Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi • Cilt: 44 • Sayı: 1 • Haziran 2022, ISSN: 2587-2672, ss/pp. 119-136
DOI: 10.14780/muiibd.1135535

ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE RELATIONSHIP BETWEEN MURABAHA AND MACROECONOMIC DYNAMICS

MURABAHA İLE MAKROEKONOMİK DİNAMİKLER ARASINDAKİ İLİŞKİ

Tolga ERGÜN*

Abstract

The concept of murabaha is expressed as cost plus profit share sales. Murabaha, known as the participation finance product, has an important place in the interest-free financial system. In this context, it is aimed to reveal the relationship between murabaha and macroeconomic variables on the Turkish sample in this study. In the research model, murabaha is used as a dependent variable, while Gross Domestic Product (GDP), employment rate, and inflation rate have been tested as independent variables within the scope of macroeconomic indicator. A total of 40 quarterly data between 2010-2019 have been analyzed using the Johansen cointegration, VECM Granger and Toda-Yamamoto causality test. According to the findings obtained from the analysis, murabaha and macroeconomic variables are statistically identical in the long term and move in the same direction together. According to the findings obtained from the Toda-Yamamoto analysis, a bidirectional causality has been found between murabaha and the GDP and employment rate, which is used as a macroeconomic indicator, while a one-way causality relationship has been found between murabaha and the inflation rate. The results indicate the existence of a long-run causality relationship between murabaha financing and various macroeconomic dynamics.

Keywords: Participation Finance, Murabaha, Macroeconomic Dynamics, Johansen Co-Integration, Toda-Yamamoto Causality Test, Turkey
JEL Classification: E44, G21, O16

Öz

Murabaha kavramı maliyet artı kar payı satış olarak ifade edilmektedir. Katılım finans ürünü olarak bilinen murabaha, faizsiz finans sistemi içinde önemli bir yere sahiptir. Bu bağlamda çalışmada, Türkiye örneklemi üzerinde murabaha ile makroekonomik değişkenler arasındaki ilişkisinin ortaya koyulması amaçlanmıştır. Araştırma modelinde murabaha bağımlı değişken olarak kullanılırken, makroekonomik gösterge kapsamında Gayri Safi Yurt İçi Hasıla (GSYİH), istihdam oranı ve enflasyon oranı bağımsız değişkenler olarak sınanmıştır. 2010-2019 yılları arasındaki toplam 40 çeyrek dönem veriler Johansen eşbütünleşme, VECM Granger ve Toda-Yamamoto nedensellik testinden faydalanılarak analiz edilmiştir.

* Asst. Prof. Dr., Trabzon University, Vakfıkebir Vocational School, Department of Finance, Banking and Insurance, Trabzon. E-Mail: tolgaergun@trabzon.edu.tr, ORCID ID: 0000-0001-9650-4542

Makale Gönderim Tarihi: 19.12.2021
Yayına Kabul Tarihi: 22.06.2022

Analizden elde edilen bulgulara göre murabaha ile makroekonomik değişkenler uzun dönemde istatistiksel olarak eş bütünleşik olup birlikte aynı yönde hareket etmektedir. Toda-Yamamoto analizi sonuçlarına göre murabaha ile GSYİH ve istihdam oranı arasında çift yönlü bir nedensellik tespit edilirken murabaha ile enflasyon oranı arasında tek yönlü bir nedensellik ilişkisi saptanmıştır. Sonuçlar, murabaha finansmanı ile makroekonomik dinamikler arasında uzun dönem nedensellik ilişkisinin varlığına işaret etmektedir.
Anahtar Kelimeler: Katılım Finans, Murabaha, Makroekonomik Dinamikler, Johansen Eşbütünleşme, Toda-Yamamoto Nedensellik Testi, Türkiye
JEL Sınıflandırması: E44, G21, O16

1. Introduction

For developed and developing countries, the financial sector is regarded to be almost a carrier of economic dynamics. The banking system contributes to the growth of the GDP of developing countries at the level of 45-50%. In this respect, the financial sector increases domestic production and helps economic growth by providing cheaper financing to the growing sectors of the economy. In other words, while economic growth is supported by financial development, a possible instability in the financial sector will have a negative impact on a country's economic growth and development (Akhtar et al., 2017).

Financial systems are defined as a structure consisting of institutions and financing instruments. The main feature of the system is that it mediates the channeling of financial resources to the market. It is possible to say that the interest-free financial system, which is one of the areas of application within the financial system, constitutes an important branch of the financial system with the services it offers.

With the impact of globalization, markets have become integrated. This situation turns the economies into a more dependent structure. Therefore, in a market where all economic factors are active and integrated, macroeconomic factors affect all activities of the economy. It is undeniable that the field of interest-free finance, which has an important place in the financial system, is also affected by macroeconomic dynamics (Chelhi et al., 2020).

The interest-free finance system can be expressed as the place where all the services and contracts (liquidity, profitability, collateral, etc.) are considered within the scope of Islamic law and based on the risk-return relationship. One of the two main features of this system is the prohibition of al-riba (interest), that is, interest, and the other is risk-sharing. The field of application of the system is formed by banks that do not use interest in banking transactions (Askari et al., 2015).

The standards in the functioning of the services offered by Islamic Finance Institutions are determined by the Accounting and Auditing Organization of Islamic Finance Institutions (Maljichi, 2017).

The global financial crises experienced throughout history have led to deterioration in the economies of many countries, especially in developed ones, and have increased poverty. Such reasons have led to seeking an alternative financial system in many countries, especially in countries with a large Muslim

population (Salman and Nawaz, 2018). With this thought, the demand for interest-free financing has gradually increased in the following years.

Interest-free financing products serve as a tool for stimulating economic growth and human development. In addition, it is aimed to reduce poverty and inequality in line with the economic development goals by adopting the principle of risk-sharing instead of debt financing with interest-free financing. Interest-free financing products are designed to facilitate access to financing (Hamdow Gad Elkreem, 2017).

There are a number of financing products included in the interest-free finance system. Among these financing products, murabaha, mudaraba, musharake, salam, exception, and icare are among the most well-known interest-free financing products (Hassan and Mollah, 2018). Among these products, the usage rate of murabaha in the financial system is approximately 80-95% (Warde, 2000). For example, in Pakistan, the usage rate of murabaha in the total financial system is 87%, while this rate is 82% in the Islamic Bank of Dubai and 73% in the Islamic Development Bank of Saudi Arabia (Bhatti, 2015). For this reason, murabaha has been known as the most widely used financing product in the interest-free financial system since 1975 (Khan, 2017). These products are evaluated in two categories based on equity and debt resources. While mudaraba and musharake have equity-based partnership structures, murabaha, salam, exception, and icare are debt-based financing products (Ahmed, 2014).

In line with the information above, it is aimed to investigate the long-term causality relationship between macroeconomic dynamics of murabaha, which is used by the participation banking sector in Turkey. The investigation of the relationship between murabaha and macroeconomic dynamics, which is the most used financial product by the participation banking sector, constitutes the unique aspect of the study for Turkey. In this context, the study is designed in five sections and the conceptual framework of murabaha is discussed in the second section after the introduction section. In the third section, the studies conducted on the subject are discussed under the title of literature. In the fourth chapter, after explaining the methodology of the research, the findings obtained from the empirical study are included.

2. Conceptual Framework: Murabaha and Murabaha-Based Financing Process

The concept of murabaha is derived from the Arabic word "ribh" and means to earn, make a profit, or add a profit margin on the cost of a good (Rifki, 2014: Bhatti, 2015). In other words, murabaha, which is an interest-free sales method, is also used as increase, reproduction and profitable sales (Canbaz, 2016). Murabaha is a financial product that has a profitable and term sale process by receiving a product in advance according to the needs and demands of the customer and informing the customer how much it costs (Yurttadur and Yıldız, 2017).

According to the Islamic Financial Services Board (IFSB), murabaha is defined as a contract offered by institutions that provide interest-free financial services and selling a particular good to a customer on a cost-plus profit margin basis (IFSB-Islamic Financial Services Board, 2021). Pursuant to

Article 48 of the Banking Law No. 5411, murabaha is referred to as "credit" and "…… by payment of movable and immovable property and service costs of participation banks or… procurement of immovable, equipment or commodities…… financing of documents in return for goods…. ..or similar methods are also considered as loans in the application of this Law" (Banking Law No. 5411). In this type of contract, participation banks buy an asset, again determined by the customer, from a seller determined by the customer, upon the request and direction of their customers, with the power of attorney given to the customer, and sell it to the customer, who promises to purchase, with the addition of profit (Aktepe and Dereci, 2019).

Today, murabaha is among the most common methods of funding in the interest-free finance system. The financing provided by this product is defined by names such as corporate financing support, individual financing support, and production support in Turkey. In the literature, murabaha is expressed as the sale of the financing product with an added profit at the rate agreed with the buyer on the cost price during the usage process. In this transaction, important details such as the goods or materials to be purchased, cash price, and quality can be determined by the customer or the fund user. After the delivery of the requested product is made, the customer is debited by issuing an invoice in which an appropriate profit is added to the agreed amount of money and maturity.

The stages of the murabaha financing method can be expressed as follows, respectively (Yanpar, 2015).

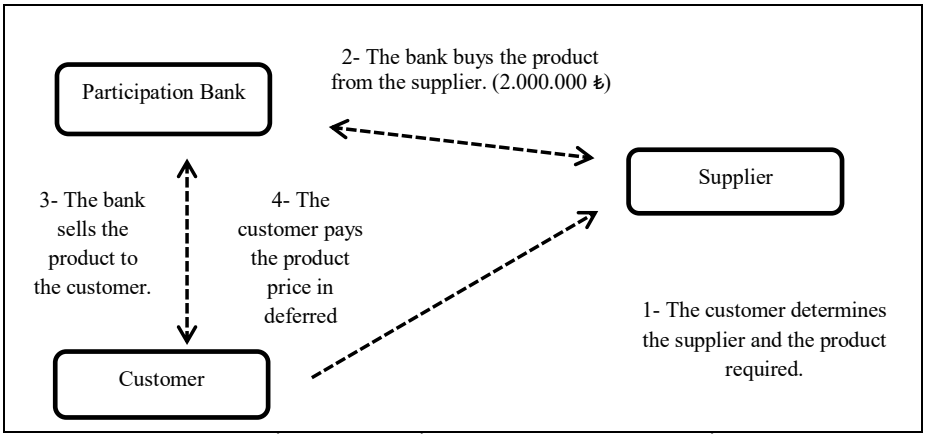
- A contract is signed between the bank and the customer to whom the fund usage limit is allocated.
- A bank undertakes that it will purchase a product required by the customer and sell that product to the customer on a term basis with a certain profit margin that will add to the purchase price.
- Each customer undertakes to the bank that she/he will purchase the product in question from the bank and pay for it at the agreed price and payment plan.
- The bank may request additional collateral regarding the customer's commitment.
- The customer informs the bank about where and at what price the goods and services of which quality and quantity will be purchased.
- A bank purchases the requested product from the supplier and sells it to the customer.

It will be appropriate to embody the above-mentioned stages in an example. In this context, an example of the process of operation of the murabaha financing product is indicated in Figure 1 (Yanpar, 2015). In the example of the figure, Mr. A is required to purchase 1000 tons of sardines for the fishmeal factory he operates. However, Mr. A has no money to buy this product in cash, and there is no seller among local fishermen who can make a decommissioned or deferred payment. Mr. A goes to a participation bank and applies for murabaha financing in order to be able to buy the 1000 tons of sardines he needs. In murabaha financing, first of all, the bank goes to the local fishermen and buys the sardines in the amount Mr. A demands 2.000 ₺ per ton. (total 2.000.000 ₺). Subsequently,

the bank sells the product to Mr. A at a cost of 2.400 ₺ per ton (a total of 2.400.000 ₺). The difference of 400.000 ₺ is the profit of the bank. Through the agreement performed, Mr. A will pay the cost of the sardines to the bank in installments of 100.000 ₺ within a 24-month installment plan.

The riskiest part in the process of operation of the murabaha financing product shown in Figure 1 is the possibility that the customer will stop buying this product after the product has been purchased by the bank. For this reason, a binding contract is signed between the bank and the customer requesting murabaha financing, and the customer undertakes to purchase the goods subject to the financing. In this regard, the murabaha financing product is, in theory, a form of trade financing. In other words, the client requests the bank to purchase goods with certain characteristics. When the bank buys the product, it resells it to the customer, adding a certain profit to the cost of the product (Hamdow Gad Elkreem, 2017).

Figure 1. Financing Based on the Murabaha



Source: Yanpar, A. (2015). İslami Finans, İlkeler, Araçlar ve Kurumlar, İstanbul, Scala, p.157.

3. Literature Review

There are many empirical studies in the literature examining the relationship between the financial sector and the real sector. While studies investigating the effect of loans given to the private sector by deposit banking on economic performance are included in the literature, the limited number of studies examining the relationship of murabaha used by the interest-free finance sector with macroeconomic dynamics has been evaluated as a gap in the literature. In this context, some of the studies in the literature have directly investigated the relationship between murabaha and macroeconomic variables, while others have examined the relationship between interest-free banking and economic growth and macroeconomic variables. Furqani and Mulyany (2009) investigated the long-term relationship between the interest-free banking sector and macroeconomic variables using the Vector Error Correction Model, using quarterly data between 1997-2005 in Malaysia. As a result of the study, in which real GDP and export variables are used as macroeconomic indicators, the

authors have determined a long-term positive relationship between macroeconomic variables and interest-free banking.

Adebola et al. (2011) investigated the relationship between interest-free banking and macroeconomic variables in Malaysia. The authors analyzed monthly data from 2006 to 2011 using ARDL and Granger causality tests. As a result of the study, the authors determined a negative relationship between the interest rate and the banking sector.

El-Galfy and Khiyar (2012) investigated the potential impact of interest-free financing on economic growth by conducting a literature review. As a result of the evaluation of the studies conducted, the authors stated that interest-free banking and finance have a positive impact on economic growth. They also stated that scientific studies were carried out on a country basis and that the results obtained could not be generalized to other countries.

Manap et al. (2012) analyzed the relationship between interest-free banking development and economic growth in Malaysia using Toda-Yamamoto and Bootsrap decanger method. As a result of the study using quarterly data between 1998 and 2012, the authors determined a statistically significant relationship between economic growth and the development of interest-free finance, and that interest-free finance contributes to economic growth.

Shahbaz and Rahman (2012) examined the effects of financial development, exports, and foreign direct investments on economic growth in Pakistan for quarterly periods between 1990 and 2008. In the study using the ARDL approach, the authors revealed a bidirectional long-run causality relationship between financial development, exports, and foreign direct investments, and economic growth.

Yazdan and Hossein (2012) investigated the short and long-term relationship between economic growth and interest-free banking in the sample of Iran and Indonesia. The authors analyzed monthly data from 2000 to 2010 with the ARDL Bounds Test.

Almsafir and Aslmadi (2013) examined the relationship between macroeconomic variables and murabaha on the Jordanian economy in their study. The authors analyzed the periods from 1984 to 2012 with the ARDL Bounds Test. As a result of the study, the authors have determined that especially macroeconomic variables are effective on murabaha and that murabaha can provide a faster balance on variables compared to the interest rate.

Tabash and Dhankar (2014) investigated the relationship between the interest-free finance system and economic growth in a sample of selected countries in the Middle East region. As a result of the study in which co-integration and causality tests have been carried out, the authors have determined a bidirectional causality between the financing of interest-free banks and the GDP in the long run.

The study conducted by Abdul (2015) investigated the role of the interest-free banking sector in Kenya on economic growth. As a result of the study, in which the data between 2008 and 2014 were

examined by multiple linear regression analysis, the author determined that savings had a positive effect by activating economic growth, while total advances had a negative effect on economic growth.

Ahmad et al. (2015) investigated the relationship between murabaha, which is used in the interest-free banking system in Jordan, and macroeconomic variables. The authors examined the relationship between the M2 money supply, foreign direct investments, and GDP variables for the 1978-2012 period and the murabaha financing product using the ARDL Bounds Test. As a result of the analysis, the authors determined a statistically positive relationship between macroeconomic indicators and murabaha.

Al-Fawwaz et al. (2015) examined the effects of participation finance products such as murabaha, musharakah, and ijara on macroeconomic variables in their study. In the study examining the periods between 2010 and 2011 using regression analysis, the authors determined the statistically positive effect of interest-free financing products on economic growth.

Nahar and Sarker (2016) examined the effect of macroeconomic factors on the financing of interest-free banks in a sample of 48 countries. The authors, who tested the period between 2004 and 2013 with panel data analysis, found a positive relationship between GDP and inflation and the financing of interest-free banks.

Rabaa and Younes (2016) investigated the relationship between the financial performance of interest-free banks and economic growth by using the regression method, taking into account the period between 2001-2012. As a result of the analysis, the authors determined a statistically positive relationship between the profitability of interest-free banks and economic growth.

In the study conducted by Hamdow Gad Elkreem (2017), the relationship between economic growth and interest-free banking performance was examined. In the sample of six countries, the annual data of six banks for the period 2011-2013 were tested by Pearson regression analysis. As a result of the study, the author determined a positive causal relationship between mudarebe, exception and decommissioning, and economic growth from interest-free financing products, while a negative causality was found between murabaha and decommissioning and economic growth.

Zahid and Basit (2018) examined the effect of macroeconomic variables on the growth of interest-free banking in Pakistan. Variables such as GDP, inflation rate, money supply, total savings, interest rate, and Muslim population were used as macroeconomic indicators in the study. The authors analyzed data for the period 1985-2015 using the co-integration test. As a result of the study, the authors stated that while the GDP, money supply, and Muslim population had a positive effect on the growth of interest-free banking, interest rates, inflation, and savings had a negative effect.

Khotijah and Iswanaji (2020) investigated the effect of the murabaha financing product on the economic growth of the agricultural sector. The authors analyzed a total of 36 quarterly data from the period 2010-2018 through the regression method. As a result of the study, the authors determined

that murabaha financing had a statistically positive effect on the economic growth of the agricultural sector.

Syahputra and Ningsih (2020) investigated the effect of murabaha and musharakah financing on the GDP in Indonesia for the periods between 2009 and 2018. In the study using regression analysis, the authors revealed that murabaha and musharake financing significantly would affect the GDP.

Hussain et al. (2021) examined the relationship between economic growth and interest-free banking products. In the study using the regression method, the authors analyzed the periods between 2016 and 2020. As a result of the study, the authors found a negative relationship between murabaha, a financing product, and GDP, while they found a positive relationship between musharakah and GDP.

When the studies in the literature are evaluated in general, It has been determined that there are statistically significant relationships between GDP, inflation rate, unemployment rate, large money supply, and interest-free finance. In addition, it is seen that there is a similar result between the murabaha financial product used by participation banks and macroeconomic variables.

4. Methodology of the Research

In this study, the long-term relationship between various macroeconomic indicators and murabaha financial product used by participation banks has been examined with the Johansen cointegration test, and then the causality relationship between the variables has investigated with the VECM Granger causality and Toda-Yamamoto (1995) approach, using a total of 40 quarterly data from the years 2010-2019 in the Turkish sample.

4.1. Data and Methods

The explanations related to the variables and variables used in the model created in the empirical study are illustrated in Table 1. Within the scope of macroeconomic indicators, real GDP, inflation and employment rate are used as independent variables (Al-Fawwaz et al., 2015; Zahid and Basit, 2018). On the other hand, murabaha is analyzed as a dependent variable (Almsafir and Alsmadi, 2014; Ahmad et al., 2015). Murabaha data reflects the total value of six participation banks operating in the Turkish participation banking sector.

Table 1. Variables and Definition of Variables

Variables	Definition	Database
MUR	Murabaha (real)	Participation Banks Association of Turkey
GDP	Gross Domestic Product (real)	Turkish Statistical Institute
INF	The Inflation Rate	The Central Bank of the Republic of Turkey
EMP	Employment Rate	The Central Bank of the Republic of Turkey

4.1.1. Johansen Cointegration and VECM Granger Test

In Engle-Granger (1987) approach, a singular cointegration relationship is obtained. However, more than one integration or equilibrium relationship can be analyzed vectorially by examining possible equation systems between the series. For this purpose, Johansen and Juselius (1990), and Johansen (1998), introduced a multi-equation approach in their studies and defined the cointegration relationship as a vector by considering each series internally. In addition, in the equation where Johansen cointegration analysis will be performed, all of the series must be stationary at I(1) level (Mert and Çağlar, 2019: p.260). If there is a long-term relationship between the series, there will be at least one-way causality between the series, and Vector Error Correction Model (VECM) Granger causality test can be used (Sarıkovanlık et al., 2019: p.132). In this context, the model estimate established for Johansen cointegration analysis is as follows.

$$LMUR_t = \beta_0 + \beta_1 LGDP_t + \beta_2 INF_t + \beta_3 EMP_t + \varepsilon_t \quad (1)$$

4.1.2. Toda-Yamamoto Causality Test

In the Toda-Yamamoto (1995) causality test, the series of variables are estimated using the Vector Autoregressive (VAR) model with their level values, regardless of whether they are integrated of the same order. It is determined (k+dmax) after determining the appropriate lag length (k) determined by the information criteria in the VAR system and the maximum stationarity degree (dmax) determined by the unit root tests of the variables used (Amiri and Ventelou, 2012). In the VAR estimation system (k+dmax), it is equalized to zero as a group, and the H_0 hypothesis is analyzed using the Modified Wald test (MWALD) test to determine whether there is a causality relationship.

In this study, the research models to be examined with the help of Toda-Yamamoto technique are as follows (Amiri and Ventelou, 2012; Dritsaki, 2017).

$$lmur_t = \mu_0 + \left(\sum_{i=1}^{k} a_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} a_{2i} lmur_{t-i} \right) + \left(\sum_{i=1}^{k} \beta_{1i} lgdp_{t-i} + \sum_{i=k+1}^{k+d_{max}} \beta_{2i} lgdp_{t-i} \right) + \varepsilon_{1t} \quad (2)$$

$$lgdp_t = \lambda_0 + \left(\sum_{i=1}^{k} \gamma_{1i} lgdp_{t-i} + \sum_{i=k+1}^{k+d_{max}} \gamma_{2i} lgdp_{t-i} \right) + \left(\sum_{i=1}^{k} \delta_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} \delta_{2i} lmur_{t-i} \right) + \varepsilon_{2t} \quad (3)$$

$$lmur_t = \chi_0 + \left(\sum_{i=1}^{k} \gamma_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} \gamma_{2i} lmur_{t-i} \right) + \left(\sum_{i=1}^{k} \Lambda_{1i} inf_{t-i} + \sum_{i=k+1}^{k+d_{max}} \Lambda_{2i} inf_{t-i} \right) + \varepsilon_{5t} \quad (4)$$

$$inf_t = \theta_0 + \left(\sum_{i=1}^{k} \varphi_{1i} inf_{t-i} + \sum_{i=k+1}^{k+d_{max}} \varphi_{2i} inf_{t-i} \right) + \left(\sum_{i=1}^{k} \psi_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} \psi_{2i} lmur_{t-i} \right) + \varepsilon_{6t} \quad (5)$$

$$lmur_t = \phi_0 + \left(\sum_{i=1}^{k} y_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} y_{2i} lmur_{t-i} \right) + \left(\sum_{i=1}^{k} \varsigma_{1i} emp_{t-i} + \sum_{i=k+1}^{k+d_{max}} \varsigma_{2i} emp_{t-i} \right) + \varepsilon_{7t} \quad (6)$$

$$emp_t = 6_0 + \left(\sum_{i=1}^{k} \Psi_{1i} emp_{t-i} + \sum_{i=k+1}^{k+d_{max}} \Psi_{2i} emp_{t-i} \right) + \left(\sum_{i=1}^{k} \text{¥}_{1i} lmur_{t-i} + \sum_{i=k+1}^{k+d_{max}} \text{¥}_{2i} lmur_{t-i} \right) + \varepsilon_{8t} \quad (7)$$

In the above equations, it has been decided whether there is a causal relationship between lmur and lgdp, inf, and emp by examining through the MWALD technique. The null hypotheses for these equations are $H_0=\beta_{1i}=0$, i=1…..k; $H_0=\delta_{1i}=0$, i=1…..k; $H_0=\Lambda_{1i}=0$, i=1…..k; $H_0=\psi_{1i}=0$, i=1……k; $H_0=\varsigma_{1i}=0$, i=1…..k; $H_0=\text{¥}_{1i}=0$, i=1…..k; and the causality relationship is examined by testing with the MWALD technique for k lags. If the calculated MWALD test statistic is greater than the k degree of freedom χ^2 table value, the null hypothesis will be rejected, and the existence of a causal relationship will be accepted.

4.2. Findings of the Analysis

In the econometric analysis, primarily, the variables that make up the research model are seasonally adjusted with the Census X-12 technique, since they are quarterly data. Seasonality can cover periods such as six months, three months, or one month (Sevüktekin and Çınar, 2017). After this process, the stationarity test of the variables was carried out to determine the d_{max}. The results of the analysis using the Phillips-Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) techniques are shown in Table 2. The L at the beginning of the variables in the table refers to the logarithmic transformation.

Table 2. PP Unit Root Test Results

Variables	Level			1st Difference		
	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None
LMUR_SA	-3.042**	-5.388***	0.649	-11.344***	-11.031***	-10.618***
	(0.039)	*(0.000)*	*(0.852)*	*(0.000)*	*(0.000)*	*(0.000)*
LGDP_SA	-0.269	-2.892	13.111	-9.977***	-9.835***	-3.341***
	(0.920)	*(0.175)*	*(1.000)*	*(0.000)*	*(0.000)*	*(0.001)*
INF_SA	-0.799	-1.781	0.665	-2.382**	-2.367**	-2.192***
	(0.817)	*(0.704)*	*(0.855)*	*(0.022)*	*(0.016)*	*(0.000)*
EMP_SA	-1.896	-2.333	-0.487	-4.492***	-4.435***	-4.565***
	(0.330)	*(0.407)*	*(0.498)*	*(0.000)*	*(0.000)*	*(0.000)*

Note: ***, **; significance at 1% and 5%, respectively.

According to the results of the PP unit root test in the table, it is found that all variables are at 1st difference. The results of the KPSS unit root test are given in Table 3. According to the test results, it is seen that all variables are stationary at the first level.

Table 3. Results of the KPSS Unit Root Test

Variables	Level		1st Difference	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept
LMUR_SA	0.774	0.162	0.351[a]	0.308[b]
LGDP_SA	0.780	0.133	0.095[c]	0.098[d]
INF_SA	0.518	0.174	0.097[e]	0.057[f]
EMP_SA	0.533	0.138	0.081[g]	0.082[h]

Note: Significance: KPSS Table critical values in intercept model a: 0.739 at 1%, 0.463 at 5%; in trend and intercept model b: 0.316 at 1%, 0.364 at 5%, 0.564 at 10%; c: 0.739 at 1%, 0.463 at 5%, 0.347 at 10%; in trend and intercept model d: 0.216 at 1%, 0.146 in 5%, 0.119 at 10%; in intercept model e: 0.739 at 1%, 0.463 at 5%, 0.347 at 10%; f in trend and intercept model: 0.216 at 1%, 0.146 in 5%, 0.119% at 10%; in intercept model g: 0.739 at 1%, 0.463 at 5%, 0.347 at 10%; h in trend and intercept model: 0.216 at 1%, 0.146 at 5%, 0.119 at 10%.

Table 4 illustrates descriptive statistical information about the variables used in the analysis. The logarithmic values of MUR and GDP variables in terms of amount are shown in the Table in order to eliminate the scale difference between the MUR and GDP variables and the INF and EMP variables. Accordingly, while the average LMUR has been 6.672, LGDP has been calculated as 8.740, INF 9.583, and EMP 11.703. In addition, the number of observations is 40, which is sufficient for analysis.

Table 4. Descriptive Statistical Indicators

Variables	Mean	Median	Maxsimum	Minimum	Std. Dev.	Observations
LMUR_SA	6.672	6.791	9.152	5.389	0.644	40
LGDP_SA	8.740	8.731	9.050	8.428	0.179	40
INF_SA	9.583	8.234	19.833	6.003	3.478	40
EMP_SA	11.703	10.471	23.980	6.742	4.231	40

After testing the stationarity and unit root tests of the variables in the model, the appropriate lag length has been determined by creating a VAR system. The delay length has been calculated by using the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quin Information Criterion (HQ) information criteria. The results obtained are presented in Table 5.

Table 5. VAR Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-167.336	NA	0.12368	9.26143	9.43558	9.32283
1	10.5143	307.633	1.98e-05	0.51273	1.38350	0.81972
2	41.5144	46.9190*	9.08e-06*	– 0.29807*	1.26930*	0.25449*
3	49.3442	10.1575	1.54e-05	0.14355	2.40754	0.94171

Note: * Optimal lag length

According to the results in Table 4, it is determined as k=2. It is also shown in Figure 2 that the inverse roots of the VAR (1) system are located in the unit circle and that the stability condition of the system is met.

Figure 2. Inverse Roots of AR Characteristic Polynomial

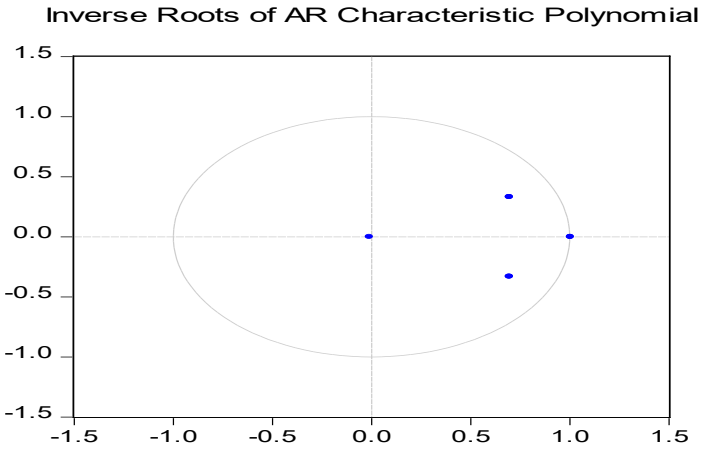


Table 6 contains summary cointegration statistical information for the determination of the model and selection of information criterion. Accordingly, it is found that there is a cointegration relationship in the linear intercept trend model, which is the fourth model. In this model, Akaike, the information criterion with the lowest error, has been preferred.

Table 6. Johansen Cointegration Test Summary

Data Trend	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	2	1	0	1	2
Max-Eig.	0	1	0	0	0
Log Likelihood					
0	34.08175	34.08175	40.79305	40.79305	42.44338
1	51.52394	52.93368	59.40185	62.08628	63.72931
2	58.56741	66.22291	72.65022	76.22601	77.84443
3	61.24405	73.18032	75.25194	87.10954	87.64238
4	61.28571	75.52459	75.52459	88.71147	88.71147
Akaike Information Criteria					
0	0.773236	0.773236	0.622608	0.622608	0.753146
1	0.248670	0.225907	0.033231	-0.060349	0.015038
2	0.301811	-0.012384	-0.258346	-0.345890	-0.324690
3	0.597553	0.101093	0.041559	– 0.450530*	-0.424577
4	1.039683	0.470856	0.470856	-0.039526	-0.039526

Schwarz Criteria					
0	2.884594	2.884594	2.909913	2.909913	3.216397
1	2.711922	2.733145	2.672429	2.622836*	2.830183
2	3.116955	2.890734	2.732746	2.733175	2.842347
3	3.764591	3.400091	3.384543	3.024414	3.094354
4	4.558614	4.165733	4.165733	3.831298	3.831298

Note:*Information criterion with a cointegration relationship

The results of the Johansen cointegration analysis used to determine the long-term relationship between the series of the variables in the research model are indicated in Table 7. Accordingly, the series are cointegrated in the long run. In other words, the LMUR variable and the LGDP, EMP, and INF variables act together statistically in the same way over a long period of time.

Table 7. Johansen Cointegration Test Results

H_0	Eigenvalue	Trace Statistic	Critical Value (0.05)	Prob.	H_0	Eigenvalue	Max-Eigen Statistic	Critical Value (0.05)	Prob.
None r=0*	0.693	95.836	63.876	0.000	None r=0*	0.693	42.586	32.118	0.001
At most 1*	0.544	53.250	42.915	0.003	At most 1*	0.544	28.279	25.823	0.023

Note: * Expresses the cointegration relationship between the series

In order to determine the validity of Johansen cointegration results in Table 7, an autocorrelation and heteroskedasticity tests has been performed. The LM test has been used for autocorrelation and the White test for heteroscedasticity. The findings of these tests are shown in Table 8. In regards to the results in Table, it has been tested up to the 10th lag length to determine whether there has been autocorrelation in the research model and it is determined that there is no autocorrelation problem in the model. Moreover, there is no heteroscedasticity problem in the model pursuant to the white test result.

Table 8. Autocorrelation (LM) ve Heteroskedasticity (White) Test Results

Lag	LR Stat.	Prob.	Lag	LR Stat.	Prob.
1	12.08438	0.7408	**6**	23.53935	0.1025
2	13.54281	0.6360	**7**	15.31405	0.5056
3	15.46540	0.4947	**8**	23.72243	0.0982
4	30.52093	0.0162	**9**	17.72630	0.3442
5	22.25363	0.1381	**10**	17.94731	0.3310
White Test 165.845 0.359					

After the long-term relationship between the dependent and independent variables that make up the research model, VEC Granger causality analysis has been performed to examine the short-term causality relationship between the variables. According to the analysis results in Table 9, it is seen that

there is a unidirectional causality from LGDP_SA and LEMP_SA variables to LMUR_SA variable

Table 9. VEC Granger Causality/Block Exogeneity Wald Tests Results

Dependent Variable: D(LMUR_SA)			
Excluded	**Chi-sq**	**df**	**Prob.**
D(LGDP_SA)	7.939628	2	0.0473
D(EMP_SA)	10.27433	2	0.0164
D(INF_SA)	2.050798	2	0.5619
All	23.565	6	0.005
Dependent Variable: D(LGDP_SA)			
Excluded	**Chi-sq**	**df**	**Prob.**
D(LMUR)	2.713552	2	0.4379
D(EMP_SA)	2.163272	2	0.5392
D(INF_SA)	0.658717	2	0.8829
All	9.770994	6	0.3693
Dependent Variable: D(EMP_SA)			
Excluded	**Chi-sq**	**df**	**Prob.**
D(LMUR)	5.282567	2	0.1522
D(LGDP_SA)	3.644563	2	0.3025
D(INF_SA)	7.961109	2	0.0468
All	29.20893	6	0.0006
Dependent Variable: D(INF_SA)			
Excluded	**Chi-sq**	**df**	**Prob.**
D(LMUR)	0.547914	2	0.9082
D(LGDP_SA)	0.601195	2	0.8962
D(EMP_SA)	8.044009	2	0.0451
All	8.881286	6	0.4483

Note: D, refers to 1st difference

VAR (k+dmax)=VAR(2+1=3) has been estimated using the Seemingly Unrelated Regression (SUR) technique. The results obtained from the analysis are stated in Table 10.

Table 10. Toda-Yamamoto Causality Test Result

Hypothesis	**X^2 Table Value**	**Prob.**	**Decision**	**Result**	**Evaluation**
$H_0=\beta_{1i}=0$	10.236	0.016**	H_0=reject	lgdp → lmur	Two-way Causality
$H_0=\delta_{1i}=0$	8.697	0.033**	H_0=reject	lmur → lgdp	
$H_0=\Lambda_{1i}=0$	4.115	0.127	H_0=accept	lnf O lmur	One-way Causality
$H_0=\psi_{1i}=0$	6.777	0.022**	H_0=reject	lmur → Inf	
$H_0=\varsigma_{1i}=0$	28.949	0.000***	H_0=reject	emp → lmur	Two-way Causality
$H_0=¥_{1i}=0$	26.481	0.000***	H_0=reject	lmur → emp	

Note: ***, **; significance at 1% and 5%, respectively. O: Indicates that there is no causality relationship.
→ :Refers to the direction of the relationship.

According to the results of the MWALD analysis in the table, it is seen that the H_0 hypothesis, that there is no causality relationship between lgdp and lmur, has been rejected. This conclusion also applies to the hypothesis that there is no causality from lmur to lgdp. In other words, a two-way causality relationship is found between lmur and lgdp at a statistical significance at 5% level. While the H_0 hypothesis that there is no causal relationship from inf to lmur cannot be rejected, the H_0 hypothesis that there is no causality relationship from lmur to inf has been rejected. In other words, a one-way causality relationship has been determined from lmur to inf. Finally, the H_0 hypothesis, which has been established that there is no causality relationship from emp to lmur, and the H_0 hypothesis, which has been established that there is no causality relationship from lmur to emp, is rejected. In other words, a two-way causality relationship has been determined between these two variables at a statistical significance level of 1%.

5. Conclusion and Recommendations

Murabaha, one of the participation finance products and used extensively by participation banks, is the process of selling a product by adding some profit to the cost, following the notification of the cost to the customer. Participation banking sector, which is the implementer of participation finance products, is in a rapid growth trend in our country as well as in the world. According to the Islamic Financial Services Agency-IFSB report, in the third quarter of 2020, the global interest-free banking assets increased to $1.8 trillion (IFSB, 2021). On the other hand, according to the data of the Association of Participation Banks of Turkey, the largest amount of assets of participation banks in the Turkish banking sector is at the level of 7.5% (PBAT-Participation Banks Association of Turkey, 2021). In this context, it is extremely important to investigate the relationship of murabaha, which is among the most used financial products in participation banking, with Turkey economic growth and other macroeconomic dynamics.

In the light of the above information, the causality relationship between the murabaha participation finance product and macroeconomic dynamics has been investigated in this study. In this direction, gross domestic product, inflation rate and employment rate variables used as macroeconomic indicators and murabaha in the study have been examined by Johansen cointegration test, VECM Granger causality and Toda-Yamamoto causality test. In the empirical study, first of all, quarterly series are seasonally adjusted and variables in terms of amount are subjected to logarithmic transformation. The results obtained from the analysis of this study are similar to the results of the studies in the literature. For example, the study results conducted by Almsafir and Alsmadi (2014), Ahmad et al. (2015), and Zahid and Basit (2018) noted that participation banking and murabaha finance had a significant impact on the growth of the country's economies and macroeconomic variables.

The findings obtained from the econometric analysis and the evaluations related to it can be listed as follows.

1-With respect to Johansen cointegration analysis references, murabaha and GDP, employment rate and inflation rate variables are cointegrated in the long run. In other words, the variables in question move together in the same direction over a long period of time.

2-According to the result obtained from the Toda-Yamamoto long-term causality analysis, a two-way causality relationship has been found between murabaha financial product and GDP. It could be said that murabaha, which is used by participation banks based on financial trading, is a reason for economic growth and contributes to growth. This situation is mutually supportive of each other. A two-way causality relationship has been found between the employment rate and murabaha. The result obtained shows that the increase/decrease in the amount of financing based on murabaha may affect the investments and accordingly the level of employment may change. A one-way causality relationship is determined between the murabaha and the inflation rate from the murabaha to the inflation rate. In particular, due to the increase in the money supply, it will be able to contribute to the increase in investments by encouraging credit and financing opportunities provided by banks. In this case, it is essential to take the necessary strategic measures in accordance with the equilibrium policy in order to create a potential for a possible increase in inflation.

3-In line with the VECM Granger Causality/Block Exogeneity Wald test results, a statistically unidirectional causality has been found from GDP and employment variable to Murabaha variable.

4-As a result, it has been revealed that there is a long-term causality relationship between the macroeconomic variables discussed in this study and the murabaha financial product, and therefore the increase or decrease between the macroeconomic variables is the reason for the increase or decrease in the use of murabaha finance. For future studies, the causality between the loans given concening the activity types of the banks and the macroeconomic variables would be examined comparatively.

References

Abdul, W.A. (2015). The role of Islamic banking on economic growth in Kenya, University of Nairobi, Unpublished Master Thesis.

Adebola, S.S., Yusoff, W.S.W., & Dahalan, J. (2011). The impact of macroeconomic variables on Islamic banks financing in Malaysia. *Research Journal of Finance and Accounting, 2*(4), 22-33.

Ahmad, N., Yazis, M., & Oudat, M.S. (2015). Analysis long-run and short-run relationships between macroeconomic variables and murabaha to the purchase-order: Evidence from Jordanian Islamic bank. *International Journal of Economics and Finance, 7*(2), 168-177.

Ahmed, H. (2014). Islamic banking and shari'ah compliance: A product development perspective. *Journal of Islamic Finance, 3*(2), 15-29.

Akhtar, B., Akhter, W., & Muhammad S. (2017). Determinants of deposits in conventional and Islamic banking: A case of an emerging economy. *International Journal of Emerging Markets, 12*(2), 296-309.

Aktepe, İ. E., & Dereci, M. (2019). İslam hukukunda akit teorisi ve katılım bankacılığında akitler, Yaşayan ve Gelişen Katılım Bankacılığı, Görmüş, Ş./Albayrak, R. A. (Ed.), *İstanbul, TKBB.*

Al-Fawwaz, T. M., Alawneh, A. M., & Shawaqfeh, G. N. (2015). The impact of Islamic finance on some macroeconomic variables: a case study of Jordan Islamic bank. *Interdisciplinary Journal of Contemporary Research Business, 7*(1), 10-30.

Almsafir, M. K., & Alsmadi, A. A. (2014). Murabahah versus interest rate, the equilibrium relationship with macroeconomic variables in Jordanian economy: An ARDL approach. *Procedia Social and Behavioral Sciences, 29,* 349-357.

Amiri, A., & Ventelou, B. (2012). Granger causality between total expenditure on health and gdp in OECD: Evidence from the toda-yamamoto approach. *Economics Letters, 116*, 541-544.

Askari, H., Iqbal, Z., & Mirakhor, A. (2015). Introduction to Islamic economics: Theory and application, Singapur: John Wiley&Sons.

Banking Law No. 5411. https://www.bddk.org.tr/Mevzuat/DokumanGetir/961, (Accessed on 11.10.2021).

Bhatti, M. (2015). Taxation treatment of Islamic finance products in Australia. *Deakin Law Review, 20*(2), 263-298.

Canbaz, M. (2016). Katılım bankacılığı, First Edition, İstanbul: Beta

Chelhi, K., El Hachloufi, M., Eddaoui, A., & Marzak, A. (2020). Aplication of data mining in Islamic banking for modeling of murabaha product return risk in a macroeconomic context. *International Journal of Information Science&Technology, 4*(1), 19-27.

Dritsaki, C. (2017). Toda-yamamoto causality test between inflation and nominal interest rates: Evidence from three countries of Europe. *International Journal of Economics and Financial Issues, 7*(6), 120-129.

El-Galfy, A., & Khiyar, K. A. (2012). Islamic banking and economic growth: A review. *The Journal of Applied Business Research, 28*(5), 943-856.

Engle, R.F. & Granger, C.W.J. (1987). Co-integration and error correction: Representation, estimation, and testing. *Econometrica, 55,* 251-276.

Furqani, H., & Mulyany, R. (2009). Islamic banking and economic growth: Empirical evidence from Malaysia. *Journal of Economic Cooperation and Development, 30*(2), 59-74.

Hamdow Gad Elkreem, B. (2017). Impact of Islamic models of finance on economic growth through financial stability. *Journal of Business&Financial Affairs, 6*(1), 1-7.

Hassan, A., & Mollah, S. (2018). Islamic finance ethical underpinnings, products, and institutions, Switzerland: Palgrave Macmillan.

Hussain, G., Hafeez, M., & Batool, H. (2021). Islamic models of finance and economic growth: A mediating role of financial stability in case of Islamic countries. *Elementary Education Online, 20*(5), 5298-5307.

IFSB-Islamic Financial Services Board (2021). https://www.ifsb.org/sec03.php, (Accessed on 16.10.2021).

Johansen, S. (1998). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control, 12*, 231-254.

Johansen, S. & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics, 52*(2), 160-210.

Khan, H. F. (2017). Islamic banking: On its way to globalization. *International Journal of Management Research & Review, 7*(11), 1006-1014.

Khotijah, S. A., & Iswanaji, C. (2020). Analysis of the effect of murabaha finance in sharia banks on the economic growth of agricultural sector. *Jurnal Ekonomi dan Keuangan Syariah, 4*(2), 246-259.

Maljichi, D. N. (2017). The gate to Islamic finance. *Vizione, 28*, 349-356.

Manap, T. A. A., Abduh, M., & Omar, M. A. (2012). Islamic banking-growth nexus: Evidence from Toda-Yamamoto and bootsrap granger causality test. *Journal of Islamic Finance, 1*(1), 59-66.

Mert, M., & Çağlar, A. E. (2019). Eviews ve Gauss uygulamalı zaman serileri analizi, First Edition, Ankara: Detay.

Nahar, S., & Sarker, N. (2016). Are macroeconomic factors substantially influential for Islamic bank financing? cross-country evidence. *Journal of Business and Management, 18*(6), 20-27.

PBAT-Participation Banks Association of Turkey (2021). https://tkbb.org.tr/veri/sektormukayese, (Accessed on: 13.11.2021).

Rabaa, B., & Younes, B. (2016). The impact of the Islamic banks performances on economic growth: Using panel data. *International Journal of Economics and Finance Studies, 8*(1), 101-111.

Rifki, I. (2014). Assessing the gold murabahah in Islamic banking. *International Journal of Commerce and Management, 24*(4), 367-382.

Salman, A., & Nawaz, H. (2018). Islamic financial system and conventional banking: A comparison. *Arab Economic and Business Journal, 13,* 155-167.

Sarıkovanlık, V., Koy, A., Akkaya, M., Yıldırım, H. H., & Kantar, L. (2019). Finans biliminde ekonometri uygulamaları kavram uygulama analiz, First Edition, Ankara: Seçkin.

Sevüktekin, M., & Çınar, M. (2017). Ekonometrik zaman serileri analizi eviews uygulamalı, Fifth Edition, Bursa: Dora.

Shahbaz, M., & Rahman, M. M. (2012). The dynamic of financial development, import, foreign direct investment, and economic growth: Cointegration and causality analysis in Pakistan. *Global Business Review, 13*(2), 201-219.

Syahputra, D., & Ningsih, S. (2020). The effect of murabaha financing and sharia bank musharaka financing to gross domestic product. *International Conference Communication and Social Sciences, 1*(1), 148-158.

Tabash, M. I., & Dhankar, R. S. (2014). The flow of Islamic finance and economic growth: An empirical evidence of Middle East. *Journal of Finance and Accounting, 2*(1), 11-19.

Toda, H.Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics, 66*, 225-250.

Yanpar, A. (2015). İslami finans, ilkeler, araçlar ve kurumlar, İstanbul: Scala.

Yazdan, G.F., & Hossein, S.S.M. (2012). Analysis of Islamic bank's financing and economic growth: Case study Iran and Indonesia. *Journal of Economic Cooperation and Development, 33*(4), 1-24.

Yurttadur, M., & Yıldız, İ. (2017). Faizsiz finans, First Edition, İstanbul: Beta.

Zahid, S., & Basit, AB. (2018). Impact of Macroeconomic factors on the growth of Islamic banking: A case of Pakistan. *Journal of Finance&Economics Research, 3*(2), 37-50.

Warde, I. (2000). Islamic finance in the global economy, Edinburg University Press.