Deposit Dollarization and Bank Performance: The Jordanian Case

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Abstract

It is common knowledge that banks all over the world hold deposits in foreign currencies. Some of these deposits might account for a large proportion of local banks' deposits. This phenomenon (dollarization) has attracted attention in the literature. Indeed, if a significant part of a banking sector is dollarized, then such a sector incurs extra liquidity and solvency risks. Based on the time period 2000-2011, this paper examines the impact of foreign exchange deposits on the performance of Jordanian banks in terms of their profitability, efficiency (net interest margin), and credit behaviour. The empirical results indicate that foreign exchange holdings have a significant impact on bank profitability and net interest margin. However, this impact is not significant in the case of bank credit. These results imply that Jordanian banks with higher proportions of their deposits in foreign currencies pass on the extra risk they incur in the form of wider net interest margins.

Keywords: Jordan, Net Interest margin, Bank Credit, Dollarization

1. Introduction

Financial intermediaries constitute a major part of any financial system. In addition, banks are expected to contribute towards economic development because of the services they provide. It is argued that if run efficiently, banks promote and pool savings, and improve the allocation of resources through their credit allocation systems (Levine, 2005).

The literature contains many papers that examine a number of aspects concerning the performance of banks. While some papers consider the determinants of bank performance in terms of return on assets or return on equity, others examine the determinants of the cost of financial intermediation (net interest margin). Some of the papers which examine bank performance include Sayilgan and Ylidirim (2009), Heffernan and Fu (2010), Olweny and Shipho (2011), Dietrich (2011), Tan and Floros (2012), Ongore and Kusa (2013), and Ayanda et al. (2013). Similarly, some of the papers which examine the cost of financial intermediation include Demirguc-Kunt and Huizinga (1999), Gounder and Sharma (2012), Ahokpossi (2013), and Nassar et al. (2014).

The banking literature has also examined the impact of deposit dollarization on bank performance. This issue is important because if a significant part of the banking sector is dollarized, then banks incur two sources of risks that might affect their performance and these are liquidity risk and solvency risk.

Banks with greater proportions of the deposits in the form of foreign exchange incur greater levels of liquidity risk. The reason for this observation is simple. For local currency deposits, any central bank can act as the lender of the last resort because it can create domestic currency in case of emergency. Naturally, this is not possible in the case of foreign currency deposits. This is why when foreign exchange deposits increase, bank managers tend to hold more liquid positions or to fund less risky projects. In turn, such behaviour decreases their profitability (Rengifo et al. (2010).

It can also be argued that the existence of foreign currency deposits puts pressure on the balance sheets of banks if and when depreciation or devaluation of the local currency occurs. As a result, banks with greater proportions of their deposits denominated in foreign currencies are more likely to increase their reserves for loan losses (Chang and Velasco, 2001).

Due to the above-mentioned arguments, foreign exchange deposits can have an impact on the development of banking systems. This is why it would be interesting to examine the impact of this issue (deposit dollarization) on the performance of any system. Indeed, the literature includes a growing number of papers that examine this specific issue. Again, some of the papers which have applied either or both of the above-mentioned models in a cross-country setting or bank-level (within-country) settings are De Nicolo et al. (2004), Kubo (2007), Kutan et al. (2010), and Viera et al. (2012). On average, and as expected, greater levels of dollarization impact bank performance.

Typically, the literature which examines the impact of foreign exchange deposits on the performance of banks regresses a measure of bank performance on a set of bank-specific variables including bank size and equity capital, macroeconomic variables including growth rate in real gross domestic product and inflation, and foreign exchange deposits to total deposits.

Relative to the above brief account of the literature, this paper examines the impact of deposit dollarization on the performance of Jordanian banks during the period 2000-2011. In more specific terms, this paper attempts to answer three questions.

First, does dollarization affect bank performance (return on assets)?
Second, does dollarization affect bank credit?
Third, does dollarization affect bank net interest margin.

The rest of the paper is organized as follows. In section 2, we report some basic information about the Jordanian banking sector. In section 3, the data and methodology will be presented. In addition, this section presents and discusses the empirical results. Finally, section 4 summarizes and concludes the paper.

2. The Banking Sector in Jordan

The Jordanian banking system is composed of the Central Bank of Jordan (CBJ), licensed banks, Islamic banks, and specialized credit institutions. Currently, there are thirteen national banks, three Islamic banks, and nine foreign banks with branches in Jordan.

Relative to the national economy, the Jordanian bank sector has become large. For example, as a proportion of Gross Domestic Product (GDP), the total assets of the licensed banks has increased from about 35 percent in 1970 to 90 percent in 1980 and to 160 percent by the end of 2013.

Similarly, and relative to the rest of the Arab world, Jordanian banks play a more important economic role. During the period 2009-2013, the mean credit to the private sector to GDP ratio was equal to 73 percent in Jordan (Table 1), and this ratio is much higher than the Arab world's average (41 percent). However, the Chilean, Chinese, German, Israeli, Japanese Malaysian, and British banking systems provide their respective economies with greater levels of credit.

Licenced Jordanian banks hold significant proportion of their deposits in the form of foreign exchange. For example, during the period 2000-2014, the mean annual ratio of foreign exchange deposits to total deposits was equal to 47.5 percent Table 2).

Table 1: Credit to Private Sector to GDP Ratio 2009-2013

Country	Ratio	Country	Ratio
Arab World	41	UAE	70
Bahrain	69	Chile	103
Egypt	31	China	132
Jordan	**73**	Germany	101
Kuwait	69	Israel	91
Lebanon	87	Japan	181
Morocco	70	Malaysia	115
Oman	42	Indonesia	32
Qatar	42	Turkey	53
S. Arabia	39	UK	178

Table 2: Foreign Exchange Deposits to Total Deposits

Year	Ratio	Year	Ratio
2000	64.5	2008	35.6
2001	67.6	2009	27.9
2002	69.3	2010	27.7
2003	63.9	2011	27.5
2004	68.1	2012	41.0
2005	56.8	2013	31.4
2006	54.8	2014	26.0
2007	50.6	Mean	47.5

However, it is interesting to note that during this period, foreign exchange deposits have been decreasing. In actual fact they have decreased from 64.5 percent (2000) to 56.8 percent (2005), to 27.7 percent (2010), and to26.0 percent (2014). As one might expect, this consistent decrease is due to the lowering of interest rates on the US dollar and relative increase in the general level of interest rates in the Jordanian economy.

3. The Data, Methodology and Results

To examine the impact of foreign exchange deposits on the performance of the Jordanian banks in terms of their profitability (return on assets), efficiency (net interest margin) and credit behaviour, a total of 12 banks are included in the statistical analyses. This sample of Jordanian banks does not include the Islamic banks. Also, it does not include the Housing Bank for Trade and Finance. These banks are excluded because the nature of their business is somewhat different from the listed 12 banks.

As far as the time period and data are concerned, it covers the years 2000-2011 and all the relevant information is obtained from the web page of the Jordanian capital market and actual financial statements of the banks. Indeed, the statements had to be relied on because the foreign exchange deposits of the banks are not reported by the information provided by the capital market.

Based on the published literature, the main theoretical models which are used in this paper assume a negative impactof dollarization on bank profitability and on bank credit. Also, a positive impact of dollarization on the cost of financial intermediation is expected.

To assess the impact of foreign exchange deposits, we specify the following three regression equations:

$$ROA_{i,t}= \beta_1 CRED_{i,t-1}+\beta_2 SIZE_{i,t-1}+\beta_3 CAP_{i,t-1}+\beta_4 NIM_{i,t-1}+\beta_5 FD_{i,t-1}+\beta_6 GRO_{t-1}+\beta_7 INF_{t-}+\varepsilon_{i,t}$$

$$CRED_{i,t}= \beta_1 SIZE_{i,t-1}+\beta_2 CAP_{i,t-1}+\beta_3 NIM_{i,t-1}+\beta_4 FD_{i,t-1}+\beta_5 GRO_{t-1}+\beta_6 INF_{t-}+\varepsilon_{i,t}$$

$$NIM_{i,t}= \beta_1 CRED_{i,t-1}+\beta_2 SIZE_{i,t-1}+\beta_3 CAP_{i,t-1}+\beta_4 FD_{i,t-1}+\varepsilon_{i,t}$$

where the subscripts i and t denote banks (i = 1, …, N) and time (t = 1, …, T) respectively. ROA is income before tax to total assets; CRED is bank credit to total assets; SIZE is the natural logarithm of bank assets; CAP is equity capital to total assets; NIM is net interest margin ((Interest Revenue – Interest Expense) / Total Assets); FD foreign exchange deposits to total deposits; GRO is real GDP growth rate; INF is the inflation rate.

The estimation method that we use is the Period Seemingly Unrelated Regression (SUR) – Pooled Estimated Generalized Least Squares (EGLS).The regressions are estimated with the lagged values of all independent variables including the foreign exchange deposits. Indeed, the lagged value of foreign currency deposit to total deposits rates as opposed to contemporaneous rates should be included for a number of reasons.First, bank managers make plans for the next period based on the previous period's data and some future expectations. This is why the ratio of dollarization should have at least one year's lag.Second, the lending process in foreign exchange is expected to have an impact of the banks' financial statements in the next period. Therefore, it makes sense to include the ratio of foreign exchange deposits to total bank deposits in its lagged form.

In Table3, we report some descriptive statistics about all the variables which are used in the analysis. Based on the reported figures, one can observe the followings.

First, the mean return on assets was equal to 1.9 percent. This ratio is considered to be healthy. Indeed, banks are highly leveraged and their assets tend to be large. This is why, a return on assets which is equal to around 1 to 2 percent is considered good.

Table 3: **Dependent Variables**

	ROA	**NIM**	**CRED**	**SIZE**	**CAP**	**FD**	**GRO**	**INF**
Mean	0.019	0.039	0.474	21.019	0.086	0.302	0.052	0.055
Median	0.020	0.038	0.465	20.910	0.079	0.302	0.055	0.047
Maximum	0.035	0.083	0.603	23.898	0.277	0.601	0.082	0.139
Minimum	0.001	0.026	0.330	19.218	0.017	0.020	0.023	-0.007
Std. Deviation	0.007	0.011	0.067	1.043	0.045	0.134	0.024	0.047

ROA is incme before tax to total assets; NIM is net interest margin ((Interest Revenue – Interest Expense) / Total Assets); CREDis bank credit to total assets.; SIZE is the natural logarithm of bank assets; CAP is equity capital to total assets; FD foreign exchange deposits to total deposits; GRO is real GDP growth rate; INF is the inflation rate.

Second, the mean ratio of credit to total assets is equal to 47.4 percent. However, there are some large differences between the banks. For example, the maximum and minimum values of this ratio are equal 60.3 percent and 33 percent. In other words, banks in Jordan do differ in terms of their sources of income as some of them have a low proportion of their assets in the form of credit.

Third, among the sample of the twelve banks, the largest difference lies in bank size. Indeed, the maximum and minimum values of the natural logarithm of total assets are equal to 23.8 and 19.2.

Fourth, the overall mean value of net interest margin (NIM) is equal to 3.9 percent. This value is higher than that which prevails in many countries. For example, based on the estimates provided by Kasman et al. (2010), the mean values of net interest margin are equal to 0.8 percent in Luxemburg, 1.6 percent in Finland, 1.8 percent in Belgium, 2.5 percent in Spain, 2.6 percent in the U.K., and 2.9 percent in Germany. In actual fact, the banking sectors which have wider net interest margins are those operating in Denmark (4.4 percent), Bulgaria (5.4 percent), Croatia (5.6 percent), and Turkey (10.7 percent).

Finally, it is very interesting to consider the foreign exchange deposits statistics. Again, one can observe the difference in this measure. For example, while the overall mean ratio is equal to 30.2 percent, the maximum and minimum values of this ratio are 60 percent and 2 percent respectively (Table 4). This simple comparison indicates that Jordanian banks do differ in terms of the foreign deposits they attract and this difference probably affects their performance.

The estimation results for the determinants of bank profitability are reported in Table 4 below. The coefficient of foreign exchange deposit (FD) is positive and significant at the 99 percent level. This effect is robust to the inclusion of other variables (real economic growth and the inflation rate). Indeed, in both cases, the values of this coefficient are equal +0.023 and +0.021 respectively.

This conclusion implies that banks with more foreign exchange deposits might be earning much wider interest margins on these accounts and this is due to the extra risk in lending local customers, for example, US dollars. This result is in sharp contrast to the international evidence.

For example, based on their analysis of a total of 36 dollarized banking systems, Kutan et al. (2012) report a significant negative impact of foreign exchange deposits on bank profitability. However, the results of this paper cannot really be compared with that by Kutan et al. because they relied on a cross section of 36 countries.

Table 4: Return on Assets

Variable	Coefficient	Coefficient
CRE	0.0167 (3.678*)	0.019 (3.857*)
SIZE	-0.001 (-0.333)	-0.001 (-1.531)
CAP	-0.062 (-2.030**)	-0.061 (-2.066**)
NIM	0.198 (2.995*)	0.246 (3.377*)
FD	**0.023** **(2.924*)**	**0.021** **(2.643*)**
GRO	---	0.084 (2.654*)
INF	---	-0.040 (-4.738*)
Adjusted R^2	0.748	0.808
F-statistic	37.405*	35.498*
D-W Statistic	2.176	2.008

In addition, Table 4 shows that bank credit and bank net interest margin have positive and significant impact on bank profitability. Clearly, these results make sense and are expected. Finally, the results also show that real economic growth has a positive impact on bank performance while inflation (macroeconomic uncertainty) has a significant and negative impact on bank performance. These results are in agreement with the internationally available evidence.

Relative to the point mentioned above (more foreign deposits results in wider net interest margin), it is useful to note that the impact of foreign exchange deposits on net interest margin and on bank creditare also examined, and the results are reported in Tables5 and 6.

The results indicate that the extra risk incurred by banks with greater proportions of their deposits in foreign exchange are passed-on to the customers in the form of wider net interest margin. Indeed, the coefficient of the foreign deposits is equal to +0.022 (Table 7) and significant at conventional levels.

Table 5: Net Interest Margin

Variable	Coefficient
CRED	0.032 (2.013**)
SIZE	-0.001 (2.169**)
CAP	-0.008 (-0.219)
FD	**0.022** **(2.014**)**
Adjusted R^2	0.913
F-statistic	173.993*
D-W Statistic	2.007

Table 6: Bank Credit

Variable	Coefficient	Coefficient
SIZE	0.017 (11.52*)	0.017 (8.307*)
CAP	0.382 (1.079)	0.451 (1.426)
NIM	1.175 (1.908**)	1.832 (2.304**)
FD	**0.052** **(0.641)**	**-0.005** **(-0.057)**
GRO	---	0.438 (1.158)
INF	---	-0.215 (-3.049*)
Adjusted R^2	0.870	0.898
F-statistic	110.528*	87.340*
D-W Statistic	1.880	1.766

Interestingly, the reported results reveal that foreign exchange deposits do not have an impact on bank credit (Table 6). This result reinforces the previous conclusions about the impact of foreign exchange deposits on bank profitability and net interest margin. In other words, the fact that foreign exchange deposits do not impact bank credit, this means that banks with greater proportions of their deposits in the form of foreign currencies seem to lend these currencies but at wider interest margins.

In addition, and as expected, inflation rate has a negative impact on bank credit. This is indeed expected given the fact that inflation creates greater levels of economic uncertainties and hence bank respond by reducing the lending activities. Finally, the evidence shows that larger banks tend to lend proportionately more and this is probably due to their superior risk management or superior borrowers in terms of their ability to pay back their loans.

4. Summary and Conclusions

As a part of any financial system, banks are expected to play a positive role in economic development. Indeed, the available evidence, on average, shows that banks promote economic growth, industry growth, and firm growth. Based on these conclusions, one cannot be surprised to learn that the literature has examined many issues that concern banks' performance. These issues include the determinants of bank profitability, determinants of banks' bet interest margin, the determinants of banks' capital, bank efficiency, bank competition and its impact on net interest margin and bank risk levels, bank discipline, and the impact of foreign bank entry on the performance of local banks.

In addition to the above-mentioned research issues, the impact of foreign exchange deposits on the performance of banks has been attracting a growing number of research issues. This research is indeed important for a number of reasons including the fact that dollarization (dollar deposits to total deposits) can in some cases be extremely high. Indeed, this is the case in the Jordanian banking sector. For example, based on the sample of 12 banks and during the period 2000-2011, the mean proportion of bank deposits in foreign exchange to total deposits was equal to 30 percent.

The empirical results are both encouraging and disappointing. First, the fact that foreign exchange deposits do not negatively impact bank credit, this implies that these deposits (in foreign currencies) do not adversely affect financial development (measured by total credit to GDP). Second, the fact that foreign exchange deposits have a positive impact on bank net interest margin and bank profitability, these conclusions imply that banks with greater levels of foreign exchange deposits manage this extra risk factor by widening their net interest margins, and hence increasing their profitability. The fact that a wider margin is an implicit cost paid by bank customers, and by the economy at large, these conclusions are disappointing.

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