



# Shariah Compliant FX Swap: An Islamic Instrument for Central Bank Policy Making in Iran

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**Abstract:** The foreign exchange swap (FX swap) is a contract that is designed as a hedging mechanism to minimize market participants' exposure to volatile and fluctuating market currency exchange rates. Many central banks worldwide make use of this instrument for managing the FX market. However, because of the *Shariah* rulings, countries like Iran (where Islamic banking is in practice) cannot make use of the conventional FX swap. Considering this, the main purpose of this paper is to come up with new *Shariah* Compliant FX Swap that can be used by the Iranian central bank for alleviating foreign exchange risks. In terms of methodology, Content analysis and *Ijtihad* (independent jurisprudential reasoning) approach are used in this study. The results show that it is possible to revise the contracts of the conventional Central Bank Swap to make it *Shariah* compliant. The paper argues that the Central bank of Iran could efficiently use this instrument to mitigate foreign exchange volatilities, reduce risks, manage liquidity, and improve monetary policy operations in a cash-constrained environment. This paper for the first time proposes a way forward in reconciling traditional Swap contracts with the Iranian Islamic banking system that can be used by the central bank for managing the FX market.

**Keywords:** Islamic Banking, *Shariah* Compliant FX Swap, Iran, Central Bank, Policy Making

**JEL Classification:** E52, D53

## Introduction

Foreign Exchange (FX) swaps are financial contracts in which two (or more) counterparties exchange one currency for another at a predetermined time and at the maturity date, the exchanged funds go back to each counterparty. While central

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banks (worldwide) use the FX swap in their transactions with other central banks or even with commercial banks, as a policy-making instrument, the Iranian central bank has not yet used this instrument in practice. The main reason for this is the fact that conventional FX swaps are contrary to Islamic *Shariah*.

Considering this, designating a substitute instrument that is both *Shariah* compliant and economically efficient is the important issue discussed in this article. The results, which are based on an analytical-descriptive approach, show that the conventional Foreign Exchange (FX) swaps are not *Shariah* compliant (because of *Bai Al-Inah* and the necessity of paying the whole price in the forward contract) and it is not possible to use them in an Islamic framework. However, it is possible to revise the conventional Foreign Exchange (FX) swaps in a way to make them *Shariah* compliant and suitable to be used by the Iranian central bank.

After the introduction, the literature review is done and then (in parts 3 and 4) the economic and jurisprudential dimensions of the conventional Foreign Exchange (FX) swaps are evaluated and its Islamic alternative is presented. Parts 5 and 6, respectively discuss the potential incentives for the central bank and the conventional banks of using the Islamic Foreign Exchange (FX) swaps and the influence of this instrument on the balance sheet of the central bank. Finally, in part 7, some important and complementary points are discussed and part 8 concludes.

## Literature Review

FX swap is one of the financial derivatives. The word swap means: barter, exchange one thing for another, trade, make an exchange or trade, substitute and exclusion. In finance, it is an agreement between two firms to exchange a stream of payments in the future (with two different payments of asset or liability). This agreement determines the payment date and the way of calculating the stream of payments. Usually, the calculation of the stream of payments includes the future values of one or more market variables.

Historically, the first swap contracts were signed in the early 80s. From that time on, the market of this instrument has grown considerably. Nowadays in the international scene, most of the derivatives are Over the Counter (OTC) Contracts and are conducted based on barter agreements (Mishkin, 2013, p. 345).

Currently, there are many different swaps that are done based on different assets in the international financial markets. The FX swaps and interest rate swaps are the most important and widely-used instruments. In developed and developing

countries, central banks are one of the main institutions that use FX swaps to manage the FX market. Central banks enter in the FX swap market and by managing the FX reserves, prevent drastic supply or demand changes of FX hence prevent shocks from occurring (Derakshhan, 2004, p. 40).

Considering the fact that Iranian economic system is highly dependent on imports, any shock in the FX market (like what happened in 2012 and 2018) may have destructive effects on the Iranian economy. Therefore, designating a substitute FX swap instrument that is both *Shariah* compliant and economically efficient, can help the Iranian central bank to manage the market in chaotic situations.

Evaluating research done in the field of Islamic capital market shows that most of the previous researches have tried to designate futures and options in an Islamic framework however little has been done about swaps. In what follows, some of these researches have been mentioned:

Having criticized the conventional FX swap, Obaidullah (2005) proposes the “two-sided *Qard*” as a substitute. In his suggestion, the two sides of the FX swap give foreign exchanges to each other as *Qard*. Although this suggestion makes the efficiency of the instrument very low, there is a consensus that it is *Shariah* compliant.

Masuminia and Baharvandi (2008) evaluate the FX hedging contracts and shed light on the jurisprudential dimensions of three instruments which include: FX option, FX future, and FX swap. The results of this paper show that it is possible to find a jurisprudential solution (like Al-Solh contract) for FX option and FX future, but the FX swap cannot be justified based on *Shariah* rules (like Bay al-Dayn bi al-Dayn, Bay al-Kali bi-Kali and *Riba*).

Dusuki (2009) examines the concept and mechanism of the FX Swap based on *Shariah* rules. The results show that the swap practiced in the conventional system is not *Shariah* compliant; due to the existence of *Riba* (usury), *Gharar* (uncertainty) and *Gimar* (gambling). However, the swap contract introduced by Islamic banks based on concepts such as Murabahah or Tawarruq is deemed permissible as long as it is free from elements that contravene the *Shariah*. In addition, Islamic swap departs from the conventional swap in two respects. First, the structure of Islamic swap is based entirely on the principles, values, and objectives of *Shariah*. Second, the purpose of Islamic swap has clearly been defined as an instrument that can only be used for hedging and not for speculative trading activities.

Musavian and Musavi Boyoki (2010) evaluate the possibility of using total return swaps (TRS) in Islamic banking. After assessing the possibility of justifying

this new contract based on Bay al-Dayn bi al-Dayn, Bay al-Kali bi-Kali and Solh al-Dayn bi al-Dayn, the authors come to the conclusion that because most of the Islamic scholars are of the view that these kinds of relations are not permissible, it is not possible to use the conventional total return swap in the Islamic framework. Finally, this paper proposes the idea of swapping the principal assets as a substitute for the conventional swap.

Kunhibava (2010) discusses the overall concept of financial derivatives (including forwards, futures, options, and swaps) and their *Shariah* related issues. The results of this research show that the admissibility of conventional derivatives is unsettled and the paramount underlying reason for this is the probability of *Gharar* in these contracts.

Masuminia and Elahi (2012) evaluate the possibility of using conventional commodity swap in the Iranian financial markets based on the Islamic jurisprudence. The results show that what is done in conventional contracts lies outside the legitimate Bay contract and hence cannot be accepted in the Islamic context simply because of being *Riba*.

As it is seen, most of the previous researches have evaluated the swap contract in general terms and have tried to find some jurisprudential solution to it. However, the conventional swap is conducted in different ways and each of them needs precise evaluation and discussion. Considering that, this paper specifically focuses on central bank Foreign Exchange (FX) swaps and tries to evaluate this special type of swap contract based on an economic-jurisprudential assessment. In addition, the research tries to come up with some policy recommendations to be used by the Iranian central bank.

### **Central Bank Foreign Exchange (FX) Swaps**

Central bank FX swap is a financial contract in which two (or more) counterparties exchange one currency for another at a predetermined time and at the maturity date, the exchanged funds, go back to each counterparty. Hence, the Central bank FX swap does not include the stream of payments in a specified time period.

The FX swap has two independent legs that happen at two different points in time at two dissimilar rates. The first one is “spot leg” in which the counterparties exchange two different currencies at spot rates. The second one is “forward leg” in which the counterparties exchange two different currencies at forward rates at the maturity time.

If the maturity of the swap happens to be less than one month (from the beginning of the contract), then the swap is called “short-dated swap” whereas if the maturity is more than one month, then the swap is called “forward swap” (Bergljot, Barkbu & Li, 2010, p. 23). The structure of the swap contract is shown in figure one.

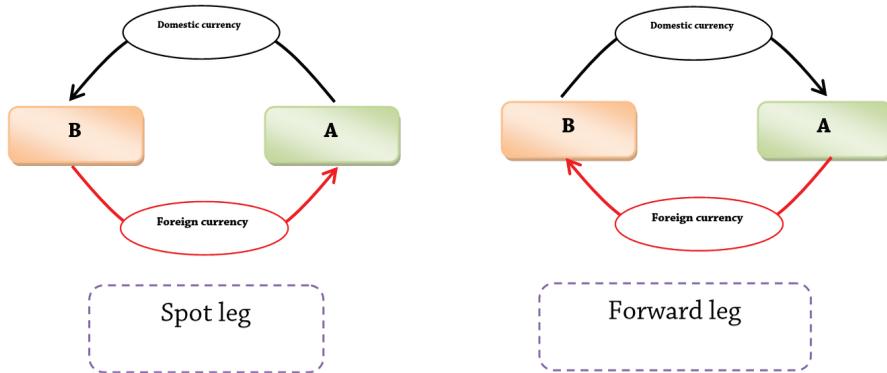


Figure 1. The structure of the FX swap.

### *The Use of Swap Contracts in the International FX Markets*

In the international FX markets, trades are done using different forms of the spot, forward, option and swap contracts; among which, swaps are considered to be the most important. In April 2016, from the 6557 billion dollars in circulation in the international FX market (daily average), the swap contracts amounted to 2730 billion dollars equalling 42 percent of the marker share. Meanwhile, the spot contracts formed 2677 billion dollars and were ranked the second after the swap contracts. Table one shows the data related to the international FX market statistics based on different contracts used.

Because of the important share of the swap contracts in the international FX markets, central banks use these instruments extensively. Among the developing countries, Brazil, Azerbaijan, Pakistan, and Turkey use FX swaps widely.

*Table 1.*  
The share of different contracts in the international FX markets.

Contract	2001	2004	2007	2010	2013	2016
Spot	386	631	1005	1488	2046	2677
FX Swap	656	954	1714	1759	2228	2730
FX Forward	130	209	362	475	680	740
FX Option and the others	67	140	243	250	391	410
Total	1500	2036	3376	3969	5345	6557
Share of FX Swap (percent)	44	47	51	44	42	42

*Note:* The data are the average of April and are in billions.

*Source:* Bank for International Settlements, 2016.

### *The Rationale of Using FX swaps by Central Banks*

The intermediate targets of central banks of entering into the FX swap contracts are: managing domestic liquidity, managing FX reserves, pursuing the stability of FX market and finally managing the fluctuations in the FX market. The final goal of the central banks from pursuing these intermediate targets is to ensure the economic and financial stability of the economy. In the following section, these are explained.

#### *Economic Stability*

By allocating FX reserves efficiently and effectively, the FX market helps in maintaining the macroeconomic stability of the economy. On the contrary, a chaotic FX market, by harming the efficient way of FX reserves and boosting the FX risk, weakens the macroeconomic stability.

Some of the channels through which the instability in FX market affects the macroeconomic situation include: reducing the economic growth (Aghion, Bacchetta, Ranciere & Rogoff, 2009, p. 11), decreasing foreign investment (Furceri and Borelli, 2008, p. 5), lessening foreign trade (Clark, Tamirisa, Wei, Sadikov & Zeng, 2004, p. 6) and increasing the inflation pressures (Cazorzi, Hahn & Sánchez, 2007, p. 15).

#### *Financial Stability*

Monetary policymakers in different countries pay careful attention to the FX operations of the banks and in disordered situations, they supervise these operations closely. In this regard, the Basel Committee on Banking Supervision (BCBS) notes

that there are few banking activities in which the banks may face some heavy losses like the ones related to FX operations. The Basel Committee emphasizes that the banking supervisors should be cautious and the FX operations risk of the banks should not bring them to the point where they become unable to pay their liabilities. This may harm the stability and health of the banking system as a whole<sup>1</sup>.

### *The Rationale of Using FX Swaps by Commercial Banks*

Considering the fact that the conventional FX swaps are used in large denominations and their main users are commercial banks (and not the public), one question arises: what are the aims of commercial banks in using this instrument in their transactions with the central bank?

It seems that the main aim of the commercial banks in using FX swap is the management of the risks related to the FX volatilities in the future. In fact, commercial banks have different FX transactions with their customers and in all of them, the risk of FX price changes is considerable which is an important source of uncertainty.

For example, suppose a commercial bank has some financial relations with an importer of the automobile equipment (i.e. customer). At time zero, the customer may have excess in his FX reserves and may need domestic currency<sup>2</sup> (Iranian Rials). On the other hand, he knows that at time one (six months later) he may need his FX reserves. In this situation, the customer does not want to buy his FX reserves in the market permanently for the fact that it is possible that at time one (when he is in need of FX), the price of FX may be higher in the market.

On the other hand, the commercial bank cannot accept the FX reserves of the customer at time zero because the bank knows that in the future (time one) the consumer may want to withdraw his FX deposit and the price of the FX may be high in the market because of which, the bank may face a kind of risk.

Considering all this, the only solution that the customer has is to hold his FX reserves as cash and by doing this, he would be sure that at time one (when he needs his reserves) they would be available. However, it is clear that keeping reserves idle for a time period (between time zero and one) will have high opportunity costs for the customer.

1 We should note here that unlike the commercial banks, the central bank is not a profit-seeking institution. Hence, it sounds logical that the central bank, in special circumstances, makes use of some instruments to increase the monetary and economic stability of the banking system; although the use of these instruments may have some economic loss for the central bank.

2 Domestic currency in this paper is supposed to be Iranian Rial.

In this situation, the central bank may come up with a solution of using FX swaps. In fact, the central bank can extract the risk posed in the relationship of a commercial bank with its customers and enter it in its own balance sheet and by managing this risk correctly, minimize its costs.

In other words, the central bank announces that the commercial bank can enter into an FX swap contract with the central bank and by doing this, can give the extra reserves of its customer to the central bank. In fact, the commercial bank can buy central bank FX swap. In this situation, the commercial bank is assured that at time one (when the customer needs FX reserves) it can exercise its swap contract with the central bank and get the needed reserves.

For instance, the commercial bank can sign an FX swap contract with his customer in which the bank gets the FX reserves of the customer and gives him domestic currency at time zero. In addition, it assures the customer that time one (six months later when the customer is in need of his FX reserves) the bank would be ready to take domestic currency and give FX reserves.

For managing the risk of FX price increase in this six months period, the commercial bank signs an FX swap contract with the central bank and gives the FX reserves to the central bank (at time zero) and receives domestic currency (Rial). In this contract, the central bank becomes responsible to provide the commercial bank with the FX reserves at time one.

In practice, since the commercial banks have different customers having different FX needs, the commercial bank enters into some limited (but large) FX swap contracts with the central bank on one side and many small FX swap contracts with its customers on the other. In fact, the central bank hedges the risk of the commercial bank and the commercial bank hedges the risk of its customers in turn.

### *Determining the Price of the Forward Leg and the Cost of the FX Swap Contract*

The price of the forward leg is determined considering the difference between the interest rates of the two currencies which are swapped. In fact, the arbitrage operation requires that (based on covered interest rate parity condition) the price of the forward leg be determined based on the difference between the interest rates of the two swapped currencies.

Hence, equation one illustrates the price of the forward leg; where:  $F$  is the future price of the FX,  $S$  is the spot price of the FX,  $r_d$  is the interest rate of domestic currency

and is the interest rate of the foreign currency. Based on this, the cost of the FX swap is shown in equation two.

$$Fr_{DC/FX} = Sr_{DC/FX} \left[ \frac{1+R_{DC}}{1+R_{FX}} \right] \quad (1)$$

$$Fr_{DC/FX} - Sr_{DC/FX} = Sr_{DC/FX} \left[ \frac{1+R_{DC}}{1+R_{FX}} - 1 \right] \quad (2)$$

Therefore, the one who keeps the currency yielding higher interest rates (in the time period of the contract) will pay something to the other side of the contract; so that the return of the two currencies becomes equal. In other words, at the beginning of the contract, the present value of the FX swap contract would be zero; regardless of the contract cost.

## The Fiqh Analysis of the Conventional Central Bank FX Swaps

Considering the fact that the Iranian banking system is based on the Usury-Free banking act (1983) and hence the central bank can only use *Shariah* compliant instruments, it is important to consider jurisprudential issues in designing all new instruments. Considering this, in what follows, some of the *Shariah* rules (based on the Imamiyah School of thought) which are important in designating swap contract are evaluated. After that, the challenges of the conventional swap are assessed and a *Shariah* compatible substitute is presented.

### *Shariah* Rules

Reviewing the Islamic economic sources and refereeing to the Usury-Free banking act (1983) shows that there are some important *Shariah* rules that should be considered in designing new financial instruments. Some of these are:

#### *Bai-al-Inah*<sup>3</sup> (Sale with Immediate Repurchase)

One of the important rules in designing Islamic derivatives (including swap) is avoiding *Bai-al-Inah*. In fact, one of the rules available in Bai contract is that if two Bai are put in one contract, they should not be conditional on each other. In other words, the mixture of two Bai contracts is correct only if the second Bai is not considered as a condition in the first.

In fact, if the seller in the Bai contract makes a condition in which the buyer would be forced to sell-back the commodity to the seller (initial owner of the commodity) it would not be *Shariah* compliant. These kinds of transactions are called *Bai-al-Inah* and are not correct in the Islamic *Fiqh* although some Islamic banks in Malaysia do use them (Salehabadi, 2005, p. 13; Modaresin, 2002, p. 385).

#### *The Necessity of Paying the Whole Price in the Salam Contract*

In Salam contract, the price is given to the seller but the commodity is given to the buyer in the future. In economic terms, this contract can be called pre-sell. From the jurisprudential point of view, some rules should be considered in Salam contracts. Firstly, the price should be paid thoroughly. In fact, if in the Salam contract the price is paid in the future, the contract would become "*Bai al-Kali bi-al-Kali*"<sup>4</sup> which it is not correct based on Islamic *Fiqh*.

Secondly, the commodity purchased on the Salam contract cannot be sold before the maturity date. So, it is not possible to conduct secondary market for Salam receivables. Hence, if an Islamic bank gives facility to its customer based on the Salam contract, it cannot sell its receivables from this contract in the secondary market. Thirdly, the kind and characteristics of the commodity in the Salam contract should be explained completely so that no *Gharar*<sup>5</sup> is involved in the contract. Finally, all of the contract prices should be paid when the contract is signed (Imam Khomeini, 2001, p. 41).

#### *The Necessity of Benefits to be Related to the Principals*

The third issue in swap contracts (like all other derivatives) is that all of the benefits of the contract should be related to the principals. For example, if any profits originate from the exchanges during the time period of the contract, these benefits are solely for the owner of the exchanges. To put it in a nutshell, the originated benefits are only for the owners.

#### *The Avoidance of Gharar*

Another important issue in designing FX swap and other contracts is that the conditions of the contract (especially the amount of the traded exchanges, the time of

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delivery and the price of the FX) should be clear to both sides of the contract. Therefore, any ambiguities make the contract impermissible (Musavian, 2007, p. 161).

### **Avoiding Fake Contracts and the Possibility of Delivery of the FX**

Last and maybe the most important rule in designing the swap contract is that the contracts signed should not be fake (Musavian, 2012, p. 121). In other words, in designing the swap contracts, some points should be considered. For instance, the central bank should make the delivery of the FX possible at the maturity date so that those who sign a swap contract with the central bank may get their FX if they want<sup>6</sup>.

### ***Challenges Facing the Conventional FX Swap from the Islamic Point of View***

Having evaluated the important *Shariah* rules for the swap contract the following question arises: Is the conventional FX swap *Shariah* compliant? It seems that the answer is negative. In fact (as it was discussed in previous sections), the FX swap has two dissimilar legs i.e. the spot and forward legs. These legs happen at two different points in time and rates.

In the spot leg, the two sides of the contract exchange two different currencies at the spot rate and in the forward leg (happening at the maturity date) they recover their currencies at the forward rate. It seems that there are at least, two jurisprudential issues or challenges in these contracts.

The first challenge is that the spot and forward legs are conditional on each other. For example, the central bank may buy 1000 dollars from a commercial bank (at spot rate) and promise to sell 1000 dollars to the bank at the maturity (three months after the contract date). From the Islamic point of view, because two legs of the contract are conditional on each other, the *Bai-al-Inah* will happen that makes the swap contract impermissible.

The second challenge refers to the nature of the forward leg. In fact, the question is about the jurisprudential nature of the forward leg. The *Fiqh* scholars have

6 The Shariah board of the Iranian Securities and Exchange Organization believes that: “the forward contracts which are signed based on assets which are not basically deliverable (like: stock market index and interest rates volatilities) are not permissible. But swap contracts based on assets like: securities, commodities, foreign exchanges and coins are permissible” (Pireh, 2010, p. 17).

different views about the nature of the forward contract. They have analyzed this contract based on different jurisprudential dimensions like the promise to Bai in future, Salam contract, *Bay al-Dayn bi al-Dayn*, *Bay al-Kali bi-Kali*, the initial condition and *Bai al-Arbun* (Masuminia, 2010, p. 226).

Accepting some of these natures may cause some *Shariah* challenges to the swap contract. For example, if we consider the nature of the forward leg as *Bay al-Kali bi-Kali*, then it would not be *Shariah* compliant and if we consider it as Salam, there would be some jurisprudential challenges for the fact that all of the prices should be paid when the contract is signed. However, if we consider the forward leg as a promise of Bai in the future, then there would be no jurisprudential challenge.

### ***Designating Shariah Compliant FX Swap***

As it can be seen, it is not possible to use the conventional swap contract in the context of Islamic finance. Therefore, the question arises whether it is possible to revise the conventional swap contract in a way to make it *Shariah* compliant? It seems the answer is in affirmative.

To solve the first issue, it could be suggested that the two sides of the contract do not put any condition which shows the spot leg and forward leg are dependent on each other. In other words, the two legs should be legally independent of each other. With regards to the second challenge, it could be suggested that the forward leg is considered as a new contract named: "option to buy via promise to sell" because in the context of Islamic finance, all of the new contracts are permissible (provided they are rational and not in contrary with *Shariah* rules like *Riba*), hence this new contract would be *Shariah* compliant.

Based on this, when a commercial bank signs an Islamic FX swap contract with the central bank, the central bank (seller) promises to sell a specified amount of FX in future via a specified amount of domestic currency. Correspondingly, the commercial bank (buyer) has the option to buy the FX in the future at the pre-agreed rate. In this contract, no Bai contract happens; but one side of the contract promises to Bai something in the future and the other has the option to enter in the Bai contract.

In this kind of the swap contract, the central bank (after doing the spot leg which is buying FX at time zero from a commercial bank) gives the commercial bank an option to buy a predetermined amount of FX at maturity from the central bank. In fact, the central bank signs two independent contracts with the commercial bank which are independent; although they are signed simultaneously.

For instance, in a specific swap contract between the commercial bank and the central bank, two contracts are signed between the two parties. Based on the first contract, the central bank buys 1000 dollars from the commercial bank and gives Iranian Rials at spot price. Based on the second contract, the central bank promises to sell 1000 dollars to the commercial bank (at a pre-agreed rate) if the commercial bank exercises its option.

One question here is that is it possible for the central bank to request any price for the option that it provides to the commercial bank? The answer is positive and this price can be considered as a percentage of the spot leg price. However, the central bank can announce that if the commercial bank enters in the second contract, the price of the option will be paid back. By announcing this, the commercial banks will have a higher incentive to enter in the second contract with the central bank. Finally, to avoid *Gharar*, the price of the option should be clearly determined from the beginning of the contract.

### **Analyzing the Economic Incentives of the Central Bank and Commercial Banks**

The important question in this part is that: does the new Islamic FX Swap (discussed above) satisfy economic efficiency (in addition to being *Shariah* compliant)? In other words, do central banks and commercial banks have enough economic incentives to use the new Islamic FX Swap? The answer to these questions is given below in tables 2 and 3. Table 2 relates to the condition where the central bank temporarily faces a shortage in its FX reserves. In fact, the central bank needs immediate FX reserves but (for some reasons) these reserves are not available.

On the other hand, part of the commercial banks' assets includes FX reserves. Nevertheless, the commercial banks cannot supply these FX reserves in the spot market for the fact that they might be in need of these reserves in the near future to satisfy their obligations toward their customers (there is a risk that the FX price changes). Therefore, although the commercial banks have some FX reserves, they are reluctant to sell these reserves in the spot market in exchange of the domestic currency.

In this situation, the central bank can enter this market and make use of the needs of commercial banks to follow-up its policy-related objectives. In fact, the central bank can provide the commercial banks with the new Islamic FX swap. According to this swap contract, the central bank may announce that any bank that sells its FX reserves to the central bank at time zero (at spot prices), will have the option to buy (at time one) the same amount of the FX reserves at pre-agreed prices.

This instrument will be a good choice for the commercial bank and they will have an incentive to buy it because commercial banks would be able to sell their FX reserves to the central bank at time zero and receive domestic currency and use it in their financial operations. In addition, they would be sure that at time one, when they are in need of FX reserves, they would receive the FX reserves from the central bank by exercising their option.

It is a kind of game between the central bank and commercial banks. At time one, two conditions may occur. If the prediction of the commercial bank (that the FX price will increase) realizes, the commercial bank will exercise its option and hence the central bank will face a loss. However, if the prediction of the central bank (that the FX price will decrease) comes true, the commercial bank will forgo its option and hence the central bank will face a profit. So, it is clear that the correct prediction of the central bank about the future price of the FX is vital and prevents the central bank from bearing economic losses.

Table 2.

The relation of the central bank and commercial banks when there is an FX shortage

Contract	Central bank facing FX shortage	Commercial bank facing FX surplus	Final results	
Time zero	Buying FX and paying domestic currency	Selling FX and receiving domestic currency	-----	
Time one	if FX price increases	Selling FX and receiving domestic currency	Buying FX and paying domestic currency	Central bank loss because the option is exercised
	if FX price decreases	-----	-----	Central bank profit because the option is not exercised

Source: Authors' analysis

Table 3 relates to the condition where the central bank temporarily faces surplus in its FX reserves and some of the commercial banks face FX shortage. Nonetheless, the commercial banks cannot demand these FX reserves in the spot market (at time

zero) for the fact that it is probable that at time one (when they are not in need of the FX reserves anymore and want to sell their reserves in the market) the price of the FX decreases and they face a loss. Consequently, although commercial banks need some FX reserves, they are reluctant to buy these reserves in the spot market.

In this situation, the central bank can enter this market and make use of the needs of commercial banks to follow-up its policy-related objectives. In fact, the central bank can provide the commercial banks with the new Islamic FX swap. According to this swap contract, the central bank may announce that any bank that buys FX reserves from the central bank at time zero (at spot prices), will have the option to sell (at time one) the same amount of the FX reserves at pre-agreed prices to the central bank.

This instrument will be a good choice for commercial banks and they will have enough incentives to use it. The reason for this is that the commercial banks can buy FX reserves from the central bank in time zero and use it in their financial operation. In addition, they are sure that in time one, when they are in no need of FX reserves, they can sell the FX reserves to the central bank by exercising their option.

At time one, two conditions may occur. If the prediction of the commercial bank that the FX price will decrease realizes, the commercial bank will exercise its option and hence the central bank will face a loss. However, if the prediction of the central bank that the FX price will increase comes true, the commercial bank will forgo its option and hence the central bank will earn a profit. It is therefore clear that the correct prediction of the central bank about the future price of the FX is very important and prevents the central bank from bearing economic losses.

*Table 3.*

The relation of the central bank and commercial banks when there is FX surplus.

Contract	Central bank facing FX shortage	Commercial bank facing FX surplus	Final results
Time zero	Selling FX and receiving domestic currency	Buying FX and paying domestic currency	---

Time one	if FX price increases	-----	-----	Central bank profit because the option is not exercised
	if FX price decreases	Buying FX and paying domestic currency	Selling FX and receiving domestic currency	Central bank loss because the option is exercised

Source: Authors' analysis

From the above analysis, it becomes clear that the main aim of the commercial banks in using the Islamic FX swap is to manage their FX reserves risks and the ultimate goal of the central bank is to conduct its policies. In fact, by using the Islamic FX swap, the central bank can gather FX reserves from the market when it needs FX reserves but when it is in shortage, central bank by doing this, manages the market. However, the way of managing the FX market depends on the discretion of the central bank. For example, the central bank may come to this conclusion that it is better to sell all the gathered FX reserves in the spot market or sell parts of it weekly.

### FX Swap and the Central Bank Balance Sheet

Suppose the price of each dollar in exchange for domestic currency is 29500 Rial. In this situation, the central bank decides to sign a three-month Islamic FX swap with the commercial banks. Based on this contact, the central bank buys 100 million dollars at the spot price and pays commercial banks in domestic currency. In addition, it provides them with an option and promise to give them 100 million dollars at maturity at a forward price (30600 Rial) if the commercial banks exercise their option.

Meanwhile, the central bank (based on its prediction about the future price of FX), determines the price of the option as 2 percent of the total amount of the FX exchanged in the contract. Now, the question is that what happens to the central bank balance sheet at the maturity? The answer to this question depends on the price of the FX in the market at the maturity. If the price of the FX at maturity goes over and above 30000, the commercial banks will exercise their right. By exercising their rights, the commercial banks will receive FX from the central bank at forward price 30600. Therefore, the FX reserves of the central bank do not change and hen-

ce the only change in the monetary base will be equal to the difference between the spot and forward leg prices i.e. 110 billion Rial (Refer to table 1 part A).

However, if the price of the FX at maturity becomes less than 30000, the commercial banks will not exercise their right. So, the commercial banks will not receive FX from the central bank at forward price 30600. In fact, they choose to refer to the FX market and buy their needed FX reserves.

Therefore, the FX reserves of the central bank will increase by an amount equal to 100 million dollars. However, because of the fact that the central bank will not pay back the option price to the commercial banks, the monetary base will increase by an amount equal to 3010 billion Rials (Refer to table 1 part B).

Table 4.

The effects of the central bank FX swap on the central bank balance sheet.

A			B	
<b>Exercising forward leg</b>			<b>Forgoing forward leg</b>	
<b>Assets</b>			<b>Assets</b>	
Foreign assets	+100 million dollars	Spot leg	Foreign assets	+100 million dollars
Domestic assets	-		Domestic assets	-
Foreign assets	-100 million dollars	Forward leg	Foreign assets	-
Domestic assets	-		Domestic assets	-
<b>Liabilities</b>			<b>Liabilities</b>	
Money in circulation	-	Spot leg	Money in circulation	-
Bank reserves	+2950 billion Rials		Bank reserves	+2950 billion dollars
Money in circulation	-	Forward leg	Money in circulation	-
Bank reserves	-3060 billion Rials		Bank reserves	+60 billion Rials

Foreign assets	-		Foreign assets	+100 million dollars
domestic liabilities	-110 billion Rials	Final situation	domestic liabilities	+3010 billion Rials
Monetary base	-110 billion Rials		Monetary base	+3010 billion Rials

Source: Authors' analysis

### Supplementary Considerations about Using Islamic FX Swap by the Central Bank

The main aim of the central bank in using FX swap is to absorb needed liquidity for managing fluctuations in the FX market. In fact, if the aim of the central bank is to target the FX price in a corridor system, the FX swap can help the central bank to reach the needed reserves.

Considering the economic situation of Iran<sup>7</sup> and the high level of FX swap usage in the international FX markets, it seems that the Iranian economy too needs to use the FX swap instrument. In fact, by manipulating the conventional FX swap and making it *Shariah* compliant, the Iranian Central Bank can make use of this instrument to solve some of the limitations related to the shortage of foreign exchange reserves and the low level of reserves liquidity. By doing this, the Iranian Central Bank can enhance its power in managing the foreign exchange fluctuations.

Considering the fact that it is possible for the banks to face FX surplus in the short-run, the central bank can swap these reserves and gather them. These gathered reserves can then be used to manage the market. In fact, the central bank can manage the market without using its own FX reserves. At the maturity, the banks will have the option to exercise the forward leg of the swap contract.

In what follows, some of the important points that should be considered by the central bank (in using the Islamic FX swap efficiently) are mentioned:

1. Considering the fact that there is no forward market for the FX reserves to discover the price of FX in the Iranian economy and in addition, the return that banks pay to their depositors is determined by the government (and not by the mar-

7 One should note that although there are some limitations on the FX **spot** transactions in Iran, but it does not influence drastically the performance of the FX swap market.

ket), hence it is of high importance for the central bank to predict the forward price of the FX correctly. Since the return that Iranian banks pay to their domestic deposits is more than what they pay to FX deposits, the central bank should increase the price of the forward leg of the swap contract gradually. This will make the FX policy making, a function of banks return policy. However, if the price of the forward leg of the swap contract is determined at a level less than the difference available between the domestic and FX deposits returns, the bank will have enough incentive to exchange FX for domestic currency to make a profit.

2. In the conventional FX swap contract, the two legs of the swap are conditional to each other. It is clear that this contract (like all other financial contracts) faces a default risk on the side that will face losses if the contract is exercised. However, by making the two legs of the swap contract unconditional to each other (for making it *Shariah* compliant), it would be possible that banks do not enter in the forward leg if they realize they would face some loss. In fact, if at the maturity, the spot price of the FX plus the price of the option is less than the forward leg price, all of the banks may not exercise the forward leg and default. On the other hand, if at the maturity, the spot price of the FX plus the price of the option is more than the forward leg price, all of the banks will exercise the forward leg. Hence, in this condition, the price of the option, determined by the central bank, is an important policy instrument that not only reduces the risk that central bank faces but also has some clear signals for the FX market. Therefore, determining the price of the option correctly will reduce the potential loss of the central bank partly or fully.
3. In the Islamic FX swap, the central bank promises to sell the banks FX reserves provided they exercise their option at the maturity date. In this situation, the central bank can make use of new FX swap contracts to gather new FX reserves and use them to pay its obligations for the previous FX swap contracts (a kind of pay as you go system). This is a very important characteristic of this instrument. However, the important point is that the central bank should be cautious in entering new FX swap contracts and prevent Ponzi game. The reason for this is that the unlimited increase of the FX swap contracts may increase the liabilities of the central bank to the commercial banks which may increase the vulnerability risk of the central bank FX reserves in future. So, it could be suggested that the amount of the central bank FX swap contracts be limited to a specified percentage of the central bank capital. This will prevent the central bank from overusing this instrument.

4. Since speculation is possible for the commercial banks, the FX swap contracts have the potential to cause fluctuations in the FX market; especially in crises times or in markets with a low level of liquidity. The process of speculation can be imagined by supposing that the commercial bank (having excess FX reserves and seeking speculation) first enters in an FX swap contract with the central bank and sells its reserves to the central bank in exchange of domestic currency (Rial). The bank then uses the received Rial in the market to buy FX reserves that may weaken Rial. In the second round (near maturity of the central bank FX swap) the bank sells its bought FX reserves at higher prices and makes a profit. At the maturity date, if the FX price in the market is higher than the forward leg of the swap contract, then the commercial bank will exercise its option and receive FX reserves from the central bank. Considering this, the central bank should pay attention to speculative operations of the banks especially in times of crises.
5. The central bank can provide commercial banks with Islamic FX swap contracts with different maturities. In fact, the central bank, besides spot leg, can provide banks with options having maturities like one week, one month, three months, six months, nine months and one year. By doing this, the central bank can signal stakeholders of the FX market its prediction about the future of the FX price. Considering the fact that the Iranian central bank may not be able to correctly predict the future of the FX market (at least in the short-run), it could be suggested that the central bank only provides the short-term options to the market (one week or one month).
6. In most of the countries where the central bank uses FX swap, there is a structured market for the trade of this instrument and the central bank is an important player in this market. Although establishing an interbank market for this instrument would be a step forward, but there should be a possibility for non-bank institutions (that have lots of FX reserves) to gradually enter this market.
7. Last, not the least is that the ultimate goal of the central bank in designating Islamic FX swap is to manage the fluctuations of the FX market and not to make a profit. Hence, the probable economic cost of this instrument for the central bank is no good excuse for not using it. One might justify these costs as the expenses of reaching financial stability in the FX market.

## Conclusion

The FX swap is a conventional instrument in the international FX markets and most of the central banks make use of this instrument for different purposes. Considering the economic situation of Iran, it seems that the Iranian economy needs the FX swap instrument. By manipulating the conventional FX swap and making it *Shariah* compliant, the Iranian Central Bank can make use of this instrument to solve some of the limitations related to the shortage of foreign exchange reserves and low level of liquidity of the reserves. By doing this, the Iranian Central Bank can enhance its power in managing the foreign exchange fluctuations. Based on this fact, this article tried to review the conventional FX swap and evaluate its economic, jurisprudential and accounting aspects. Considering the Islamic *Fiqh*, it could be mentioned that the conventional FX swap has two main challenges because of which it cannot be used in an Islamic context. In fact, the FX swap has two dissimilar legs which are: spot and forward legs. These legs happen at two different points in time and rates. In the spot leg, the two sides of the contract exchange two different currencies at the spot rate and in the forward leg (happening at the maturity date) they recover their currencies at the forward rate.

It seems that there are at least, two jurisprudential issues or challenges in this contract. The first challenge is that the spot and forward legs are conditional on each other and hence lead to *Bai-al-Inah*. The majority of Islamic scholars do not accept *Bai-al-Inah* as a legitimate contract.

The second challenge refers to the nature of the forward leg. In fact, *Fiqh* scholars have different views about the nature of the forward contract. They have analyzed this contract based on different jurisprudential natures like the promise of Bai in future, Salam contract, *Bay al-Dayn bi al-Dayn*, *Bay al-Kali bi-Kali*, the initial condition, and *Bai al-Arbun*. Accepting some of these natures makes the forward leg impermissible.

However, it is possible to revise the conventional swap contract in a way that makes it *Shariah* compliant. To solve the first challenge, it could be suggested that the two sides of the contract do not put any condition which shows the spot leg and forward leg are dependent on each other. To solve the second challenge, it could be suggested that the forward leg is considered as a new contract named: "option to buy via promise to sell".

Based on this, when a commercial bank signs a *Shariah* compliant FX swap contract with the central bank, the central bank (seller) promises to sell a specified

amount of FX in the future in exchange of a specified amount of domestic currency. Correspondingly, the commercial bank (buyer) has the option to buy the FX in the future at the pre-agreed rates. In this contract, no Bai contract happens; but one side of the contract promises to Bai something in the future and the other has the option to enter in the Bai contract.

In this kind of the swap contract, the central bank (after doing the spot leg which is buying FX at time zero from a commercial bank) gives the commercial bank an option to buy a predetermined amount of FX at maturity from the central bank.

Another important point is that it is possible for the central bank to request something for the option (option price). However, the central bank can announce that if the commercial bank enters in the second contract, the price of the option will be paid back. By announcing this, the commercial bank will have a higher incentive to enter in the second contract with the central bank. Finally, to avoid *Gharar*, the price of the option should be clearly determined from the beginning of the contract.

Another very important issue in the designated Islamic FX swap is that the price of the option, determined by the central bank, is an important policy instrument that not only reduces the risk that central bank faces but also has some clear signals for the FX market. Therefore, determining the price of the option correctly will reduce the potential loss of the central bank partly or fully. This could be an important issue for further research on the topic.

In this paper, the focus was only on the Iranian banking system where the Imamiyah school of thought is prevailing and overshadows its banking system. However, it is a very good idea to discuss the *Shariah* compliant FX swap in light of the rulings of other Islamic schools of thought like Hanafi and Maliki. This topic can be a very good issue for future research.

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