PRACE NAUKOWE AKADEMII EKONOMICZNEJ WE WROCŁAWIU
Nr 1152 2007

Zarządzanie finansami firm – teoria i praktyka

Abdulnafi Al Zarari, Abla Tahtamouni

Philadelphia University, Jordan

JORDANIAN COMMERCIAL BANKS STRATEGIES IN HIGH-RATE RETURN REALIZATION AND ITS RELATION WITH LIQUIDITY GAP MANAGEMENT PERFORMANCE*

1. Introduction

Managing financial institutions has never been an easy task, but in recent years, it has become more difficult because of greater uncertainly in the economic environment. Gap management ,"which is the difference between the dollar amounts of rate-sensitive assets and rate-sensitive liabilities has received more consideration as a result of substantial fluctuations in the market interest rate, which affect the value of assets and liabilities held by financial institutions.

As a part of the ongoing efforts to address international bank supervisory issues, the Basel Committee on Banking Supervision has issued a paper on the management of Interest Rate Risk (1997). In this paper, as in many other areas, sound controls are of crucial importance. It is also essential the banks have a comprehensive risk management program at their disposal which effectively identifies, measures, monitors and controls interest rate risk, and is subject to appropriate board and senior management oversight.

A major part of the business of financial institutions (banks) is providing loans, and for these institutions to earn high profit, they must make successful loans that are paid back in full (and so have low credit risk), but in reality, however, credit risk increases. Financial institutions also encounter other types of risk such as liquidity risk and market risk which have their effect on the performance of the banking businesses. Therefore it is not surprising that bank managers have become more concerned about managing the risks their institutions face as a result of interest-rate fluctuations and defaults by borrowers.

* Artykuł wygłoszony na konferencji w 2005 r.

The main objective of the study is to investigate the relationship between liquidity risk, interest rate risk and liquidity gap management in the Jordanian commercial banks.

The aim of the research is to examine the effect of the different types of risks on liquidity gap management for a sample of Jordanians banks. It also aims to see if Jordanian commercial banks are complying with the Basel Committee on banking supervision issues. This study, therefore, is of importance, because no similar study has been conducted in this area in Jordan, and it will be of great benefit to other researchers interested in this subject.

2. Hypotheses of the study

The main hypothesis is as follows: There is a statistical relationship between liquidity gap management, "which is the difference between the dollar amounts of interest rate-sensitive assets and interest rate-liabilities", and elements related to liquidity risk, and interest rate risk. The sub hypotheses are the following:

A – there is a positive statistical relationship between liquidity risk and bank liquidity gap management,

B – there is a positive relationship between interest rate risk and bank liquidity gap management,

C – there is a positive relationship between liquidity gap management and liquidity risk,

D – there is a positive relationship between liquidity gap management and interest rate risk.

3. Research Methodology

3.1. Sample of commercial banks

The sample of commercial banks used in the study consists of three commercial banks selected from banks listed in the Amman Stocks Exchange (ASE) for the period between December 31, 1998 to December 31, 2003 because new rules and regulations were adopted by the Central Bank of Jordan .The selection criterion employed was the availability of data for these banks through the period of the study.

3.2. Data collection

The following sources were used to collect information needed for the purpose of the study, and these sources are considered as secondary sources of data:

1) the annual reports for the fourteen banks,

2) many previous and different research, related to the study.

In addition, two interviews were made with the Arab and housing banks to collect primary data related to liquidity gap management, but the required information was unavailable because these data are considered confidential by banks officials, and it was difficult to disclose any information related to this.

3.3. Literature Review

A number of studies have been conducted on gap management, other works discussed the different types of risks that are related to the banking business: the interest rate risk, credit risk, liquidity risk, market risk, and bank size, and either issue related to determining the effects of these risks on gap management, which have been subjected to extensive investigation by bankers, academics and policy makers [Ross 1990; Vander Meer, Smink 1999; Cumming 2001; Brewer, Jackson 2001; Diamond, Rehuram 2001).

4. Variables affecting the Liquidity Gap

This part of the study will measure the effect of variables (interest risk, liquidity risk, S.R.A., and S.R.L.) on the liquidity gap in each of the Arab banks, the Housing bank, and the Jordan-Kuwait bank, making use of the hypothesis, as well as considering result shown in tables.

4.1. Evaluation of the Relative importance of the variables

To measure the variables affecting the liquidity gap, we took into account the interest rate risk, liquidity risk, S.R.A., and S.R.L., because these factors are classified among variables that affect liquidity gap. The equation of multiple linear slope has been used to measure the effect of the variables on gap. Available data of interest rate risk, liquidity risk, S.R.A., and S.R.L. for the period 1998-2003 have been substituted into the following linear formulae, which give a high correlation coefficient:

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4,$$

where:
Y – liquidity gap (dependent variable),
independent variables:
x_1 – interest rate risk,
x_2 – liquidity risk,
x_3 – sensitive reliable asset,
x_4 – sensitive reliable liability

Relating these to the data of tables, the research has arrived at the following equations:

for the Arab bank:

$$Y = 0.000 + 0.000\, x_1 + 0.000\, x_2 + 1.000\, x_3 + (-1.000\, x_4),$$

$$R = 1.00, \qquad R^2 = 1.00.$$

The slope Y of independent variables x_1, x_2, x_3, x_4 given R (1.00), where R is the coefficient of multiple correlation. This indicates the extent of relation between independent and dependent variables.

R^2 which equals 1.00 indicates that total difference in gap (Arab bank) detected throughout examination of variables x_1, x_2, x_3, and x_4 amounts to 100%.

ARAB BANK pIc

Trade Investment Portfolio,net		
	1998	2939
	1999	4248
	2000	150972
	2001	468896
	2002	561299
	2003	642516

+

Treasury Bills		
	1998	783632
	1999	990618
	2000	1332073
	2001	1372410
	2002	877143
	2003	773263

TOTAL	
1998	786571
1999	994866
2000	1483045
2001	1841306
2002	1438442
2003	1415779

/

Customer Deposit		
	1998	7957757
	1999	8759854
	2000	9748285
	2001	9175787
	2002	10052167
	2003	10572042

+

Bank &Financial Deposit		
	1998	2454212
	1999	2427300
	2000	2594177
	2001	3072811
	2002	2110080
	2003	2027478

TOTAL	
1998	10411969
1999	11187154
2000	12342462
2001	12248598
2002	12162247
2003	12599520

Liquidity Risk%	
1998	7,55448849
1999	8,89293202
2000	12,0157956
2001	15,0327899
2002	11,8271073
2003	11,2367693

For the Housing bank the equation is:

$$Y = 0.000 + 0.000\,x_1 + 0.000\,x_2 + 1.000\,x_3 + (-1.000\,x_4),$$

$$R = 1.000, \qquad R^2 = 1.000.$$

R^2 indicates that the total difference in gap detected amounts to 100% also by the mentioned four variables.

HOUSING BANK

Trade Investment Portfolio,net	
1998	43727950
1999	45347768
2000	48342543
2001	22244107
2002	0
2003	0

+

Treasury Bills	
1998	71038885
1999	103424427
2000	159006138
2001	277194898
2002	0
2003	0

TOTAL	
1998	114766835
1999	148772195
2000	207348681
2001	299439005
2002	0
2003	0

/

Customer Deposit	
1998	1045495395
1999	1141196309
2000	1209389902
2001	1239299639
2002	0
2003	0

+

Bank &Financial Deposit	
1998	21812975
1999	59870058
2000	56358930
2001	73925498
2002	0
2003	0

TOTAL	
1998	1067308370
1999	1201066367
2000	1265748832
2001	1313225137
2002	0
2003	0

Liquidity Risk%	
1998	10,7529219
1999	12,3866756
2000	16,3815029
2001	22,8018027
2002	0
2003	0

The equation for the Jordan-Kuwait bank is the following:

$$Y = 22714.879 + (-6346.202\, x_1) + (-214.998\, x_2) + 1.00\, x_3 + (-1.000\, x_4),$$

$$R = 1.00\, x_3, \qquad R^2 = 1.000.$$

R^2 indicates that the total difference in gap detected amounts to 100% by the four variables.

The partial regression coefficients for the Arab bank and the Housing bank show that there is an average fluctuation in Y as a result of fluctuation in x_3 and x_4 while the effect of x_1, x_2 remains constant. This analysis has shown disagreement with hypothesis of variables x_1, x_2 and agreement with x_3 and x_4 (the x_3 has shown a strong positive statistical relationship but x_4 has shown a negative statistical relationship with gap).

The partial regression coefficients in the Jordan-Kuwait bank point out that there is an average fluctuation in Y as a result of fluctuation in all of independent variables (but different in scale). The correlation coefficient for variables Y and x_1 is very high but negative (T is negatively significant). The correlation coefficient for variable *Y* and x_2 shows significant relation, but negative also (*T* is negatively significant).

On the other hand, the correlation coefficient for variables *Y*, and x_3 shows a 100% significant positive relation (*T* was very high), but the correlation coefficient for variables *Y*, and x_4 shows 100% negative relation (*T* was highly negative).

JORDAN KUWAIT BANK

Trade Investment Portfolio,net	
1998	4145566
1999	3108306
2000	4294233
2001	43889955
2002	58922854
2003	58452022

\+

Treasury Bills	
1998	20644497
1999	22754129
2000	19911382
2001	12049581
2002	0
2003	0

TOTAL	
1998	24790063
1999	25862435
2000	24205615
2001	55939536
2002	58922854
2003	58452022

/

Customer Deposit	
1998	249456406
1999	264404213
2000	339465497
2001	357812813
2002	397943009
2003	435916737

\+

Bank &Financial Deposit	
1998	27893804
1999	34284668
2000	69149130
2001	45968658
2002	54195884
2003	74785353

TOTAL	
1998	277350210
1999	298688881
2000	408614627
2001	403781471
2002	452138893
2003	510702090

Liquidity Risk%	
1998	8,93818072
1999	8,65865342
2000	5,9238249
2001	13,8539136
2002	13,0320251
2003	11,4454245

4.2. Conclusions

In short, the research arrive the following generalization:

1. There is a strong positive relationship between liquidity gap and S.R.A of the three banks. This is in agreement with the hypothesis. The correlation between these two variables amounts to 1.000 (100%). That means S.R.A is significant in predicting liquidity gap.

2. There is strong negative relationship between the amount of S.R.L and liquidity gap in the three banks. The coefficient of correlation is –1.000 (–100%). This is not agreement with the hypothesis, but it means it is significant in the anticipation of liquidity gap (adverse relationship).

3. There is no relationship between interest risk and liquidity gap in both Arab bank and Housing bank ($B = 0.000$), which means this independent variable is not significant for predicting liquidity gap.

4. There is negative significant relationship between each of interest risk, liquidity risk with liquidity gap in Jordan-Kuwait bank, which means these two variables x_1, x_2 are significant for predicting liquidity gap but are negative.

Literature

Bessis J., *Risk Management in Banking*, John Wiley and Sons, New York 2000.

Brewer E., Jackson W., *Managing Interest Rate Risk*, „Journal of Insurance" 2001, vol. 25, no. 3.

Cumming H., *Risk Management, Supervisors, Risks Manager*, „Economic Policy Review" 2001 (Federal Reserve Banks of New York), vol. 7, no. 1.

Diamond D., Rehuram G., *Liquidity Risk, Liquidity Ratio and Financial Fragility: a Theory of Banking*, „Journal of Political Economy" 2001, vol. 109, no. 2.

Ross D., *Interest Rate Management: Risk and How to Measure It*, „Accountancy" 1990, vol. 106, no. 1164.

Vander Meer R., Smink M., *Managing Interest Rate Risk*, „Geneva Paper on Risk and Insurance" 1999, vol. 24, no. 2.

STRATEGIE REALIZACJI WYSOKICH STÓP ZWROTU W JORDAŃSKICH BANKACH KOMERCYJNYCH ORAZ ICH RELACJA DO ZARZĄDZANIA LUKĄ PŁYNNOŚCI

Streszczenie

Luki płynności to różnice pomiędzy aktywami i pasywami portfela bankowego, luki generujące ryzyko płynności, ryzyko niemożności uzyskania funduszy bez ponoszenia dodatkowych wydatków. Kontrolowanie ryzyka płynności implikuje rozciąganie w czasie finansowania, przez co unika się nieoczekiwanego istotnego finansowania na rynku i zachowania „poduszki" z płynnych, krótkoterminowych aktywów, których sprzedaż zapewnia płynność bez ponoszenia zysków lub strat kapitałowych. Ryzyko płynności istnieje, gdy występuje deficyt środków, nadmiar środków skutkuje ponoszeniem ryzyka stóp procentowych, ryzyka nieznajomości z wyprzedzeniem stóp pożyczkowych lub lokacyjnych dla posiadanych środków.

Opracowanie ma na celu analizę związków między ryzykiem płynności, stóp procentowych i zarządzaniem luką płynności w jordańskich bankach komercyjnych na przykładzie trzech banków komercyjnych wybranych z listy banków notowanych na giełdzie papierów wartościowych w Ammanie. W wyniku badań stwierdzono silny pozytywny związek pomiędzy luką płynności a S.R.A. (*Sensitive Reliable Asset*) w badanych bankach; współczynnik korelacji wykazał, że S.R.A. jest istotne w przewidywaniu luki płynności. Jednak występuje negatywny związek pomiędzy S.R.L. (*Sensitive Reliable Liability*) i luką płynności. Nie ma istotnej relacji między ryzykiem stopy procentowej i luką płynności w dwóch bankach (Arab Bank i Housing Bank), co oznacza, że ryzyko stopy procentowej nie ma znaczenia przy przewidywaniu luki płynności. Natomiast w trzecim banku (Jordanian-Kuwait Bank) występowała istotna negatywna relacja każdej ze zmiennych (ryzyko stóp procentowych, ryzyko płynności) z luką płynności, co oznacza, że mają one znaczenie przy przewidywaniu luki płynności, ale ich związek jest negatywny.