

## Exchange Rate Risk Management in Participation (Islamic) and Conventional Banks in Turkey: A Comparative Study

Fatma Mansour and Hatice Dogukanli

Department of Business Administration, Faculty of Economics and Administrative Sciences,  
Cukurova University, Adana, Turkey

---

**Abstract:** This study compares hedging Foreign exchange rate risk by derivatives between participation and conventional banks in Turkey. Data has been collected from senior management of 44 selected banks through questionnaires. The study used both primary and secondary data. Primary data was collected through questionnaires from 5 Islamic banks and secondary data was collected from the financial reports of 39 conventional banks. The sample covers all of the Islamic and conventional banks. The findings of this study show that participation (Islamic) banks are exposed more to exchange rate risk than conventional banks. In addition, Islamic swaps were found to be the most important mechanism, however, swaps contract was found to be the most important in conventional banks. This is the first study, that compares exchange rate exposure degree and hedging strategies in participation and conventional banks in Turkey.

**Key words:** Exchange rate in Turkey, exchange rate risk, participation and conventional banks, Islamic, hedging, primary

---

### INTRODUCTION

Participation (Islamic) banks have been in Turkey, since, the early 1980's (Anonymous, 2017; Hassan *et al.*, 2016). In November 2005, upon enactment of the new Banking Law in Turkey, the number of Islamic banks has raised from two banks in 2005 to four full-fledged participation (Islamic) banks and two conventional banks with Islamic Window in 2018. In contrast, there were 35 conventional banks in Turkey in 2005 and become 39 conventional banks in Turkey in 2018.

The banking industry has a permanent and a sharp fluctuation in exchange rates in Turkey, since, 1980 as a result of this fluctuation this topic is vital for the banking industry in Turkey. The main objective of this research is to compare the extent of exposure to exchange rate fluctuations in participation and conventional banks in Turkey. Participation (Islamic) banks are more sensitive to shocks followed by economic turmoil such as an increase in currency rates as Turkey applies the floating exchange system and is open to all kinds of large fund movements due to political stability, interest rates and investment opportunities (Hassan *et al.*, 2016). Turkey which is considered an emerging market has witnessed significant developments in its banking system, since, the financial crisis of 2001. As is the case in most emerging markets,

the high-interest rates and exchange rate fluctuations have been characteristics of the Turkish economy for a long time (Kasman *et al.*, 2011).

Despite an extensive prior literature, there is a little research on exchange rate risk management in participation (Islamic) banks in Turkey. We are motivated to investigate the major difference between hedging strategies in participation banks comparing to conventional banks to reduce exchange rate risk. This study contributes to an investigation for exchange rate's mitigation instruments in Islamic and conventional banks by using derivatives strategies for the exchange rate.

**Literature review:** Recently, there has been renewed interest in managing exchange rate risk. However, there is no studies comparing and illustrate exchange rate risk management tools in Islamic and conventional banks in Turkey. The studies by Khan and Ahmed (2001), Ariffin *et al.* (2009), Islam *et al.* (2013) and Hassan (2011) involving a cross-country samples have considered samples of banks from Turkey during the period from 2000 till 2011. The result of one of the most influential accounts of risk management comes from (Khan and Ahmed, 2001) who explain Islamic banks face additional risks due to the nature of their balance sheet and shari'a compliance. Non-availability of financial instruments to Islamic banks

is a major hindrance in their way to manage market risks as compared to the conventional banks. They conclude that different assessment tools need to be used in examining both types of banks. While Ariffin *et al.* (2009) attempt to ascertain the perceptions of Islamic bankers (chief financial officers and risk managers) about the nature of risks, risk measurement and risk management techniques in their banks. It covers 28 Islamic banks in 14 countries using a questionnaire survey. The results indicate that Islamic banks are mostly exposed to similar types of risks to those in conventional banks. Whereas according to Islam *et al.* (2013) compare risk management practices of the selected conventional and Islamic banks. A total number of 14 private banks (7 are of interest based and 7 are of interest free) have been selected for the study purpose. The main findings of the study are) there is variation between the conventional and Islamic banks in understanding of risk and risk management practices) the conventional banks attach more importance to the advanced techniques of risk management as well as risk mitigation. But the Islamic banks give more importance to the traditional practice mainly and) a number of problems has been facing in risk management practices by the respondents. While Hassan (2011) examined the extent of risk management practices and techniques by Islamic and conventional banks in term of dealing with different types of risks in the Middleeast Region. The result of the survey administered on 19 Islamic banks and 24 conventional banks indicate a positive relationship between risk management practices and risk management. Even though Islamic financial institutions do not deal with interest rate, they apply it in the market as a benchmark to price certain types of financing products such as Murabahah and Mudharabah. This is due to the fact that they cannot re-price Mudharabah and Murabahah contracts. In addition, Islamic banks cannot engage in interest rate swap contracts to hedge this type of risk because an instrument such as derivative contracts is totally prohibited. Hassan (2009) observed that Islamic banks are also facing Foreign-exchange and equity risks, since, they may not have adequate tools to manage these risks.

From another prospective, Ehsan (2012) conducted a study called “Islamic perspective on financial derivatives demand for instruments of risk management in various business of Pakistan” which investigated utilizing hedging tools in Islamic banks in Pakistan to deal with various type of risks. Ehsan’s (2012) highlights that most of Islamic banks are aware about the structure of forward contracts, Foreign currency forwards, forward rate agreements, futures contracts, Foreign currency futures

and interest-rate futures. However, a large number of Islamic banks are not conversant with the structure of options, Foreign currency options, interest-rate options, interest-rate swaps, currency swaps, credit default swaps, total return swaps, Islamic swaps and swaptions.

On a related topic discuss the topic of “Risk Management in Banks-a comparative study of some selected conventional and Islamic banks in Bangladesh” which demonstrates whether or not hedging mechanisms used in Islamic banks are advanced more than utilizing strategies in conventional banks. The results according to reveal that conventional banks use advanced methods of risk identification techniques, risk management techniques as well as risk mitigation techniques to a great extent along with traditional techniques. So, these banks give due importance to the advanced techniques of risk management as a whole. But the Islamic Banks give more emphasis on traditional methods of risk identification, risk management and risk mitigation techniques because of shortage of qualified and experienced bank officials.

Yildiran (2015) investigates the techniques and methods of the financial risk management such as exchange risk and interest risk management used by financial manager of exporting firms during the crisis in Turkey. The study focused specifically on the 2008/09 financial crisis. The data of the study based on the surveys of the 104 exporting firms in Turkey. The survey findings indicated that 67% of firms use financial risk management tools for hedging and 80, 4% of exporting firms perceived the exchange risk as important or the most important risk. Only 23 firms used the financial derivatives as a risk management instruments. The study uses the binary logistic regression models for analyzing whether firms applied risk management strategies in exporting or not. In result of study, arrived results large and listed at BIST firms succeeded using risk management strategies and derivatives other than small exporting firms. Such approaches, however have failed to address hedging exchange rate risk in Islamic and conventional banks by derivatives contracts in Turkey.

## **MATERIALS AND METHODS**

### **Research questions:**

- What are the differences between Islamic and conventional banks in the degree of exposure to exchange rate risk?
- What are derivatives instruments which are used in Islamic and conventional banks to minimize exchange rate risk?

The study attempts to achieve the following specific objectives in order to have more concrete answers to the questions:

- To clarify the level of exchange-rate risk faced by both Islamic and conventional banks
- To illustrate the impact of using different control tools on risk mitigation of Islamic banks as compared with those of conventional banks

**Research hypothesis:** The study sought to test the following specific research hypothesizes:

- H<sub>1</sub>: There is a statistically noticeable variation among the surveyed respondents (banks) with regard to the purpose of using financial derivatives in Islamic banks comparing with conventional banks
- H<sub>2</sub>: There is a statistically noticeable variation among the surveyed respondents in the time interval of producing exchange rate risk reports between Islamic and conventional banks
- H<sub>3</sub>: There is a noticeable variation in Islamic banks comparing to commercial banks in terms of the degree of exposure to exchange rate risk
- H<sub>4</sub>: There is a numerically noticeable variation among the surveyed in terms of using and importance of the various types of hedging tools in Islamic banks conventional banks.

In order to test the hypothesis, we used the difference in mean to test the research hypothesis by using t-test. If t statistic is 2 or >2 this indicates that the differences is significant otherwise, the difference is insignificant, it was analyzed through this website <http://www.quantitativeskills.com/sisa/statistics/t-test.htm>.

## RESULTS AND DISCUSSION

**Data analysis and results:** The questionnaires were accomplished between February and April 2017. The questionnaires were sent through email and physically distributed to 44 different banks in Turkey and finally, 3 Islamic banks, 2 conventional banks with Islamic window. 39 conventional banks have been chosen for attaining the research objectives. The data of conventional banks were collected from the end of fiscal year financial reports for banks. The sample covers all of the Islamic and conventional banks in Turkey.

**Perceptions on exchange rate risk issue in Islamic and conventional banks:** The surveyed respondents were asked whether or not banks face exchange rate risk. In

particular, question 1 is to measure the exposure to exchange rate risk of Islamic and conventional banks using a 5-point Likert scale.

Table 1 shows the mean of exposing Islamic banks for exchange rate risk is 3.80 while the mean of exposing conventional banks for exchange rate risk is 4.72. It can be noticed that Islamic banks are exposed to exchange rate risk more than conventional banks. As a consequence of the absence of effective hedging mechanisms complies with sharia rules, Islamic banks are unable to mitigate exchange rate risk effectively. Although, Islam *et al.* (2013) illustrate that 14.3% respondents of Islamic banks are highly concerned about Foreign exchange risk, 28.6% respondents have been highly concerned about Foreign exchange/currency risk in conventional banks. While according to shows that exchange rate risk gains a 1st place in conventional banks where Islamic banks achieved first place in exchange rate risk.

**Purposes for utilizing financial derivatives in Islamic and conventional banking:** Banks and companies use derivatives both for speculation and hedging. In conventional finance, risk management is a necessity in strategic business planning which has led to the use of derivatives as a risk management tool.

Table 2 shows purposes of using financial derivatives in Islamic banks. About 60% of financial derivatives are using for hedging by Islamic banks while 20% of them are for hedging and arbitrage. About 20% of them are used neither for hedging nor for arbitrage. According to Khan and Ahmed (2001) the institutions used derivatives for hedging (risk mitigation) purposes and a number of banks used these instruments for income generating purposes. While there is only one case of use of forwarding contracts for income-generating purposes, there are several cases of use of derivatives for risk mitigation purposes. Ehsan (2012) shows that the majority of the respondents 70.8% believe that financial derivatives are mainly used for hedging 16.4% rightly take the view that financial derivatives are used for speculation. Mahmood and Rehman (2010) represent that 55% of the respondents use derivatives for hedging purposes while 20% of the respondents consider derivatives to be suitable for speculation.

Table 3 shows the purposes for using financial derivatives in conventional banks. It was observed that conventional banks were used 80% of financial derivatives for hedging and 20% of them are for none. Yildiran (2015) highlighted that 19.2% of the firms choose the derivatives to hedge exchange risks.

**Foreign exchange rate risk and reporting:** Table 4 and 5 indicate the time interval of producing the exchange rate risk report by conventional and Islamic banks,

Table 1: Descriptive statistics for the degree of exchange rate risk

Type of banks	N	Mean	SD
Islamic banks	5	3.80	1.095
conventional banks	39	4.72	0.456

Table 2: Frequency distribution of the purpose for utilizing financial derivatives in Islamic banks

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
<b>Valid</b>				
Hedging	3	60	60	60
None of them	1	20	20	80
Hedging and Arbitrage	1	20	20	100
Total	5	100	100	

Table 3: Frequency distribution of the purpose for utilizing financial derivatives in conventional banks

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
<b>Valid</b>				
Hedging	39	100	100	100
Total	39	100	100	

Table 4: Frequency distribution of the production of exchange rate risk report by conventional banks

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
<b>Valid</b>				
Daily	39	100	100	100
Total	39	100		

Table 5: Frequency distribution of when banks produce exchange rate report in Islamic banks

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
<b>Valid</b>				
Daily	4	80	80	80
Daily and weekly	1	20	20	100
Total	5	100	100	

respectively. Table 4 illustrates 100% of conventional banks produce the exchange rate risk report every day. On the other hand, Table 5 shows 80% of Islamic banks produce the exchange rate risk report daily while 20% of them produce the report daily and weekly.

**Intensity of use of different financial derivatives contracts:** The questionnaire also intends to evaluate the perceptions and opinions of the surveyed respondents on different financial derivatives contracts. Question 6 covers the intensity of utilizing various financial agreements which enable banks from making successful and effective hedging against exchange rate risk.

Table 6 explains techniques and instruments which are used to reduce exchange rate risk in conventional banks. Furthermore, it shows that the highest contracts utilized by conventional banks to hedge against exchange rate risk are (combining of currency swaps, currency forward and currency options) which are 59% of their total

Table 6: Frequency distribution of techniques and instruments which are used to reduce exchange rate risk in conventional banks

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
Currency swaps	15	38.5	38.5	38.5
Currency swaps and currency forward	1	2.6	2.6	41.0
Currency swaps and currency forward and currency options	23	59.0	59.0	100
Total	39	100	100	

Table 7: Frequency distribution of techniques and instruments which are used to reduce exchange rate risk in Islamic bank

Variables	Frequency	Percentage	Valid (%)	Cumulative (%)
<b>Valid</b>				
Currency forward	3	60	60	60
Currency Islamic swaps and forward	1	20	20	80
All of them	1	20	20	100
Total	5	100	100	

Table 8: Chi-square person and spearman correlation tests for techniques and instruments that are used to reduce exchange rate risk in Islamic bank and conventional banks

Banks	$\chi^2$	Pearson	Spearman correlation
Islamic and conventional banks	0.238	0.087	0.170

contracts used for hedging Foreign exchange risk. In addition, it shows that currency swaps are used by 38.5% in conventional banks to decrease currency risk.

On the other hand, Table 7 highlights strategies which are utilized to minimize exchange rate risk in Islamic banks. Furthermore, it shows that the most used contracts by Islamic banks to reduce exchange rate risk are (Currency forward) which represents 60% of their total contracts used for hedging Foreign exchange risk. In addition, it shows that currency Islamic swaps and forward are used by 20% of Islamic banks.

According to show that among five techniques for managing risk diversification and currency swaps achieve first place wherein Islamic banks currency swaps achieved a first place and in Islamic banks are being followed by diversification and derivatives with was 3.7 and 3.4, respectively.

Table 9 and 10 illustrate the importance of the instruments which are used to reduce exchange rate risk in Islamic and conventional banks and they demonstrate that currency forward has the highest value and has the highest importance among the remaining contracts that are used by 60% in Islamic banks. Currency Islamic swaps and currency forward and all of them (currency forward, currency options, currency swaps and Islamic swaps) are equally used at the rate of 20% to handle Foreign exchange rate fluctuation in Islamic banks. On the other hand, the most important contracts in

Table 9: Frequency distribution of the importance of financial derivatives in Islamic banks

Variables	V1 (%)	I (%)	N (%)	UN-I (%)	VU (%)	Mean (%)	SD (%)
Currency swaps	-	80	20	-	-	-	-
Currency forward	-	80	-	-	20	-	-
Currency futures	20	40	20	20	-	-	-
Currency options	-	20	20	60	-	-	-
Currency Islamic swaps	40	40	20	-	-	-	-

Table 10: Frequency distribution of the importance of financial derivatives in conventional banks

Variables	V1 (%)	I (%)	N (%)	UN-I (%)	VU (%)
Currency swaps	100.0	-	-	-	-
Currency forward	-	97.4	-	2.6	-
Currency futures	-	-	-	-	-
Currency options	-	2.6	93	4.6	-
Currency Islamic swaps	-	-	-	-	-

Table 11: Intensity of utilizing various derivatives tools in Islamic banks

Variables	Currency swaps	Currency forward	Currency futures	Currency options	Islamic swaps
N					
Valid	5.000	5.000	5.000	5.000	5.00
Missing	0.000	0.000	0.000	0.000	0.00
Mean	2.200	2.600	2.400	3.400	1.80
Median	2.000	2.000	2.000	4.000	2.00
Mode	2.000	2.000	2.000	4.000	1 <sup>a</sup>
SD	0.447	1.342	1.140	0.894	0.837

Scale: 1 = Very Important (VI); 2 = Important (I); 3 = Neutral (N); 4 = Unimportant (U); 5 = Very Unimportant (VU)

Table 12: Intensity of the importance of various derivatives tools in conventional banks

Variables	Currency swaps	Currency forward	Currency futures	Currency options	Islamic swaps
N					
Valid	39	39	39	39	39
Missing	0	1	0	0	0
Mean	1.10	2.36	4.92	2.95	
Median	1.00	2.00	5.00	3.00	
Mode	1	2	5	3	
SD	0.641	0.707	0.480	0.916	

conventional banks are currency swaps, currency forward and currency options which represent 100, 97.4 and 93 %, respectively.

According to Ehsan (2012) in relation to the instruments or techniques used by the organizations to reduce currency risk, 4.3% use currency swaps most of the organizations 62% use or currency forwards 23.9% use currency futures 7.6% use currency options.

**Perceived importance levels and use of financial derivative contracts:** The questionnaire also aims to evaluate the perceptions of the respondents on different derivatives contracts. On the other hand, question 6 searches for feedback on which contracts are used in banks, question 7 covers the importance of utilizing various Islamic financial agreements.

From Table 11 it can be concluded that Islamic swaps are the most important mechanism and option contracts are the least important contracts in Islamic banks in terms of mean for Islamic swaps and options that were 1.80 and 3.40, respectively.

**Intensity of the importance of various derivatives tools in conventional banks:** It is clear from Table 12 that currency swaps have the highest rank in conventional banks, however, Islamic swap does not have any significant value and currency futures contract has the least importance among other contracts and their means are 1.10 and 4.92, respectively.

Yildiran (2015) explained that it is occasionally used the currency derivatives such as FX contracts with mean of 2.20 (19.2%), currency options with mean of 1.75 (19.2), swaps with mean of 1.64 (21.2%), forwards with mean of 1.95 (19.2%) in conventional banks.

**Additional risk issues faced by Islamic and conventional banks:** To learn respondent's view on some risk management issues question 8. Table 13 ranks the importance of statements according to their mean values. the highest value of respondents (80%) believe and agree that risk of banks might be transferred to partners or clients. While 40% of respondents consider that banks must minimize the potential negative impact of any risks,

Table 13: Frequency results of responses to statements under question 8 in Islamic and conventional banks

Variables	Eliminating risks as much as possible	Using hedging to control risk	Minimizing the potential negative impact of any risks	Transferring risk to partners or clients	Diversifying operations to reduce the impact of any single risk
N					
Valid	44	44	44	44	44
Missing	0.00	0.00	0.00	0.00	0
Mean	3.20	2.60	2.40	2.20	2.40
Median	3.00	2.00	2.00	2.00	3.00
Mode	3.00	1.00	1.00	2.00	1 <sup>a</sup>

<sup>a</sup>Significant values

around 40% of respondents think that the impact of any single risk can be minimized by diversifying operations. The majority of banking industry in Turkey thought that derivatives contracts are using hedging not only to control risk but also for minimizing the potential negative impact of any risks.

Islamic banks 71.86% respondents have highly agreed for the risk reduction approach for risk mitigation in their banks followed by risk avoidance by 85.7%, risk transferring and risk sharing by 42.9% each and only 28.6% respondents have highly agreed for risk retention approach. The said table depicts that in the case of conventional banks, only 28.6% respondents have highly agreed for using risk avoidance approach. Again, only 14.3% respondents have only agreed on the risk avoidance, risk retention and risk reduction approaches.

### CONCLUSION

Generally, it can be concluded from the study that survey on hedging practices of Turkish Islamic and conventional banks to handle currency risk reveals the following outcomes Islamic banks are exposed more to exchange rate risk than conventional banks. About 70% of banks produce a report every day. About 70% are using the financial derivatives for hedging and 20% for other purposes, however, 10% of the respondents are using the financial derivatives for both hedging and arbitrage both in Islamic and conventional banks. Moreover, the highest contracts utilized by conventional banks are (combining of currency swaps, currency forward and currency options) which are representing 59%. In addition, it shows that currency swaps are used by 38.5% in conventional banks. On the other hand, the most used contracts by Islamic banks to hedge against exchange rate risk are (currency forward) which are 60%. In addition, currency Islamic swaps and forward are used by 20 % of Islamic banks to reduce currency exchange rate risk. Islamic swaps are the most important mechanism and option contracts are the least important

contracts in Islamic banks. Whereas, the swaps contracts are the most important in conventional banks. The bulk of the banking industry in Turkey thought that derivatives contracts are using hedging not only to control risk but also for minimizing the potential negative impact of any risks.

### RECOMMENDATION

Future studies could expand the scope of the survey by covering more countries and regions, measure the effect of using derivatives contract on minimizing exchange rate risk in Islamic and conventional banks.

### ACKNOWLEDGEMENTS

The researchers acknowledge and thank their respective institutes and universities. I would like to express my appreciation to Prof. Dr. Khaled Hussainey, for his valuable suggestions during the planning of this research. Thanks also go to the reviewers of Igdır Symposium for their comments because this part produced in International Igdır Symposium (2017, Igdır University, Turkey) and it has improved based on committee requirements.

### REFERENCES

- Anonymous, 2017. Investment support and promotion Agency of Turkey. Wikimedia Foundation, San Francisco, California, USA. [https://de.wikipedia.org/wiki/Investment\\_Support\\_and\\_Promotion\\_Agency\\_of\\_Turkey](https://de.wikipedia.org/wiki/Investment_Support_and_Promotion_Agency_of_Turkey)
- Ariffin, N.M., S. Archer and R.A.A. Karim, 2009. Risks in Islamic banks: Evidence from empirical research. *J. Banking Regul.*, 10: 153-163.
- Ehsan, M., 2012. Islamic perspective on financial derivatives: Demand for instruments of risk management in various businesses of Pakistan. Ph.D Thesis, Durham University, UK.

- Hassan, A., 2009. Risk management practices of Islamic banks of Brunei Darussalam. *J. Risk Finance*, 10: 23-37.
- Hassan, M.K., O. Unsal and H.E. Tamer, 2016. Risk management and capital adequacy in Turkish participation and conventional banks: A comparative stress testing analysis. *Borsa Istanbul Rev.*, 16: 72-81.
- Hassan, W.M., 2011. Risk management practices: A comparative analysis between Islamic banks and conventional banks in the Middle East. *Intl. J. Acad. Res.*, 3: 288-295.
- Islam, K.M., M.M. Islam and M. Zaman, 2013. An empirical study on risk management in some selected conventional and islamic banks in Bangladesh: A comparative study. *Beykent Univ. J. Soc. Sci.*, 6: 105-124.
- Kasman, S., G. Vardar and G. Tunc, 2011. The impact of interest rate and exchange rate volatility on banks stock returns and volatility: Evidence from Turkey. *Econ. Modell.*, 28: 1328-1334.
- Khan, T. and H. Ahmed, 2001. Risk Management: An Analysis of Issues in Islamic Financial Industry. Islamic Development Bank, Islamic Research and Training Institute, Jeddah, Saudi Arabia, ISBN:9789960321097, Pages: 183.
- Mahmood, M. and K. Rehman, 2010. Derivative usage in corporate Pakistan: A qualitative research of listed companies. *Intl. Bus. Econ. Res. J.*, 9: 151-158.
- Yildiran, M., 2015. The financial risk management strategies during 2008/09 global financial crisis: A survey on Turkish exporting firms. *Intl. J. Finance Accounting*, 4: 163-171.