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Inflationary Dynamics of Consumer and Producer Financing: A Comparative Banking Analysis

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Abstract

One of the macroeconomics objectives is to stabilize purchasing power for the masses, which remains a leading economic problem in Pakistan for years. Economists are convinced about some degree of inflation in the economy to mobilize economic resources, with the condition to keep it to a minimum. Currently, Islamic finance is setting its firm footing in Pakistan and competing with the conventional financial system. Under this scenario, this study compares the Shari'ah compliant financing provided by Islamic financial institutes, and human made standards of conventional financial institutions. This study explores the effect of consumer financing and producer financing of Islamic and conventional banks on the inflation of Pakistan. Quarterly secondary data between 2009Q2 to 2019Q2 extracted from the State Bank of Pakistan reports and International Financial Statistic. ARCH model is used to estimate the model. Empirical results displayed that Islamic consumer financing, as expected in theory, helps to control inflation. The preaching of moderation in Islamic finance makes Islamic consumer financing less inflationary, and asset-based Islamic producer financing will perform better in reducing inflation. Islamic consumer financing is well participating in the management of inflation. However, Islamic producer financing lacks inflation curtailing ability. The small share in the financial market, and lack of long-term investment plans, are the few reasons why Islamic producer financing is not managing inflation.

Keywords: Islamic Financing, Asset Based, Inflation, Financial Sector Development.
JEL Classification: G21, G28
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I. Introduction

1.1. Background

1.1.1. Macro-Economic Pillars

Inflation, growth, and employment are the three macroeconomic pillars (Mankiw, 2016), managing them is the major goal of any policymaker. Their interconnection makes economic policy articulation difficult in isolation. The first objective is growth, which measures how well an economy has performed with respect to production in one year (Mankiw, 2016). Economists proposed that a country have a stable growth rate say 3 to 5 percent, which helps plan other goals. The second pillar is inflation, which denotes general prices (Shazad et al., 2012). Many economists believe that a little inflation of 2-3% is healthy for economic growth as it promotes sellers to produce for deferred sale at a premium of 2-3% each time period. The third pillar is unemployment rate, denoting proportion of workforce who are not engaged in a paid job. Empirically it has been suggested that a growth rate above 2.5% will decrease the unemployment to 0.5% for every percentage increase (known as Okun's Law). However, there is a catch that demand may supersede supply at low unemployment, leading to inflation (as per Philips Curve) (Phelps, 1967; Mankiw, 2016). Thus the complex dynamics are evident, requiring the need for developing models to manage these pillars.

1.1.2. Contribution of Inflation to the Economy

This study aims to relate Islamic finance with inflation. It refers to a condition of an economy where there is a rise in the general price level of goods and services. Inflation forces fiat money to lose its value rapidly. Here, fixed income people have to spend more on their daily living expenses, and stocking goods and services to avoid future inflation, thus motivating excessive consumption and hoarding. Due to this excessive consumption and hoarding, inflation accelerates; this condition could result in hyperinflation. After World War 1 (1919-1923) and Hungary after World War 2 (1945-1946), Germany has faced such type of hyperinflation (Amadeo, 2019).

1.1.3. Inflation and Social Injustice

Mises (1920) explained that inflation is a tool used by the government to collect funds, which it could not collect by taxes. Inflation is undoubtedly the

greatest swindle humanity have ever witnessed (Harwood, 1974). He explained that swindle is a term that refers to accruing someone's property or money unlawfully, fraudulently and without his explicit concern (Stringham, 2018). Pelerin (2012) explained that inflation in an economy is a Governments choice rather than an economic phenomenon (for example, the case of Seigniorage). To support his statement, he argues that the government has control over money, allowing them to spend money beyond their budget. He explains that inflation is harmful to everyone in the economy except for the political class and is a tool of theft and fraud used by the government to steal the common person's wealth.

The loss in buying power of money reflects its impact on people who have placed their faith in the currency. The cash value of all types of funds, bonds, saving deposits, mortgages, and insurance plans decreases. After World War 2, the inflationary periods started in the United States. By the end of 1974, the estimated losses to these funds were 1.1 trillion dollars (Harwood, 1974). A press release in 1997, by the central bank of Turkey explained that during the period from 1991 to 1996, inflation had robbed 30% of the purchasing power of citizens despite huge salary increments during the same period (Hoffman PR). Hewlett (1977) explained that the correlation between inflation, political upheaval and social injustice is neither arbitrary nor coincidental. This correlation exists due to the impact of inflation on wealth distribution to the various classes in society. The role of inflation in an economy can be cruel as it muddles the existing pattern of income distribution and creates inequality. He explained that the discriminatory aspect of inflation is "*it affects different classes differently*". Brokers and middle man stock the goods, expecting that the prices will rise in future, a slowdown in economic activity creates social unrest (Polleit, 2008; Zoellick, 2011). It suffers the general public, and investors that is why economists try to keep inflation as low as possible (Chapra, 2008).

Keynesians and Monetarists are of the view that at least in short-run inflation can boost economic growth. However, they claim that this channel works because an unexpected increase in prices fools a few producers and workers. Earlier, inflation was not associated with price but a phenomenon of paper money currency and a specific description of monetary policy (Bryan, 1997). Monetary school of thought believed that the excessive supply of money causes inflation. At constant level of goods and services, an increase in money supply will allow people to spend more and hence raises the general prices level (Kemmerer, 1918; Grauwe & Polan, 2005). This increased spending is because of the illusion of higher growth (Kia, 2008).

During the inflationary periods, the capital holder, who owns trade stocks and property, will get richer by earning more profit due to the persistent rise

in stocks and property prices. Moreover, the fixed income and unemployed class get poorer due to the loss in purchasing power (Sprinkel, 1971). This shows the interaction of financial system with inflation whereby the financial sector plays an important role in the money supply.

To regulate money supply in monetary phenomena, the effective tool to be used is the interest rate. It has been found by Kia (2008, 2010) that a predetermined interest rate has a positive impact on inflation. Shaikh (2013) believes that the interest rate creates market imperfections, leading to a slump in an economy via cost-push inflation (Shazad et al., 2012).

A renowned scholar Mufti Muhammad Taqi Usmani, discussed some other factors that can influence inflation in the conventional economic system. He explained that the cruel practices (i.e. gambling, speculative transactions, and futures contracts) and the use of financial market derivatives result in few hands holding the majority of society's wealth. The uncurbed lust for profit and unnatural practices as business strategies to earn profit creates an imbalance in the economy and leads to inflation (Usmani, 2004). Islamic preaching strongly prohibits unlawfully accruing any one's property. Allah S.W.T has declared war with one who practices riba (interest) in any financial transaction. One reason for prohibiting riba is that it affects the fair distribution of wealth in society.

1.1.4. Research Gap

Sulaiman, Arshed and Mushtaq (2016) and Sulaiman, Arshed and Hassan (2016) explored the role of banking sector development (using broad money) on the inflation for SAARC countries. Both studies narrated that banking sector leads to inflation. Dhungana and Pradhan (2017) studied the relationship between bank lending and inflation in Nepal. Using panel data of twenty-four banks from 1996 to 2015 found a positive relationship between two variables. Several studies like these did not did not distinguish between conventional & Islamic and consumer & production financing as they are expected to have different effects. This study is comparing the differences between Islamic and conventional financing in consumer and producer sector in inflation using ARCH/GARCH model.

1.1.5. Research Questions

This study examines the impact of both Islamic and conventional banks financing and its impact on inflation under the light of Maqasid al-Shari'ah.

As Islamic economics promises zero or minimum inflation. We will find out the banking sector is fulfilling the objectives of Islamic economics.

- Is there any difference between the effect of consumer financing on inflation for the case of Islamic and conventional banking in Pakistan?
- Is there any differences between the effect of producer financing on inflation for the case of Islamic and conventional banking in Pakistan?

1.1.6. Significant of the Study

This study will explain a new dimension of conventional and Islamic financing and their impact on inflation. We will analyze the data of consumer and producer financing of both Islamic and conventional financial institutions and their impact on inflation. It will help make a new point that why Islamic financial system better in the management of inflation then the conventional system (Mohieldin, 2012).

1.2. Objective

Under this scenario, this study compares the asset-based and Shari'ah compliant financing provided by Islamic financial institutes and humanmade standards of conventional financial institutions. This study will explore the effect of consumer financing and producer financing on the inflation of Pakistan. This study explores the theoretical differences between conventional and Islamic consumer and production theories by reviewing the discussions and theories by scholars and economists on this matter. This study helps in concluding the point that whether or not the Islamic financial system is full filling the theoretical objectives of Islamic economics (minimizing inflation).

II. Literature Review

2.1. Background Theory

2.2.1. Financial System, Economic Growth and Inflation

There is a long debate available in the literature that discusses how financial market growth supports economic development. Majority of the researchers believe that over the long sweep of history, financial markets contribution towards economic growth has been "*too obvious for a serious discussion*" (Miller, 1998). However, previously, Lucas (1988) argued that academic discussions on the role and importance of the financial market in economic development are severely exaggerated. Where it is not clear whether growth leads to financial development or the other way around.

Levine (1997) found a first-order positive relation between economic growth and financial development based on theoretical reasoning and empirical evidence. Moreover, he found that the level of financial development is a good predictor of future economic growth rate. Petkovski and Kjosevski (2014) stated that empirical studies have concluded that a growing financial sector influence economic growth positively. Most recently, Popov (2017), after reviewing the notable number of empirical works of the past quarter-century on the relationship of financial growth and economic development, founded a first-order positive relationship between these two.

Financial intermediaries (including banks) provides four broad group functions and services, which are (1) mobilizing savings, (2) allocation of savings, (3) diversifying of risk and (4) monitoring the allocations of managers (Petkovski & Kjosevski 2014). Each of these functions can influence the investment and saving decision and hence and influences economic growth. In short, banks and financial intermediaries allocate funds to such projects where the marginal product of capital is highest. This function of banks increases capital productivity which results in higher growth (Pagano, 1993).

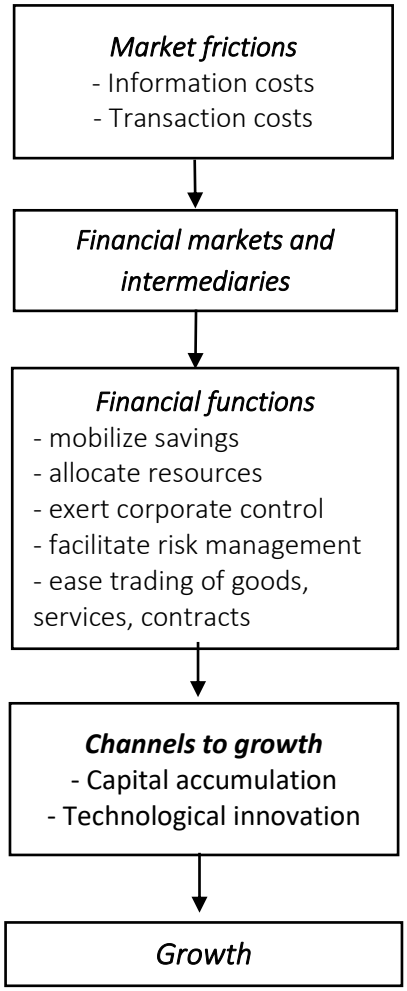

Figure 1. A Theoretical Approach to Finance and Growth

Source: Aghion and Howitt (1992)

Figure 1 theoretical model is being established by Aghion and Howitt (1992), which explains the importance of financial intermarries (banks) and how the functions of financial institutions help in economic growth. The relationship between economic growth and inflation is a tricky business as it changes its nature by changing the intensity of inflation. Recent studies revealed nonlinearity in their relationship. Low inflation is associated with high economic growth, and high inflation is associated with low economic growth. The Keynesian model (AD & AS curve) displays a positive relationship between growth and inflation in short-run. However, it did not imply, inflation itself is a growth enhancer. It explains that if the increase in aggregate demand leads to economic growth, then the emergence of little inflation is an unharmful by-product (Rutayisire, 2015).

Fischer (1993) reviewed literature and discussed that high inflation decreases investment, which decreases the productivity of the economy. The channel through which inflation affects long run economic output is

financial sector repression. Boyd, Levine, and Smith (2000) explained that growing literature in the financial sector and inflation relationship explained that even predictable high rates of inflation influence effective fund allocation of the financial sector.

High level of inflation disturbs the price signaling mechanism of the market. Theories that explain the importance of asymmetric credit market information explain how high inflation impacts financial sector performance and subsequently long-run economic growth (Boyd et al., 2000; Azariadas, & Smith, 1996). Azariadis and Smith (1996) and Boyd, Choi and Smith (1997) explained that a shallow rate of inflation does not disturb the information flow of market and allocation of the resource of the financial sector, as the at low rate credit market friction may not be binding. These models further explain that with the rise in inflation, credit market friction may become binding, decreasing financial sector performance. As soon inflation reaches a higher level, it already had damaged the financial sector (Boyd, Levine, & Smith, 2000).

2.2.2. Impact of Financial Intermediaries on inflation

A key indicator of economic growth in a developing country is a smoothly operating, robust financial system. As, banks are institutions that collect excessive liquidity from the general public and channelize it to the person, state and business, which require these funds, either for consumption purposes or for business (production purposes) (Korkmaz, 2015).

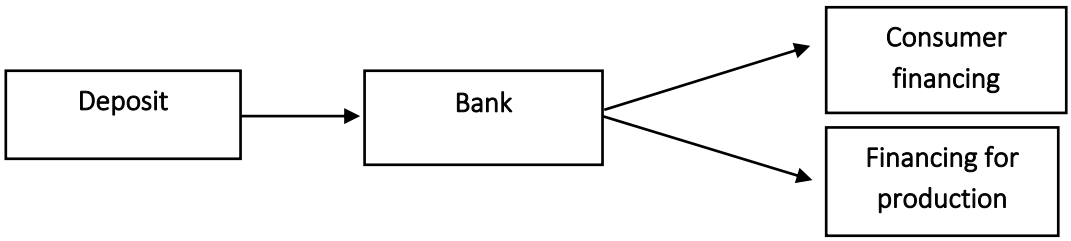

Figure 2. Bank as an intermediary
Source: Author

Figure 2 explains that that bank receives the deposit from customers on which it pays interest or profit. Also, from these deposits, a bank lends money to customers who need these funds and receive profit or interest against this facility. In a dual banking system, where conventional and Islamic banks are actively operating in the same financial market, the client can choose either of the modes of financing for consumption purposes or for business purposes.

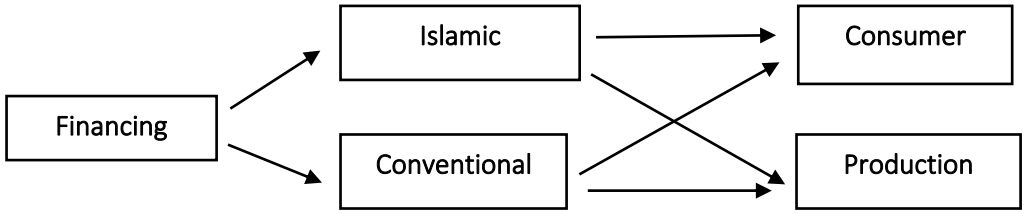

Figure 3. Categories of Bank Financing
Source: Author

Korkmaz (2015) explained that the banking role in an economic sense is a facilitator of economic activity. Hence, its function is to lend more liquidity. Lending money will increase investment and economic growth. Banking lending impacts both the supply and demand side of good and services market differently. The framework of Ludwig von Mises explains that a bank creates money in the shape of credit which finances investment beyond savings (Cochran & Call, 2000) at the cost of future expenses.

Based on figure 3, the bank facilitates a person to spend more via consumer financing. Bank provides facilities like credit cards, leasing finance, and overdraft balances, increasing the demand directly. Furthermore, the bank provides discount offers on different brands of consumable goods like clothing, food restaurants, and departmental stores, which, in turn, motivate individuals to spend more money. The banks are more concerned about the creditworthiness of a client rather than where he will spend this money (Faizulayev, 2011). Moreover, the loan compounds if the client is unable to pay. The promotion of credit card debt by offering a discount on different brands, restaurants, markets ends up in overspending and wasteful consumption. Conventional banks have framed people into expensive mortgage loans (Equitymaster, 2010; Majaski, 2019). There are millions of people who have lost everything; some of them even end up committing suicide. On the other hand, Islamic banking is based on the principles of Shari'ah, whereby debt for consumption purposes is discouraged (Sahi al-Bukhari, ch 38, hadith no. 500; Sahi Bukhari, Hadith no. 6375). Hence Islamic customers will either avoid consumer financing or avoid wasteful consumption (Sunan Ibn Majah, Book 1, Hadith 425).

First and most importantly, Islamic banks finance consumers on interest-free mode. They provide a facility by buying an asset for the customer to either sell him on lumps sum future payments or in instalments or leases it on a rental basis. Secondly, Islamic banks issue consumer finance based on Diminishing Musharaka, Ijarah, and Murabaha. Hence, the bank is directly or indirectly involved in the purchasing of the consumed asset. This creates an oversight for the utilization of the funds. Hence, Islamic consumers are saved

from impulse buying, which reduces the positive effect of Islamic consumer financing compared to conventional consumer financing.

Dar and Akram (2004) explained that the consumption habit of society directs the direction of all economic sectors. And if people are wastefully spending on unproductive things like fun and frolic. Then the capital for productive means will become scarce. Hence Islamic consumer finance works as a moderator to restrict the apparent utility-maximizing behavior of the consumer (Chapra, 1992: 20). The concept of moderation in consumption is discussed in Islam in several instances like (Quran 2:172, 25: 67, 17:26-27) and (Sahi al-Bukhari, Hadith 6463). Hence the controlling mechanisms at lender and borrower end ensure lower inflationary pressures with consumer financing.

The banking sector can fulfill the capital requirement in financing to the business sector to increase production. It can be done by running financing, plant and machinery leasing, and loan for other operational needs. It leads to an increase in supply, reducing cost push inflationary pressures. However, if this financing is interest-based, it is counted within the total cost of compounding interest, increasing cost-push inflation (Dar & Akram, 2004; Kia, 2013; Shazad, Ahmad & Rehman, 2012; Bashir, Yousaf & Aslam, 2016). Since bank is performing as a debtor and earns interest, it focuses on creditworthiness of customer rather than the utilization of lending (Faizulayev, 2011). On the other hand, Islamic financing is either asset-backed or asset-based. It is contractually based and works either on partnership bases like Mudarabah and Musharaka contracts or sales like Murabaha, Salaam and Istisna contracts. So the amount of money/credit created by the bank is channelized in asset creation and productive means. Money is treated as a risk bearing factor of production, so it is entitled to a profit share which can either be positive or negative (Dar & Akram, 2004). Moreover, Islamic bank finance on trade base, partnership base, and rental base, so a physical asset and economic activity are involved in the contract. So, this production promoting activity leads to a decrease in market prices while conventional producer financing may or may not increase production and decrease prices.

Siddiqi (1996) explained that the replacement of debt financing by equity financing ensures zero or minimum inflation. Kia (2008) interest-free financing reduces the cost of production, which in turn increases the business activity and encourages people to contribute to the economy on profit and loss sharing basis. Kia and Darat (2007) explained that no other demand for money is more stable than the demand for profit sharing money. Kia (2014) explained that the negative supply effect does not exist under a partnership agreement because the profit and loss is the residual of

total income. However, predetermine interest rates have a negative supply effect as it will push the cost schedule up.

The goals and purpose of a firm under the Islamic economic framework is the attainment of Falah (welfare). Scholars have explained the motive or objective of a firm under the Islamic framework. It is to produce such goods and services that allows human to live a prosperous life and dignify its existences as the vicegerents of Allah (S.W.T) on this earth (Chapra, 1984). The ultimate objective of a firm engaged in production should be the achievement of Falah (Sattar, 1988; Abbas, 1995; Siddiqi, 1979). A precise definition of Falah is all-sided wellbeing of this worldly life and the life hereafter (Saddiqi, 1979). Abbas (1995) explained that Falah as the attainment of happiness in both material and spiritual content were the goals to create social wellbeing in the material world and spiritual salvation (Abubakar, 2016). The classification of factors of production in conventional economics is arbitrary and has no scientific sanctity attached to it (Khan, 1990). Many economists themselves consider this classification to be arbitrary (Samuelson, 1983).

Usmani (2004) explain that Islamic production theory recognizes 3 actual factors of production. These are capital, land, and labor (Khan, 1990). Khan (1990) classified these factors of production into 2 broad groups hired factors of production and entrepreneurial factors of production. The hired factors of production provide a definite service in the production process and for which they are rewarded in the shape of wage and rent. Entrepreneurial factors bear the entrepreneurial risk in the project rather than having a fixed return in the form of wage and rent. The award of such factor to engage in production is the profit. This theoretical composition of Islamic firms tends to be more productive and less inflationary than conventional firms.

2.2. Empirical Review

Earlier economic experts like Schumpeter discussed the role of banks as intermediaries helping in technological innovation. As a result, the banking sector plays a role in the effective allocation of saving resources to an entrepreneur who has the best chance of growth (Oluitan, 2012). Fry (1988), McKinnon (1973), King and Levine (1993) and Shaw (1973) emphasized the above statement regarding the role played by the banks in economic development.

Findings of Popov (2017) while investigating the relationship between economic growth and financial development. He explained that the past

quarter-century data supports a first-order positive relationship between these two economic variables. Similarly, Shumpeter (1934), Goldsmith (1969), Shaw (1973), Greenwood and Jovanovich (199), and Bencivenga and Smith (1991) supported the statement that a developing financial sector contributes to economic growth. Levine (1997) explains that a good predictor of economic growth is financial development.

Empirical studies on banking credit and economic growth have proven that there is a linear relationship. A study of Yakubu and Affoi (2014) examined Nigeria using data set from 1992 to 2012. Ordinary least square method found that bank credit has a significant impact on economic growth. Bank credit help in economic development (Odedokun, 1998; Beck et al., 2005; King & Levine, 1993; Levine, 2002). Boyreau-Debray (2003) found a negative relationship between bank credit and growth because Chinese banks were mobilizing their investments and pouring these funds in weak leashes of Chinese state enterprises. Studies like Beck et al. (2005) and Crowley (2008) explained that bank credit to the private sector is a good indicator of economic growth. Onuorah and Chi-Chi (2013), after studying the bank credit and economic growth in Nigeria. They concluded that total production bank credit and total general bank credit positively impact economic growth. Bayoumi and Melander (2008) found that a 2.5% reduction in banking credit can lead to a 1.5% decrease GDP growth.

Švigir and Miloš (2017) explained that the relationship between inflation and growth has no clear cut definition. Different studies have found a different relationship, some of which are even controversial to each other. Sidrauski (1967) found that there is no relationship between inflation and growth. Mamo (2012), Mallik and Chowdhury (2001) in their study found a positive relationship. Levine (1993) in his study, explained that a negative relationship exists between these variables.

This explained that different levels of inflation impact growth differently. The question arises which level of inflation hurt growth and has a positive impact (Švigir, & Miloš, 2017). Barro (1995) explained that a high rate of inflation decreases the level of investment and can negatively affect growth. Ghosh and Phillips (1998) studied the relationship of growth and inflation for 145 countries and found a positive relationship with a low level of inflation, and this relationship turns to negative for a high level of inflation.

The empirical literature and studies that investigated the relationship between the found different results in different studies. Paul, Kearny and Chowdhury (1997) conducted a study that explains that in 40% of countries, there is no causality between these economic variables. A bidirectional casualty existed in 20% of countries. In the rest of the countries, unidirectional causality was found. More a negative relationship was found

in industrial and developed countries, and a positive relationship between growth and inflation was found in developing countries. Boyd, Levine and Smith (2000) explained that a high level of inflation interferes with the price signalling mechanism of the financial market. It disturbs the active and accurate fund distribution of financial intermediaries, resulting in low economic output.

The lending operation of banks is a key factor in economic growth. However, there is a risk that bank irrational lending practices can lead to inflation. On the one hand, excessive lending to speculative and unproductive ventures can lead to an increase in the money supply and hence can result in inflation. Also, if the bank restricts its lending operations, the result will be low production Also, empirical studies have proven that excessive bank lending to the private sector can lead to inflation from the demand side (Huang & Xu, 1999; Corsetti et al., 1999; Antzoulatos, 1996; Ludvigson, 1999). Bacchetta and Gerlach (1997) explain that the reduction in the banking credit can decline the overall consumption level and growth of the economy, and the same it will do to inflation. Ghosh and Phillips (1998) found a positive relationship between these two. Debelle (2004) explains that the efficiency of monetary policy can be weakened by the uncontrolled lending of banks to the private sector due to inflationary pressures. Younus (2004), in her study using VAR and Granger causality test, found that banks credit to the private sector is inflationary.

Now while explore the studies related to Islamic credit, a study by Shahzad, Ahmed and Rehman (2012) explored the different characteristics of Islamic financing in which it connects the increase in demand and increase in assets. Under this framework increase in Islamic financing is expected to be less or no inflationary. Ayuniyyah, Beik and Arsyianti (2013) provide an insignificant effect of Islamic financing on inflation for the case of Indonesia.

A recent study by Selim and Hassan (2019) assessed the role of interest-free monetary policy on the misery index. And for the case of 12 countries, the results showed a negative effect of interest free financial expansion on misery index, which includes a decrease in inflation. Further, Cham (2019) confirmed no effect of Islamic financing on inflation in GCC countries, and individual country estimates show that 5 out of 7 countries show the deflationary effect of Islamic financing.

Since modern economics has not considered inflation as compared to what Islamic economics has mentioned. Hence previous studies have not opened up to the fact that the usurious and speculative effects of conventional banking system lead to more inflation than growth. This mechanism increases the income inequality among rich and the poor. This study explores the comparative role of Islamic and conventional financing in

consumer and producer financing in inflation. Previous studies also ignored the fact that the financing provided by the Islamic banks follow variable returns to scale, like other inputs. The size effect in certain cases explains the coefficient direction (Hayes, 2017). This study incorporates this phenomenon using the square form of financing.

III. Methodology

3.1. Data

A quantitative research technique using secondary data of economic variables extracted from the International Financial Statistics, State Bank of Pakistan Annual Reports and State Bank of Pakistan Islamic banking bulletin for analysis. The time period of the study is 2009Q2 to 2019Q2. Table 1 reports the variables used in the study. The dependent variable is CPI with base year 2010, and the independent variables are Islamic consumer financing (ICF) and Islamic producer financing (IPF) both are in relative form with respect to total Islamic financing. Similarly, Conventional consumer financing (CCF) and conventional producer financing (CPF) are in relative form with respect to total conventional financing. The control variables include oil prices for cost of production, industrial production index shows the total production effect and exchange rate is the effect of trade.

Table 1. Variables and Data Sources

Variable (Symbol)	Units	Sources
Inflation (CPI)	General Prices (2010 = 100) (Natural Log)	IFS
Islamic Consumer Financing (ICF)	Islamic Consumer Financing to total Islamic Financing	SBP Islamic banking bulletin
Conventional Consumer Financing (CCF)	Conventional Consumer Financing to total Conventional Financing	SBP annual reports
Islamic Producer Financing (IPF)	Islamic Producer Financing to total Islamic Financing	SBP Islamic banking bulletin
Conventional Producer Financing (CPF)	Conventional Producer Financing to total Conventional Financing	SBP annual reports
Oil Prices (OIL)	Crude oil prices (Natural Log)	Fred. St. Louis
Industrial Production Index (IPI)	Index of industrial manufacturing (Natural Log)	IFS
Exchange Rate (ER)	Annual Average Rupee per USD (Natural Log)	IFS

3.2. Model Development

3.2.1. Estimated Equation

In order to compare the effect of conventional and Islamic financing on inflation, this study has built multiple regression models comparing both forms of consumer and producer financing in separate models. Following are the parameterization version of the estimation equation, which are estimated in this study. This study has proposed that the financing size also influences the marginal effect of that particular financing on inflation (Hayes, 2017). This study has used the square form of the financing as proposed by (Haans et al., 2016) to incorporate these dynamics.

$$CPI_t = \alpha_1 + \alpha_2 ICF_t + \alpha_3 ICF_t^2 + \alpha_4 CCF_t + \alpha_5 CCF_t^2 + \alpha_6 OIL_t + \alpha_7 IPI_t + \mu_t \quad (1)$$

$$CPI_t = \beta_1 + \beta_2 IPF_t + \beta_3 IPF_t^2 + \beta_4 CPF_t + \beta_5 CPF_t^2 + \beta_6 ER_t + \varepsilon_t \quad (2)$$

The advantage of this model is that it can explore the quadratic role of all forms of financing in inflation in Pakistan. This specification can help in financing the optimal value or range in between the particular type of financing is achieving the objectives set by the policymakers.

3.3. Method

Empirical literature investigating the relationship between banking credit and economic growth find a linear relationship between these 2 economic variables. Studies like King and Levine (1993) used cross country growth regression technique. Demetriades and Hussein (1996), Demetriades and Andrianova (2004), Ghirmay (2004), Tang (2003), used time-series data set. Rioja and Valev (2003) used the panel data technique. Ghirmay (2004), Tang (2003), Demetriades and Hussein (1996) explains that time series data technique is more applicable for the single country analysis.

Since the data is in a quarterly form comprising of 10 years, estimating the commonly used ARDL model cannot control from the conditional heteroscedasticity. This study has used the ARCH/GARCH methodology to estimate inflation as proposed by (Brunner & Hess, 1993; Payne, 2008; Nyoni, 2018) on the limited/small sample while reducing the number of lags can avoid over-restrictive estimates. Further, this study adds the quadratic transformation of consumer and producer financing of Islamic and conventional banks as proposed by (Arshed, Anwar, Kousar & Bukhari, 2018;

Iqbal, Kalim & Arshed, 2019; Arshed, Anwar, Hassan & Bukhari, 2019; Hanif, Arshed & Aziz, 2019).

IV. Results and Analysis

4.1. Results

Table 2 displays the result of descriptive statistics of all the variables. Total number of observations of date set is 42 quarters. Other than the financing variables, all the variables are normally distributed as their Jarque Bera values are insignificant at 10%. This study assumes that the financing variables are asymptotically normal using central limit theorem.

All the variables have a mean value higher than the standard deviation, indicating that they are under dispersed whereby the individual observations are distributed near the mean value. Hence regression analysis approach that uses the mean as a center can be appropriate.

Table 2. Descriptive Statistics

	IPF	CCF	CPF	CPI	ER	ICF	IPI	OIL
Mean	4.452	2.131	4.516	4.874	4.600	2.605	4.737	4.310
Std. Dev.	0.050	0.130	0.012	0.205	0.143	0.277	0.133	0.346
Skewness	-0.946	0.806	-1.151	-0.624	0.720	0.686	0.425	-0.239
Kurtosis	2.421	3.196	4.042	2.339	3.531	2.021	2.511	1.908
Jarque-Bera	6.858	4.616	11.18	3.492	4.128	4.975	1.684	2.483
Probability	0.032	0.099	0.003	0.174	0.126	0.083	0.430	0.288
Observations	42	42	42	42	42	42	42	42

Source: Data processed by author

Table 3. Correlation Coefficient

	IPF	CCF	CPF	CPI	ER	ICF	IPI	OIL
IPF	1	-0.453	0.490	0.965	0.819	-0.993	0.685	-0.220
CCF	-0.453	1	-0.995	-0.337	-0.123	0.359	-0.025	-0.515
CPF	0.490	-0.995	1	0.388	0.169	-0.399	0.063	0.486
CPI	0.965	-0.337	0.388	1	0.907	-0.971	0.719	-0.262
ER	0.819	-0.123	0.169	0.907	1	-0.845	0.698	-0.252
ICF	-0.993	0.359	-0.399	-0.971	-0.845	1	-0.726	0.301
IPI	0.685	-0.025	0.063	0.719	0.698	-0.726	1	-0.451
OIL	-0.220	-0.515	0.486	-0.262	-0.252	0.301	-0.451	1

Based on correlation coefficients in table 3, it can be seen that there is high correlation of CPI with all the variables except for the conventional consumer financing and oil prices. While one of the variables have high correlation, which comes as an independent variable in the same model. This avoids the presence of multicollinearity.

Figure 4 shows the line plots comparisons of CPI with Islamic and conventional producer financing. It can be observed here that the increase in Islamic producer financing is positively associated with the increase in general prices in Pakistan. While there seem little or no association between CPI and conventional producer financing. Figure 5 shows that there seems a negative correlation between Islamic consumer financing and CPI. While there is a mixed correlation between conventional consumer financing and CPI. It is negative between 2009 and 2013 and positive between 2013 and 2019.

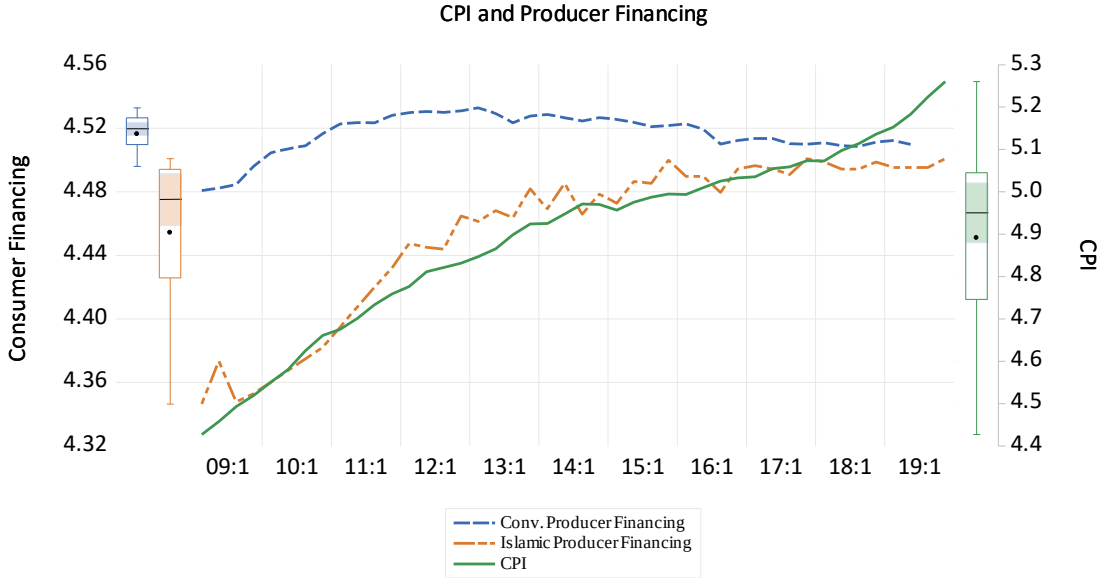

Figure 4. CPI and Producer Financing Line Plots

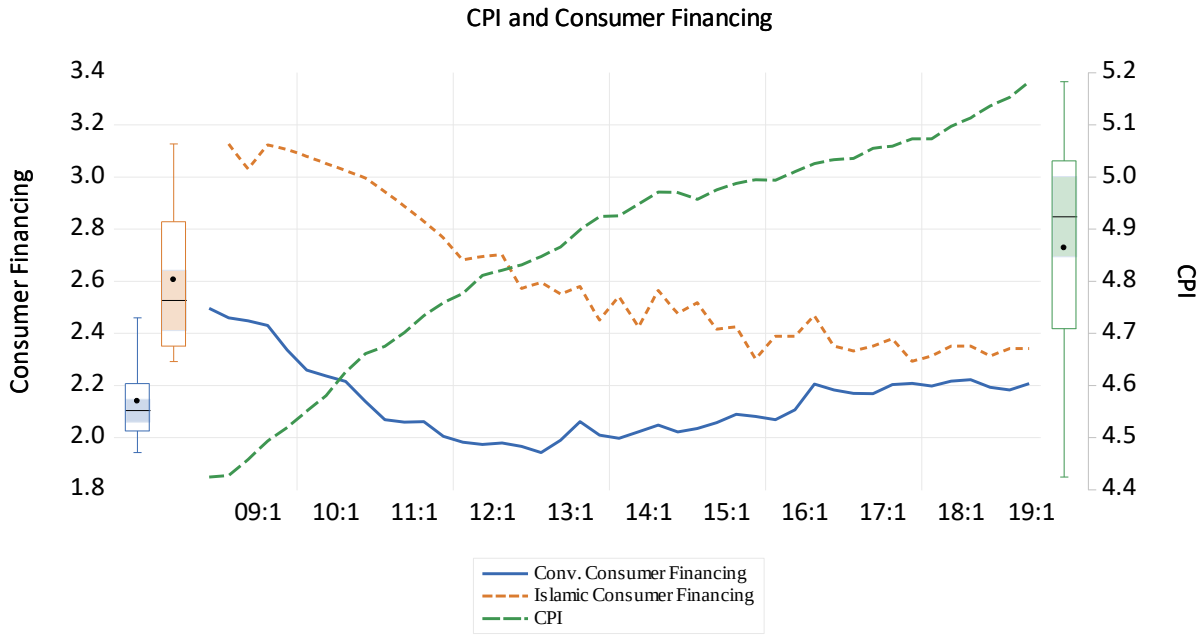

Figure 5. CPI and Consumer Financing Line Plots

Since the series does not constitute 30 years of data, it is small to consider a non-stationary series. And the standard unit root tests do not have the power to test the small series. This study has used two approaches to test the data series stationarity: the HEGY seasonal unit root test and the second group unit root test. Both tests conclude that the CPI is seasonally stationary and the data set is stationary as a group. Hence ARCH/GARCH model can be applied on the level of CPI data.

4.1.1. ARCH model of Consumer Financing

Table 4 reports the estimates of ARCH model for the consumer financing variables. Here using the sample of 41 quarters, the R square explains that 98% of the variation in the CPI is explained by the independent variables and the variance equation. For controlling variables, a 1% increase in the exchange rate will lead to a 0.41% increase in the general prices in Pakistan. This is because devaluation of exchange rate makes imports expensive and increases the debt burden. Hence inflation increase because of two phenomena, imported inflation and debt based inflation. At the same time, MA(1) component is negative significant, indicating that Pakistan is facing negative random shocks in general prices.

For the case of conventional consumer financing, a 1% increase in conventional consumer financing with respect to total consumer financing will lead to an increase in general prices by 6.64%. The squared coefficient of conventional consumer financing is negative, indicating that for every percent increase in the financing, there will be a 1.49% decrease in the marginal effect of conventional consumer financing on general financing. Thus forming an inverted U shaped relationship, whereby a small proportion of conventional consumer financing is inflationary, while high levels of consumer financing tend to reduce inflation. This prompts that consumer financing at high levels may transform the economy to consumer economy, where the seller meets the demand.

For Islamic consumer financing, a1% increase in the financing will lead to a 2.48% increase in the general price level. Here the squared coefficient of Islamic consumer financing is negative, which means that for every percentage increase in financing will lead to a 0.52% decrease in the marginal effect of Islamic consumer financing on the general prices. Thus forming a U-shaped relationship, whereby a small proportion of Islamic consumer financing is inflationary and high levels of financing may reduce inflation.

Table 4. Estimates of Consumer Financing Model

ARCH Model of Consumer Financing		
Indep. Variables	**Coefficient**	**Z stat (Prob.)**
CCF	6.641	2039.8 (0.00)
CCF^2	-1.493	-111.5 (0.00)
ICF	2.489	8.15 (0.00)
ICF^2	-0.518	-8.57 (0.00)
ER	0.411	24.86 (0.00)
C	-7.251	-15.76 (0.00)
	ARMA Coefficients	
AR(1)	0.893	0.09 (0.92)
MA(1)	-0.626	-5.84 (0.00)
	Variance Equation	
C	0.000	0.09 (0.92)
ARCH(1)	2.288	2.71 (0.01)
Regression Statistics		
R squared	0.98	
Sample	41	
Heteroscedasticity	ARCH test	0.187 (0.66)
Normality	Jarque Bera Test	1.327 (0.51)
Autocorrelation	Q Statistic	Insignificant (10 lags)

4.1.2. ARCH model of Producer Financing

Table 5 reports the estimates of ARCH/GARCH model for the consumer financing variables. Here using the sample of 42 quarters, the R square explains that 97% of the variation in the CPI is explained by the independent variables and the variance equation. For controlling variables, a 1% increase in the oil prices will lead to a 0.04% increase in the general prices in Pakistan. This is because oil prices constitute in cost of production, hence it will create cost push inflation.

For the case of conventional consumer financing, a 1% increase in conventional consumer financing with respect to total consumer financing will lead to an increase in general prices by 1695%. The squared coefficient of conventional consumer financing is negative, indicating that for every percent increase in the financing, there will be a 188.2% decrease in the marginal effect of conventional consumer financing on general financing. Thus forming inverted U shaped relationship. Here a small proportion of conventional consumer financing is inflationary, while high levels of consumer financing tend to reduce inflation. This prompts that very high financing to the production sector will assist in the production process; hence inflation will fall.

Table 5. Estimates of Producer Financing Model

ARCH Model of Producer Financing		
Indep. Variables	Coefficient	Z stat (Prob.)
CPF	1695.2	52.98 (0.00)
CPF^2	-188.2	-48.21 (0.00)
IPF	19.76	1017.2 (0.00)
IPF^2	-1.800	-145.9 (0.000
OIL	0.045	3.77 (0.00)
IPI	0.061	1.31 (0.18)
C	-3865.3	-34.81 (0.00)
Variance Equation		
C	0.000	0.846 (0.397)
ARCH(1)	0.764	1.431 (0.152)
GARCH(1)	-0.108	-0.266 (0.789)
Regression Statistics		
R squared	0.97	
Sample	42	
Heteroscedasticity	ARCH test	0.154 (0.69)
Normality	Jarque Bera Test	1.835 (0.40)
Autocorrelation	Q Statistic	Insignificant (10 lags)

For Islamic consumer financing, a 1% increase in the financing will lead to a 19.76% increase in the general price level. Here the squared coefficient of Islamic consumer financing is negative, which means that for every

percentage increase in financing will lead to 1.8% decrease in the marginal effect of Islamic consumer financing on the general prices. Thus forming a U-shaped relationship, whereby a small proportion of Islamic consumer financing is inflationary and high levels of financing may reduce inflation.

4.2. Robustness

The development of the ARCH/GARCH model is based on the Box Jenkins methodology comprising of ACF, and PACF tests to determine the appropriate lags of AR and MA model. Further, the ARCH LM test has been used along with the AIC / SIC criteria to ensure the order of ARCH and GARCH models. This approach makes the development of the model robust to other competing specifications.

4.3. Analysis

After estimating the equation 1 and 2 using the ARCH/GARCH method. Here this study will be providing the visualization of the effects of all selected financing types with inflation. Comparing Figure 6 and Figure 7, it is evident that based on the current incidence, conventional consumer financing is not high enough to reduce inflation while the highest value Islamic consumer financing has been able to reduce inflation at a higher rate. This conforms to the moderation hypothesis that Islamic consumer financing is deflationary while conventional consumer financing is inflationary. This outcome achieves the first objective by providing evidence of a net deflationary effect of Islamic consumer financing

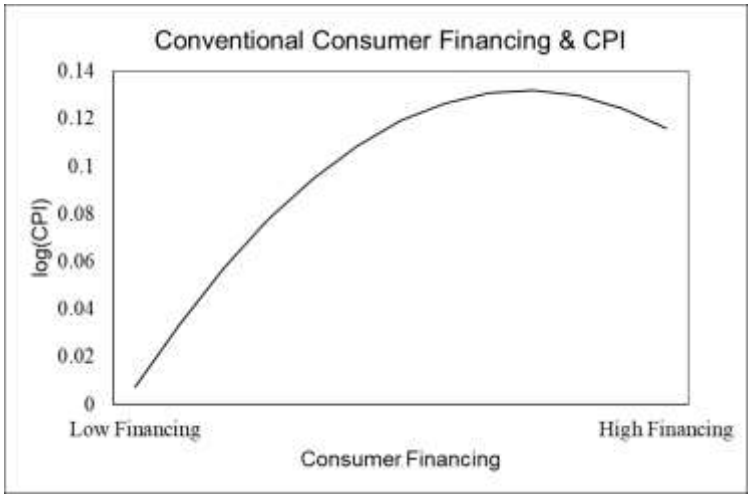

Figure 6. Regression fit of conventional consumer financing

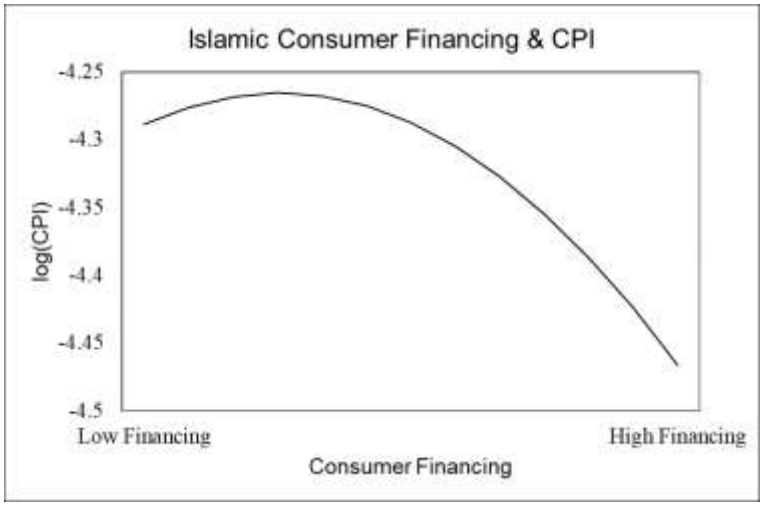

Figure 7. Regression fit for Islamic consumer financing

While comparing Figure 8 and Figure 9, shows that conventional financing successfully promotes the production, leading to a decrease in inflation. While based on the data, the incidence of Islamic producer financing is not high enough compared to conventional financing that may promote production, so it is inflationary. This outcome provides evidence for the second objective whereby Islamic financing in Pakistan are not successful in reducing inflation more than conventional financing.

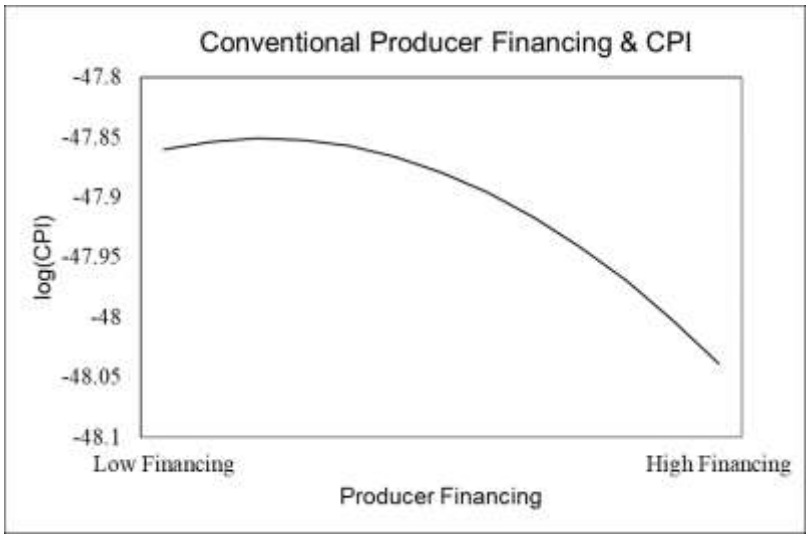

Figure 8. Regression fit of conventional producer financing

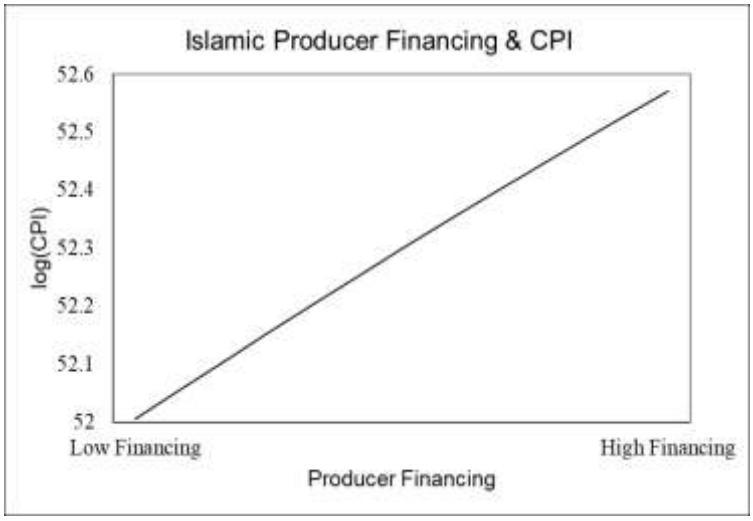

Figure 9. Regression fit of conventional producer financing

V. Conclusion and Implication

5.1. Conclusion

This research is based on the idea of empirically and theoretically comparing Islamic and conventional financing against inflation. As inflation is a common problem in most economies, economists are striving to create a system that can manage and control inflation. After World War 2, inflation-free economy became a dream for the economist. There is vast literature available on the finance and inflation relationship. However, no such study compares the different mode of financing and their impact on inflation.

The financial system can extend credit to the economy in two major categories, first is the consumer credit, and second is the producer credit. The revival of Islamic finance has been a beacon of hope that inflation-free economy can be achieved. Pakistan currently has a dual banking system in which conventional banks has a major share in the financial market. On the other hand, an Islamic bank is still a minor part with at most 16% share in the financial market. The main reason for this setback is the lack of public awareness and knowledge of Islamic economics and some other factors.

The theoretical finding of this paper is that the concept of wealth in Islam is that all things belong to Allah. And man on earth is a trustee of his resources and subject to be judged on the day of resurrection. That is why Islamic preaching's promote moderation and discourage wasteful consumption, self-centring, and hedonism. Same as this, Islamic consumer financing can

only be used for Shari'ah-compliant products, which are permitted. The consumer modes of financing are asset-based or asset-backed, which minimize the waste of resources and helps in promoting trade. For this reason, the demand for the only useful product will rise in the economy and demand for unproductive goods and services will decrease. Conventional consumer financing is based on loans that pay interest. The consumer can use that loan anywhere he wants. This point is established on this finding that conventional banks are more concerned about the creditworthiness of the customer. Moreover, the bank encourages (credit card) customers to use more credit by giving discounts on different brands.

The empirical finding of the consumer financing model matches the theoretical finding of this paper. Results explain that there is a more positive impact of consumer financing of conventional banks on inflation. On the other hand, Islamic consumer financing help in reducing inflation. Reason for such results is that Islamic banks can only provide consumer financing on a real asset. And the underlying asset must be Shari'ah compliant. This, in turn, reduces the chance of wasting resources and quantity of money created in the form of credit used to obtain a real asset.

The producer financing theoretical model explains that money as a factor of production is present in both Islamic and conventional economic models. Popular belief of the conventional economic framework is that money is traded as capital, or some consider it a separate factor that is used to acquire capital goods. In both cases, the cost of using money interests. Islamic economics, however, differ its opinion as Allah s.w.t strictly prohibits interest. They consider money as an entrepreneur or risk baring factor of production the cost using, which is profit.

Now from inflation, financing for production can impact inflation from the supply side (cost-push). By increasing the financing, the supply will also increase, which help in reducing the gap between supply and demand and hence can reduce inflation. This condition holds for both Islamic and conventional financing; both will help in reducing the gap by increasing supplies. However, it was hypothesized that on the supply side of the inflation impact of both financings will be different. Here interest-based financing will increase production and increase the cost of production. Hence their relative size explains cost-push inflation. On the other hand, in Islamic financing, there is no impact of interest rate on the cost. So we can conclude that Islamic financing for production will be more helpful in reducing inflation.

However, the empirical finding of producer financing display results that are partially not under the theoretical concepts. The result implies that conventional financing for production has a slightly negative effect on

inflation. Moreover, the results of Islamic producer financing is insignificant in showing deflationary effect. A possible explanation of its non-performance is that the size and participation of Islamic banks are very small compared to conventional banks. Despite the market share size, other factors include the immature Mudarabah market with only 4% share in Islamic financing. Lack of risk assessment agencies that can assess the risk of business for investment purposes. Lack of mature short term Islamic investment market. Due to these issues, Islamic banks to compete with the conventional bank have to offer pseudo-Islamic products to the customer, which mimic conventional banking products.

5.2. Recommendation

The comparison of theoretical model and empirical finding of this study suggested that Islamic consumer financing helps reduce inflation. Conventional consumer financing causes inflation more than Islamic consumer financing. So the government should promote consumer financing through Islamic mode and facilitate Islamic banking for its expansion. More Islamic banks should make new ways and modes to promote their consume financing department, optimizing the target of curbing inflation in the economy.

The development of risk assessment agencies is essential for facilitating and promoting equity-based financing. It will also help in the growth of Mudarabah companies and will have a positive impact on economic growth. It will also help in the development of the short term Islamic financial market. All these factors will help in increasing the growth of the economy can contribute to managing inflation.

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