



## **Analyzing the Role of Money Balances as a factor of Output in Context of Globalization: A Case Study of Bahrain**

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### **ABSTRACT**

The nexus between money and output is regaining attention from researchers after recent global financial crisis. Likewise, globalization-output nexus also grabs the attention of researchers. Henceforth, the study is design to analyze the effect of real money balances and globalization on output by incorporating real money balances and globalization in Cobb-Douglas production function. Time series data has been analyzed and all variables of the study are tested for order of integration through unit root test. So, it is found that that all variables are integrated of first order so one cannot apply ordinary least squares. This is the reason that Johansen cointegration technique and the cointegration regression, fully modified least squares, are applied for long run relationship and long run estimates respectively. The cointegration technique confirmed long run relationship among variables thus; it is concluded that real money balances and globalization are important determinants of output in the Kingdom of Bahrain. Furthermore, results of the study show that real money balances and globalization are found to have positive and significant effect on output along with labor and capital. Thus, this study concludes that real money balances and globalization are important factors of output in the Kingdom of Bahrain and monetary authorities should consider real money balances and globalization in policy making for sustainable economic growth.



## **1. Introduction**

The neoclassical production function illustrates the nexus between real output and real inputs. However, producers utilize money balances to acquire inputs and combine and organize them in production process. Henceforth, real money balances can be incorporated as a vital factor of production and can contribute to economic growth in the economy (Ben-Zion & Ruttan, 1975; Fischer, 1974; Habibullah, 1988; M Aynul Hasan & Mahmud, 1993). Besides, money is the one good for which all other goods are exchanged. Hence its use, as a medium of exchange, eliminates the characteristic of double coincidence of wants that is one of the problems associated with barter system. Moreover, by sparing labor and capital from distribution and to

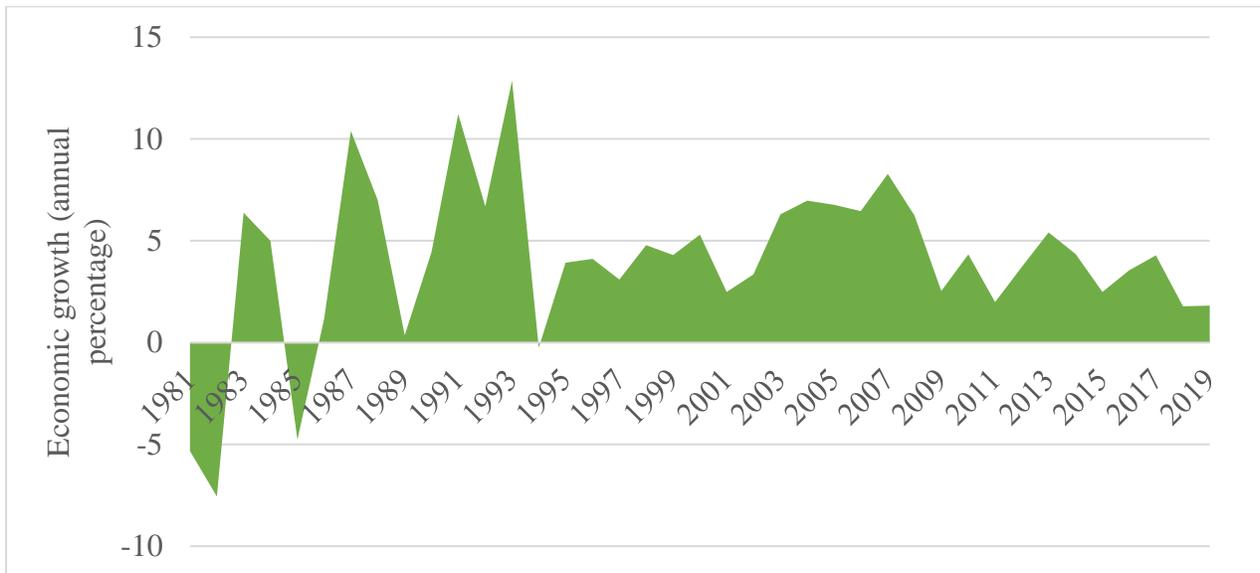
engaged in production, holdings of money balances making it promising for the production sector to save capital and labor that would might engaged in the exchange of goods and services. Likewise, money makes it possible to expand market exchange system and improves market efficiency as it works as a a resource-saving device (Nourzad, 2002; Shair et al., 2021).

Simionescu, Balcerzak, Bilan, and Kotásková (2018) and Zhuang et al. (2021)opined that the effectiveness of monetary policy and whether money can influence output is in the core of modern macroeconomics. Moreover, a sound and sustainable economic growth is related to sustainable monetary policy thus; the nexus between money and output grabs the attention from academicians, researchers and policy makers. However, Andrés Domingo, López Salido, and Vallés Liberal (2002) of the view that it may not be possible that money influences output without an adequate money supply, domestic credit and sound financial conditions (Chien, Hsu, Zhang, Vu, & Nawaz, 2021). Despite of these conditions, the nexus between economic growth and money received attention in the empirical literature as money plays an important role in industrialized as well as in emerging economies (Hussain & Haque, 2017; Yang & Shafiq, 2020). In the Keynesian perspectives, money does not matter for long run growth while in monetarists perspectives money matters for economic growth. This is the reason that in the new Keynesian perspectives money can influence real variables in the short run so money can influence output and hence, economic growth (Hussain & Haque, 2017). Besides, globalization-economic growth nexus also grabs attention of empirical researchers as globalization it leads to income and new business opportunities, helps in technological transfer and access to global capital henceforth promotes economic growth (Bhatti & Fazal, 2020; Kilic, 2015; Shittu, Hassan, & Nawaz, 2018).

The Kingdom of Bahrain initiated diversification policies in late 1970s and it was once of the first state in GCC who officially initiated diversification idea in order to prepared itself for post-oil and gas period. Henceforth; policy measures were taken to diversify and liberalize its economy to achieve social and economic prosperity of the country. However, oil sector still generates 70 percent of government revenue and 60 percent of exports. Moreover, in order to reduce reliance on oil, government of Bahrain improved infrastructure of the Kingdom by initiating structural reforms. Besides, the structural reforms made the Kingdom of Bahrain an open economy with liberalized capital account and trade and also, these reforms helped the Kingdom to become a preferred destination for investors. However, fiscal deficits are accumulating in Bahrain as economic growth is moderating due to weak aggregate demand. Likewise, international reserves are fading as current account is in deficit and putting pressure on exchange rate. Kingdom of Bahrain took austerity measures but still found itself more vulnerable country in the Gulf Cooperation Council (GCC) as it has low savings and is highly indebted thus; the Kingdom is highly exposed to financing risks. If one looks into economic growth over the years, then it will be more clear why the Kingdom is highly indebted and is most vulnerable country in GCC. Economic growth of the Kingdom of Bahrain remains very volatile between 1981-2019 as it was as low as below (-7) percent in 1982 and reached to its maximum value of more than 10 percent in 1987. Bahrain economic growth on average remained below 1.5 percent during 1980s while it remained on average above 5.6 percent during 1990s and 2000 and 2010. However, economic growth rate of Bahrain dropped to 3.3 percent during 2011 and 2019 (World Bank, 2020).

Figure 1 displays economic growth rate of Bahrain for the period from 1981 to 2019. In order to sustain economic growth and to provide better living of standards to masses the Kingdom of Bahrain initiated the Bahrain's Economic Vision 2030 back in 2008. The core of this vision lies in making Bahrain a global contender instead of regional and in align with Sustainable Development Goals (SDGs) and the vision encompasses the three principles, sustainability, competitiveness, and fairness. Sustainability in the Bahrain's Economic Vision 2030 means that the Kingdom of Bahrain is expecting to strengthen economy and to boring sustainable economic prosperity by ensuring sound and viable economic growth through private sector. However, it has to be ensured that economic prosperity is not coming at the expense of environment and not erupting the cultural heritage of the Kingdom of Bahrain. As for as competitiveness is concerned, the Kingdom of Bahrain will educate and train the masses and where possible will attract foreign skillful labor with attractive packages. Additionally, local as well as foreign businesses will be encouraged to invest in Bahrain so all this will enhance competition locally and

will enable the Kingdom to be competitive globally. There is a negative relation exist between taxation and FDI (Shafiq, Hua, Bhatti, & Gillani, 2021). Similarly, fairness in the economic vision means that masses have equal access and are to be treated equally under the law. Special care will be taken to ensure human rights in the Kingdom so each and every of the society contribute in the economic prosperity of the Kingdom. All this would be possible by encouraging and promoting private sector not only to contribute to economic growth but also to help in making Bahrain's economy a diversified economy against an oil dependent economy. The economic vision stressed on to promote and encourage competition, specialization and innovation. This is the reason that economic development board (EDB) initiated economic and institutional reforms to achieve the targets set in the Bahrain's Economic Vision 2030 and designed first ever economic strategic policy for the Kingdom (Government of Bahrain, 2021).



**Figure 1: Bahrain's Annual Economic Growth Rate**  
**Source: World Bank (2021)**

As the Kingdom's economic growth remained volatile and most vulnerable country to financial risks, researchers devoted some empirical studies to investigate the determinants of economic growth in Bahrain. For instance, Rehman, Ali, and Nasir (2015) examined impact of financial development and savings on economic growth in Bahrain whereas Fazal, Gillani, Amjad, and Haider (2020); Hanan (2018) and Nawaz, Ahmadk, Hussain, and Bhatti (2020) investigated effect of energy and financial development on economic growth. However, researchers did not come across any study that investigated real money balances and globalization effect on economic growth in the Kingdom of Bahrain. Hence, this study is a novel study for Bahrain as it will investigate the role of money balances as a factor of production in context of globalization in Bahrain along with capital and labor in Cobb-Douglas production framework.

Rest of this empirical study is organized in such a way that review of literature is discussed in second section and research methodology is followed in third section. Results and discussion are discussed in fourth section while last section concludes the study.

## **2. Literature Review**

### **2.1. Real Money Balances and Output**

Numerous empirical studies are devoted that examined effect of money on output however; these studies results are inconclusive about the effect of money on economic growth. For instance, Sinai and Stokes (1972) argued that real money balances are omitted variable from the production function thus, real money balances are incorporated in the production process and estimated the Cobb-Douglas Production function through least squares for the US economy. They examined annual data from 1929 to 1967 and found that the Cobb-Douglas functions reveal increasing returns to scale. The results of the study indicate that real money balances are an

important factor of output along with labor and capital. Thus, the results support the view that real money balances are a producer's good, an assumption made in some neoclassical monetary models of growth. This is the reason that once again real money balances are tested as a factor of production by Short (1979) and estimated the Cobb-Douglas production function for the US economy by including real money balances as a factor of production. In this study, Cobb-Douglas production function and translog structural models were estimated through time series data and results show that real money balances exhibit positive impact on output in these two models. The results support to consider money balances as a factor of output along with conventional production variables. In developing country context, Khan and Ahmad (1985) examined the real money balances in the production function for Pakistan. The Cobb-Douglas production function was estimated using simultaneous equation models. The empirical results confirmed money balances as a vital factor of production along with labor and capital. Moreover, estimated production function reveals increasing returns to scale. However, after fitting in money balances in production, coefficient of labor has been reduced while no effect has been witnessed as for as capital is concerned.

Recently after global financial crisis of 2007-08, many empirical studies tested money neutrality in different countries and regions. For instance, Chuku (2009) was interested to gauge the effectiveness of monetary policy on output as well as on price level in Nigeria. Monetary policy indicators are evaluated to find out the impact of monetary policy on output and price stability. The study found that money supply is the most influential tool of monetary policy in Nigeria as its effect on output and price level is high comparative to other tools of monetary policy. Likewise, the study conducted by Babatunde and Shuaibu (2011) for Nigerian economy concluded that money supply positively affect economic growth. Similarly, study carried out by Inam (2014) for same economy reached to conclusion that money is an important factor of long run economic growth. In a study conducted by Hussain and Haque (2017) determined that money supply positively influenced economic growth in long run in Bangladesh. Likewise, Chaitip, Chokethaworn, Chaiboonsri, and Khounkhalax (2015) in the context of East Asian countries, also concluded that money supply positively affect long run economic growth in some East Asian countries. In a panel setting, the study carried out by Morteza and Farahani (2016) in natural-resource-producing countries reached to the conclusion that money supply does not have positive and significant effect on economic growth. In a comparative study for Czech Republic and Romania, Simionescu et al. (2018) examined the impact of money on output. They analyzed quarterly time series data covering period from 1995 to 2014 for both mentioned countries and reached to conclusion that findings of the study reject monetary neutrality as money can influence output in both time spans i.e. short run and long run.

Audu, Yaaba, and Ibrahim (2018) carried out study to explore the nexus among money supply, inflation and output in case of Nigeria. They argued that ever evolving financial development is compelling researchers to investigate causes, nexus and changes in money aggregates and their link with macroeconomic variables. They emphasized on the stable nexus between monetary aggregated and output and opined that this stable relationship would make possible to come up with appropriate monetary policy. Moreover, results of their study documented that high monetary aggregates of money supply are responsible for altering output in Nigeria and suggested that monetary authorities might consider high monetary aggregates than lower aggregates in Nigeria for sound economic growth.

In a study for Indonesia, Kurniasih (2019) tested the effect of money supply on economic growth along with exports, investment and inflation in Indonesia. He applied regression technique as well as error correction mechanism to examine effect of stated factors on economic growth. The results of his study indicate that investment and exports are positively associated with economic growth whereas money supply and inflation are having negative significant effect on economic growth. From empirical studies discussed above, it can be concluded that money as a factor of production is not true in each and every case that's why it is advisable to test whether money acts as a factor of production in a specific country.

From the above literature it can be concluded that money balances are important factor of output henceforth; of economic growth in long run as number of studies for instance,

(Babatunde & Shuaibu, 2011; Hussain & Haque, 2017; Simionescu et al., 2018) find not only long run association between money and output but also reached to conclusion that money positively influence output in the long run. So, the first hypothesis of the study is as follows:

**Hypothesis I:** Real money balances positively affect out put in long run

## 2.2. Globalization and Output

Bhagwati (2004) and Bhatti, Chaudhry, and Bashir (2021) stressed on the importance of globalization for output as he argued that globalization enhances competition and hence; leads to economic growth. On other hand, Almas and Sangchoon (2010) argued that technological progress associated with globalization as a result of integration of world economies and financial markets, and lower information costs lead to increase in investment and productivity along with optimal resource allocation. Berhane (2016) carried out time series study for Ethiopia to study the impact of globalization on economic growth. He concluded that globalization is integrated in long run with economic growth and also has positive affect on economic growth of Ethiopia.

Similarly, Kilicarslan and Dumrul (2018) investigated the role of globalization as a factor of economic growth in time series study for Turkey. They applied cointegration test for long run relationship and FMOLS for long run estimates. Results of their study showed that globalization has positive affect on economic growth in Turkey. Md Abu Hasan (2019) in panel study for South Asia determined that globalization has positive and significant effect on economic growth and recommended that these countries should encourage globalization and adopt such policies that can promote globalization. Ali, Farooq, and Gillani (2020) examined effect of globalization along with other important factors on economic growth. They found a long run relationship between economic growth, FDI and globalization as they analyzed data from 1980 to 2016. Moreover, results of their study showed that globalization and FDI have positive and significant factor of economic growth in case of Pakistan.

It can be deduced from the studies of Berhane (2016); Kilicarslan and Dumrul (2018) and Ali et al. (2020) that globalization is a vital factor of output in the long run thus; the second hypothesis of the study is as follows:

**Hypothesis II: Globalization enhances output in the long run**

From the above literature it can be concluded that money balances and globalization are important factors of economic growth in long run however; effects of money balances as well as globalization on output varies across countries thus; it is recommended to examine these mentioned factors as a factor of production for a single country in which these factors are not tested. This is the reason that this study will analyze money balances and globalization as factors of production in case of Bahrain and will put forward recommendations based on research findings so that Bahrain may get sustainable economic growth.

## 3. Research Methodology

### 3.1. Theoretical Framework

In classical economics, output is the function of labor and capital. Let's denote output, labor and capital with  $Y$ ,  $L$  and  $K$  respectively. Then, production function with labor and capital as factors of production is given in Equation (1) as follows:

$$Y = f(L, K) \tag{1}$$

Considering Cobb-Douglas production function of the Equation (1), this will take us to Equation (2) as follows:

$$Y = AL^{\alpha_1}K^{\alpha_2} \tag{2}$$

Where A represents technology and  $\alpha_1$  and  $\alpha_1$  respective elasticities of labor and capital. After taking natural log of Equation (2) and considering for time series, this will take us to empirical Model (1) of the study which is given in Equation (3) as below:

$$\ln Y_t = \alpha_0 + \alpha_1 \ln L_t + \alpha_2 \ln K_t + e_t \quad (3)$$

Whereas Y, L and K presents output, labor and capital respectively. Time period in Equation (3) is denoted with t and e is error term. Besides, money received due role as a factor of output in the literature in growth models as Levhari and Patinkin (1968) put light on the importance of money in a simple growth model by considering real money as producer's good. By this they mean that money is held only because it enables producers to produce more. Thus; considering money as an inventory in this study, we directly introduce the real quantity of money into the production function. We assume that all money balances are held by the business sector of the economy, whose production function has the form

$$Y = f(L, K, M/p) \quad (4)$$

Equation (4) is different in the sense from Equation (1) that real money balances are taken as factor of output like labor and capital. This function expresses that output depends on labor, capital and real balances. The introduction of real money into production function reveals the fact that it frees labor and capital for the production and implies that the demand for them is determined by the marginal productivity principle. Besides, production functions can be applied to a single firm, an industry or to entire national output. In economics, the Cobb-Douglas production function is widely used to represent the relationship of an output to inputs. Following the framework established by Sinai and Stokes (1972) for the US economy and studies in context of developing countries like Khan and Ahmad (1985) and Kurniasih (2019) in their estimation of real money balances in the production process to trigger out the influence of money balances on output. Likewise, closely following the studies carried out such as Feridun, Olusi, and Folorunso (2006); Kilicarslan and Dumrul (2018); Maqbool-ur-Rahman (2015) and Ali et al. (2020) who determined effect of globalization on economic growth along with labor and capital; this study incorporated real money balances and globalization in production function. Moreover; the Cobb-Douglas form of the production function is assumed and considering for time series analysis, Equation (4) can take form as is shown in Equation (5).

$$Y_t = AL_t^{\alpha_1} K_t^{\alpha_2} m_t^{\alpha_3} g_t^{\alpha_4} \quad (5)$$

After taking natural log of Equation (5), the empirical Model (2) of the study is written in Equation (6) as follows:

$$\ln Y_t = \alpha_0 + \alpha_1 \ln L_t + \alpha_2 \ln K_t + \alpha_3 \ln m_t + \alpha_4 \ln g_t + e_t \quad (6)$$

Whereas, Y, L, K, m and g are indicating output (measured through gross domestic product, GDP), labor, capital, real money balances and globalization respectively and e is the error term and t represent time period. Besides,  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$  and  $\alpha_4$  are the output elasticities of labor, capital, real money balances and globalization respectively. Aggregate output is proxy with gross domestic product (GDP) and is taken in constant local currency. One can get real money balances when money is being adjusted for inflation. Thus; broad money is adjusted for inflation through consumer price index to get real money balances. Labor force is proxy with population with age group (15-64) as data on labor is not available for study period. Capital is being proxy with gross capital formation in constant local currency. Table 1 represents description of variables. Data on broad money, consumer price index, GDP, and gross capital formation, labor force is collected from World Bank online database whereas data on globalization is being gathered from KOF Swiss Economic institute online database. The KOF globalization index encompasses economic, social and political aspect of globalization. This study covers time period from 1980 to 2015 based on availability of data.

This is a time series study so first of all data on all variables will be tested for unit root (non-stationarity) problem. One can apply ordinary least squares if data is not suffering from unit root however; if data became free from unit root at first difference then it is not advisable

to apply OLS as results will be spurious. The study will apply Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller, 1979) to check unit root in the time series data. Likewise, one has to look for technique that takes variables at first difference to find long run relationship among variables thus; Johansen cointegration technique (Johansen & Juselius, 1990) will be applied to determine long run relationship. Once long run relationship is confirmed then fully modified ordinary least squares (FMOLS) cointegration regression will be applied to estimate long run coefficients of empirical Model 1 and 2 of the study. FMOLS is developed by Phillips and Hansen (1990) and this cointegration technique provides efficient and reliable estimates if variables are stationary at first difference. This cointegration regression also take care of the endogeneity problem that may arise due to cointegration process (Phillips & Hansen, 1990).

**Table 1**  
**Description of variables**

Variable	Description
Output	GDP in constant local currency
Labor	Total Population (age group, 15-64)
Capital	Gross capital formation in constant local currency
Real money balances	Broad money is adjusted for inflation through consumer price index
Globalization	KOF globalization index

## 4. Results and Discussion

### 4.1. Results Interpretation

The main objective of the study is to check real money balances as a factor of production in Bahrain. Secondly, this study also takes into account the role of globalization in production. So, time series data has been analyzed for this purpose. The first step in time series analysis is to check data for unit root (non-stationarity) problem as mostly time series data is trended. As discussed earlier that this problem will be diagnosed through unit root test, ADF test. Table 2 illustrates results of ADF unit root test. The results of ADF unit root test depicts that variables of the study are non-stationary at level. This means all variables are having unit root problem and their mean and variance is not constant over period of time. But, all these variables are stationary at first difference. Hence, it is concluded that all variables are integrated of same order i.e.  $I(1)$  or alternatively we can say that all variables are free from unit root problem at first difference. As all variables became stationary at first difference so one requires a technique that not only takes variables at first difference but also determine long run cointegration as this will confirm long run relationship among variables. Johansen cointegration is one of the technique that can serve us in this regard as it takes variables at first difference and it will give us any long run information if exists. Henceforth, the Johansen test is applied to determine the number of cointegration relationships. The results of the test are reported in Table 3. In Panel A of Table 3, results of Johansen cointegration are provided for conventional production function, as output (GDP) is function of labor and capital as was expressed in empirical Model 1 of the study. These results illustrate that the null hypothesis of no cointegration is rejected. The presence of a valid cointegration vector is confirmed from both trace statistics and maximum eigen statistics. The reason is that estimated value of these statistics are greater than their critical values. Thus, from the results it is concluded that there is a unique long run relationship among the variables of Model 1. Likewise, Panel B of Table 3 presents results of cointegration test for Model 2 when real money balances and globalization are included as factors of production.

**Table 2. Unit Root Test Results**

Variables	Level	First Difference	Conclusion
<i>log (GDP)</i>	-1.04	-4.92 ***	$I(1)$
<i>log (Labor)</i>	-2.30	-2.99**	$I(1)$
<i>log (Capital)</i>	-0.087	-4.47***	$I(1)$
<i>log (Real Money Balances)</i>	0.27	-10.48***	$I(1)$
<i>log (Globalization)</i>	-0.70	-6.91***	$I(1)$

\*, \*\*, \*\*\* show significance at 10%, 5% and 1% level respectively.

These results indicate at least two cointegration vectors thus; it is concluded from these results that real money balances and globalization are also factors of production in Bahrain like labor and capital. Now, we can move one to estimate the models of the study after long run relationship is being established.

**Table 3**  
**Cointegration Test Results**

Panel A: $Y=f(L,K)$				
No. of CE(s)	Trace Stat.	Critical Value	Max. Eigen Stat.	Critical Value
None*	66.82366	42.91525	43.92219	25.82321
At most 1	22.90147	25.87211	16.62754	19.38704
At most 2	6.273927	12.51798	6.273927	12.51798
Panel B: $Y=f(L,K, m, g)$				
None*	91.78060	69.81889	41.32353	33.87687
At most 1	50.45707	47.85613	28.33379	27.58434
At most 2	22.12328	29.79707	13.69267	21.13162
At Most 3	8.430607	15.49471	7.318717	14.26460
At Most 4	1.111890	3.841466	1.111890	3.841466

\* Indicate one cointegration vector at 5 % significance level.

Results of empirical Model (1) which is basically conventional production function are provided in Panel (A) of Table 4. These results show that coefficients of labor and capital are found statistically significant and it may be noted that Cobb-Douglas production function exhibited increasing returns to scale as the sum of the elasticities of factor inputs are greater than unity, i.e., ( $\alpha_1 + \alpha_2 = 1.50$ ). Likewise, results of empirical Model (2) of the study are provided in Panel (B) of Table 4. These results indicate that all explanatory variables are significant factors of economic growth. Importantly, real money balances and globalization are significant factors of production like labor and capital in case of the Kingdom of Bahrain. The Cobb-Douglas production function in case of second model of the study also exhibits increasing returns to scale like first model of the study as the sum of the elasticities of factor inputs are greater than unity, i.e., ( $\alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 = 2.84$ ). Comparison of both Cobb-Douglas production functions reveal that when real money balances and globalization is incorporated in the production function, the coefficients of labor and capital declined significantly from 1.32 and 0.18 to 0.68 and 0.09 respectively.

**Table 4**  
**Long run Results of FMOLS Cointegration Regression**

Panel A: $Y=f(L,K)$		
Explanatory Variables	Coefficient	t-Statistic
<i>log (Labor)</i>	1.32***	14.53
<i>log (Capital)</i>	0.18***	3.55
<i>Constant</i>	8.79***	17.30
Panel B: $Y=f(L,K, m, g)$		
<i>log (Labor)</i>	0.68**	2.52
<i>log (Capital)</i>	0.09**	2.46
<i>log (Real Money Balances)</i>	0.06***	4.56
<i>log (Globalization)</i>	2.01***	3.51
<i>Constant</i>	7.257207	9.57

\*\* and \*\*\*shows significance at 5% and 1% level respectively.

## 4.2. Result Discussion

The neoclassical production function depicts the relationship between real output and real inputs. Nevertheless, producers utilize money balances to acquire inputs and combine and organize them in production process. Henceforth, researchers (for instance, Ben-Zion and Ruttan (1975); Fischer (1974); Habibullah (1988); M Aynul Hasan and Mahmud (1993)) argued that real money balances can be incorporated as a vital factor of production and can contribute to economic growth in the economy. This study confirms the argument that real money balances are important factor of output henceforth; of economic growth in the Kingdom of Bahrain. This result confirms the first hypothesis of the study that real money balances positively affect out

put in long run. Moreover, the positive impact of real money balances on output is consistent with the findings of Sinai and Stokes (1972) for United States and Khan and Ahmad (1985) for the Pakistan. However, the findings of the current study are different from findings of the study carried out by Morteza and Farahani (2016) who investigated real money balances as a factor of production in natural resource producing countries as they concluded that money balances do not have significant impact on output. The finding of this study that real money balances significantly contributes to economic growth in case of the Kingdom of Bahrain is ample to deduce that real money balances are and have to be considered as an important factor of production in the Kingdom of Bahrain. However, until now this important factor of production function and economic growth is neglected in empirical research studies in case of the Kingdom of Bahrain. Likewise, the positive and significant effect of globalization on output assured that this study also achieved its second hypothesis that globalization enhances output in the long run. Now if one compares this finding with past studies, the positive and significant effect of globalization on economic growth resembles with other empirical studies' findings such as Feridun et al. (2006) and Maqbool-ur-Rahman (2015) who concluded that globalization positively affect economic growth. It can be deduced from the results that money and monetary policy can play a sound role in sustainable economic growth in the Kingdom and to achieve the targets set in Bahrain's Economic Vision 2030. However, if one looks into the principles set for the economic vision, one can easily find that the role of monetary policy is being ignored in the statement of the economic vision. So, it is highly recommended that monetary policy has to be design in coordination with all economic policies. This will ensure for the Kingdom to achieve sustainable economic growth in ever challenging global environment.

## **5. Conclusion**

The nexus between money and output is regaining attention from researchers after recent global financial crisis. Although various researchers based on their findings have argued that real money balances are a factor input and substantial amount of studies have been devoted to verifying its validity empirically. However, we did not come across any study that test the nexus between real money balances and output in the context of globalization especially for an oil rich country that initiated liberalization in GCC in late 1970s i.e. the Kingdom of Bahrain. Secondly, empirical studies are scarce in this regard as far as the Kingdom of Bahrain is concerned. Henceforth, the purpose of the current study is to analyze empirically the assertion that real money balances as a factor of production which is not considered by researcher till date in empirical studies for the Kingdom of Bahrain. Secondly, globalization which is considered as stimulator factor of economic growth in modern times is also missing in empirical studies for Bahrain in this regard. Thus, this current study is carried out to examine this money and output nexus in the Kingdom of Bahrain along with globalization. For this purpose, this study analyzed the effect of real money balances and globalization on output by incorporating real money balances and globalization in Cobb-Douglas production function. Time series data is analyzed by applying unit root test, cointegration test and FMOLS cointegration regression for order of integration, cointegrating vectors and long run estimates respectively. The study found that all variables are integrated of order one and there is long run relationship among variables of the study. Moreover, in order to differentiate and to trigger out returns to scale, this study estimated production function with real money balances and without. In both cases, results indicate high returns to scale however; returns to scale of capital and labor are lower than without real money balances. Results of the study confirmed all proposed hypotheses of the study that real money balances and globalization are factor of output along with conventional factors labor and capital. Thus, this study concludes that real money balances is a vital factor of output and monetary authorities should consider real money balances as a factor of economic growth in the Kingdom of Bahrain. The argument is supported on the ground if one critically examines the Bahrain's Economic Vision 2030, no space and guidelines are provided to monetary policy which main objective is to achieve economic growth with price stability in short run and sustainable economic growth at full employment in the long run. Henceforth, it is highly recommended that monetary policy has to be design in coordination with all other economic policies and strategies. This will ensure for the Kingdom to achieve sustainable economic growth in ever challenging global environment. Similarly, the positive effect of globalization on economic growth also highlights that government should encourage policies that lead to higher globalization/liberalization of the

Kingdom of Bahrain's economy. Bahrain should continue liberal policies however; in order to benefit more from globalization in form of sustainable growth, it has to improve its human capital and should encourage high skillful labor from rest of world. Besides, globalization is also challenging the Kingdom of Bahrain's economy and investors/producers have to adapt rapidly to evolving global market thus; the business community needs supportive environment in the kingdom to cope with global challenges. No empirical study is without limitations and this study limit itself to real money balances and globalization and effects of these factors on economic growth. In future, studies should also consider other relevant factors that may affect economic growth and also should consider the components of globalization which are economic, political and social globalization and investigate their effects on economic growth in the Kingdom of Bahrain.

## References

- Ali, S. L., Farooq, A., & Gillani, S. S. (2020). Impact of Globalization and Foreign Direct Investment on Economic growth: Empirical evidences from Pakistan. *Journal of Global Economics*, 8(3), 1-6.
- Almas, H., & Sangchoon, L. (2010). The relationship between globalization, economic growth and income inequality. *Journal of Globalization Studies*, 1(2), 87-117.
- Andrés Domingo, J. A., López Salido, J. D., & Vallés Liberal, J. J. (2002). Money in an estimated business cycle model of the euro area. *Documentos de trabajo/Banco de España*, 0121.
- Audu, S., Yaaba, B. N., & Ibrahim, H. (2018). Money supply, output and inflation dynamics in Nigeria: The case of new higher order monetary aggregates. *American Journal of*, 289-302.
- Babatunde, M. A., & Shuaibu, M. I. (2011). Money supply, inflation and economic growth in Nigeria. *Asian-African Journal of Economics and Econometrics*, 11(1), 147-163.
- Ben-Zion, U., & Ruttan, V. W. (1975). Money in the production function: an interpretation of empirical results. *The Review of Economics and Statistics*, 57(2), 246-247.
- Berhane, Z. (2016). The link between globalization and economic growth: evidence from Ethiopia. *Ethiop J Dev Res*, 38, 1-25.
- Bhagwati, J. (2004). *In Defense of Globalization*. New York, NY: Oxford University Press.
- Bhatti, M. A., Chaudhry, I. S., & Bashir, F. (2021). Financial Globalization, Output Gap and Foreign Output Gap on inflation: Evidenced from Developing Economies. *Journal of Accounting and Finance in Emerging Economies*, 7(2), 419-433. doi:<https://doi.org/10.26710/jafee.v7i2.1773>
- Bhatti, M. A., & Fazal, S. (2020). Impact of Globalization on Industrial Sector Growth in Pakistan. *Pakistan Journal of Economic Studies*, 3(1), 24-45.
- Chaitip, P., Chokethaworn, K., Chaiboonsri, C., & Khounkhalax, M. (2015). Money supply influencing on economic growth-wide phenomena of AEC open region. *Procedia Economics and Finance*, 24, 108-115. doi:[https://doi.org/10.1016/S2212-5671\(15\)00626-7](https://doi.org/10.1016/S2212-5671(15)00626-7)
- Chien, F., Hsu, C.-C., Zhang, Y., Vu, H. M., & Nawaz, M. A. (2021). Unlocking the role of energy poverty and its impacts on financial growth of household: is there any economic concern. *Environmental Science and Pollution Research*, 1-14. doi:<https://doi.org/10.1007/s11356-021-16649-6>
- Chuku, C. A. (2009). Measuring the effects of monetary policy innovations in Nigeria: A structural vector autoregressive (SVAR) approach. *African Journal of Accounting, Economics, Finance and Banking Research*, 5(5), 18.
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, 74(366a), 427-431. doi:<https://doi.org/10.1080/01621459.1979.10482531>
- Fazal, S., Gillani, S., Amjad, M., & Haider, Z. (2020). Impacts of the Renewable-Energy Consumptions on Thailand's Economic Development: Evidence from Cointegration Test. *Pakistan Journal of Humanities and Social Sciences*, 8(2), 57-67. doi:<https://doi.org/10.52131/pjhss.2020.0802.0103>
- Feridun, M., Olusi, J. O., & Folorunso, B. A. (2006). Analyzing the impact of globalization on economic development in developing economies: an application of error correction modelling (ecm) to Nigeria. *Applied econometrics and international development*, 6(3), 174-182.
- Fischer, S. (1974). Money and the production function. *Economic Inquiry*, 12(4), 517.
- Government of Bahrain. (2021). Bahrain Economic Vision 2030. Retrieved from <https://www.bahrain.bh>
- Habibullah, M. (1988). Real money balances in the production function of a developing economy: a preliminary study of the Malaysian agricultural sector. *Pertanika*, 11(3), 451-460.
- Hanan, N. (2018). *Financial Development and Economic Growth in Oil-Dependent Economy: The case of Bahrain*. Retrieved from
- Hasan, M. A. (2019). Does globalization accelerate economic growth? South Asian experience using panel data. *Journal of Economic Structures*, 8(1), 1-13.
- Hasan, M. A., & Mahmud, S. F. (1993). Is money an omitted variable in the production function? Some further results. *Empirical Economics*, 18(3), 431-445. doi:<https://doi.org/10.1007/BF01176197>

- Hussain, M. E., & Haque, M. (2017). Empirical analysis of the relationship between money supply and per capita GDP growth rate in Bangladesh. *Journal of Advances in Economics and Finance*, 2(1), 54-66.
- Inam, U. (2014). Money supply and economic growth in Nigeria: An econometric analysis (1985-2011). *Money*, 5(12), 149-155.
- 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), 169-210.
- Khan, A. H., & Ahmad, M. (1985). Real money balances in the production function of a developing country. *The Review of Economics and Statistics*, 67(2), 336-340.
- Kilic, C. (2015). Effects of Globalization on Economic Growth: Panel Data Analysis for Developing Countries. *Economic Insights-Trends & Challenges*, 67(1), 1-11.
- Kilicarslan, Z., & Dumrul, Y. (2018). The Impact of Globalization on Economic Growth: Empirical Evidence from the Turkey. *International Journal of Economics and Financial Issues*, 8(5), 115-123.
- Kurniasih, E. P. (2019). The long-run and short-run impacts of investment, export, money supply, and inflation on economic growth in Indonesia. *Journal of Economics, Business, & Accountancy Ventura*, 22(1), 21-28.
- Levhari, D., & Patinkin, D. (1968). The role of money in a simple growth model. *The American Economic Review*, 58(4), 713-753.
- Maqbool-ur-Rahman, M. (2015). Impacts of globalization on economic growth-evidence from selected South Asian countries. *Journal of Management Sciences*, 2(1), 185-204.
- Morteza, E., & Farahani, Y. (2016). The relationship between money supply and economic activity in countries dependent on natural resources. *Journal of Economics and Sustainable Development*, 7(7), 21-29.
- Nawaz, M. A., Ahmadk, T. I., Hussain, M. S., & Bhatti, M. A. (2020). How Energy Use, Financial Development and Economic Growth Affect Carbon Dioxide Emissions in Selected Association of South East Asian Nations? *Paradigms(SI)*, 159-165.
- Nourzad, F. (2002). Real money balances and production efficiency: a panel-data stochastic production frontier study. *Journal of Macroeconomics*, 24(1), 125-134.
- Phillips, P. C., & Hansen, B. E. (1990). Statistical inference in instrumental variables regression with I (1) processes. *The Review of Economic Studies*, 57(1), 99-125.
- Rehman, M. Z., Ali, N., & Nasir, N. M. (2015). Financial development, savings and economic growth: Evidence from Bahrain using VAR. *International Journal of Financial Research*, 6(2), 112-123.
- Shafiq, M. N., Hua, L., Bhatti, M. A., & Gillani, S. (2021). Impact of Taxation on Foreign Direct Investment: Empirical Evidence from Pakistan. *Pakistan Journal of Humanities and Social Sciences*, 9(1), 10-18.
- Shair, F., Shaorong, S., Kamran, H. W., Hussain, M. S., Nawaz, M. A., & Nguyen, V. C. (2021). Assessing the efficiency and total factor productivity growth of the banking industry: do environmental concerns matters? *Environmental Science and Pollution Research*, 28(16), 20822-20838.
- Shittu, W. O., Hassan, S., & Nawaz, M. A. (2018). The nexus between external debt, corruption and economic growth: evidence from five SSA countries. *African Journal of Economic and Management Studies*, 9(3), 319-314. doi:<https://doi.org/10.1108/AJEMS-07-2017-0171>
- Simionescu, M., Balcerzak, A. P., Bilan, Y., & Kotásková, A. (2018). The impact of money on output in Czech Republic and Romania. *Journal of Business Economics and Management*, 19(1), 20-41.
- Sinai, A., & Stokes, H. H. (1972). Real money balances: An omitted variable from the production function? *The Review of Economics and Statistics*, 54(3), 290-296.
- World Bank. (2020). Bahrain's Economic Outlook. Retrieved from <https://www.worldbank.org/en/country/qcc/publication/bahrain-economic-outlook-october-2020>
- Yang, X., & Shafiq, M. N. (2020). The Impact of Foreign Direct Investment, Capital Formation, Inflation, Money Supply and Trade Openness on Economic Growth of Asian Countries. *iRASD Journal of Economics*, 2(1), 25-34. doi:<https://doi.org/10.52131/joe.2020.0101.0013>
- Zhuang, Y., Yang, S., Chupradit, S., Nawaz, M. A., Xiong, R., & Koksai, C. (2021). A nexus between macroeconomic dynamics and trade openness: moderating role of institutional quality. *Business Process Management Journal*. doi:<https://doi.org/10.1108/BPMJ-12-2020-0594>