs in assets, there are currently 13 Islamic Commercial Banks, 20 Islamic Business Units, and 393 Branch Offices in Indonesia (Sharia Banking Statistics, 2023). The government of Indonesia through Financial Service Authority (OJK) and Bank of Indonesia (BI) implementing dual banking system in Indonesia where conventional and Islamic banking together operating the role of banking with their own characteristics and then implementing the characteristics as banking products (Abduh and Azmi Omar, 2012).

Currently, Islamic Banking in Indonesia is still focusing their attention on the domestic market share which is still very large but cannot yet be maximized, considering that Indonesia is the country with the largest Muslim population in the world. It is because, after running for more than 3 decades, the market share of Islamic Banking in Indonesia is still very far from its potential. On the other side, the asset of Malaysia's Islamic banking is 4 times larger than Indonesia where the citizens of Malaysia are nine time lower than Indonesia with only 60% of Muslim. Therefore, the policy to focus on domestic target is seen appropriate for Islamic Banking in Indonesia.

Indonesia's Islamic banking industry is expanding at a very respectable rate. This is evident from the upsurge in a variety of banking indicator variables, including assets, financing, and deposit funds. Nevertheless, there hasn't been much of an increase in the number of branch offices or staff. The standout feature of Islamic banking in Indonesia is greater FDR compared to conventional banking, even though its total assets and market share are still significantly lower than those of conventional banks. The fact that more third-party funds are invested in the actual sector than in idle ones, such Bank Indonesia certificates of wadiah, indicates how closely Indonesian Islamic banking aligns with the real sector. Aside from that, even if the value of non-performing loans (NPF) is lower than that of conventional banks, Islamic banking displays a very low level and has been declining over the past nine years. Table 1 reveals seven Indonesia's Islamic Banking indicators during the last nine years (Bahrul Ilmi, 2018).

2.2. *Mudharabah* and *Musyarakah* Contract

Mudharabah and *musyarakah* are contractual agreements between two parties in managing a business. The results of the business, both profits and losses, are divided based on a percentage agreed in advance by all parties. The difference is, in *mudharabah*, one party is only the owner of the capital and the other party runs the business. Meanwhile, in the *musyarakah* concept, anyone can contribute either by investing in capital or being involved in running a business. The concept of profit and loss sharing applied to these two contracts is a characteristic that differentiates them from contracts in conventional banks which use interest. When compared to the interest concept, the ideas of *mudharabah* and *musyarakah* are thought to be more equitable because earnings or losses are calculated after the firm has run, not at the start of the contract. The idea of interest seems unjust since, in charging interest, the bank, in its capacity as a creditor, consider that the company as debtor constantly generate profit while ignoring the fact that it also experiences times of loss.

2.3. Previous Studies on Islamic Financial Development and Economic Growth

The previous studies for issue Islamic Banking and economic growth were conducted with various study cases. The relationship between Islamic Banking and economic growth focused on Pakistan is conducted Naz and Gulzar (2023) which evaluated the impact of Islamic finance which consists of Islamic banking (assets, deposits, and financing), Islamic bond market, and Islamic stock market development on economic growth in the case of Pakistan. The study than concluded that Islamic Banking has positive contribution on economic growth only in the short run but the cointegration did not found. The study found that expanding debt financing in the market model will slow down economic expansion. Furthermore, the analysis shows that Islamic banks effectively fulfilled their role as intermediary institution by allocating most of the third-party funds to the real sector. Another study performed by Shaikh (2002) which analysed the impact of Islamic Banking on economic growth in Pakistan. Using ARDL

Table 1: Indonesian Islamic banking indicator

IB indicator*	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total assets[1]	296,261	356,503	424,180	477,326	524,563	593,947	782,099	782,100	809,989
Total financing[2]	212,996	248,007	285,695	320,193	35,182	383,944	409,878	491,489	547,667
Total deposits fund[3]	230,007	279,335	334,887	371,828	416,150	465,977	536,992	606,062	623,244
Employee	55,816	55,597	55,746	54,471	54,840	55,538	56,298	56,298	56,298
Number of offices[4]	2,301	2,201	2,169	2,229	2,300	2,426	2,479	2,445	2,387
FDR (%)	88.03	85.99	79.61	78.53	77.91	76.36	70.12	75.19	82.45
NPF (%)	4.84	4.42	4.76	3.26	3.32	3.13	2.59	2.35	2.28

*All data is recorded in December except for 2023 is in September

[1]Total assets of Islamic Commercial Bank and Islamic Business Unit (in billion IDR).

[2]Total financing consist of profit-sharing financing, receivables, *ijarah* including leasing receivables, and *Salam* financing.

[3]Consists of demand and saving deposit of *Wadia*, non- and profit-sharing investment fund.

[4]Consists of Islamic Commercial Bank and Islamic Business Unit (unit).

Source: Islamic Banking Statistics, Financial Authority Services (OJK), government of Indonesia.

as the methodology, the study found that Pakistan's manufacturing sector have benefits from the expansion and profitability of Islamic banking on a broad scale.

The issue of the impact of Islamic Banking to economic growth focused in the case of Turkey conducted by Kazak et al. (2023). They compared the impact given by Islamic and conventional banking to Turkey's economic growth and found that both of Islamic and conventional bank activities contributed positively to the economic growth. However, the impact given by Islamic banking is less than conventional banking due to the Islamic banking is still in the infancy stages of development. The literature study conducted by Ledhem and Mekidiche (2022) concluded that the growth of Islamic finance promotes economic growth of Turkey. As the country which implement dual banking system, the conventional together with Islamic banking contributes positively to economic growth of Turkey.

Malaysia is one of the fastest-growing Islamic financial system in the world. Therefore, many studies interests to evaluate the contribution of Islamic Banking and Finance to the economic growth of Malaysia. The growth of financing become one of the most variable that used as independent variables to represents the growth of Islamic Banking. Gudarzi Farahani and Dastan (2008) and Gani and Bahari (2021) got evidence that the financing of Islamic Banking supports economic growth and capital accumulation of Malaysia in the long run. The similar results found by several study such as study conducted by Mohd Yusof and Bahlous (2013) which stated that Islamic Banking supports economic growth in Malaysia not only in the short but also in long run. The investigation of Bougatef et al. (2020) using the monthly data of industrial price index as the proxy of economic growth prove the same thing that financing of Islamic Banking, particularly the profit and loss-sharing contract, spur economic growth of Malaysia. Beside the positive long run impact, Abd Majid and Kassim (2014) also found the unidirectional causality running from Islamic Banking financing to economic growth in Malaysia which supports the growth hypothesis. Ledhem and Mekidiche (2021) use other variables to prove the contribution of Islamic banking to Malaysia's economic growth, namely banking financial ratios. This study discovered that only ROE, out of all the banking ratios used, had a substantial impact on Malaysia's endogenous economic growth. Oppositely, Hachicha and Ben Amar (2015) argued that the financing of Islamic Banking is not support the economic growth of Malaysia in the long run. The effect is looks more important in the short run. The results found by those studies shows demonstrates how effectively the Malaysian Islamic banking industry serves as an intermediary institution. This evidence should be the basis for the Malaysian government's decision to encourage the growth of Islamic banking in Malaysia by improving banking infrastructure and maintaining the stability of the Islamic financial sector.

In the case of Indonesia, Abduh and Azmi Omar (2012) investigate the connections between the emergence of Islamic banking and economic expansion. The findings demonstrate a significant relationship between Islamic financial development and economic growth over the long and short terms. A bidirectional relationship pattern can be seen in the causal relationship. Oppositely, Al Fathan and Arundina (2019) discovered that Indonesia's economic growth is not supported by the expansion of Islamic banking or Islamic stocks. According to the neutrality theory, those factors stand alone.

Several studies chose a group of countries as the case study. By doing this, the study can compare the condition in each country or obtain the overall picture for all countries. Zirek et al. (2016) examined 14 OIC countries using panel data during the period 1999–2011. They came to the conclusion that Islamic banking, particularly deposits, assets, and loans can encourage overall economic growth at all countries. The relationship between Islamic Banking and economic growth in the case of ASEAN countries attract attention of Lebdaoui and Wild (2016) to investigate it. Using panel data, they found the relationship between the variables in the long run but not for short run. With their effects on diversification, Islamic banking products are thought to be able to improve financial efficiency and stability throughout ASEAN, particularly in nations where Muslims predominate. The 52 nations that Imam and Kpodar (2016) studied provide more proof that the expansion of Islamic banking contributes to economic growth, although with a very small portion compared to the size of the global financial system. Islamic banking identified driving economic growth through capital accumulation, increased financial inclusion, and better access to savings. The study conducted by Boukhatem and Moussa (2018) in the case of 13 MENA countries proved that Islamic Banking growth give positive stimulation to those country's economic growth but hindered by an inadequate institutional structure. Likewise, Jawad and Christian (2019) also attested to the fact that Islamic banking promotes economic expansion throughout the 24 nations. The supply leading hypothesis is backed by the findings of a long-term association and causality linking the development of Islamic banking to economic growth. Interestingly, Elmawazini et al. (2020) found that Islamic Banking contributes greater than conventional Banking to the economic growth of GCC countries before and after financial crisis. After several studies confirm that the growth of Islamic Banking supports economic growth for many countries, Ledhem and Mekidiche (2020) investigates more detail of Islamic Banking variable by employing several banking financial ratios based on the CAMEL parameters for five Muslim countries. The studies determined that the sole important factor contributing to economic growth is the return on equity (ROE). This finding implies that improving the performance of other financial ratios can lead to a considerable contribution to economic growth from all variables. Ghroubi (2023) posits that the growth of Islamic Banking financing and capital ratio stimulated the economic growth in the case of 13 Muslim countries from MENA and Southeast Asia. However, the increase of capital ratio should be followed by the declining of loan growth. This study shows that Islamic banking makes a significant and effective contribution to economic growth through sound and safe capital investment. Kismawadi (2023) examined how is the Islamic Banking supports the economic growth. 24 Islamic banks from Saudi Arabia, the United Arab Emirates, Kuwait, Malaysia, Qatar, Bahrain, and Bangladesh were included in the study, which used IRF and VDC as its methodology. The study came to the conclusion that Islamic banking directly and permanently fosters economic growth in all nations.

The review of previous studies, for various case studies and methodology, reveals that globally all of studies found the evidence that growth of Islamic financial development contributes positively to the economic growth of the country. Specifically, the variable of Islamic financial development is represented by the amount of financing and financial ratio.

2.4. Previous Studies on Energy Consumption and Economic Growth

Energy consumption has a vital role in influencing a country's economic growth. In an era of increasingly rapid globalization and industrialization, demand for energy continues to increase as a support for economic activity. Energy is also a crucial factor in increasing productivity, facilitating mobility, and supporting innovation in the industrial to service sectors. The economy's dependence on energy makes a deep understanding of the interactions between energy consumption and economic growth increasingly important. Studies examined the correlation between economic growth and energy use consistently linked it to environmental damage, specifically in terms of carbon emissions (CO_2). It is because the predominant energy sources utilised by all nations are fossil fuels, which generate carbon emissions which increase the pollution and lead to environmental degradation.

In the case of African countries, Otim et al. (2022) and Ekeocha et al. (2020) for the case of Kenya and Nigeria respectively confirmed that consumption of fossil fuel supports economic growth in both countries. However, it will increase the pollution through the increase of CO_2 emission produced by the combustion of fossil fuels. Therefore, those studies recommended to the government of both countries to phasing out subsidies for fossil fuel to trigger the decrease of fossil energy consumption which will decline the CO_2 emission. Furthermore, Okoye et al. (2020) demonstrated that energy consumption played a significant role in driving economic growth in Nigeria. Another African country namely

In the case of ASEAN countries, Bui (2020) explained that there is a bidirectional relationship between Vietnam's economic growth and fossil energy consumption. This relationship showed if the shock happens to one variable it will affect the other variables. This conclusion was drawn based on the results of the causality test which found a bidirectional relationship between these variables. An important task for policy holders is to harmonize economic growth and fossil energy consumption in order to minimize natural damage resulting from fossil energy consumption. The findings of that study then strengthened through different aspects for the same country. Pham et al. (2023) evidenced that the consumption of renewable energy and several other variables contribute significantly to the increasing of environmental quality in Vietnam. The study than recommends wider use of renewable energy sources. In addition, Farabi et al. (2019) proved that in the case of Indonesia and Malaysia, the increase of energy consumption and income will trigger the rise of CO_2 emission. The study also suggests to priority gas as energy sources rather than oil and coal due to consuming gas will lead the environmental quality and spur economic growth simultaneously. According to the findings of Dat et al. (2020), it is possible to forecast the Indonesian economy based on energy consumption because a significant correlation between the two variables.

The scholarly literature pertaining to the interplay among energy consumption, economic growth, and environmental sustainability within ASEAN countries offer significant contributions to our understanding of the complex mechanisms that influence policies regarding regional development. Lyazzat et al. (2023) delved into the intricate relationship between energy consumption, carbon emissions, and economic growth in ASEAN-5 countries. Their study underscores the significance of energy in shaping economic policies and activities. By analyzing causality, they reveal bilateral and unilateral relationships between economic growth, CO_2 emissions, and energy consumption across different countries in the ASEAN region. In Azerbaijan, Humbatova et al. (2019) analyzed the correlation between total electric energy consumption and GDP in both Manat and Dollar over a period of 22 years. By employing ARDL models, the study identified a positive correlation not only between GDP and electric energy consumption, but also between electric energy consumption and GDP across multiple economic sectors. Farabi et al. (2024) proved fossil energy is still the main energy to support economic growth of Indonesia. There is no evidence yet that renewable energy substitutes the existence of fossil energy to support Indonesia's economic growth.

A panel nonlinear autoregressive distributed lag model is used by Belloumi and Aljazea (2024) to examine the complex relationship between energy consumption and economic growth in the Middle East and North Africa (MENA). The study confirmed an unbalanced long-run relationship between energy consumption and economic growth, with both long-term increases and decreases in energy consumption having a major impact on output growth. Furthermore, just three of the sample's countries—Jordan, Saudi Arabia, and Tunisia—show good short-term impacts from energy-saving programmes, while the remaining eight countries judge them appropriate for long-term economic growth. Conversely, Syzdykova et al. (2020) explore the nexus between energy consumption and economic growth in the Commonwealth of Independent States (CIS), emphasizing the variability of causality direction across countries. Their study uncovers a two-way causality between energy consumption and economic growth in CIS countries, highlighting the validity of the feedback hypothesis. Meanwhile, Khobai et al. (2021) investigate the relationship between energy consumption and economic growth in BRICS countries, revealing a long-run relationship between economic growth, energy consumption, employment, and trade openness. Their findings suggest a unidirectional causality flowing from economic growth to energy consumption, indicating the potential for conservation policies to be implemented without adversely affecting economic growth in BRICS countries.

The literature highlights the complex relationship between energy consumption, economic growth, and environmental sustainability using renewable energy as the proxy of energy consumption. Pham et al. (2023) underscore the critical role of renewable energy consumption in reducing greenhouse gas emissions in Vietnam, advocating for eco-friendly technologies and policy initiatives. Purnomo et al. (2022) focus on Indonesia,

emphasizing the positive impact of energy consumption, particularly oil, gas, and biomass fuel, alongside educational attainment on economic growth. Conversely, Huseynli (2024) explores the relationship in Greece, revealing a negative correlation between renewable energy consumption and energy consumption, while affirming a positive link between economic growth and energy usage. Alkasasbeh et al. (2023) adds to the discourse by demonstrating the positive economic effects of renewable energy consumption in Jordan, urging collaborative efforts to foster sustainable economic growth through increased investment in renewables. Fadilah et al. (2020) conducted a thorough study on how renewable energy consumption (REC) affects economic growth in ASEAN countries. Using the GMM method, they found a positive relationship between economic growth, non-renewable energy consumption (NREC), labor force growth, capital stock, and REC. These findings emphasize the importance of policies promoting both renewable and non-renewable energy use to boost economic development. Those studies agreed that renewable energies can be used as primary energy to substitute the current fossil energy to decline the amount of carbon emission. The conversion energy from fossil to renewable is expected to improve environmental quality and repair natural damage

3. DATA AND METHODOLOGY

3.1. Data

The variable involved in this study are consist of 1. Economic growth which reflected by industrial production index (*ipi*). The monthly data of *ipi* sourced from Global Economic Monitor (GEM), World Bank. 2. Energy consumption (*ec*) is the total of primary energy consumption consist of oil, coal, gas and other energy sources consumption measured in exajoules and retrieved from Statistical Review of World Energy 2023, Energy Institute. 3. The Islamic Financial development variables are represented by the amount of profit-sharing financing of Islamic Bank in Indonesia consist of *mudharabah* (*finmd*) and *musyarakah* (*finms*). The variables choose based on the consideration that both are the characteristics of Islamic Banking which make it difference from conventional banking, valued in billions of rupiah. The monthly data of *mudharabah* and *musyarakah* could be retrieved from statistical of sharia banking, Financial Services Authority (OJK), the Government of Indonesia and 4. Gross fixed capital formation (*cap*) is representing the value of investment. The *cap* calculates the net new investments made in fixed capital assets by businesses inside the country within a certain accounting period sourced from World Development Indicator (WDI), the World Bank. The summary of the data and operational variables presents in the Table 2. Due to there is a different range between the data, annual and monthly, data interpolation is carried out for annual data to make all data range equal in the monthly. In addition, all of data are transforms into natural logarithm to bridge extreme values closer to the mean.

3.2. Methodology

3.2.1. ARDL and ECM

The study employs the method of ARDL to find out the impact of Islamic Banking financing to economic growth in Indonesia. ARDL is the dynamic model which can analyse short and long run relationship of variables where OLS can only analyse the long run relationship. ARDL runs by regressing a variable over both its own historical values and the current and historical values of several exogenous variables. ARDL has no concern with the pre-testing such as unit root test with ADF or PP test which means that the ARDL method can be implemented to identify the present of long-run relationship without any concern in which level the variable stationer, whether it is I(0) or I(1). However, in the beginning of this study, the unit root test is performed to identify the order of integration for all variables. The ARDL method is the most suitable model for this study because of its flexibility which can be analyse the long-run relationship without any requirement for variable to stationer at the same level. In addition, ARDL also suitable for the model which has small sample of the data. Additionally, ARDL handles issues with autocorrelations and missing data. The ARDL model which used in this study can be written as follow:

$$\Delta \ln ipi_t = \alpha_0 + \sum_{i=1}^{p} \Pi_i \Delta \ln ipi_{t-i} + \sum_{i=0}^{p} \Phi_i \Delta \ln ec_{t-i} + \sum_{i=0}^{p} \Gamma_i \Delta \ln finmd_{t-i} + \sum_{i=0}^{p} \Omega_i \Delta \ln finms_{t-i} + \sum_{i=0}^{p} \psi_i \Delta \ln cap_{t-i} + \gamma_1 \ln ipi_{t-i} + \gamma_2 \ln ec_{t-i} + \varepsilon_t \gamma_3 \ln finmd_{t-i} + \gamma_4 \ln finms_{t-i} + \gamma_5 \ln cap_{t-i}$$

Where:

lnipi : Natural logarithm of economic growth reflected by industrial price index of Indonesia.

lnec : Natural logarithm of primary energy consumption of Indonesia.

lnfinmd : Natural logarithm of Islamic Banking financing *mudharabah* of Indonesia.

lnfinms : Natural logarithm of Islamic Banking financing *musyarakah* of Indonesia.

lncap : Natural logarithm of gross fixed capital formation of Indonesia.

The existence of long-run relationship can be identified based on the value of F-statistics general regression of Dickey-Fuller and used to identity the significance of lagged levels. Beside the long-run relationship, the short-run model can be identify using the Error Correction Model (ECM) capturing the speed of adjustment. The equation of ECM for the model in this study can be written as follow:

$$\Delta \ln ipi_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta \ln ipi_{t-i} + \sum_{i=0}^{p} \beta_2 \Delta \ln ec_{t-i} + \sum_{i=0}^{p} \beta_3 \Delta \ln finmd_{t-i} + \sum_{i=0}^{p} \beta_4 \Delta \ln finms_{t-i} + \sum_{i=0}^{p} \beta_5 \Delta \ln cap_{t-i} + \phi ECT_{t-1} + \varepsilon_t$$

Where:

Δ : The first difference of the variable.

β'_s : The short run dynamic coefficient model which convergence to equilibrium.

ϕ: The speed of adjustment.

Table 2: Variable definition and sources

No.	Definition	Variable	Data range	Source
1	Economic growth	*ipi*	Monthly	Global Economic Monitor, World Bank.
2	Primary energy consumption	*ec*	Annually	Energy Institute Statistical Review of World Energy
3	Financing of Islamic Banking (*mudharabah*)	*finmd*	Monthly	Financial Services Authority (OJK), Government of Indonesia.
4	Financing of Islamic Banking (*musyarakah*)	*finms*	Monthly	Financial Services Authority (OJK), Government of Indonesia.
5	Gross fixed capital formation	*cap*	Annually	World Development Indicator, World Bank.

The study also employs CUSUM test to ensure whether the estimation model is stable or not. The line of CUSUM must be within the 5% critical line to ensure that the cointegration results are significant and stable.

4. FINDINGS AND DISCUSSION

4.1. Descriptive Statistics and Unit Root Test Results

The purpose of presenting descriptive statistics is to provide a comprehensive overview of the data, facilitating its comprehension as a foundation for analysis, without making any judgments or extrapolating the sample to the entire population. Conducting a descriptive analysis allows for the examination of the specific attributes and patterns of data trends over a certain period. The study includes a descriptive statistical table, which may be found in Table 3.

This study employs the Augmented Dickey-Fuller (ADF) and Philip-Peron (PP) methods for unit root testing as preliminarily test to assess the stationarity of the data. The results of the stationary test, as shown in Table 4, indicate that the variables involved in the model exhibit stationarity at varying levels. Hence, this study opted for the ARDL method to identify the existence of cointegration, as it enables the detection of cointegration among many variables that present stationarity at varying levels.

4.2. Lag Length Criteria

Once the degree of integration for all variables in the model estimation has been identified using the unit root test, the next step is to determine the number of lags needed to estimate the ARDL bound test. The lag length for this study was determined using the AIC criterion. Figure 1 displays the top 20 ARDL models. The graphic indicates that the ideal lag lengths chosen for estimate are ARDL (2, 1, 1, 0, 0).

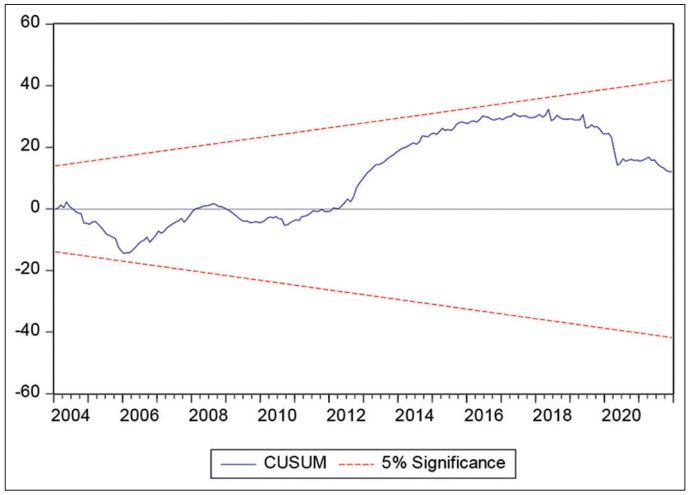
4.3. ARDL Bound Test for Co-Integration

The ARDL bound test of cointegration, introduced by Pesaran et al. (2001), is used after confirming that the variables are integrated at distinct orders to find the cointegration or long run relationship between the variables involved in the model. This test is performed under the assumption that there is no cointegration between the variables as H0 where H_0: $\emptyset_0 = \emptyset_1 = \emptyset_2 = \emptyset_3 = \emptyset_4 = \emptyset_5$. The existence of cointegration can be ascertained when the H0 hypothesis rejected in the condition of H_0: $\emptyset_0 = \emptyset_1 \neq \emptyset_2 \neq \emptyset_3 \neq \emptyset_4 \neq \emptyset_5$ where the value of F statistics is higher than the value of upper bond I(1) at 5% and vice versa. The result of ARDL bound test concludes that the cointegration exist between the variables based on the value of F-statistics (4.673) which is higher than upper bond I(1) at 5% (3.49) as displayed at Table 5.

Table 3: Descriptive statistics

Indicators	ln*ipi*	ln*ec*	ln*finmd*	ln*finms*	ln*cap*
Mean	24.135	25.948	8.954	9.774	1.426
Median	24.119	26.082	9.265	10.029	2.745
Maximum	24.523	34.881	9.746	12.141	3.750
Minimum	23.734	21.915	6.280	4.254	–7.860
Std. Dev.	0.193	2.665	0.803	1.869	3.125
Skewness	0.087	0.467	–1.624	–0.809	–1.577
Kurtosis	1.664	3.183	5.322	3.209	3.912
Jarque-Bera	17.080	8.564	150.179	25.083	101.586
Probability	0.000	0.0138	0.000	0.000	0.000
Sum	5454.701	5864.276	2023.697	2209.140	322.3940
Sum Sq. Dev.	8.391	1598.785	145.085	786.005	2198.286
Observations	226	226	226	226	226

Figure 1: CUSUM plot result



4.4. ARDL Estimation Results

After confirming the present of cointegration which indicates the long run relationship, the step then proceeds to analyse the ARDL estimation. This study estimates the model Islamic financing by choosing the financing of *mudharabah* and *musyarakah* as the main independent variables with capital formation and energy consumption involved as control variables and regressed over the dependent variable namely industrial price index as the reflection of economic growth. The criteria of AIC (2, 1, 1, 0, 0) is used to determine the long run of ARDL model. Based on the result of ARDL estimation which displayed in the Table 6 reveals that the both of financing variables of Islamic Banking in Indonesia are positive and significantly affect the economic growth of Indonesia. The positive sign reflects that in the long run, the financing of *mudharabah* & *musyarakah* of Islamic Banking are contributes positively to the economic growth of Indonesia. The changes 1% of *mudharabah* financing will increase 0.132% of Indonesia's economic growth. Meanwhile, the changes of 1% of *musyarakah* financing will increase

Table 4: Unit root test result

Variables	ADF test				PP test			
	Level		1st diff.		Level		1st diff.	
	t-stat	Prob.	t-stat	Prob.	t-stat	Prob.	t-stat	Prob.
ln*ipi*	–0.810	0.813	–16.798	0.000***	–1.065	0.729	–37.266	0.000***
ln*finmd*	–5.604	0.000***	–8.325	0.000***	–5.481	0.000***	–9.262	0.000***
ln*finms*	–2.144	0.227	–4.136	0.001***	–4.304	0.000***	–9.929	0.000***
ln*cap*	–2.359	0.154	–3.603	0.006***	–3.645	0.005***	–3.733	0.004***
ln*ec*	0.241	0.974	–1.406	0.579	1.006	0.996	–1.521	0.521

***, **, *Denote significant at 0.01, 0.05, and 0.1 respectively

Table 5: ARDL bound test result for cointegration

K	Test statistic	Critical value bounds							
		10%		5%		2.5%		1%	
	f-stat	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
5	4.673	2.20	3.09	2.56	3.49	2.88	3.87	3.29	4.37

Table 6: Estimation results of ARDL (2, 1, 1, 0, 0) model

Dependent variable: ln*ipi*				
Variables	Coefficient	Std. Error	t-statistic	Prob.
ln*ipi*(-1)	0.508	0.063	8.026	0.000***
ln*ipi*(-2)	0.356	0.064	5.505	0.000***
ln*finmd*	0.111	0.072	1.546	0.123
ln*finmd*(-1)	0.132	0.074	1.788	0.075**
ln*finms*	–0.102	0.059	–1.728	0.085**
ln*finms*(-1)	0.119	0.058	2.045	0.042**
ln*cap*	0.001	0.002	0.597	0.005***
ln*ec*	0.001	0.002	0.570	0.009***
c	3.248	1.033	3.144	0.001***

*,**,*** denote significant at 10, 5 and 1 percent level

0.119% of Indonesia's economic growth (Table 6).

4.5. Long-Term Coefficients of the ARDL Model

In the long run, the result reveals that *mudharabah* financing is negative and not significant. It is mean that *mudharabah* financing still not give positive contribution to the economic growth of Indonesia. The insignificant relationship between mudharabah financing and economic growth in Indonesia might attributed to the insufficient public awareness of this financing concept, leading to a low adoption rate of this product. In addition, Islamic banking in Indonesia appears to favour the *murabahah* scheme (a method of buying and selling with a profit). This scheme has more simple calculation of financing, making it more practical to apply and reducing the risk for Islamic banking in Indonesia. Oppositely, the variable of *musyarakah* financing shows positive and significant. This indicates that, in the long run, *musyarakah* financing can give positive contribution to economy of Indonesia even though the amount. The result of capital formation and energy consumption are ignored as the control variables. The result of long-term coefficient of coefficient ARDL displayed at Table 7.

4.6. ECM Short-Run Estimation Results, Diagnostic Stability Tests

Based on the long run result, this study estimates error correction model to test the mechanism of error correction and short run relationship between the variables. Table 8 displays the result of short run relationship between Islamic banking financing and economic growth in Indonesia. The negative coefficient on ECT means that the error correction mechanism exists. In addition, this

Table 7: Long-term coefficients of the ARDL model

Dependent variable: ln*ipi*				
Variables	Coefficient	Std. Error	t-statistic	Prob.
ln*ec*	0.013	0.012	1.127	0.000***
ln*finmd*	–0.101	0.064	–1.565	0.119
ln*finms*	0.120	0.032	3.646	0.001***
ln*cap*	–0.001	0.009	–0.120	0.904
c	23.524	0.526	44.654	0.000***

*,**,***denote significant at 10, 5 and 1 percent level

Table 8: Error correction representation of the ARDL model

Dependent variable: ln*ipi*				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ln*ipi*(-1))	–0.356	0.060	–5.842	0.000 *
D(lnfinmd)	0.111	0.065	1.704	0.089***
D(lnfinms)	–0.102	0.049	–2.052	0.041**
ECT(-1)*	–0.135	0.034	–3.949	0.000*

*,**,*** denote significant at 1%, 5%, and 10% level of significant

result also confirms that the result of cointegration valid. The ECT coefficient indicates that the rate at which short-run dynamics adjust to long-run equilibrium is 13.5%. Consequently, around 13% of the imbalance resulting from the shock in the previous year returns to the long-term balance of the current year. The identification of this can be determined by observing the negative coefficient or error term (ECT) of –0.315, as well as its significant level at the 1% level.

The test of residual also performed by this study to determine the stability of the model. The discovery indicates that the cumulative sum (CUSUM) of recursive residuals falls within the confines of the 5% confidence interval, indicating parameter stability. This can be demonstrated by the trajectory of the blue line, which consistently remained between the red line throughout the whole observation time. Based on the available evidence, it can be inferred that there is no problem of model instability, thus indicating that the model is suitable for use as a significant point of reference in analysing the influence of Islamic banking financing on economic growth in Indonesia. The result of the plot of the cumulative sum of recursive residuals can be seen at the Figure 1.

5. CONCLUSION AND POLICY RECOMMENDATION

The main objective of this study is to find the contribution of Islamic banking particularly the financing of profit and loss sharing namely *mudharabah* and *musyarakah* contract which based on the consideration that Islamic Banking is one of the financial sectors

that has significant growth. In addition, the cointegration and ECM also analyse to find the short and long run relationship and the speed of adjustment if the shock happens respectively. The variable involved in the model are the economic growth reflected by industrial price index as the dependent variable. Financing of *mudharabah* and *musyarakah* are the main variable of independent variables while gross capital formation and energy consumption involved as the control variable. ARDL chosen as the most suitable methodology considering the variables are stationer in the different level and the number of the series. Data interpolation is carried out to have the equal data in the monthly series because the data of gross capital formation and energy consumption only available in annual series.

The ARDL estimation result confirmed that energy consumption and both financing *mudharabah* and *musyarakah* are positively and significantly affect to economic growth of Indonesia. In addition, the cointegration and ECM confirmed which means that there is a long run relationship between the variables and mechanism of error correction which brings the variable back to the pattern if the shock happens. In the long run, only *musyarakah* financing which contributes positively and significantly affect economic growth of Indonesia while the *mudharabah* financing shows the opposite. This is likely due to a lack of awareness among a significant number of individuals of the underlying principles of mudharabah contract. Conversely, Islamic banking exhibits a preference for *murabahah* contracts as opposed to *mudharabah* due to their reduced risk and more pragmatic calculating methods.

The findings of this study provide evidence that energy consumption is still the main variable *supporting* economic growth of Indonesia. However, due to the variable of energy consumption reflected by primary energy which consist of as fossil energy, the issue of environmental degradation remains a serious concern for the government. It is because, economic growth based on fossil energy consumption will increase greenhouse gas emissions and will ultimately lead to several phenomena of natural damage such as global warming, irregular climate and rising sea levels. Thus, switching to renewable energy sources for energy consumption is a smart move that the government may do to lessen environmental harm while also promoting economic development. This is consistent with the data from earlier research that has been published and referenced in the literature review.

In addition, the presence of Islamic Banking in Indonesia has a beneficial impact on economic growth. This research validates that Islamic banking has the potential to contribute to economic growth, comparable to conventional banks, but to a lesser extent presently. Furthermore, Islamic Banking plays a significant role as an intermediary institution by prioritizing the provision of credit to the real sector rather than the financial sector. Given the evidence of Islamic Banking's favourable impact on economic growth, it is imperative for the Indonesian government to persist in promoting Islamic Banking through policies that foster its rapid expansion. The ongoing merger of Islamic banks, involving three banks today and two more in the future, is a highly beneficial strategy aimed at enhancing the assets, efficiency, and market share of Islamic banking.

On the other hand, this study proposes that Islamic Banking should intensify its product promotion efforts in Indonesia in order to expand its market presence, given that the market share of Islamic Banking significantly lags behind that of Conventional Banking. In order to expedite the expansion of banking assets, it is important to continuously expand and assess the goal market share. The Indonesian government has the ability to streamline the licencing process for foreign investment by facilitating the development of Islamic banking institutions, including both commercial banks and rural credit banks. The surge in international Islamic banking can stimulate extensive product innovation and create more employment prospects.

Despite having a history of approximately 27 years, Islamic banking in Indonesia has not shown good achievements. This is particularly noteworthy considering that Indonesia is the highest Muslim population globally. Based on this fact, the growth and market share of Islamic banking in Indonesia should be able to exceed conventional banking. From a banking perspective, this study recommends that Islamic Banking should focus on developing and offering more distinctive products that set them apart from Conventional Banking. Specifically, they should prioritise profit and loss sharing products like mudharabah and musyarakah, rather than solely relying on *murabahah*, which shares similarities with Conventional Banking product characteristics. Finally, this study recommends that Islamic banking in Indonesia concentrate its efforts on the domestic market, as it possesses significant untapped potential. The lack of public comprehension regarding the concept of contracts (*akad*) in Islamic Banking is a classic persistent obstacle that impedes the development of Islamic banking in Indonesia until now. Hence, it is imperative to enhance the dissemination of knowledge on Islamic banking contracts and *riba* in order to bolster market share expansion.

REFERENCES

Abd Majid, M.S., Kassim, S.H. (2015), Assessing the contribution of Islamic finance to economic growth: Empirical evidence from Malaysia. Journal of Islamic Accounting and Business Research, 6(2), 292-310.

Abduh, M., Azmi Omar, M. (2012), Islamic banking and economic growth: The Indonesian experience. International Journal of Islamic and Middle Eastern Finance and Management, 5(1), 35-47.

Al Fathan, R., Arundina, T. (2019), Finance-growth nexus: Islamic finance development in Indonesia. International Journal of Islamic and Middle Eastern Finance and Management, 12(5), 698-711.

Alhassan, H., Kwakwa, P.A., Donkoh, S.A. (2022), The interrelationships among financial development, economic growth and environmental sustainability: Evidence from Ghana. Environmental Science and Pollution Research, 29(24), 37057-37070.

Alkasasbeh, O., Khasawneh, O., Alzghoul, A. (2023), The nexus between renewable energy consumption and economic growth: Empirical evidence from Jordan. International Journal of Energy Economics and Policy, 13(2), 194-199.

Bahrul Ilmi, M. (2018), The analysis of the effect of Islamic financing and labor relationship development toward nonperforming financing in Islamic banks. Journal of Islamic Accounting and Business Research, 9(4), 648-660.

Belloumi, M., Aljazea, A. (2024), Relationship between energy and economic growth: Evidence from a panel nonlinear ARDL model.

International Journal of Energy Economics and Policy, 14(2), 468-476.
Bougatef, K., Nakhli, M.S., Mnari, O. (2020), The nexus between Islamic banking and industrial production: Empirical evidence from Malaysia. ISRA International Journal of Islamic Finance, 12(1), 103-114.
Boukhatem, J., Moussa, F.B. (2018), The effect of Islamic banks on GDP growth: Some evidence from selected MENA countries. Borsa Istanbul Review, 18(3), 231-247.
Bui, X.H. (2020), An investigation of the causal relationship between energy consumption and economic growth: A case study of Vietnam. International Journal of Energy Economics and Policy, 10(5), 415-421.
Chiu, Y.B., Lee, C.C. (2020), Effects of financial development on energy consumption: The role of country risks. Energy Economics, 90, 104833.
Čihák, M., Hesse, H. (2010), Islamic banks and financial stability: An empirical analysis. Journal of Financial Services Research, 38, 95-113.
Dat, N.D., Hoang, N., Huyen, M.T., Huy, D.T.N., Lan, L.M. (2020), Energy consumption and economic growth in Indonesia. International Journal of Energy Economics and Policy, 10(5), 601-607.
Ekeocha, P.C., Penzin, D.J., Ogbuabor, J.E. (2020), Energy consumption and economic growth in Nigeria: A test of alternative specifications. International Journal of Energy Economics and Policy, 10(3), 369-379.
Elmawazini, K., Khiyar, K.A., Aydilek, A. (2020), Types of banking institutions and economic growth. International Journal of Islamic and Middle Eastern Finance and Management, 13(4), 553-578.
Fadilah, S., Lestari, R., Sahdan, M.H., Sahdan, A.Z.A. (2020), The impact of renewable energy consumption on the economic growth of the ASEAN countries. International Journal of Energy Economics and Policy, 10(6), 602-608.
Farabi, A., Abdullah, A., Setianto, R.H. (2019), Energy consumption, carbon emissions and economic growth in Indonesia and Malaysia. International Journal of Energy Economics and Policy, 9(3), 338-345.
Farabi, A., Zamroni, Z., Handayani, D.O.D., Setianto, R.H. (2024), Sustainable development in Indonesia: A study of energy consumption, CO_2 emissions, FDI, and gross capital formation. International Journal of Energy Economics and Policy, 14(2), 435-446.
Gani, I.M., Bahari, Z. (2021), Islamic banking's contribution to the Malaysian real economy. ISRA International Journal of Islamic Finance, 13(1), 6-25.
Ghroubi, M. (2023), Linkages between capital, bank financing and economic growth: The case of Islamic and conventional banks from a panel of Muslim countries. Journal of Islamic Accounting and Business Research, doi: 10.1108/JIABR-01-2023-0036.
Gudarzi Farahani, Y., Dastan, M. (2013), Analysis of Islamic banks' financing and economic growth: A panel cointegration approach. International Journal of Islamic and Middle Eastern Finance and Management, 6(2), 156-172.
Hachicha, N., Ben Amar, A. (2015), Does Islamic bank financing contribute to economic growth? The Malaysian case. International Journal of Islamic and Middle Eastern Finance and Management, 8(3), 349-368.
Humbatova, S.I., Ahmadov, F.S., Seyfullayev, İ.Z., Hajiyev, N.G.O. (2020), The relationship between electricity consumption and economic growth: Evidence from Azerbaijan. International Journal of Energy Economics and Policy, 10(1), 436-455.
Huseynli, B. (2024), Analyzing the relationship between renewable energy sources, economic growth and energy consumption in Greece. International Journal of Energy Economics and Policy, 14(2), 89-95.
Imam, P., Kpodar, K. (2016), Islamic banking: Good for growth? Economic Modelling, 59, 387-401.
Jawad, A., Christian, K. (2019), Islamic banking and economic growth: Applying the conventional hypothesis. Journal of Islamic Monetary Economics and Finance, 5(1), 37-62.
Kazak, H., Uluyol, B., Akcan, A.T., Iyibildiren, M. (2023), The impacts of conventional and Islamic banking sectors on real sector growth: Evidence from time-varying causality analysis for Turkiye. Borsa Istanbul Review, 23, S15-S29.
Khobai, H., Abel, S., Le Roux, P. (2021), A review of the nexus between energy consumption and economic growth in the BRICS countries. International Journal of Energy Economics and Policy, 11(3), 424-431.
Kihombo, S., Ahmed, Z., Chen, S., Adebayo, T.S., Kirikkaleli, D. (2021), Linking financial development, economic growth, and ecological footprint: What is the role of technological innovation? Environmental Science and Pollution Research, 28(43), 61235-61245.
Kismawadi, E.R. (2023), Contribution of Islamic banks and macroeconomic variables to economic growth in developing countries: Vector error correction model approach (VECM). Journal of Islamic Accounting and Business Research, 15(2), 306-326.
Lebdaoui, H., Wild, J. (2016), Islamic banking presence and economic growth in Southeast Asia. International Journal of Islamic and Middle Eastern Finance and Management, 9(4), 551-569.
Ledhem, M.A., Mekidiche, M. (2021), Islamic finance and economic growth nexus: An empirical evidence from Southeast Asia using dynamic panel one-step system GMM analysis. Journal of Islamic Accounting and Business Research, 12(8), 1165-1180.
Ledhem, M.A., Mekidiche, M. (2021), Islamic finance and economic growth: The Turkish experiment. ISRA International Journal of Islamic Finance, 14(1), 4-19.
Lyazzat, K., Abubakirova, A., Igilikovna, O.A., Zhanargul, T., Suleimenovna, S.B. (2023), The relationship between energy consumption, carbon emissions and economic growth in ASEAN-5 countries. International Journal of Energy Economics and Policy, 13(2), 265-271.
Mohd Yusof, R., Bahlous, M. (2013), Islamic banking and economic growth in GCC & East Asia countries: A panel cointegration analysis. Journal of Islamic Accounting and Business Research, 4(2), 151-172.
Naz, S.A., Gulzar, S. (2023), Islamic financial development and economic growth: The emergence of Islamic financial market in Pakistan. Journal of Islamic Accounting and Business Research, 14(6), 989-1012.
Okoye, L.U., Omankhanlen, A., Okoh, J.I., Adeleye, N.B., Ezeji, F.N., Ezu, G.K., Ehikioya, B. (2021), Analyzing the energy consumption and economic growth nexus in Nigeria. International Journal of Energy Economics and Policy, 11(1), 378-387.
Otim, J., Watundu, S., Mutenyo, J., Bagire, V. (2022), Fossil fuel energy consumption, economic growth, urbanization, and carbon dioxide emissions in Kenya. International Journal of Energy Economics and Policy, 13(3), 457-468.
Pesaran, M.H., Shin, Y., Smith, R.J. (2001), Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289-326.
Pham, D.T., Van Pham, H., Dang, T.Q. (2023), Renewable energy consumption, energy efficiency, trade, economic development and FDI on climate change in Vietnam. International Journal of Energy Economics and Policy, 13(6), 8-14.
Purnomo, S.D., Wani, N., Suharno, S., Arintoko, A., Sambodo, H., Badriah, L.S. (2022), The effect of energy consumption and renewable energy on economic growth in Indonesia. International Journal of Energy Economics and Policy, 13(1), 22-30.
Sabiu, T.T., Abduh, M. (2020), Islamic financial development and economic growth in Nigeria: A bounds testing approach. Journal of Islamic Monetary Economics and Finance, 6(3), 597-620.
Salman, A., Nawaz, H. (2018), Islamic financial system and conventional banking: A comparison. Arab Economic and Business Journal, 13(2), 155-167.

Shaikh, S.A. (2022), Market development of Islamic banking in Pakistan and its economic impact. Journal of Islamic Accounting and Business Research, doi: 10.1108/JIABR-02-2022-0028.

Syzdykova, A., Azretbergenova, G., Massadikov, K., Kalymbetova, A., Sultanov, D. (2020), Analysis of the relationship between energy consumption and economic growth in the commonwealth of independent states. International Journal of Energy Economics and Policy, 10(4), 318-324.

Tabash, M.I., Abdulkarim, F.M., Akinlaso, M.I., Dhankar, R.S. (2022), Islamic banking and economic growth: Fresh insights from Nigeria using autoregressive distributed lags (ARDL) approach. African Journal of Economic and Management Studies, 13(4), 582-597.

Zarrouk, H., El Ghak, T., Abu Al Haija, E. (2017), Financial development, Islamic finance and economic growth: Evidence of the UAE. Journal of Islamic Accounting and Business Research, 8(1), 2-22.

Zirek, D., Boz, F.C., Hassan, M.K. (2016), The Islamic banking and economic growth nexus: A panel VAR analysis for Organization of Islamic Cooperation (OIC) countries. Journal of Economic Cooperation and Development, 37(1), 69-100.