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Exchange Rate Stability: Theory and Policies from an Islamic Perspective

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FOREWORD

The Islamic Research and Training Institute (IRTI) of the Islamic Development Bank (IDB) was established in 1401H (1981G) "to undertake research for enabling the economic, financial and banking activities in Muslim countries to conform to *Shari'ah*". In order to discharge its responsibilities, IRTI pays special attention to basic and applied research in the areas of Islamic economics, banking and finance relying on its in-house research capabilities and mobilizing external scholars.

In recent times, different parts of the world experienced severe financial crises linked to exchange rate instability. These crises have aroused much interest among different quarters resulting in producing a large literature on the subject. Research on exchange rate determination and stability from an Islamic perspective appears lacking to a greater extent. This research paper is a useful contribution on this topic. After discussing the microeconomic aspects of exchange rate determination from an Islamic perspective, a monetarist model of exchange rate determination is presented. The implications of Islamic principles on exchange rate stability are discussed. Monetary and fiscal policies that can be undertaken for exchange rate stability are also suggested. The research identifies the lack of international Islamic financial instruments and institutions

as main stumbling blocks in employing Islamic transactions and implementing policies.

I hope that the publication of this research paper will give policy makers a new perspective and different direction to deal with exchange rate instability. This particularly applies to countries that are trying to make their economies compatible with Islam norms. It is also expected that the paper will stimulate further research on the topic, particularly with reference to the nature of Islamic instruments and institutions that will enable economies to embrace international transactions that conform to Islamic principles.

Mabid Ali Al-Jarhi

Director, IRTI

1. INTRODUCTION

The Asian financial and economic crisis starting with the sudden collapse of the currencies and economies of the Asian "miracle" countries, caught most policy makers and analysts by surprise. Triggered by Thailand's floating of the baht in July 1997, the crises depreciated the currencies of some countries by unprecedented amounts causing one of the most serious downturn in these economies since the Second World War.[1] In a matter of months, the turmoil caused a huge decline in output and employment increasing the suffering of millions (Wade, 1998). The unpredictability and severity of the crises in economies that apparently had sound fundamentals has aroused interest from different quarters and a large literature has poured out on the subject.[2] Concerned policy makers, central bankers, and researchers are investigating the causes of the downturn to draft appropriate policies to tackle the problem and prevent future crises. New theoretical explanations are being sought to understand the currency crisis. While some of these discourses are general overview of the evolution of the crises, developments on the theoretical and empirical fronts include identifying the variables that may have caused the downturn.

Research on exchange rate stability from an Islamic perspective, however, is lacking. Though monetary management of an Islamic economy has been discussed in a closed-economy context (see Chapra 1985 & 1996 and Choudhry and Mirakhor 1997), the discussion of the same for an open-economy does not exist. This research is an attempt to fill this void. It is an in-depth study of exchange rate determination from an Islamic viewpoint. Alternative policies that can be undertaken for exchange rate stability are suggested. The specific objectives of the research are the following:

a) Relying on the existing literature, provide a theoretical basis of an exchange rate determination

[1] For example, by February 1998 the Thai baht and the Korean Won depreciated 50 percent, while the Indonesian rupiah shredded 75 percent of its pre-crisis value (Wade 1998).

[2] Recent publications that have devoted major part of their issues on the Asian Crisis includes *IMF's World Economic Outlook* (May 1998), *Cambridge Journal of Economics* (Vol. 22, No. 6, 1998) and *World Development* (Vol. 26, No. 8, 1998).

in an Islamic economy. Both microeconomic and macroeconomic approaches will be examined.

b) Discuss the effects of Islamic principles on international transactions and exchange rate stability.

c) Outline exchange rate policy framework for a stable exchange rate from an Islamic perspective. To enable the implementation of these policies by OIC[3] member countries the institutions required are also discussed.

The paper is organized as follows. After defining some basic concepts, Section 2 surveys literature on the theoretical developments and empirical research on exchange rate determinants in conventional economics. In Section 3, contributions in exchange rate determination in an Islamic economy are discussed. The basic Islamic principles that have relevance with international transactions and currency markets are also outlined. Section 4 starts with outlining the microeconomic theory of exchange rate determination in the conventional economy. We then discuss the Islamic nature of currency market by qualifying the transactions in it by *Shari'ah* principles. We discuss the implications of these on the stability of the exchange rate. Section 5 discusses the determination of the exchange rate from a macroeconomic perspective. A monetarist model of exchange rate is outlined and modified by the *Shari'ah* principles to arrive at the Islamic version. As in the microeconomic model, the implications of the Islamic principles on exchange rate stability are also discussed for the macroeconomic model. In Section 6 the policy recommendations for exchange rate stability are outlined. This section also includes a discussion on the institutional arrangements necessary for the successful implementation of the Islamic policy alternative. The last section concludes the paper.

[3] OIC stands for Organization of the Islamic Conference, a grouping of 56 Muslim countries.

2. EXCHANGE RATE DETERMINATION: LITERATURE REVIEW

Before going over the review of the literature on exchange rate determination, we first outline the basic concepts related to currency markets. We then discuss the evolution of the theories of exchange rate determination in conventional economics. This is followed by a brief review of the empirical studies on exchange rate determination and movements. In this sub-section, the variables that affect the exchange rate are listed.

2.1. Currency Markets and Exchange Rate: Basic Concepts

Exchange rate can be defined as the price of foreign currency in terms of domestic currency units. Foreign currency is traded in spot and forward markets. In the former market currencies are exchanged on the spot[4] and in forward markets contracts are signed in the present for a transaction that takes place in the future. The time and other details (price, quantity, etc.) of the future transaction are specified in the contract. The demand and supply in these markets determine the respective spot and forward exchange rates.

Other than spot and forward transactions, contracts in currency markets include futures, options, and swaps. Futures are forward contracts of standardized currency amounts that are traded in organized markets. Like futures, options are financial contracts of standardized amounts that give buyers (sellers) the right to buy (sell) without any obligation to do so. As futures and options are standardized, only a few leading currencies are traded in these markets. Swaps involve two contracts, one spot and the other forward, the latter offsetting the former. Swaps are often used when futures are not available for a certain currency. Governments/central banks sometimes use swaps to stabilize their currencies (Salvatore 1993, p. 392).

Agents in the foreign exchange markets are exporters/importers, investors, and speculators. While exporters and importers are involved in the trading of goods and services, investors deal in assets (financial and real). A speculator is a "trader who enters the futures market in search of profit and, by doing so, willingly accepts increased risk" (Kolb 1997, p. 96). While a hedger uses forward, futures, options, and swaps to reduce his exposure to risk, a

[4] Spot transactions in currency markets involving transfer of deposits takes two days to clear.

speculator uses the same instruments to expose himself to risk to make a profit (Salvatore 1993, p. 398).

Like any other good, the market forces of demand and supply of foreign currency determines the corresponding exchange rate. The demand for foreign currency arises when domestic residents purchase foreign goods, services, or assets (financial and real). Similarly, supply of foreign currency comes from exporters of domestic goods, services, and assets. The balance of payments accounts places the flow of goods and services under the current account (*CA*), and the flow of assets (real and financial) under capital account (*KA*). The central banks official reserve transactions (*ORT*) balances the account. The sum of current account and capital account is called official settlements balance (*OSB*). Note that when the central bank acquires (sells) foreign reserves, *ORT* is negative (positive). The accounting identity for the balance of payments is,

$$BOP = CA + KA + ORT = 0, \qquad (2.1)$$

$$\text{or} \qquad CA + KA = -ORT. \qquad (2.1')$$

Exchange rate regimes can be broadly classified as fixed (pegged), flexible (floating), and managed float.[5] In a flexible exchange rate regime, the exchange rate is determined by market forces and authorities do not interfere in the currency market. The government and central bank can pursue independent fiscal and monetary policies. The overall macroeconomic policies, however, affect the exchange rate and its volatility. In a fixed exchange rate regime, the exchange rate is fixed at a par value determined by the authorities. The central bank takes appropriate measures to keep the exchange rate at this level. If right macroeconomic policies are not undertaken, a fixed exchange rate cannot be sustained. Managed float is hybrid of the above two regimes in which the central bank allows the exchange rate float (determined by market forces) within a narrow band. The central bank intervenes in the currency market whenever the exchange rate hits one of the bounds of the band.

[5] In reality exchange rate regimes are more varied and they include peg (fixed), crawling peg (exchange rate crawls at a pre-announced rate), managed float (float within a band), independent float (determined in the inter-bank foreign exchange market), and fully float (market determined will full current account convertibility) (see Desai 1998).

2.2. Theories of Exchange Rate Determination: A Brief Survey

In the microeconomic approach, exchange rate is determined in the currency market by the forces of demand and supply of foreign currency. As for the macroeconomic approach, different open-economy theoretical models have been developed to explain the movement of exchange rate. We briefly discuss the evolution of these macroeconomic models below.

Before the introduction of fiat money the gold standard and the price-specie-flow mechanism determined the exchange rates. Until the First World gold standard determined the value of a currency in terms of the other. Each country's currency was convertible to gold at a specified rate, which in turn determined the exchange rate between currencies of different nations. Hume asserted in 1752 that any disequilibrium in the balance of payments lead to the price-specie-flow mechanism (Salvatore 1993, p. 479). Under this mechanism gold flowed out of a deficit nation and flowed in the surplus country. Reduction of gold reduced the money supply and the price level, making the country more competitive. The opposite happened in the surplus country. These adjustments kept the balance of payments close to zero. Under the price-specie-flow mechanism the exchange rate changed due to the changes in internal prices.

One of the first theories of exchange rate determination is the trade (or elasticity) approach. This approach is similar to the microeconomic approach as it maintains that the equilibrium exchange rate is the one that balances the flows of exports and imports. For example, if imports exceed exports (a trade deficit) then the domestic currency depreciates. The depreciation of the currency makes imports expensive to residents and exports cheaper to foreigners, thereby giving trade balance. Alexander (1951 and 1952) introduces the macroeconomic version of this theory as the absorption approach. From the national income accounting identity, he derives the trade balance as the difference between the total output produced and the absorption (sum of consumption, investment, and government expenditure) in the economy. If absorption in an economy exceeds the output produced, there is a deficit is the trade balance and pressure on the exchange rate to depreciate. The depreciation of the exchange rate reduces absorption (imports) and increases output (exports) bringing balance in the trade flows. One implication of the absorption approach is the twin-deficits problem, which links the internal (budget) deficit to the external (trade deficit). If saving equals and investment in an economy, then a government budget deficit causes a trade deficit.

Two theories of exchange rate determination derived from arbitrage conditions are widely used in open-economy macroeconomics. The first relates to arbitrage in the goods market is the purchasing power parity (PPP). PPP has evolved to be one of the prominent theories of exchange rate determination with fiat money. Under PPP, the exchange rate is determined by arbitrage as the ratio of the price levels (or inflation rates) of two countries as shown below.[6]

$$E=P/P^*,$$

Where E is the exchange rate, P is the domestic price level, and P^* is the world (foreign) price level. The second arbitrage relates to the asset market and called the (uncovered) interest parity (IP). With mobile capital and no transaction costs, short-term capital flows across borders to reap higher rates of return. Mobility of capital gives equality of the rates of return across borders. The interest parity condition is given as,

$$i = i^* + e,$$

where i is the domestic interest rate, i^* is foreign interest rate[7] and e is the expected rate of depreciation of the domestic currency. Note that the rate of return on foreign assets is the sum of foreign interest rate (i^*) and the expected rate of depreciation of the domestic currency (e).

Mundell (1962) and Fleming (1962) use a Keynesian IS-LM framework to introduce capital flows along with trade in goods in an open economy. In this model domestic and foreign interest rate differentials cause capital flows between countries. Interest arbitrage induces the flow of short-term liquid capital to earn higher returns (interest rates) (Caves et.al. 1990, pp. 400-401). The effects of fiscal policy and monetary policy depend of the degree of capital mobility. Given some degree of capital mobility, an expansionary monetary policy lowers the interest rate and depreciates the currency, while an expansionary fiscal policy increases the interest rate and appreciates the currency in the short run.

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[6] According to absolute PPP exchange rate is determined as a ratio of the price levels of two countries, while according to relative PPP the change in the exchange rate is proportional to the relative changes in the two countries inflation rates (Salvatore 1993, pp.473-74).

[7] Foreign interest rate is the interest earned on placing funds in external financial markets. Examples of foreign interest rate are LIBOR and US Treasury bond rate.

Monetary approach to exchange rate assumes that economic agents hold only one asset, money (Johnson 1972). The monetarist theory (the monetary approach to exchange rate) underscores that money market equilibrium and purchasing power parity together determine the exchange rate. As such, domestic and foreign money supplies, outputs, and interest rate differential are the determinants of exchange rate (Caves et. al. 1990, p.655). In this model, increase in domestic credit creation increases money supply and depreciates the domestic currency.

In portfolio balance models, exchange rate is determined as an asset price (Dornbusch 1975, Ch. 5 and Dornbusch and Fischer 1980, Kouri 1976, and Rodrigues 1980). Agents hold domestic and foreign bonds denominated in foreign currency, along with money. The composition of the portfolio of assets depends on the relative returns on different assets. One characteristic of these models is that interest parity (in the assets market) determines the short run exchange rate and PPP (in the goods market) governs the long run exchange rate. There are, however, differences in the adjustment rates in the assets and goods markets. This model is the first to explain the volatility of the exchange rate.

Efficient markets model postulates that agents with rational expectations base their decisions on all the information available (see Sheffrin 1983 and Copeland 1994). Accordingly, the expected value of the future exchange rate is based on all the current information available and is reflected in the spot exchange rate. The future exchange rate differs from the expected exchange rate due to random shocks (errors) that agents do not have information on when the expectations are formed. The exchange rate, as such, follows a random walk due to these unexpected random shocks. This model explains the volatility of the exchange rates arising from these random factors. The effect of monetary and fiscal policies in efficient markets model depends on whether the policies are anticipated or not. If the policies are expected then this information is included in the spot exchange rate (and hence the expected exchange rate). If the policies are unexpected, then they affect the exchange rate randomly.

There is a small but a growing literature that discusses how currency crises can originate. Literature on currency crisis can be divided into first generation and second generation models (Flood and Marion, 1998). In first generation models, speculators attack a currency when they recognize that the domestic expansionary policies will not be able to sustain the fixed exchange rate. Krugman's (1979) model falls in this category. He shows that currency crisis can arise in a fixed exchange rate regime if domestic credit expansion exceeds the demand for money. Loss of reserves to keep the exchange rate at par value leads to a speculative attack on the currency. Second generation models of currency crises explain how an attack on the currency takes place

under sound economic policies. In these models, speculators use derivatives (options) to make a profit from expectations about the uncertain future. Theoretical models in this category include self-fulfilling crisis, herd behavior of investors and the contagion effect (Obstfeld 1986, 1994, and 1996).[8] Some papers also debate the role of the financial sector liberalization's contribution to the volatility of the exchange rate. Diaz-Alejandro (1985) asserts that financial liberalization that led increased capital mobility across borders in imperfect capital markets of the Latin American countries increased the frequency of financial crises.

Mishkin (1996) takes a different approach to explain the currency crisis. He points out the problems of asymmetric information as the root cause of financial instability. He reiterates that increase in interest rates, deterioration in banks' balance sheets, stock market decline, and increase in uncertainty aggravates the adverse selection and moral hazard problems. For emerging economies this can lead to foreign exchange crisis, which can initiate a vicious cycle of decline in economic activity and banking crisis.

From the above discussion two points can be noted. First, the theories of exchange rate determination have evolved over time reflecting the changes and developments in the nature of international transactions. Earlier theories emphasized trade (current account) variables in determining exchange rates. The development of technology has increased capital mobility over time. As a result, recent theories assert capital account variables as main determinants of exchange rate. Second, in a cross-section of countries at a point in time, the level of development of a country will determine which theory (i.e., variables in the current account or the capital account) appropriately explains the determination of exchange rate. In developing countries with rudimentary financial markets, trade variables are more likely to determine the exchange rate. In countries that have developed capital markets and allow free movement of capital across borders, the exchange rate is more likely to be determined by movements of financial assets. Most countries, however, fall somewhere in the middle allowing regulated capital movements. As such flow of goods, services, and assets determine the exchange rate.

[8] For a review of speculative attacks and balance of payments crisis see Blackburn and Sola (1993) and Agenor, et.al. (1992).

2.3. Empirical Research on Exchange Rate Determination

The above discussion suggests different determinants of exchange rate. Accordingly, empirical research has tested and identified numerous variables that affect the exchange rate. Among the widely estimated results in open-economy macroeconomics are the purchasing power parity (PPP) and the interest parity (IP). While capital movements induced by international interest rates differentials effect the exchange rate, PPP appears not to affect the short-term exchange rate. A few recent studies, however, emphasize that the fundamental variables (like money supply, interest rates, current account balance, etc.) are unable to explain the variability of the exchange rates. Instead, speculative bubbles based on self-fulfilling expectations are tested (see Frankel and Rose 1995). Another recent development in empirical studies is the contagious effects of currency crises (e.g., Eichengreen et.al. 1996).[9]

Instead of going over the empirical studies individually, we list the variables that have been identified by some recent survey papers that have studied the important contributions in the area (Frankel and Rose 1995, Kaminsky and Reinhart 1998 and Kaminsky, Lizondo, and Reinhart 1997). These studies show that following variables appear to affect the nominal exchange rate.

A: Monetary Variables:

Capital Account Indicators: Foreign exchange reserves, and domestic-foreign interest- rate differentials, capital flows, short-term capital flows, and foreign direct investment.

Debt Profile: Public foreign debt, total foreign debt, short-term debt, debt service, foreign aid and credit to the public sector.

Financial Liberalization: Credit growth, change in the money multiplier, ratio of domestic credit to nominal GDP, real interest rate on deposits, and ratio of lending-to deposit ratio.

Other Financial variables: Central bank credit to the banking sector, domestic inflation, and ratio of M2 to foreign exchange reserves.

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[9] One of the recent developments on the empirical front is the development of indicators that can serve as Early Warning Signals to predict an impending crisis so that appropriate policies can be taken to avert it. For a discussion on the development and use of Early Warning Signals, see Kaminsky and Reinhart (1998) and Kaminsky, Lizondo, and Reinhart (1997).

B: Real Variables

Current Account: Exports, imports, terms of trade, deviation of exchange rate from trend, real exchange rate, current account balance, and savings and investment.

Fiscal variables: Fiscal deficit and government consumption.

Overall Economy: Output and stock prices.

Note that most of the variables listed above are influenced (directly of indirectly) by monetary and fiscal policies. Appropriate use of these policies, therefore, is necessary to achieve exchange rate stability.

3. INTERNATIONAL TRANSACTIONS AND CURRENCY MARKETS: ISLAMIC PERSPECTIVES

While literature on international transactions and currency markets in Islamic Economics is scant, no paper (to the best of my knowledge) discusses exchange rate determination and policies. In this section, after briefly reviewing the literature related to international transactions and currency markets from Islamic perspective, we outline the Islamic principles governing these issues.

There are few indications of the concept of exchange rate in the earlier writings of Islamic scholars. Dirham (silver coin) and dinar (gold coin) had an exchange rate that was determined by market forces. Among the earlier writers, Islahi (1988 and 1992) reports that Ibn Taimiyah and Ibn al-Qayyim emphasized the importance of keeping the value of money stable. While talking about the debasement of money due to increased money supply, Ibn Taimiyah hints that precious metals leave the country (Islahi 1988, p. 142).

Siddiqi (1992) maintains that exchange rate is determined in the market by demand for and supply of currency. Intervention in the currency market by relevant authorities is allowed only to protect and promote public interest (Siddiqi 1992, p.19). Khan (1997) and Kahf and Khan (1992a) discuss how Islamic modes of financing can be used in an international setting. Saadallah (1999) discusses different modes of Islamic financing that can be used in trade of various kinds of commodities with different maturities. Tahir (1994) touches on the international capital flows appropriate in an Islamic economy. While discussing different sources of financing development, Iqbal (1991) discusses the pros and cons of different kinds of external financing from an Islamic perspective.

Khan (1991) discusses transactions in four different foreign exchange markets (spot, forward, futures, and swaps) from Islamic perspective, concluding the conventional forward, futures and swaps contradict Islamic principles. Tahir (1994) discusses the features of the exchange rate in a fiat money context. He argues that argues that fiat money can be traded in the forward market on principles of *bai' muajjal* (price-deferred sale) and *bai' salam* (object-deferred sale) (p. 272).[10] He then discusses how these modes of transactions can be used in international trade to avoid *riba* (interest).

[10] As pointed out in Section 3.1 below, Islamic rules prohibit such transactions.

3.1. International Economic Transactions: Islamic Rules

The fundamental principle of exchange between two currencies is based on the following saying of Prophet Muhammad (PBUH):

> Gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates, salt for salt, like for like, equal for equal, hand to hand. If these types differ, then sell them as you wish, if it is hand to hand (Muslim).

The above saying asserts that when commodity money (gold or silver) is exchanged, they should be of equal amount and the transaction should be completed on the spot. The exchange of different units of one specie for another (e.g., gold for silver) is allowed as long as the transaction takes place on the spot.

While the exchange rate is determined in the market for foreign currencies by the forces of demand and supply (Siddiqi 1992, p.20), the Islamic rules that are relevant to our discussion on exchange rate determination and policies are given below:

1. The government/central bank can interfere in the foreign exchange market to protect public interest (the principle of *maslahah)*.[11]

2. *Riba* based transactions are prohibited. Other than interest on debt transactions, *riba* has other implications in a foreign exchange market. As fiat money is ruled to be same as commodity money (silver and gold), [12] the rules of *riba* relating to gold and silver apply to currency. This means that only spot transactions between two currencies are allowed. As such, transactions in currencies of different denominations in the future are prohibited. Deferred delivery of one currency is prohibited as it amounts to *riba-nisaa* or delayed-payment *riba* (Hamoud 1985, pp. 62-63). The prohibited partial future transactions that may occur in the currency market may be the following:

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[11] Based on the legal maxims of the Ottoman Najalla (see Siddiqi 1992, p. 20).

[12] Resolution No. 9, Resolutions and Recommendations of the Third Session of the Council of the Fiqh Academy in OIC (1989).

a) Taking delivery for foreign currency now and paying for it at a future date.

b) Paying for a foreign currency now and taking delivery at a future date.

Note that transactions in the form of deferred payment (*bai-muajjal*) and deferred delivery (*bai-salaam*) involving goods are permitted. In international transaction the price of a good can be quoted in a foreign currency.

3. Certain transactions involving *gharar* are prohibited. *Gharar* refers to the doubtfulness arising from insufficient knowledge of the quantity and quality of a good by one or both parties in the transaction. As an extreme case, agent may be involved in *maysir* (gambling) which is prohibited in Islam. Pure speculation not based on economic fundamentals may fall in this category. The following transactions are also forbidden on the grounds of *gharar*:[13]

   a) Future sale (of good or currency) in which both delivery and payment are postponed to a future date.

   b) Selling something not in possession.

4. Selling *dayn* (debt or obligation) for debt or money is prohibited.[14]

5. In the absence of Islamic alternatives, the maxim of necessity making the prohibited lawful will apply.[15]

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13 For a detailed discussion on *gharar*, see Al-Dhareer (1997).

14 See Kahf (1997b) for a discussion on the topic.

15 Legal maxims of Ottoman Najalla (Siddiqi 1992, p. 19).

4. EXCHANGE RATE DETERMINATION IN AN ISLAMIC ECONOMY: A MICROECONOMIC APPROACH

To arrive at the exchange rate theory from an Islamic perspective, we first outline the conventional models of exchange rate determination and then modify these models by applying the *Shari'ah* principles (discussed in section 3.1 above). We can approach the discussion on exchange rate determination from the micro and macro perspectives. In the microeconomic approach the currency market and the determination of equilibrium exchange rate is discussed. In the macroeconomic approach we analyze a monetarist model. The micro approach of the currency market is discussed below and the macro approach to exchange rate determination is discussed in the next section.

4.1. Currency Market and Exchange Rate Determination: A Basic Model

As mentioned above, exchange rate (E) is determined in the market by the demand for and supply of currency. Note that exchange rate is defined as the price of foreign currency in domestic currency units (e.g., SR/$US), so that an increase in E indicates depreciation of the domestic currency. To determine the equilibrium exchange rate we first discuss the determinants of the demand for and supply of foreign currency.

4.1.1. The Demand Function for Foreign Currency

The demand for foreign currency (D) increases whenever a payment is made abroad. The law of demand states that quantity demanded of foreign currency is inversely related to its price, i.e., exchange rate. As foreign currency becomes cheaper (i.e., domestic currency appreciates), domestic price of imports decreases for residents. As a result, imports increase and more foreign currency is demanded. Other determinants of demand for foreign currency are imports (I), interest payments on debt or debt servicing (INT), and net capital outflows (NKO). Capital outflows arise when residents buy assets (real and financial) abroad. Thus, the demand for foreign currency function is given as:

$$D = D(E, I, INT, NKO), \tag{4.1}$$

$$D'_E<0,\ D'_I>0,\ D'_{INT}>0,\ D'_{NKO}>0;$$

where $D'i$ denotes the first derivative of demand with respect to variable i ($i = E, I, INT,$ and NKO).

Import of goods and services (*I*) has two components, induced (*In*) and autonomous (*Ia*). Induced import is positively related to aggregate income. Growth in real Gross Domestic Product (*Y*) affects the currency market indirectly by increasing the overall demand for goods and services that includes imports. Note that expansionary fiscal and monetary policies (*G* and *M* respectively) increases the aggregate demand and output and affects imports positively. Fiscal and monetary policies also affect the demand for foreign currency through the money market by changing the interest rate and the capital flows.

To understand the link between fiscal and monetary policies and capital flows, we need to examine the relationship between capital flows and domestic-foreign interest rate spread (*INTLIB*). When domestic interest rate decreases relative to foreign interest rate (say LIBOR), people transfer funds out of the country to reap higher returns. As a result, fiscal and monetary policies by changing the domestic interest rate affect capital flows across borders. The effects of the two policies on capital outflows, however, are different.

Fiscal policy affects the money market indirectly. Increase in government expenditure positively affects the aggregate output and this increases the demand for money. Given the money supply, a higher demand for money raises the interest rate. An increase in domestic interest rate results in capital inflow, decreasing the demand for foreign currency. Monetary policy affects the money market directly. An increase in money stock decreases the domestic interest rate. Given the foreign interest rate, a lower domestic interest rate increases the capital outflow (*NKO*) and raises the demand for foreign currency. Another explanation of capital outflow due to expansionary monetary policy is that such a policy leaves too much money in the hands of people, who substitute foreign currency for domestic currency.

The induced import and capital outflow functions can be written as,

$$In = I(Y, G, M), \tag{4.2}$$

$$I'_Y>0,\ I'_G>0,\ D'_M>0;$$

and

$$NKO= N(G, M, INTLIB), \tag{4.3}$$

$$N'_G<0,\ N'_M>0,\ N'_{INTLIB}<0.$$

Using import and capital outflow functions in the demand for foreign exchange function gives,

$$D = D(E, Ia, INT, INTLIB, Y, G, M), \quad (4.1')$$

$$D'_E<0, D'_{Ia}>0, D'_{INT}>0, D'_{INTLIB}<0, D'_Y>0, D'_G=?, D'_M>0.$$

The signs of all the derivatives are explained above. Note the effect of an increase of government expenditure on the demand for foreign currency is unknown. This is because the effect of an expansionary policy on demand for foreign currency has positive (due to higher imports) and negative (through higher interest rate on capital outflows) effects. The relative strengths of these two effects will determine the sign of D'_G.

4.1.2. The Supply Function of Foreign Currency

Supply of foreign currency (*S*) arises whenever payments are made by foreigners to the residents or government for goods, services, and assets. The law of supply states that the quantity supplied of foreign exchange increases with a rise in its price, i.e., the exchange rate. A rise in the price of foreign currency (depreciation of the domestic currency) makes exports cheaper to foreigners. This increases exports and, as such, the supply of foreign currency. Furthermore, supply of foreign currency is positively related to exports (*EX*), foreign direct investment (*FDI*), and external debt (*EDT*). Running down the international currency reserves (*R*) held by the central bank also increases the supply of foreign currency. The supply of foreign currency function is given by,

$$S= S(E, EX, FDI, EDT, R), \quad (4.4)$$

$$S'_E>0, S'_{EX}>0, S'_{FDI}>0, S'_{EDT}>0, S'_R<0,$$

where *S'i* are the partial derivatives of supply with respect to variable *i* (*i* = *E, EX, FDI, EDT,* and *R*).

4.1.3. Determination of Equilibrium Exchange Rate

Equilibrium in the currency market occurs when demand for the currency equals its supply (i.e., *D*=*S*). The expression for the equilibrium exchange rate is given as follows:

$$E =f (In, EX, INT, INTLIB, FDI, EDT, R, Y, G, M); \quad (4.5)$$

$$f'_{In}>0, f'_{EX}<0, f'_{INT}>0, f'_{INTLIB}<0, f'_{FDI}<0, f'_{EDT}<0, f'_R>0, f'_Y>0, f'_G=?, f'_M>0.$$

Higher imports (*In*) increase the demand for foreign currency appreciating the value of foreign currency (and depreciating the domestic currency). Similarly, higher exports (*EX*) increase the supply of foreign currency lowering the foreign currency's value. Net interest payments to foreigners increase the demand for foreign currency, thereby depreciating the exchange rate. Capital outflows resulting from higher foreign interest rate (relative to domestic interest rate) (*INTLIB*) depreciates the domestic currency. Foreign direct investment (*FDI*) and external debt (*EDT*) brings in foreign currency in the economy, increasing its supply and appreciating the domestic currency. A decrease in international reserves (*R*) increases supply of foreign currency, raising the value of domestic currency. Growth in national output (*Y*) and expansionary monetary policy (*M*) increases imports and the demand for foreign currency and as such depreciating the exchange rate. Money supply has a similar effect on the exchange rate through the money market. Increase in money supply lowers the domestic interest rate and capital flows out, depreciating the local currency. The effect of an expansionary fiscal policy (*G*) on exchange rate, however, is uncertain. On the one hand, increase in government expenditure increases aggregate demand and output affecting the imports positively. This increases the demand for foreign currency depreciating the domestic currency. On the other hand, the resulting higher output increases the demand for money, raising the interest rate and attracting capital inflows, appreciating the domestic currency.

4.2. Currency Market and Exchange Rate Determination: An Islamic Approach

To arrive at the Islamic approach to the exchange rate determination the transactions in the currency market have to be qualified by the Islamic principles. We do this by applying the Islamic rulings discussed in Section 3.1 to modify the basic model discussed above. The international transactions that qualify in an Islamic economy are discussed below.

1. In the conventional foreign exchange markets, agents involved in foreign currency transactions are traders (exporters and importers), investors, and speculators. The activities of speculators not based on firm economic foundations may fall under the category of *maysir* and, as such, will not exist in an Islamic economy.

2. Currency is traded by using spot, forward, futures, options, and swap contracts in conventional currency markets. Of these, transactions in spot markets between two currencies at an agreed upon rate are permitted in Islam. Contemporary forward currency contracts in which both the payment for and delivery of foreign currency, good, or asset are made in the future, are not allowed by Islam. Futures and options retain this characteristic and add along implicit interest elements in the contracts. As such, these contracts are not compatible with Islamic principles. Swap involve two contracts in a single contract, one being a forward contract, is also not permitted by Islamic rulings.

3. Interest based financing is not approved by *Shari'ah*. Thus, all kinds of interest bearing debt (short-term and long-term loans from bilateral, multi-lateral, and private sources) are not permissible. As selling debt is not allowed, selling/buying of conventional interest bearing bonds will not exist in an Islamic economy. As a result, interest payments/receipts will not occur in the current account in an economy based on *Shari'ah* principles. Other interest-based transactions (i.e., and borrowing from banks, official creditors, and other sources) under capital account will also be absent in an Islamic economy. Direct investment, capital transfers, and portfolio investment, however, will take place.

The international transactions that are accepted under Islamic principles are identified in Tables 1 and 2. We see that only a few transactions that currently occur in conventional economies are acceptable in Islam. We discuss the effects of the transactions based Islamic principles on the currency market and exchange rate stability next.

Table 1:
Agents and Transactions in the Foreign Currency Markets

	Spot	Forward	Futures	Swaps
Traders	* x	*	*	*
Investors	* x	*	*	*
Speculators	*	*	*	*

* - Transactions occurring in conventional economies.
x - Transactions accepted by *Shari'ah*.

Table 2:
International Transactions in the Balance of Payments Accounts

Current Account	
Trade Balance (goods)	* x
Net Services income (tourism, transport, etc.)	* x
Net Remittances	* x
Net Interest payments	*
Net income from other Investments	* x
Capital Account	
Direct Investment	* x
Portfolio Investment	* x
Capital Transfers (debt forgiveness, grants, etc.)	* x
Net-Borrowing from Official Creditors	*
Net Borrowing from banks	*
Other Borrowing (bonds issues, loans from international capital market, etc.)	*

* - Transactions occurring in conventional economies.
x - Transactions accepted by *Shari'ah.*

4.3. Islamic Principles and Exchange Rate Stability

The discussion on the effects of *Shari'ah* compatible international transactions on the exchange rate stability can be approached in two ways. First, the effects of excluding the transactions that are prohibited by Islam on exchange rate stability can be discussed. The second way is to analyze the effects of introducing Islamic alternatives to transactions that are not accepted by Islam. Note that while some transactions in the conventional economies do have Islamic alternatives, certain other transactions will not have any Islamic counterpart.

As mentioned above, speculative movement of capital will be very small in an Islamic economy due to two reasons. First, pure speculative behavior itself is discouraged and second, financial instruments used by speculators are not accepted by Islam. The negligible speculative movement of capital from the currency markets of Islamic countries will have a sobering effect on the exchange rate. This is because short-term capital (hot money) movement by speculators is the main cause of volatility of the exchange rate. A decrease in the movement of short-term capital for speculative reasons will minimize the demand and supply shocks in the currency market. This will lead to a more stable exchange rate.

The absence of salable interest bearing debt will also reduce the variability in the exchange rate. This particularly applies to short-term capital. Long-term capital is not very mobile given the long-term contracts that bind the capital. This characteristic of long-term capital, however, applies to both conventional and Islamic financing. It is the short-term capital that is very mobile increasing the volatility of exchange rates. The nature of short-term capital in an Islamic economy, however, is different from that in a conventional economy. While short-term capital in an Islamic contract will be sensitive to the rate of return (instead of interest rates), the elasticity will be smaller than that of conventional economies. This stems from the basic difference between a debt contract in the conventional economy and Islamic one. In the former, debt transaction is purely financial, while in the latter it is tied to a real transaction. As Islamic financing is tied to real transactions, it cannot be liquidated as soon as the rate of return changes. There is a built in lag in the change in the rate of return and its effect on the capital market. As a result, the disturbance arising from capital mobility due to rate of return changes will be less in a currency market in an Islamic economy, making the exchange rate relatively stable. Furthermore, the absence of the ability to sell debt (i.e., bonds) will also bring stability in the exchange rate. If the interest rate changes in conventional financial markets, investors can simply sell/buy the bonds immediately. This cannot be done with Islamic debt as it cannot be exchanged in markets. As debt cannot be sold under Islamic principles, the mobility in capital will reduce making exchange rate less volatile.

Note that while eliminating salable interest-bearing debt will decrease the volatility of exchange rate, without Islamic alternatives it will reduce the overall volume of international transactions in an economy. This may create some other problems. Foreign capital is required to fill the 'external gap' by most developing countries. Absence of foreign capital, particularly long-term, can affect economic growth adversely. Similarly, short-term capital is needed to

meet working capital needs. This genuine need for capital (short-term and long-term) calls for Islamic alternatives that can replace interest-bearing financing.

Different Islamic modes of financing have been developed to finance short-term and long-term needs of businesses in a closed economy context (see Ahmad 1993 and Kafh and Khan 1992b). These modes of financing available internally in an Islamic economy can have counterparts in an international setting. The difference between the two, however, will be that in the latter the transactions will go through the currency market. The long-term and medium-term Islamic financing alternatives can take the form of investment on the basis of profit sharing (*mudarabah* and *musharakah*) and leasing capital (*ijarah*). Short-term financing can be funded based on other Islamic modes of financing (like *murabahah* and *bai-muajjal, bai-salaam* and *istisna*).[16] As such, net borrowing from banks and official creditors will be replaced by net *salaam* flows (inward *salaam* minus outward *salaam* flows) net *muajjal* flows (inward *muajjal* minus outward *muajjal*), etc. in the balance of payments transactions for an Islamic economy.[17]

At present, however, available international financing on Islamic principles is scant, if not non-existent. This poses a problem to countries that would like to move towards Islamizing their economies in general and international transactions in particular. While the Islamic economies can use the interest-bearing international capital in necessity (see point 5 in Section 3.1 above), they should strive to develop Islamic alternatives for long-term and short-term international capital.

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[16] For a discussion of using Islamic modes of financing in international trade see Khan (1997) and Saadallah (1999).

[17] This was pointed out by Tariqullah Khan when the paper was presented at a seminar in IRTI.

5. EXCHANGE RATE DETERMINATION IN AN ISLAMIC ECONOMY: A MACROECONOMIC APPROACH

As in section 4, we first outline a macro model of exchange rate determination in the conventional economy. We then modify this model by applying the *Shari'ah* principles to arrive at the Islamic version. The implications of Islamic principles on exchange rate stability are then discussed.

5.1. Exchange Rate Determination: The Basic Macro Model

We use a monetarist model for the macroeconomic approach to exchange rate determination. The monetarist model is widely used due to its simplicity and ability to discuss the effects of monetary and fiscal policy (deficit financing) on the exchange rate. The monetarist model presented below is a modified and extended version of the first generation currency crisis model found in Flood and Marion (1998). The economy under consideration is small and open. The demand for money, given by the liquidity preference function, varies inversely with the domestic interest rate (i) and positively with the aggregate output (Y). The domestic money market equilibrium is given by,

$$M/P = l(i, Y), \qquad l_i < 0 \text{ and } l_Y > 0, \qquad (5.1)$$

where M is the money stock (base money or high-powered money) and P is the price level.[18] From the balance sheet of central bank, base money equals the sum of domestic credit (DC) and international reserves (R). That is,

$$M = DC + R. \qquad (5.2)$$

Note that DC represents the domestic financial assets (government bonds). The central bank can increase the supply of money by increasing any of the two components of its assets. In a small open economy, domestic price level (P) is determined by purchasing power parity given by,

$$P = EP^*, \qquad (5.3)$$

where P^* is the exogenous world (foreign) price level, and E is the exchange rate. Similarly, with capital mobility, interest parity determines the domestic interest rate (i) as the sum of the exogenous foreign interest rate (i^*) and the expected (and actual in case of certainty) rate of depreciation (e),

[18] In macroeconomic models, money supply is assumed equivalent to base money (see Flood and Marion 1998 and Frankel and Rose 1995).

$$i = i^* + e. \quad (5.4)$$

Substituting Equations (5.2), (5.3), and (5.4) in Equation (5.1) gives,

$$(DC + R)/EP^* = l(i^* + e, Y). \quad (5.5)$$

Rearranging, we get

$$E = (DC + R)/P^* \, l(i^*+e, Y). \quad (5.6)$$

Equation (5.6) determines the exchange rate in the monetarist macro-model. We see that expansionary monetary policy exceeding the growth in the demand for money will depreciate the currency. Expansionary fiscal policy that is financed by deficit financing by the central bank will have similar effect. Government budget deficit financed by selling bonds to the central bank increases *DC* in equation (5.6) and hence the money supply. Given the money demand, expansion of domestic credit (change in $DC>0$) depreciates the exchange rate. In a fixed exchange rate regime, the central bank has to run down its reserves (change in $R<0$) by an equal amount to keep the exchange rate at the par value. If the reserves exhaust, fixed exchange rate regime becomes unsupportable with deficit financing. Note that changes in expected depreciation/appreciation of currency affect the demand for money and as such the exchange rate.

Flood and Marion (1998) discuss how speculators launch an attack on a currency when expansionary monetary policy that is untenable by reserves is undertaken in an economy. Consider an economy with a fixed exchange rate regime where the government is running budget deficits that are financed by the central bank. Deficit financing increases the money supply creating pressure on the exchange rate to depreciate (Equation 5.6). To keep the exchange rate at par value the central bank has to sell reserves. The speculators are active in the currency markets to make a profit on the future movements of the exchange rate. The speculators expecting a depreciation of the domestic currency buy the foreign currency (reserves sold by the central government) in the spot market and short sell the domestic currency in the futures/forward markets. An expectation of depreciation of the domestic currency, therefore, lowers the demand for domestic currency (Equation 5.1). To keep the money supply in line with the lower demand the central bank needs to sell more reserves. A stage comes when the reserves exhaust. At this point, the par value of the exchange rate cannot be maintained anymore and the currency collapses. The expectations of speculators are realized and they make their profit.

Implicit in Equation (5.6) is the monetary policy rule that keeps the exchange rate stable. As long as money supply increases in line with the

demand for money, exchange rate will be stable. For example, an increase in aggregate output will raise the demand for money. If the money supply increases in the same proportion as the increase in money demand, the exchange rate will not change. As a general rule, when the money supply increases at a slower (higher) rate than the growth rate in money demand, the exchange rate appreciates (depreciates).

5.2. Exchange Rate Determination: An Islamic Approach

Given the above framework, we now introduce the Islamic version of the macroeconomic model. We start with the determinants of money demand in an Islamic economy. In the absence of interest based capital, the money demand function in an Islamic framework will be different from the conventional function described above. Khan (1987) and Khan (1995) postulate that the demand for money in an Islamic economy depends on aggregate output and rate of return, r (actual or expected) on other assets (financial or real). The foreign interest rate in the conventional framework is replaced by the Islamic counterpart, the foreign rate of return (r^*). Note that changing the interest rate to rate of return may appear trivial, but the underlying ramifications are extensive. All the features of Islamic transactions outlined in section 3.1 apply in the Islamic case. For example, Islamic debt cannot be sold, no forward, futures, or options transactions in foreign currency will exist, etc. The demand for money function in an Islamic economy can be written as,

$$M/P = l(r^*+e, Y), \qquad l_{r^*+e}<0 \text{ and } l_Y>0. \qquad (5.1')$$

The asset side of the balance sheet of the central bank in an Islamic economy will also be different from the conventional counterpart. Central bank in an Islamic economy will not hold interest-bearing bonds. Instead, the central bank can hold financial assets backed by real transactions and assets (Q). These may include equity-based government securities (Choudhry and Mirakhor 1997), deferred price (*istisna*) certificates (Zarqa 1997), asset *ijarah* bonds (Kahf 1997a), and *moqaradah* bonds (Khayrullah 1994).[19] Thus, money supply in an Islamic economy is given as,

$$M = Q + R. \qquad (5.2')$$

[19] For an explanation of these instruments, see Appendix 1.

Given these characteristics of the money market, the expression for exchange rate in an Islamic economy will be as follows:

$$E = (Q + R)/P^* \, l(r^*+e, Y). \qquad (5.6')$$

Equation (5.6) determines the exchange rate in an Islamic economy. We discuss next the implications of this on exchange rate stability.

5.3.Islamic Principles and Exchange Rate Stability

The different format of the Islamic monetarist model outlined above has important implications on the monetary and fiscal policies and the stability of exchange. First, money supply in an Islamic economy is backed by real assets or claims on real assets (Q) or foreign currency (R). Second, the central bank will not be able to finance the government's budget deficit unless the money is used in real productive activity.

The restriction on central bank's ability to increase the money supply by printing money (i.e., deficit financing) affects the stability of exchange rate. As money supply can only be increased when real activity increases ($\Delta Q>0$) or there is surplus in the official settlements balance ($\Delta R>0$), it cannot deviate much from money demand as in case with deficit financing in the conventional case. As such, there will be little pressure on the exchange rate to depreciate due to excessive money supply. Other than the fact that speculative behavior and financial instruments used for speculation will be absent in an Islamic economy, the above mentioned monetary policy will also reduce speculative activities in an Islamic economy. If the speculators know the central bank finances deficit only for productive capital investments of the government, there will be no incentives to target the currency and destabilize it due to untenable policy-induced reasons.

While discussing the demand for money in the Islamic framework, it is assumed that agents in an Islamic economy can choose to invest in international Islamic assets. At present, however, the international opportunities for investments under Islamic modes of financing are not very widespread. This will make it difficult for investors to hold substitute Islamic foreign assets. Due to the lack of foreign Islamic assets, capital may not be as mobile in the Islamic economy as in a conventional one. Though this reduced mobility of capital will have a sobering effect on exchange rate, there is a need to develop international financial instruments that are compatible with Islamic principles.

6. EXCHANGE RATE STABILIZATION FROM ISLAMIC PERSPECTIVES: POLICIES AND INSTITUTIONS

We observe from the microeconomic and macroeconomic models above that both monetary and real variables affect variability of exchange rate. From the policy viewpoint, trade policy (exports and imports), fiscal policy (government expenditure) and monetary policy (money supply and private sector credit) are relevant. We discuss the nature of these policies in this section. We first discuss the nature of appropriate exchange rate regime in an Islamic economy. After arguing for the managed float, we outline the policies that can be taken to implement such a regime. Finally, we discuss institutional set-up required for a successful implementation of an exchange rate policy based on Islamic principles.

6.1. Exchange Rate Regime

Stability of the value of money is an important goal and fundamental to the Islamic economic system (Chapra 1996 and Iqbal and Khan 1981, p. 26). While the stability in the value of money in closed economy implies no inflation, in the open-economy context it means a stable exchange rate. Exchange rate in an Islamic economy should be determined in the market by the forces of demand and supply of foreign currency. While market determined exchange rate is the guiding principle in Islam, it can be volatile if left to the market forces alone. This can in turn increase the uncertainty about the future that may affect investment and growth in the economy. Islamic rules governing economic transactions permit intervention in the markets to promote public interest.

Contrary to flexible exchange rate, a fixed exchange rate regime does not reflect market forces and may not be tenable in the long run. As such, an Islamic economy can opt for a middle path in which the exchange rate is allowed to move within a narrow band (managed float). Whenever the exchange rate hits one of the bounds of the band, the central bank intervenes to keep it within the band. Movement of the exchange rate within the band will reflect the market forces, but at the same time give stability to the exchange rates.

To understand the underlying principles on which the central bank can keep the exchange rate stable within the band, we can refer to the balance of payments accounts and the theoretical models discussed above. To keep the

exchange rate stable, the long run goal of the authorities should be to keep the official settlements balance (*OSB*) balanced, i.e., the sum of current account and capital account is close to zero. If *OSB* is deviates form zero there will be pressures on the exchange rate to change.

The short-run fluctuations in the exchange rate can be understood by examining the theoretical models discussed above. In terms of the currency market, an excess demand/supply will change the exchange rate. For example, a deficit in the OSB creates an excess demand for foreign currency. If the central bank does not intervene then the domestic currency will depreciate. Under managed float, the central bank will let the exchange rate float until it hits the upper of the band. At this point it will start sell foreign currency to meet the excess demand in the currency market. If done prudently, this will drive the exchange rate back in the band. Similarly, the monetarist model discussed above maintains that as long as the growth in the money supply is proportional to that in the demand for money, exchange rate will tend to be stable.

Note that switching from a fixed exchange rate regime to managed float keeping the conventional international transactions intact may be destabilizing, given the nature of the interest based short term capital. Managed float will be relatively stable only if the international transactions in the economy are compatible with Islamic principles. The specific policies that can be undertaken to keep the exchange rate stable are discussed below.

6.2. Exchange Rate Stability: Policies

Different specific policies that can keep the exchange rate stable are given below.

Monetary Policy:

As discussed above, money supply in an Islamic economy is backed by assets (equity and foreign currency). The nature monetary policy used by the central bank to achieve the long-run and short-run objectives, however, will be different. In the long-run output in an economy grows increasing the transaction demand for money. If the money supply grows in proportion to the growth in money demand, the exchange rate will be stable. The central bank can increase the money supply in accordance with the increased demand for money by undertaking dynamic open market operations involving asset-backed securities. The short run variations in the money demand arising from balance of payments fluctuations can be met by open market operations involving foreign

currency. To keep the exchange rate with a narrow band, the central bank can buy/sell foreign currency.

Fiscal Policy:

The limitations of financing deficits by central banks implies that governments of Islamic countries should meet their current operational expenditures from their current revenues. A government can seek financing from the central bank for capital expenditures only. Following this rule not only disciplines the government, but ensures a sound monetary policy for a stable exchange rate. Islahi (1988, p. 142) reports that Ibn Taimiyah hinted at a similar point in the 13th (Gregorian) century when he recommended that "wages of workers should be paid from public treasury (bait al-mal) (and not out of money minted for this purpose)". The policy of government seeking funds from the central bank for its capital expenditures increases the money supply, but expands the productive capacity in the economy at the same time. Money supply, as such, increases in the same proportion as demand for it. Such a policy will stabilize the currency, both, internally (low inflation) and externally (stable exchange rate).

Another related issue with government budget deficit is the twin-deficit problem discussed under the absorption approach. Government budget deficit is reflected in the trade deficit. The implication from our discussion above is that the trade deficit resulting from a government budget deficit can be tolerated if the trade deficit is due to import of capital goods, but not consumption goods. The policies that can be used to affect the composition of imports and exports are discussed next.

Trade Policy:

From our discussions on the balance of payments account, we note that to keep the exchange rate stable, an economy should have its official settlements balance (i.e., the sum of current account and capital account) close to zero. The current account comprises trade account and the net flow of resource earnings (interest, wages, profit, etc.). While Islam accepts free trade as its basic principle, restrictions can be applied on the calculus of *maslaha* and *mafsada* (Siddiqi 1992, p. 23).[20] Trying to keep the trade balance close to zero with the help of selective tariffs will eliminate pressures on the exchange rate.

[20] Siddiqi (1992) reports that Caliph Umar imposed tariffs as a reciprocal measure upon hearing that other countries had imposed tariffs on Muslim traders.

While exports are primarily determined by international demand for the goods (and relative prices), a government can control imports and its composition by using selective tariffs. In an Islamic economy the hierarchy of goods in the order of necessities, comforts and luxuries should be met (Khan 1992 and Zarqa 1989). As such, imports of necessities should be given importance and the import of luxuries and comforts discouraged. Furthermore, capital is vital in creating the productive capacity that can lead to long-term growth in the economy. As a result, import of capital goods should encouraged. Tariffs can be imposed selectively on different goods to achieve the desired composition imports. Fewer imports of comforts and luxuries will also help in keeping the trade balance and exchange rate in check.

International Finance Policy:

In the theoretical discussions, it was maintained that use of Islamic financial instruments would have a sobering effect on the exchange rate. It is important to find financial instruments that can meet an Islamic economy's needs for short-term and long-term funds to replace interest-bearing capital. This move from the current interest-bearing capital to Islamic financial instruments should be gradual so that the economy is not disrupted.

The most volatile element in conventional financing is the short-term capital. When an economy is indebted in foreign currency, depreciation of exchange rate increases the debt burden in domestic currency and make it difficult to repay the debt. One way to minimize this problem is to invest foreign capital in export-oriented industries, so that changes in exchange rate has similar effects on the liability and the income streams. For the existing interest based debt, one option to move to non-interest based capital is to swap external debt with equity (Kahf and Khan 1992a).

An Islamic alternative to get financing for fixed capital financing to lease it from abroad. Incentives should be given so that foreign capital can come in on a profit-sharing basis. Conditions should be created so that more foreign direct investment is attracted to the economy. Foreign direct investment not only has a positive effect on employment and output in an economy, it also increases the supply of foreign currency and lowers the pressures on the exchange rate. As foreign direct investment is not as mobile as other forms of debt, it has a stabilizing effect on the exchange rate.

Financial market regulation in an Islamic economy relates to ensuring that Islamic rules and regulations are followed in international transactions. This may be qualitative in nature, but has quantitative ramifications.

Regulations will include prohibition of non-Islamic behavior (pure speculation) and financial instruments (interest-based debt, forwards, futures, etc.) and facilitating the use of Islamic alternatives. As we have discussed above, the use of Islamic financial instruments in international transactions will have a sobering effect on the exchange rate. Thus, the use of Islamic modes of financing in international transactions will in itself diminish the need for quantitative restrictions on capital movements to bring about stability in the exchange rate. The success of moving from conventional international transactions to Islamic ones, however, will depend on the availability of the Islamic compatible financial instruments and the supporting institutions. Some of the institutions that may aid the international transactions according to Islamic principles are discussed next.

6.3. Islamic Institutions

The main obstacle to Islamization of international transactions is the lack of institutions that provide and support Islamic modes of financing across borders. Thus, the long-run goal to Islamize all the international transactions is to build different supporting Islamic institutions. Some of these institutions are outlined below:[21]

1. *Islamic Dollar or Dinar Market:* Similar to the Euro-dollar market or the Asian Dollar market, there is a need for an Islamic Dollar Market. This will be an international money market that will provide short-term funds to Islamic countries and businesses on Islamic modes of financing. The main players in these markets will be Islamic financial institutions (commercial and investment banks). A pre-condition for the development of this international Islamic money market is the legal framework in a Muslim country that would allow the functioning of this kind of market.

2. *Islamic Monetary Fund:* The establishment of Islamic Monetary Fund (similar to International Monetary Fund) would help the growth of international Islamic financial transactions. Islamic Monetary Fund's role will be to provide funds to OIC member countries to meet short-term balance of payments problems. As a pre-condition to get financing from Islamic Monetary Fund, the international transactions should be *Shari'ah*-compatible.

[21] While we give suggestions of different institutions that need to be set-up to enable international transactions in accordance to Islamic principles, we do not explain the *modus operandi* of these institutions. The nature and the operational details of these institutions can be taken up as topics of further research.

3. *Islamic Finance Corporation:* This institution (like International Finance Corporation) can provide and help mobilize different long-term Islamic financial products for OIC member countries for the private sector. The Islamic Finance Corporation can provide long term financing under *mudarabah*, *musharakah*, and *ijarah* principles, guarantees and standby financing, syndication of funds from different financial institutions, etc.[22]

4. *Secondary Markets for Islamic Financial Instruments*: Secondary markets for Islamic financial instruments are needed so that Muslim investors can invest their savings across borders in Islamic financial assets. Furthermore, secondary markets are essential for successful implementation of a sound monetary policy by the central bank. While the central bank in an Islamic economy will finance only asset backed expenditures of the government, to control the money supply it needs to conduct open market operations involving Islamic financial instruments. Open markets operations in an Islamic economy would involve buying/selling of Islamic financial instruments (equity based securities, deferred price certificates, asset *ijarah* bonds, *muqaradah* bonds, and *mudarahah* certificates) in the secondary markets. To enhance the depth of secondary markets, there is a need to develop other *Shari'ah* compatible financial instruments that can be traded in these markets.

5. *International Financial Instruments:* While different modes of financing have been discussed in details for a closed economy in Islamic Economics literature, not much is written for the open economy. The complicating element in financing in an open economy context is that currency risk is added to the overall risk. The burden of the currency risk on different agents will depend on the mode of financing. For example, in the profit sharing modes of financing (*mudarabah* and *musharakah*), in which the foreign financier gets a profit share from the business that operates locally, the currency risk arising from changes in the exchange rate is the financiers. In short-term financial instruments like *murabahah* and *bai-muajjal* and medium- and long-term *ijarah* mode of financing where the beneficiaries repay in foreign currency, the currency risk is borne by the borrower.

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[22] Islamic Development Bank (IDB) has initiated Islamic Cooperation for the Development of Private Sector (ICD), an institution similar to International Finance Corporation. ICD will be commercially operated with an objective of developing the private sector by offering advisory services and capital on Islamic principles.

Mitigation of the currency risk will help the growth of international Islamic financial instruments. Though forwards, futures, options, and swaps transactions in foreign exchange markets in their present format are not permissible under Islamic principles, they do perform important roles. On the demand side, these instruments help in reducing currency risk. On the supply side, the need to deal in forward and futures markets arises partly to invest surplus funds in short-term instruments. Financial instruments compatible with Islamic principles that can be used for risk management and hedging against currency risk needs to be developed. While international transactions and policies in an Islamic economy has will make the exchange rate stable, these instruments can further reduce the currency risk.

7. CONCLUSION

After reviewing the theoretical and empirical literature in conventional economics, the paper discussed the microeconomic and macroeconomic approaches to exchange rate determination from an Islamic viewpoint. In the microeconomic part, the currency market determines the exchange rate. Some of the transactions that occur in the conventional currency market, however, will not occur in the Islamic one. These include speculative transactions done by using forwards, futures, options and swaps. The effect of the nonexistence of these transactions will have sobering effects on the exchange rate.

In the macroeconomic model, we used a modified monetarist model to determine the exchange rate in an Islamic economy. Exchange rate in this model is determined in the money market. The determinants of the demand for and the supply of money were outlined from an Islamic perspective. The demand for money depends on aggregate output and rate of return on investments. The central bank in an Islamic economy cannot provide the government money in exchange of interest-bearing government bonds. Instead, money supply in an Islamic economy is backed by claims on assets and foreign currency. As long as the money supply increases in the same proportion as the increase in money demand, the exchange rate will be stable. If the central bank follows Islamic principles in determining the money supply, the exchange rate will be relatively more stable.

We argue that an Islamic economy should opt for a managed float exchange rate regime. This middle path will keep the exchange rate close to the market-determined rate and will be relatively stable. Exchange rate under managed float in an Islamic economy will be relatively stable if the international transactions are compatible with *Shari'ah*. The long run objective of keeping the exchange rate stable is to keep the official settlements balance close to zero. Monetary policy that can keep the exchange rate stable is the growth in money supply in the same proportion as the money demand. One way to achieve this is that the central bank will only finance capital expenditures of the government. The right fiscal policy is to have a balanced budget for current operations, with options of borrowing only for investment purposes. Trade policy would restrict the imports of comforts and luxuries and harmful items by using tariffs to keep the trade balance in check. The international finance policy would be to promote Islamic modes of financing. The qualitative regulations in terms of implementing Islamic rules have implications regarding international transactions in an Islamic economy.

The problem of implementing these regulations is that there are very few institutions involved in international Islamic financing that ensure transactions in accordance with Islamic principles. We assert that the international Islamic transactions have some inherent features of exchange rate stability. The move from conventional modes of international transactions to Islamic ones is, however, difficult as institutions that facilitate these transactions are lacking. The establishment of Islamic institutions (like secondary markets for Islamic financial instruments, Islamic Monetary Fund, Islamic Dollar Market, and Islamic Finance Corporation) and financial instruments are preconditions to the development of an international environment that will enable Islamic economies to pursue exchange rate policies in accordance to *Shari'ah* principles.

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APPENDIX I

Asset-based financial instruments for financing budget deficit

1. ***Equity Based Government Securities:***

Choudhry and Mirakhor (1997) suggest the use of equity based government securities can be used by the central bank in open-market operations as a substitute to interest based bonds found in conventional economies. The yield (social rate of return) on these securities will depend on the government operating surplus. The questions of how the social rate of return in cases of budget deficits and the permissibility of exchanging these securities in the secondary markets from the *Shari'ah* point of view, however, are not discussed are not discussed by the authors.

2. ***Deferred Price (Istisna) Certificates:***

Zarqa (1997) proposes the use of *istisna* sale contracts for financing of infrastructure projects. After defining a fixed investment project and the time period to repay its price, bids are invited from the investors/builders for the construction and completion of the project. The asset/project is sold to the public authority for a price that is paid in installments. Deferred price certificates with different maturities (to match the installments) are issued so that the total face value equals the total deferred price. Zarqa indicates that even though the certificates cannot be sold for cash, they can be exchanged for assets and goods. Once these assets/goods are acquired they can be sold at the ongoing price.

3. ***Asset Ijarah bonds:***

According to Kahf (1997), asset *ijarah* bonds can be issued against durable fixed assets that are leased for specified amount of rent for a period of time. Kahf maintains that *Shari'ah* does not restrict the lessor to sell the leased asset, as long as the new owner honors the existing contract. He also maintains that *Shari'ah* does not require the asset of the *ijarah* contract should exist at the time when the contract is made.

4. ***Muqaradah Bonds/Mudarabah Certificates:***

Khayrullah (1994) outlines the concept of *muqaradah* bonds. The proceeds from the sale of these bonds are used to raise funds for investment in income generating assets. The resulting profit is then

distributed according to an agreed upon rate. A similar instrument used in Pakistan is the transferable *mudarabah* certificate issued against mortgage or fixed assets of a company (Ahmad 1993).

REFERENCES

Ahmad, Ausaf (1993), *Contemporary Practices of Islamic Financing Techniques*, Research Paper No. 20, Islamic Research and Training Institute, IDB, Jeddah.

Agenor, Pierre-Richard, Jagdeep S. Bhandari, and Robert P. Flood (1992), “Speculative Attacks and Models of Balance of Payments Crises,” *Staff Papers*, International Monetary Fund, 39, 357-94.

Al-Dhareer, S. M. Al-Ameen (1997), *Al-Gharar in Contracts and its Effect on Contemporary Transactions*, Eminent Scholars Lecture Series No. 16, Islamic Research and Training Institute, IDB, Jeddah.

Alexander, S.S. (1951), "Devaluation versus Import Restriction as an Instrument for Improving Foreign Trade Balance," *International Monetary Fund Staff Papers*,

Alexander, S.S. (1952), "Effects of a Devaluation on a Trade Balance," *International Monetary Fund Staff Papers*,

Blackburn, Keith, and Martin Sola (1993), “Speculative Currency Attacks and Balance of Payments Crises,” *Journal of Economic Surveys*, 7, 119-44.

Caves, Richard E., Jeffrey A. Frenkel, and Ronald W. Jones (1990), *World Trade and Payments, An Introduction*, Fifth Edition, HarperCollins Publishers.

Chapra, M. Umer (1985), *Towards a Just Monetary System*, The Islamic Foundation, Leicester.

Chapra, M. Umer (1996), "Monetary Management in an Islamic Economy," *Islamic Economic Studies*, 4, 1-34.

Choudhry, Nurun N. and Abbas Mirakhor (1997), "Indirect Instruments of Monetary Control in an Islamic Financial System," *Islamic Economic Studies*, 4, 27-66.

Copeland, Laurence S. (1994), *Exchange Rates and International Finance*, Second Edition, Addison-Wesley Publishing Company, Cornwall.

Desai, Padma (1998), "Macroeconomic Fragility and Exchange Rate Vulnerability: A Cautionary Record of Transition Economies," *Journal of Comparative Economics*, 26, 621-641.

Diaz-Alejandro, C. (1985), "Good-Bye Financial Repression, Hello Financial Crash," *Journal of Development Economics*, 19.

Dornbusch, Rudiger (1975), *Open Economy Macroeconomics*, Basic Books Inc. Publishers, New York.

Dornbusch, Rudiger and Stanley Fisher (1980), "Exchange Rates and the Current Account," *American Economic Review*, 70, 960-71.

Eichengreen, Barry, Andrew K. Rose, and Charles Wyplosz (1996), "Contagious Currency Crises: First Tests," *Scandinavian Journal of Economics*, 98, 463-84.

Fleming, M.J. (1962), "Domestic Financial Policies Under Fixed and Under Floating Exchange Rates," *International Monetary Fund Staff Papers*, November 1962.

Flood, Robert P. and Nancy P. Marion (1998), *Perspectives on the Recent Currency Crisis Literature*, IMF Working Paper, WP/98/130.

Frankel, Jeffrey A., and Andrew K. Rose (1995), "Empirical Research on Nominal Exchange Rates," in GeneGrossman and Kenneth Rogoff (Eds.), *Handbook of International Economics*, North-Holland, Amsderdam, 1689-1729.

Hamoud, Sami Hassan (1985), *Islamic Banking*, Arabian Information, London.

Iqbal, Munawar and M. Fahim Khan (1981), *A Survey of Issues and A Programme for Research in Monetary and Fiscal Economies of Islam*, International Center for Research in Islamic Economics, King Abdul Aziz University, Jeddah and Institute of Policy Studies, Islamabad.

Iqbal, Munawar (1991), "Financing Economic Development," in A.M. Sadeq, A.H. Pramanik, and N.M.H.N. Hassan (Editors), *Development and Finance in Islam*, International Islamic University Press, Malaysia.

Islahi, Abdul Azim (1988), *Economic Concepts of Ibn Taimiyah*, Islamic Economics Series 12, The Islamic Foundation, Leicester, U.K.

Islahi, Abdul Azim (1992), *Economic Concepts of Ibn Taimiyah*, Islamic Economics Series 12, The Islamic Foundation, Leicester, U.K.

Johnson, H. (1972), "The Monetary Approach to the Balance of Payments," in *Further Essays in Monetary Theory*, Allen and Unwin, London.

Kahf, Monzer (1997a), "The Use of Assets Ijara Bonds for Bridging the Budget Gap," *Islamic Economic Studies*, 4, 75-94.

Kahf, Monzer (1997b), "Comments on Islamic Financial Instruments: The Case of Malaysia" in Ausaf Ahmad and Tariqullah Khan (Editors), *Islamic Financial Instruments for Public Sector Resource Mobilization*, Seminar Proceedings No. 39, Islamic Research and Training Institute, IDB, Jeddah.

Kahf, Monzer and Tariqullah Khan (1992a), "Alternative Strategies of International Financing", in M.A. Mannan, M. Kahf, and A. Ahmad (editors), *International Economic Relations from Islamic Perspectives*, Islamic Research and Training Institute, IDB, Jeddah.

Kahf, Monzer and Tariqullah Khan (1992b), *Principles of Islamic Financing*, Research Paper No. 16, Islamic Research and Training Institute, IDB, Jeddah.

Kaminsky, Graciela, Saul Lizonda, and Carmen M. Reinhart (1997), "Leading Indicators of Currency Crises," *IMF Working Paper*, May 1997.

Kaminsky, Graciela L. and Carmen M. Reinhart (1998), "Financial Crisis in Asia and Latin America: Then and Now," *American Economic Review*, 88, 444-48.

Khan, Mohsin (1987), "Islamic Interest-Free Banking: A Theoretical Analysis," in Mohsin Khan and Abbas Mirakhor (Editors), *Theoretical Studies in Islamic Banking and Finance*, The Institute for Research and Islamic Studies, Houston.

Khan, Muhammad Akram (1991), "Commodity Exchange and Stock Exchange in an Islamic Economy", in A.M. Sadeq, A.H. Pramanik, and N.M.H.N. Hassan (Editors), *Development and Finance in Islam*, International Islamic University Press, Malaysia.

Khan, M. Fahim (1992), "Theory of Consumer Behavior in Islamic Perspective," in A. Ahmad and Kazim R. Awan (Editors), *Lectures on Islamic Economics*, Islamic Research and Training Institute, IDB, Jeddah.

Khan, M. Fahim (1995), "A Simple Model of Income Determination, Growth and Economic Development in the Perspective of an Interest-Free Economy," in Fahim Khan, *Essays in Islamic Economics*, The Islamic Foundation, Leicester.

Khan, Tariqullah (1997), *Interest-free Alternatives for External Resource Mobilization*, Research Paper No. 44, Islamic Research and Training Institute, IDB, Jeddah.

Khayrullah, Walid (1994), "Al-Muqaradah Bonds as the Basis of Profit-Sharing," *Islamic Economic Studies*, 2, 79-102.

Kolb, Robert W. (1997), *Futures, Options, and Swaps*, Blackwell Publishers, Malden. MA.

Kouri, Pentti, J.K. (1976), "Exchange Rate and the Balance of Payments in the Short ren and the Long run: A Monetary Approach," *The Scandanavian Journal of Economics*, 78, 280-304.

Krugman, Paul (1979), "A Model of Balance of Payments Crises," *Journal of Money, Credit and Banking*, 11, 311-25.

Mishkin, Frederic S. (1996), "Understanding Financial Crises: A Developing Country Perspective," NBER Working Paper 5600, National Bureau of Economic Research, Cambridge, Massachusetts.

Mundell, R.A. (1962), "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability," *International Monetary Fund Staff Papers*, March 1962.

Obstfeld, Maurice (1986), "Rational and Self-Fulfilling Balance of Payments Crises," *American Economic Review*, 76, 72-81.

Obstfeld, Maurice (1994), "The Logic of Currency Crises," NBER Working Paper No. 4640, National Bureau of Economic Research, Massachusetts.

Obstfeld, Maurice (1996), "Models of Currency Crises with Self-fulfilling Features," *European Economic Review*, 40, 1037-47.

Rodriguez, Carlos A. (1980), "The Role of Trade Flows in Exchange Rate Determination: A Rational Expectations Approach," *Journal of Political Economy*, 80, 1148-58.

Saadallah, Ridha (1999), *Financing Trade in an Islamic Economy*, Research Paper No. 51, Islamic Research and Training Institute, Islamic Development Bank, Jeddah.

Salvatore, Dominick (1993), *International Economics*, Forth Edition, Macmillan Publishing Company, New York.

Sheffrin, S.S. (1983), *Rational Expectations*, Cambridge University Press, Cambridge.

Siddiqi, Muhammed Nejatullah (1992), "Principles of International Economic Relations in Islam", in IRTI Proceedings, *Islamic Perspectives on International Economic Relations*, IRTI, Jeddah.

Tahir, Sayyid (1994), “Prospects for International Transactions Without Riba,” in *Elimination of Riba from the Economy*, Institute of Policy Studies, Islamabad, Pakistan.

Wade, Robert (1998), “The Asian Debt-and Development Crisis of 1997-?: Causes and Consequences,” *World Development*, 26, 1535-53.

Zarqa, M. Anas (1989), "Islamic Economics: An Approach to Human Welfare," in Aidit Ghazali and Syed Omar (Editors), *Readings in the Concept and Methodology of Islamic Economics*, Pelanduk Publications, Petaling Jaya.

Zarqa, M. Anas (1997), "Istisna' Financing of Infrastructure Projects," *Islamic Economic Studies*, 4, 67-74.

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