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Accelerating Industrial Output Growth through Islamic Bank Decomposed Financing Optimization in Malaysia

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ABSTRACT

Literature shows two hypothesis 'More finance more growth' formed u-shape and 'too much finance' formed an inverted u-shape profile. Existing literature shows contradicting findings on finance growth nexus by taking only a single indicator of total financing, where financial expansion is detrimental to growth if it surpasses a specific threshold point. This gap is addressed in this study by decomposing Islamic financing into Islamic producer financing (IPF) and Islamic consumer financing (ICF) and its quadratic impact on industrial output growth in Malaysia. Autoregressive Distributive lag (ARDL) approach is applied over the period of 2008; Q1 to 2020; Q4 and, in order to visualize the effect of moderator to the nonlinear model, this study have used Dawson (2014) approach. This study demonstrates a u-shaped relationship between Islamic decomposed financing and sectoral output growth, highlighting that financial development starts to accelerate the growth, once it surpassed the calculated threshold point. With the intention to determine the right financial ceiling to restrict financial activity, threshold points are crucial to the regulators. Our findings imply that policymakers should not only enhance financing, but also improve the quality of the financial system for potential growth. This necessitates the simultaneous expansion and tightening of financial rules, as well as the attendant supervision and surveillance of financial activities, in order to preserve the integrity of finance growth nexus and avoid the 'vanishing effect' which may lead to the incidence of future economic crises. This study enriches the discussion on Islamic decomposed financing and the threshold effect to contribute to the economic growth of the country.

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1. Introduction

Economic growth is the ability of a nation to create more goods and services than the previous year. A variety of economic indicators, including Total Factor Productivity (TFP), the Human Development Index (HDI), and financial sector development, may be used to assess a

country's economic growth and development. Financial sector emergence is critical to the economic advancement and progression (Bertocco, 2008; Hassan, Sanchez, & Yu, 2011). Based on the works of Gurley and Shaw (1960); McKinnon (1960) and Schumpeter (1912), there is a substantial body of literature is available on the relationship between the financial sector development and economic growth. According to Gurley and Shaw (1960) financial intermediation theory, the development of the financial sector facilitates economic growth by mobilizing savings, stimulating technological advancement, providing opportunities for diversification, and increasing the effectiveness of resource allocation.

1.1 Financial Sector Development

Researchers and economists appear to have established a consensus during the previous several decades that financial sector expansion and economic growth have a significantly positive relationship. According to the literature, a positive financial climate promotes faster economic growth by removing funding barriers for both producers and consumers. Additionally, promotes technological dissemination and increases the effectiveness of resource allocation across the investment projects (Comin & Nanda, 2019; Levine & Zervos, 1998). Financial depth and financial efficiency are two different angles through which financial progress can be viewed. Broad money and demand, saving, and time deposits may all be used to gauge a country's financial depth. While financial intermediaries' capacity to convert deposits into advances is a measure of financial efficiency (Asongu, 2015).

The effects of financial development on output growth have received considerable attention in the literature, although with different findings. Some studies indicate that expansion of the financial industry has a favorable influence on economic growth, however other shows contradictory findings. Despite an extensively available literature on the relationship between finance and output growth, economists maintain opposing views. As a result, two major hypotheses have emerged: 'more finance more growth' produced a u-shaped profile, while 'too much finance' produced an inverted u-shaped profile.

1.1.1 The Real Economy and Islamic Finance

Emergence of Islamic banking is often allied to the desire of Muslims and revival of Islam where they want to live according to Islamic wisdom in every aspect of life. The relationship between financial activity and economic growth has aroused the interest of academics, intellectuals, and politicians worldwide (Aziakpono, 2005). Since money cannot be traded and this is the true essence of Islamic finance, so the linkage between financing and the real economy expected to be more robust. Islam provides more efficient interest and exploitation free financial system. Interest free financing reduces the cost of production (Ryandono, 2009), which in turn increases the business activity and encourages people to contribute to the economy on profit and loss sharing basis. Price stability, where profit sharing is not perceived as a capital expense since it is fixed in ratio, is another appealing aspect of Islamic banking. As a result, neither the price nor the production cost will be affected. Profit sharing does not lead to inflation, which is a sign of economic progress (Ryandono, 2009).

Countries where Islamic finance is practiced, products of Islamic finance have been shown to have a considerable positive impact on economic growth (Arshed, Yasmin, & Gulzar, 2020). According to Yusof and Bahlous (2013), Islamic finance has a positive influence on productivity because the shariah based principles of financing impetus to increase entrepreneurial skills of the managers which helps in reducing agency costs. Islamic financing leads to social justice fostering equitable resource distribution and have tendency to ensure long-term economic growth potential. Socio-economic objectives that Islamic economics seeks to achieve includes social justice, efficiency, economic growth and stability. In light of this, making profit in Islamic banks avoiding the betterment of the society as a whole is forbidden. Shariah law entirely based

on social integrity, ethics and moral framework. Islamic financial system restructures the financial transactions and instruments according to shariah principles by avoiding interest and gambling (Tabash & Dhankar, 2014). Although, Islamic banking system is also outlined to ensure the ethical norms of society keeping in view the social commitments to benefit at large.

Wahba Zuhayli, a distinguished scholar of shariah, wrote in his well-known book Al-Fiqh Al-Islami wa- Adillatuh, that the main purpose of Islamic banking is not to generate profits merely but to acknowledge the endorsement of societal goals such as socioeconomic development and poverty eradication (Al-Zuhayli, 2003). Shari'ah objectives relating to financial dealings and contracts fall under the broad interpretation of the al-Qur'an verse:

'Allah does not want you to place in difficulty, but He wants to purify you, and to complete His Favor to you that you may be thankful'. [Al-Quran, Surah al-Maidah 5:6]

Theory of Islamic economic follows the goals of Islamic economic system. Several prominent economists discussed about Islamic foundations emphasized in their studies that Islamic banking is a part of Islamic economics system and the foremost objective of Islamic banking is to create balance, ensure justice and definite fairness in a society. These objectives of Islamic banking system are inscribed with the shariah which are also recognized as maqasid al shariah.

1.1.2 Islamic Banking at a Glance

Emergence of Islamic banking is often allied to the desire of Muslims and revival of Islam where they want to live according to Islamic wisdom in every aspect of life. Islamic banking has emerged since 1970s as a new reality but its principles and philosophical interpretations are not new. Islamic economics ideas in the wake of innovations in the global financial services industry transformed into reality as according to the Holy Qur'an and Sunnah. In conventional economies, the intermediary system operates based on interest, which is intensely condemned by Islam. Various countries throughout the world have adopted an interest-free banking system as a unique business model and a viable substitute for traditional financing. In the early stages, Islamic banking encouraged savings and investments by simple banking practices. Products were designed in accordance with Shariah principles and certainly understood by the public at large. Later on in 1980s, project financing; syndicated financing, equity, ijara, sukuk and then liquidity management tools were implemented.

Ever since, the Islamic finance industry has been enjoying rapid expansion worldwide. Islamic financial institutions are now present in over 80 nations around the world (Domat, 2020). This industry had been growing slowly over the previous few years, resumed rapid growth in 2019 with a 14% growth rate, there were 526 Islamic banks. The top 3 economies for Islamic banking assets globally in 2019 are Saudi Arabia, Iran, and Malaysia. Malaysia is one of the fastest growing economies with the well-developed intermediary system, adopted Islamic financial structure in early 1980s (DoSM, 2019). The largest segment of the Islamic finance market is Islamic banking, which accounts for 69% of its assets, or USD 1.99 trillion. A variety of commercial, wholesale, and other sorts of banks provide assistance for the industry. However, the primary driver of the sector's expansion continues to be commercial banking. Islamic finance is attempting to expand rapidly into western countries as well as other non-Muslim nations and this rapid spread may be credited to the underlaying principles of Islam (Al-Jarhi, 2017; Chapra, 2009). By 2024, it's anticipated that global assets of Islamic finance industry would surpass $3.69 trillion (IFSB, 2020).

Despite the strategic relevance of Islamic financing to Malaysia's economy and its significant position in the world of Islamic finance, the last ten years have seen a considerable increase in the operations, assets, and capital of Malaysia's Islamic financial industry, which

includes Islamic banking, Islamic stock market, and takaful. In Malaysia, assets of Islamic banking system expanded significantly between 2008 and 2009, growing from RM1.8 billion in 2008 to RM2.4 billion in 2009, perhaps a gain of over 76%, despite the fact that economy underwent recessions in 2001 and 2009 (Bank Negara Malaysia, 2022). Additionally, as of December 2019, Islamic banks have RM835.19 billion in total assets (Bank Negara Malaysia, 2022). Islamic finance sector of Malaysia was able to extend financing even during tough economic times, which may have facilitated the country's economic recovery.

1.1.3 Financing Decomposition and its Dynamics

There are two fundamental ways that financing may affect growth: quantity supply, which includes producer financing or enterprise credit, and quantity demand, which involves consumer financing being disbursed (Hung, 2009). Banking sector plays an important role in the creation of demand or supply. By sharing producers' risks and maintaining social and financial stability, Islamic producer financing supports entrepreneurial activity and hence contribute to economic progress (IDB, 2015). The availability of an appropriate interest-free financing lowers manufacturing costs and helps to enhance socioeconomic prospects of the producers, which encourages them to maximize their productivity output. Yusof and Bahlous (2013) demonstrated that Islamic finance boosts productivity by encouraging managers to be more entrepreneurial, which lowers agency costs. This is because shariah-based concepts have a positive effect on productivity.

Through consumer financing, bank enables a customer to spend more. Banks provide services such as credit cards, leasing, and overdraft facilities, which create demand for products and services (Manzoor & Arshed, 2021). Furthermore, conventional bank gives discounts on various brands of consumable products such as apparel, food restaurants, and retail shops, which encourages people to spend more money. Due to the significant interest rate differential, particularly in the financial sector, competitiveness is detrimental to an economy in general. Prices and demand for goods and services rise as the portfolio of consumer loans expands. As a result, it causes massive inflation in any economy (Arsene & Guy-Paulin, 2013; Yüksel & Özsarı, 2016). In contrast, the Islamic finance structure provides consumers with asset backed interest-free borrowing. The IFSB and AAOFI have established a number of rules and recommendations to strengthen governance, disclosures, and transparency.

Islamic banking operations are centered around Shari'ah principles, which prohibit debt for consumption. They provide a service by purchasing an asset for the customer to either sell in a lump amount or in instalments or lease on a rental basis. Ijara finance is the most suitable Shariah-compliant alternative to interest-based leasing. Furthermore, Islamic banks exclusively provide consumer loans to help individuals obtain assistance for their survival and advancement in their life on the basis of Diminishing Musharaka, Ijarah, and Murabaha agreements. As a result, the bank is involved in the acquisition of the consumed asset directly or indirectly. Islamic consumer financing promotes moderation in society. Orientation of all economic sectors is determined by society's spending patterns (Dar & Akram, 2004). If people are wasting money on useless activities like fun, gaming and entertainment, then capital for productive ventures will therefore become confined. Islamic consumer finance therefore acts as a moderator to limit the customer's apparent utility-maximizing conduct (Chapra, 1991).

By dividing bank financing into two categories, Hung (2009) replicates the nonlinear relationships between finance and growth. He stated that, while consumer loans are typically regarded as unproductive and detrimental to growth, encouraging investment loans may stimulate an economy's output growth. (Beck, Büyükkarabacak, Rioja, & Valev, 2012) explore the nonlinear relationships among decomposed bank financing and growth. Provide evidence that the type of financing may matter, fund recipients might also matter nontrivially for the outcome (Benczúr, Karagiannis, & Kvedaras, 2019).

1.2 Research Objectives

The main objective of the study is to explore the quadratic effect of Islamic producer financing (IPF) and Islamic consumer financing (ICF) on industrial output growth in Malaysia. A key to accelerating output growth is the availability of credit facility (Nawaz, Abrar, Salman, & Bukhari, 2019) but after exceeding the certain threshold level, financing may become more expensive and less productive. This study also assesses the prevalence of IPF and ICF in relation to optimal level of financing to confirm weather more financial development dampens or significantly enhance industrial output growth after surpassing a certain threshold in Malaysia.

2. Literature Review

Since Bagehot (1873) pioneering work where finance has been proved to have a favorable influence on actual economic activity as the creation of money markets permitted the movement of capital during the time to productive trades in England. Financial industry, particularly the banking sector, may have an influence on economic growth through encouraging investment (Schumpeter, 1912) and increasing capital productivity. Schumpeter (1912) emphasized the need of providing loans to businesses in order to increase economic production. Financing is distributed through the banking system by mobilizing deposits and distributing them as loans where productivity may be enhanced through financing innovative manufacturing processes and intriguing inventions. These beliefs were conceptually supported by the financial repression ideas offered by Goldsmith (1969) and Gurley and Shaw (1960). After that, the introduction of endogenous growth models gave more intuitions and a foundation for empirical research on importance of finance for the process of economic growth, with prominent empirical studies supporting the finance-growth nexus including Beck and Levine (2005); Kaleem and Wajid (2009); Levine and Zervos (1998); Pradhan, Arvin, Bahmani, Hall, and Norman (2017); Samargandi, Fidrmuc, and Ghosh (2015); Uddin, Sjö, and Shahbaz (2013) etc.

2.1 Literature on Financial Development

Beck and Demirgüç-Kunt (2008) have made an attempt to decompose the financing facility into corporate financing and household financing. They demonstrate that lending to businesses, rather than households, has a favorable influence on economic growth. They discovered a negligible association between household finance and growth in industrialized nations, but a large relationship between corporate credit and economic growth. Using time series quarterly data from 2000 to 2010, Abduh and Omar (2012) looked into the relationship between the progress of both conventional and Islamic banking and economic growth in Bahrain. The outcomes reveal a significant positive bidirectional association between Islamic financing and long-term economic growth, but not in the short run. However, conventional financing development is strongly correlated with economic growth in long-term and short-term as well. Chen and Guariglia (2013) reveals that productivity positively and significantly get affected by the availability of internal financing. They have conducted empirical research on a panel of manufacturing firms in China for the period of 2001-2007.

Another study conducted by Yusof and Bahlous (2013) also point out the positive contribution of Islamic financing on economic growth of Malaysia and Indonesia by applying variance decomposition and impulse response function, on GCC and some selected Asian countries. They further state that role of Islamic banking principals reduces the agency cost and increase the entrepreneurial skills among the managers, which eventually create positive impact on growth. Farahani and Dastan (2013) contributes to explore the role of Islamic financing on economic growth of nine countries from Asia and some Arab countries in their sample. Quarterly data has been taken from 2000: Q1 to 2010: Q4 and they have applied panel cointegration approach. Core findings of the study indicates the positive significant impact of Islamic financing on economic growth in the long run as well as in the short run. Chen and Guariglia (2013) found

that firm productivity in China is positively affected by the availability of internal finance over the period of 2001-2007. Jedidia, Boujelbène, and Helali (2014) also discovered a positive effect of financial development on economic growth using time series data. According to Tabash and Dhankar (2014) a well-managed financial system sped up economic growth. Majid and Kassim (2015) states that Malaysia's economic development and Islamic financing have a long-term association.

According to Chu, Cozzi, Pan, and Zhang (2016), financially restrained industries fail to pursue R&D initiatives due to the diversion of financing facilities from producers to consumers. Growth is hampered as a result of sluggish research and innovation processes. By using the monthly data for the period of 2005 to 2015, Jobarteh and Ergec (2017) analyze the relationship between Islamic financing and economic growth. By applying Co-integration and Granger Causality tests they found one-way causal relationship between Islamic finance development and economic growth in the short and long term as well. Caporale and Helmi (2018) examine the relationship between Islamic financing productivity for fourteen emerging countries without Islamic banks and the countries where dual banking system operates. The found long run causality from credit to gross domestic product only in the countries where Islamic banks operates. On the basis of monthly data from 2010 to 2020, Ergec and Selçuk (2020) empirically investigate the causal linkages between conventional and Islamic banking financing and the real economy in Turkey. They revealed that the impact of Islamic finance on industrial production in Turkey is quite minimal. Bougatef, Nakhli, and Mnari (2020) found causalities between PLS financing and industrial production growth by applying ARDL technique on the data from 2010 to 2018 in Malaysia.

2.2 Literature on Threshold Effect of Financing

Literature explores the issue of non-linearities and threshold effects of financial development on economic growth, where some studies postulate that financial development supports growth up to a certain threshold level of financing, and then dampens the growth when that level surpassed, due to the vanishing effect braced by the law of diminishing returns. Arcand, Berkes, and Panizza (2012) supports the hypothesis 'Too Much Finance' where the marginal effect of financing is positive up to a certain threshold point but has a diminishing effect beyond that level. Too much may be just as harmful as not enough. According to Brooks (2014), time series data follow a normal distribution, therefore, using linear modelling tools to investigate the relationship between finance and growth is insufficient. Samargandi et al. (2015) in their analysis using time series data, have found an inverted u-shape relationship among financial development and economic growth. Arcand, Berkes, and Panizza (2015) indicate that financing starts negatively impact output growth when credit to the private sector surpasses the threshold point. Credit resources should be allocated as efficiently as possible in order to achieve feasible growth rates in the short run. Instead of an unbalanced expansion of finance, the effects of financial sector development may be smaller or even have a negative influence on output growth (Ductor & Grechyna, 2015).

On the other hand, Abdul Bahri, Nor, Sarmidi, and Haji Mohd Nor (2018) reveals that economic growth begins to accelerate once it has surpassed a certain threshold point of financing, resulting in a u-shaped profile. According to Ruiz (2018), economies above the critical threshold level grew faster, while those below the threshold point grew less. The nonlinear effect of bank credit on economic growth also studied by Benczúr et al. (2019) demonstrated a positive impact of financing to firms on economic growth. Household financing has a negative influence on growth in the selected country group. In general, if reducing finance facilities appears to be favorable to any specific economy, then reducing consumer credit may encourage economic growth. Benczúr et al. (2019) also support the idea that household financing diverts funds apart from firms that may contribute to growth by increasing productivity.

2.3 Literature on Macroeconomic Variables

Literature shows some other factors such as Inflation, macroeconomic policy, interest rates also have an impact on economic growth of a country. Munir, Mansur, and Furuoka (2009) using data from 1970 to 2005, indicates a statistically significant positive relationship between the inflation rate and output growth below the threshold level in Malaysia. Inflation causes price fluctuations, which affects productivity and economic efficiency. Inflationary pressures impede economic growth. In case of Nigeria, Umaru and Zubairu (2012) using time series data from (1970 to 2010) examined the impact of inflation on economic growth as well as productivity. They suggest that inflation is favorable for the productivity in Nigeria. Akpan, Udoh, and Patrick (2015); Kassim (2016), and Zarrouk, Jedidia, and Moualhi (2016) believe that rising inflation is a result of poor quality and dreadful macroeconomic policies. Some other factors such as bank supervision and regulation, corruption also have an impact on an economy's growth (Demetriades & Rousseau, 2016). The main focus of macroeconomic policy is on economic growth and inflation rates. Obi, Yuni, and Ihugba (2016) investigated the impact of inflation on economic growth in the instance of Nigeria over the years 1981 to 2014, findings reveal that, inflation significantly promotes economic growth. Majumder (2016) revealed that inflation had a positive effect on GDP growth in Bangladesh. Borrowers with high interest rates find it challenging since they are required to pay the interest amount even if a loss happens. This might harm the environment for industrial productivity, which would have a detrimental effect on the economy. In contrast, Islamic financing is growth-oriented as the real sector expands, resulting in a more secure and robust economy (Herianingrum et al., 2019). According to conventional economic theory, when interest rates are lower, the cost of capital tends to decrease, which directly affects investment spending, as a result production capacity increases, which promotes future output growth (Svilokos, Vojinić, & Šuman Tolić, 2019).

According to Haans, Pieters, and He (2016), if both positive and negative dynamics are operating concurrently in the economy, it might justify the deployment of a nonlinear model, especially the quadratic specification. The literature on nonlinear effects also suggests the same. Literature on the nonlinear relationship between financial development and economic growth, has primarily been undertaken on highly heterogeneous panel data of countries. These studies provide mixed findings in terms of higher, middle and lower-income economies, possibly the reason behind keeping the problem unresolved. According to Jalil, Feridun, and Ma (2010), a single country analysis may provide a more appropriate framework for investigating the finance-growth nexus. Previous studies have used a single indicator, such as Islamic bank finance, Islamic banking assets, or Islamic banking deposits, to investigate the impact of Islamic financing on output growth (Abduh & Omar, 2012; Kalim, Mushtaq, & Arshed, 2016; Mushtaq, Arshed, & Kalim, 2018; Tabash & Dhankar, 2014). Since the sectoral composition of every economy is different (Asghar et al., 2021), so the financing needs may differ, so one financing type does not fit for all (Misman, Ahmad, Khairani, & Amran, 2020).

Furthermore, available studies have overlooked the sectoral composition of each sector of economy, assuming that each sector of the economy responds identically to financial development. However, the extent of utilization of financing as well as the productivity of financing may not necessarily be the same across all the sectors of the economy (Ustarz & Fanta, 2021). To the best of our knowledge, no empirical study has been performed to investigate the impact of Islamic decomposed financing on sectoral output growth in Malaysia. Understanding cross-sector variations and effects of credit composition might lead to important inferences. For example, this study reveals that the effects of Islamic decomposed financing on growth may vary across the different sectors of the economy, and how much financing is necessary to achieve the maximum level of output in that particular sector. furthermore, the threshold level of financing is thus opportune to ensure whether the hypothesis 'more finance more growth' holds or not. Additionally, the Islamic banking sector will be able to control its profit share from financing.

3. Econometric Methodology

This study has taken industrial output growth as the dependent variable and Islamic consumer financing, Islamic producer financing, inflation, and interest rate as the independent variables.

Table 1
Description of the Variables

Dependent variable	**Symbols**	**Units**	**Source**
Industrial output	IP	Industrial production index	International finance statistics (IFS)
Independent variables			
Islamic producer financing	IPF	%age	Bank Negara Malaysia (BNM)
Islamic consumer financing	ICF	%age	Bank Negara Malaysia (BNM)
Interest rate	INT	% p.a	International finance statistics (IFS)
Consumer price index	INF	consumer price index	International finance statistics (IFS)

Quarterly data for the periods of 2008; Q1 to 2020; Q4 taken from the sources such as international finance statistics and Bank Negara Malaysia's Islamic banking quarterly bulletins.

Equations 1 and 2 illustrate the functional form:

$$IP = f(LNIPF + LNIPF^2 + LNINT + LNINF) \quad (1)$$

$$IP = f(LNICF + LNICF^2 + LNINT + LNINF) \quad (2)$$

A quadratic term, as used by Samargandi et al. (2015) and Abdul Bahri et al. (2018) to explore the nonlinear influence of financing, has been incorporated to investigate the propositions 'too much finance' and 'more finance more growth'.

3.1 Nonlinear Model

$$Y = \alpha_0 + \alpha_1 X^1 + \alpha_2 X^2 + \ldots \quad (3)$$

$$IP = f(\beta_1 LNIPFit + \beta_2 LNIPF^2 it + \beta_3 LNINTit + \beta_4 LNINFit + e_t \quad (4)$$

$$IP = f(\beta_1 LNICFit + \beta_2 LNICF^2 it + \beta_3 LNINTit + \beta_4 LNINFit + e_t \quad (5)$$

Table 2
Possible Outcomes

α1, α2	**Positive (+)**	**Negative (-)**	**Insignificant**
Positive (+)	Exponential increase	Inverted U-Shaped	Linear Positive slope
Negative (-)	U-Shaped	Exponential decrease	Linear Negative slope
Insignificant	Linear Positive slope	Linear Negative slope	No effect

Source: Dawson (2014)

If there is an inverted u-shaped profile among financial development and economic growth is correct, then the signs of the parameter β1 and β2 coefficients are positive and negative respectively, and statistically significant also. Supporting the hypotheses 'too much finance' proposed by Arcand et al. (2015) and Samargandi et al. (2015). If, on the other hand, signs of the parameter β1 and β2 are negative and positive, respectively, with significant values

demonstrating a u-shaped profile, then it does support the hypothesis 'more finance more growth' evidenced by Abdul Bahri et al. (2018) and Ustarz and Fanta (2021).

The equation-estimated threshold will determine the optimal level for both types of financing (IPF) (ICF), which is calculated by equating the first derivative to zero.

$$\beta \text{ IF}/\beta \text{ Ip} = \beta_1 IFit + 2 * \beta_2 IFit = 0 \quad (6)$$

$$IFit^{*} = - \beta_1 IFit \; / \; 2 * \beta_2 IFit \quad (7)$$

4. Data Analysis

4.1 Descriptive Evaluation

Table 3 provides the summary to examine the nature of the variables.

Table 3
Summary Stats

	IP	IPF	IPF2	ICF	ICF2	INF	INT
Mean	4.765	12.666	160.821	13.159	173.509	4.699	1.048
Median	4.75	12.685	160.84	13.26	175.75	4.7	1.09
Std. Dev.	0.1249	0.6341	15.9463	0.6035	15.7813	0.0784	0.1702
Skewness	0.0742	-0.3146	-0.2652	-0.3255	-0.2695	-0.1326	-1.5597
Kurtosis	1.5925	1.7721	1.7227	1.9355	1.9034	1.6262	4.5509
Jarque-Bera	4.3403	4.1250	4.1443	3.3731	3.2348	4.2417	26.2959
Probability	0.1142	0.1271	0.1259	0.1852	0.1984	0.1199	0.0000
Observations	52	52	52	52	52	52	52

Source: estimation using E-views

In descriptive evaluation, basic information and distributional properties of the data are provided. For instance, if the mean value for all variables is higher than the standard deviation, the data is said to be normally distributed around the mean. Jarque- Bera test of normality indicates that the data sets are not normally distributed, once the data is large enough, the central limit theorem indicates that the variables are asymptotically normal (Lind, 2000).

4.2 Unit Root Test

Table 4
Unit Root Test

	at level			1st difference		
Variable	**ADF test (Prob)**	**KPSS test**	**Decision at level**	**ADF test (Prob)**	**KPSS test**	**Decision at 1st diff.**
IPLN	0.3262 (.9774)	0.7836	Non-stationary	-6.7737 (0.000)	0.3182	Stationary
IPFLN	-1.6732 (0.438)	0.9607	Non-stationary	-7.0424 (0.000)	0.2740	Stationary
IPF2LN	-1.4757 (0.5376)	0.9628	Non-stationary	-5.4341 (0.000)	0.3161	Stationary
ICFLN	-2.4693 (0.1299)	0.9608	Non-stationary	-4.1977 (0.0017)	0.3487	Stationary
ICF2LN	-2.5632 (0.1075)	0.9639	Non-stationary	-2.9509 (0.0470)	0.3395	Stationary
INFLN	-1.4737 (0.5386)	0.9532	Non-stationary	-3.8356 (0.0050)	0.2859	Stationary
INTLN	-2.3829 (0.1517)	0.1289	Mixed	-4.6498 (0.0004)	0.1585	Stationary

Note: KPSS Critical values 0.739 @ 1%, 0.463 @ 5% and 0.347 @ 10%. *Significant at 5%

The unit root tests done using the ADF and KPSS methods are summarized in Table 4. These tests are performed with no intercept or trend specification. As the probability values of the ADF test are greater than 0.05 at level and less than 0.05 at first difference, and for KPSS test all the values at level are less than the critical values and greater than the critical values at first difference, indicates that all of the variables are nonstationary in nature. This implies that throughout the period of study, the natural pattern of these variables is disrupted due to legislative intervention, cultural change or technological advancement. Ironically, the knowledge obtained from the OLS approach has caused us to modify our behavior, which in turn has led OLS to become redundant. Pesaran, Shin, and Smith (2001) provided an alternative method 'Autoregressive distributed lag (ARDL)' takes into consideration the impact of past indicators on recent change, resulting in the development of an equilibrium model. Table 5 displays estimates of ARDL where the F test statistic exceeds the critical values of both (IPF) and (ICF). This model demonstrates that, despite the variables are nonstationary, their co-movement is reasonably coordinated, and all independent variables have a causal impact on the dependent variable. Additionally, the explanatory intensity of independent variables is 96% for the IPF model and 97% for the ICF model.

Table 5
ARDL Model Statistics

	IP= f (IPF+ IPF^2+INF+INT)	**IP= f (ICF+ ICF^2+INF+INT)**
F-statistic	5.7048	16.366
95% Upper bound	4.01	4.01
90% Upper bound	3.52	3.52
Diagnostics Test		
A: Serial correlation	0.7094 (0.4977)	0.7836 (0.4653)
B: Functional form	1.752 (0.1956)	2.6714 (0.1095)
C: Normality	1.218 (0.5436)	1.027 (0.598)
D: Heteroscedasticity	1.6316 (0.1611)	1.1598 (0.3473)
CUSUM	Stable	Stable
CUSUMsq	Stable	Stable
R-squared	0.969	0.985
Adjusted R-squared	0.965	0.979
DW-Statistics	2.104	2.254

Source: estimation using E-views statistical software

To assess the model's validity, four diagnostic tests are used, including the serial autocorrelation, normalcy test, heteroscedasticity test and functional form. Because all of these tests revealed insignificant, it is appropriate to conclude that the model is reliable and valid at a 10% level of confidence. Long-term estimates of both the models of Islamic decomposed financing are shown in Table 6. The primary goal of this study was to examine the quadratic impact of Islamic decomposed financing on industrial production growth, whether inverted u-shaped or u-shaped.

Table 6
Results of long run coefficients of Islamic Decomposed Financing

Islamic Producer Financing		**Islamic Consumer Financing**	
Regressors	**Coefficient (Prob)**	**Regressors**	**Coefficient (Prob)**
IPFLN	-1.9538 (0.0003)***	ICFLN	-1.8051 (0.006)***
IPF2LN	0.0795 (0.004)***	ICF2LN	0.0722 (0.005)***
INTLN	0.0218 (0.542)	INTLN	0.0257 (0.567)**
INFLN	1.1991 (0.003) ***	INFLN	0.9183 (0.041)*
@TREND	11.0793 (0.0075)	@TREND	0.0047 (0.2029)
Threshold	12.30 %	Threshold	12.451 %

Source: estimation using E-views statistical software

According to ARDL long-term estimations, the coefficients of $\beta 1$, $\beta 2$ from both the equations had a negative and then a positive impact on industrial production and both are

statistically significant. Here, 1% increase in Islamic producer finance (IPF) will initially decrease the output by 1.95%, but as IPF rises, output enhanced by 0.079%. Similarly, 1% increase in Islamic consumer financing (ICF) will initially decrease the output by 1.80% and then enhanced by 0.07% as the ICF increase. Accordingly, the signs of coefficients confirm a u-shaped profile for both type of Islamic financing and industrial output growth for the selected models. After reaching a turning point, the development of IPF and ICF boosted production growth upholds the preposition of 'more finance more growth' (Abdul Bahri et al., 2018). The empirical finding of the study supports Schumpeter (1912) argument regarding the vitality of finance, which is still relevant in today's economy. Inflation has a significant positive impact on the growth of industrial output, as our findings show that a 1% increase in inflation tends to increase industrial output by 0.91% when combined with Islamic consumer financing, and a 1% increase in inflation upsurge the industrial output by 1.19% when combined with Islamic producer financing. Inflation benefits the economy in several ways, including better investment returns: as investors and entrepreneurs are rewarded for indulging in productive activities ventures. More profits: Since producers can sell their products at higher prices, so output grows. When inflation rises, people spend more money because they believe their money will be worth less in the future, our findings are consistent with Majumder (2016) and Kassim (2016).

Our findings revealed that finance has a substantial influence on growth, whether positive or negative, depending on the economic conditions. In this study, u-shaped profile also demonstrated that financial development may stimulate industrial output growth even if it exceeds a certain threshold level of Islamic decomposed financing in Malaysia. Interestingly, the evidence contradicted the hypothesis 'too much finance' proposed by Arcand et al. (2015) and Samargandi et al. (2015), but advocate 'more finance more growth' highlighted by Abdul Bahri et al. (2018).

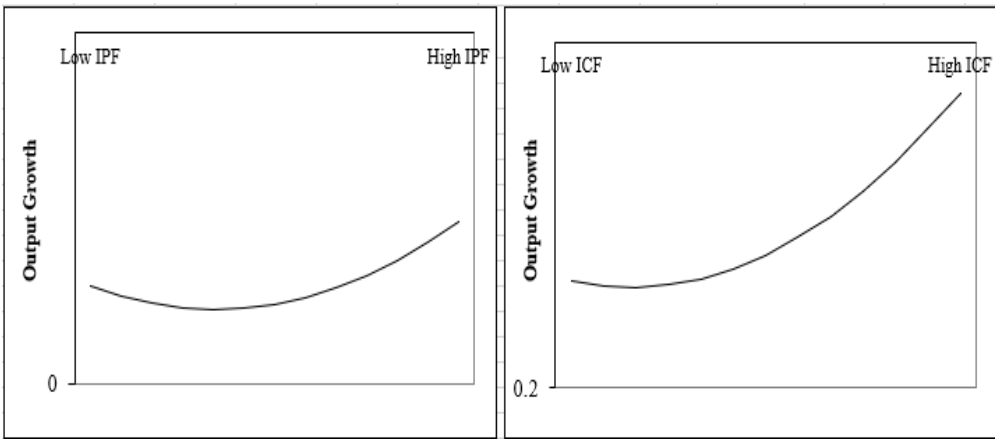

Figure 1: Quadratic Relationship Moderation
Source: Haans et al. (2016)

Figure 1 illustrates the u-shaped profile for Islamic decomposed financing to help with understanding the nonlinear association between industrial output and the development of Islamic producer financing and Islamic consumer financing as well. The solid line fitted value within the 95% confidence interval supports the u-shaped association between Malaysia's industrial output growth and the Islamic financial development in the economy. (Dawson, 2014) mathematically provided the visualization effect of possible outcomes using calculation methods (Chiang (1984) Fundamental methods of mathematical economics), Following this, our study demonstrates a u-shaped profile for both types of Islamic financing in Malaysia, supporting the hypothesis 'more finance more growth' Abdul Bahri et al. (2018). The most recent incidence of Islamic financing, according to available statistics is 13.5% for IPF and 14.04% for ICF disbursed in 2020Q4. From the estimated results (see Table 4) the calculated threshold points are 12.3% (IPF) and 12.45% (ICF), based on the first order derivation *($\beta IF/\beta IP$).* Islamic decomposed

financing has a considerably positive impact on industrial output growth after exceeding that calculated threshold level.

The primary goal of this study was to determine whether there is a u-shape or inverted u-shape association between Islamic bank financing and industrial output growth in Malaysia. ARDL estimation results of IPF and ICF Models (see Table 6) revealed that the coefficient of $\beta 1 + \beta 2$ from both the equations (3) (4) specifications represented by IF and IF2 are negative and positive respectively, whereas both are statistically significant too. Here, the conjunction of signs of both the coefficients formed u-shape profile between Islamic bank financing and industrial output growth in Malaysia for the selected period of analysis. The viability of the long run equilibrium is determined by how quickly the short run model converges towards the long run model.

Table 7
Results of short run coefficients of Islamic Decomposed Financing

Islamic Producer Financing		Islamic Consumer Financing	
Regressors	**Coefficient (Prob)**	**Regressors**	**Coefficient (Prob)**
D(ICF)	-1.0452 (0.0477)	D(IPF)	-1.3385 (0.0088)
D(ICF2)	0.0419 (0.0429)	D(IPF2)	0.0544 (0.0091)
D(INF)	1.3573 (0.0003)	D(INF)	0.8216 (0.0072)
D(MMR)	0.0146 (0.5844)	D(MMR)	0.0142 (0.5532)
ECM(-1)	-0.5790 (0.0001)	ECM(-1)	-0.6850 (0.0003)

Source: Authors estimations using E-Views 12

The ECM(-1) coefficients of -0.57 for Islamic producer finance and -0.68 for Islamic consumer financing in Table.7 indicate how every policy intervention through independent variable in the model changes the equilibrium position and how the dependent variable progresses towards this new equilibrium. To attain maximum output growth in the economy, we may anticipate monetary policy goals for financing via Islamic producer financing to be reached in about 0.57 years and financing through Islamic consumer financing to be realized in around 0.68 years.

5. Conclusion and Policy Recommendations

There is a debate in the literature on two propositions where 'more finance more growth' formed u-shape relationship and 'too much finance' formed inverted u-shape association between finance and economic growth. Studies related to Islamic financing and output growth overlooked the nonlinear dynamics of financing in Malaysia. In this study we empirically examine the nonlinear impact of Islamic decomposed financing on industrial output growth in order to revisit the existing relationship in Malaysia. Our findings show that various financial resources (both in terms of their origins and recipients) have significantly diverse effects on output growth. Surprisingly, the outcomes of this research contradicted the hypothesis 'too much finance' Arcand et al. (2015) and Samargandi et al. (2015) but endorsed 'more finance more growth' hypothesis evidenced by Abdul Bahri et al. (2018). In contrast to earlier findings, the results of the u-shaped profile in Malaysia's most recent economy may indicate to new evidence that might add to the body of knowledge on finance growth nexus. Despite, the nonlinearity of Islamic bank financing and output growth, our study also confirms that financial development accelerates industrial output growth even after surpassing the calculated threshold level of financing, contradict other studies conducted over different periods, indicating that this relationship may vary depending on the overall state of the economy. Additionally, the impact of financial development on output growth is affected by the level of various macroeconomic indicators and economic regulation such as, financial openness Rajan and Zingales (2003), financial sector policies Abiad and Mody (2005) and inflation Yilmazkuday (2013), and interest rates as a prerequisite, demonstrating the financial sector's ability to spur economic growth.

In terms of policy implications, our findings imply that policymakers should not only enhance financing, but also improve the quality of the financial system for potential industrial output growth. This necessitates the simultaneous expansion and tightening of financial rules, as well as the attendant supervision and surveillance of financial activities, in order to preserve the integrity of financial development on economic growth and avoid the 'vanishing effect' which may lead to the incidence of future economic crises. Threshold points are crucial to the policymakers in order to determine the right financial ceiling to limit financial activity. This cap will necessitate an immediate decrease in moral hazard in financial activities because it is acknowledged that financial deregulation may be detrimental to economic progress, necessitating stronger financial regulation supervision and screening. We believe that policymakers might find our findings helpful in implementing measures that raise the quality of Islamic financing rather than just expanding it. Islamic financing has shown to give both individual and societal benefits to society, and is more growth-promoting by extending will of Allah.

Authors Contribution

Sadia Yasmin: introduction, data collection, data analysis and interpretation, drafting
Mohammad Ayaz: problem, literature search, recommendations
Muhammad Ather Ashraf: revision, incorporation of intellectual content

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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