Cyclical Patterns in Profits, Provisioning and Lending of Islamic Banks and Procyclicality of the New Basel Capital Requirements

Abdul Ghafar b. Ismail*

Ahmad Azam b. Sulaiman**

The proposed risk sensitive minimum requirements of the new Basel Capital Accord have raised concerns about possible (acceleration of) procyclical behaviour of banking, which might threaten macroeconomic stability. This article analyses the interaction between business cycles and banks over the past decades for 16 samples of banks. As expected, profits appear to move up and down with the business cycle, allowing for accumulation of capital in boom periods. Provisioning for credit losses rise when the cycle falls, but less so when net income of banks is relatively high, which reduces procyclicality. Lending fluctuates with the business cycle, too, but appears to be driven by demand rather than by supply factors such as (shortage of) capital, which contradicts the assumptions underlying capital crunch theory. All in all, over the last decades, distortion caused by procyclical behaviour of banks has been limited, banking crises excepted.

JEL-code: E32, E51, G21, G28;

Key words: profits; credit loss provisioning; lending; business cycle; procyclicality; credit crunch; bank lending channel; balance sheet channel;

1. Introduction

Under the proposed new Capital Accord, risk weighting for the purpose of determining capital requirements does take in the creditworthiness of individual firms. Banks may apply the internal rating-based (IRB) method, whereby they attach their own ratings to credits. Whereas external ratings, in principle, aim to remain constant through the business cycle (the so-called through-the-cycle ratings), internal ratings depend on the current phase in the business cycle (the so-called point-in-time ratings). This development, whereby banks are allowed to classify loans into risk categories according to their own internal rating methods, is a revolutionary and market-oriented innovation in banking supervision.

The new Accord thus promotes the financial soundness of individual Islamic banks and the financial stability of the banking system. A possible disadvantage,

* Professor of banking and financial economics, Universiti Kebangsaan Malaysia, e-mail: agibab@pkrisc.cc.ukm.my

** Post-graduate student, Universiti Kebangsaan Malaysia.

however, is that the novel risk sensitiveness of capital requirements could exert a pro-cyclical influence on the economy: as suppliers of credit, banks play a major macroeconomic role. When during a downward slope of the business cycle the risk of business loans and the related capital requirements increase, there is the danger that banks become less forthcoming in extending loans, thus reinforcing the cyclical slowdown in what is called a credit crunch.

At this stage, the degree to which the new Accord will turn out to reinforce the pro-cyclicality of banks' risk management is difficult if not impossible to determine. On the basis of the above, it is relevant to analyze in what ways and to what extent banks' characteristics, such as profitability, activities, such as lending, and their actions, such as making provisions for (future) losses, relate to the business cycle. Such an analysis will also indicate how pro-cyclical the current arrangement already is. For instance, greater profits imply the possibility to enlarge the capital buffer and increase lending. These issues will be addressed in this paper.

The remaining of this chapter is divided into five sections. In section two, we will highlight the channel of pro-cyclicality in banking. The aim is to produce the evidence of pro-cyclicality of banks' behaviour and the perceived increased pro-cyclicality caused by the new capital accord. In section three, we will construct the models that relate business cycle with profits, lending and loan loss provision. The data and results will be discussed in section four. Section 5 summarizes the conclusions.

2. Pro-cyclicality in banking

This section will highlight the channel/theory of pro-cyclicality in banking. The aim is to produce the evidence of pro-cyclicality of banks' behaviour and the perceived increased pro-cyclicality caused by the new Capital Accord. Both are likely to have more than a minor effect on macroeconomic stability. By contrast, this section also want to highlight the new Accord does help to enhance the financial health of the banking system, thereby diminishing the risk of the worst possible credit crunch—that caused by a banking crisis.

A long-standing concern with regard to the setting of minimum prudential capital requirements for banks is that pressure on bank capital in a recession could lead to cutbacks in bank lending in stress periods with a constraint of this kind. The introduction of the Basel Accord in 1988, marked a worldwide adoption of minimum capital requirements that had to be met at all times. A number of academic studies were carried out after the recession in the early 1990s to see if the minimum standards had indeed created pro-cyclical effects on lending. It would not be surprising if the introduction of capital requirements had some effect on lending, through encouraging banks to focus on the true cost of some of the riskier loans. But the concern was that fixed capital requirements in developed countries could have significantly exacerbated the 1990 recession by creating a credit crunch and this was the focus of a number of academic papers.

The effect of the current accord on economic cycles is likely to be muted because earnings are the first buffer against the need to raise provisions or write off loans, limiting the impact of recessions on bank capital and therefore the likelihood of credit crunches. Also, modest falls in capital may be covered by increased use of subordinated debt, which is included in Tier 2 capital, because many banks carry a greater proportion of capital (than required) as Tier 1, giving them headroom to increase Tier 2. The new Accord, which will be introduced in 2006, could, however, have a profound effect on the dynamics of bank minimum capital and lending in recessions. In contrast to the current Accord where, for a given quantum of lending to a particular set of borrowers, the capital requirement is invariant over time, under the new Accord the capital requirements will depend on the current risk assessments of those borrowers. If borrowers are downgraded in a recession, then the capital requirements faced by the bank will rise. This would be in addition to the possible reduction in the bank's capital because of write-offs and specific provisions. There are a number of aspects to the pro-cyclicality debate.

One is the extent of likely fluctuations in bank capital requirements over the cycle and whether any increase in requirements in recessions could be met by the banks – or whether capital requirements are likely to bind at that point requiring an adjustment to lending. A further aspect is whether, if the ability of banks to lend were restricted in recessions, other sources of funds would substitute for any shortfall, limiting the overall effect on the corporate and retail sectors. Hence, several studies have examined the first set of issues – the likely extent of variation in bank capital requirements over the cycle, for different profiles of bank portfolio, under Basel II and whether any increase could be met given current capitalization of the banks. This was discussed in Jackson (1999), and Ervin and Wilde (2001). And Allen and Saunders (2002) stress further those other elements of the capital calculation for some banks (e.g. Loss given default for advanced approach banks) that is also be subject to cyclical variation.

Under Basel II, the minimum capital requirements of most large banks will be set with reference to each bank's internal assessment of the riskiness of the borrower. Borrowers will be assigned to rating bands tied to a probability of default. The extent to which banks need to downgrade borrowers in a recession will depend on the way in which the probability of default is assessed. If borrowers were assigned to a rating under the assumption that economic conditions prevailing when the loan was made were likely to remain unchanged over the life of a loan, then there would be substantial downgrading if economic conditions deteriorated (and vice versa if conditions improved). In contrast, if banks, when assessing the credit-worthiness of the borrower, consider the effect of a change in the economic climate, then downgrades might be rather less.

Another effect of rating borrowers in booms using an assumption that buoyant economic conditions will continue could be over lending. Risks are taken in booms and the effect is felt when the economy turns down. If banks underestimate the

longer-term risks of exposures this could exacerbate bubble conditions. This is also an issue raised in Danielsson et al (2001). A possible explanation for underestimation of risks in booms is set out in Herring (1999). As memories of the last economic downturn fade, banks let their capital positions decline and lend on easier terms. They suffer from 'disaster myopia'. At some point, long after the occurrence of a disaster, the subjective probability of the recurrence of disaster may become so low that it is treated as zero. As the probability is revised down so the bank will be able to lend to a broader range of creditors. It would also affect pricing of credit. To the extent that salaries and bonuses reflect short-term profit (and do not reflect the longer-term risks) so lending officers will have an incentive to disregard dangers. Once a shock occurs, subjective probabilities are revised upwards and the financial system may descend into crisis. It is also consistent with the theory of why bank credit policies fluctuate, as in Rajan (1994). Bank management is assumed to be rational but has short-term concerns – focussing on the bank's earnings and reputation. The bank management can achieve their goals with a liberal credit policy in booms, boosting current earnings at the expense of future earnings.

3. The Model

In this section we will develop the models that relate business cycle with profits, lending and loan loss provision.

3.1. Banks' Profits and the Business Cycle

The verses of 42-48, chapter Yusof teach us on how do we manage the business cycle. Do the banks' profits tie with the business cycle? Accordingly, it is interesting to find out what degree of correlation there is between banks' profitability and the business cycle.

Cavello and Majnoni (2002) developed the following theoretical model for bank profits:

$$\pi = L((r_B + E(d) + k) - r_D) - BL - (\gamma E(d)L - BL)$$

$$L((r_B + E(d) + k) - r_D) + (1-\gamma)E(d)L \qquad if \;\; LLR > 0 \quad (1)$$

$$L((r_B + E(d) + k) - r_D) + (E(d)L - BL) \qquad if \;\; LLR < 0 \quad (2)$$

where π are bank profits, L is loans, r_B is the risk free interest rate, E(d) is the expected default ratio on loans as an average through the business cycle, k is the risk premium, r_D is the funding rate, BL is bank losses on loans and LLR is loan loss reserves. The loan loss provisions $\gamma E(d)L - BL$ are set equal to a fraction γ of the expected default ratio E(d) minus the expected losses, as long as the loan loss reserves allow for this reduction. The business cycle feeds into bank profits

through bank losses (BL), the demand for loans (L) and, probably, the levels of the interest rates. In principle, the expected default ratio E(d) does not depend on the business cycle, but in reality it may be effected. This theoretic model ignores other bank activities (such as trading and bank services) and bank-specific characteristics such as those related to funding (e.g. Non-bank deposits and capital and reserves). Therefore, we estimate the following more elaborated equation:

$$profits_t = \alpha_1 gdp_t + \alpha_2 unemployment_t + \alpha_2 M3_t + \alpha_4 loans_t + \alpha_5 non-bank\ deposit_t + \alpha_6 capital\ and\ reserves_t + \mu_t \quad (3)$$

3.2 Credit Loss Provisioning and the Business Cycle

Profits are calculated by deducting credit loss provisions from net profits. Even more so than profit itself, credit loss provisions embody the relation between credit risk and capital. For provisions made to absorb (expected) credit losses press down profits before they are added to capital and reserves. In this section, we look more closely at the coherence between provisions for credit losses and the business cycle, in order to gain better insight into the possible risks of pro-cyclicality. In this section, we look more closely at the coherence between provisions for credit losses and the business cycle, in order to gain better insight into the possible risks of pro-cyclicality. As was mentioned earlier, credit quality of loans is expected to move up and down with the business cycle. During a cyclical downturn, banks must take larger amounts away from—already low—profits on behalf of provisions, while in times of favourable cyclical developments the provisions for expected credit losses go down, augmenting profits. The countercyclical behaviour of provisions would thereby reinforce the cyclical nature of profits.

In the theoretical model of Cavello and Majnoni (2002), provisions for credit losses (PVL) are modelled as:

$$PVL = \gamma E(d)L - BL \quad (4)$$

PVL is a certain share γ of the average expected losses E(d) ×L minus the actual losses BL. PVL is effected by the business cycle through loans, L and credit losses, BL. In our empirical model, we use two macroeconomic variables (real GDP growth and unemployment) to describe the business cycle and failures to describe credit losses:

$$provision_t = \alpha_1 gdp_t + \alpha_2 unemployment_t + \alpha_2 M3_t + \alpha_4 loans_t + \alpha_5 net\ profits_t + \mu_t \quad (5)$$

In equation (3), the share γ may fluctuate, as according to the income smoothing hypothesis. Therefore we also include net income. Similar results are obtained when net income is replaced by net profits .The dependent variable provisions are defined as the net addition to provisions for credit losses in proportion to loans outstanding.

3.3. Lending and the Business Cycle

According to bank lending channel theory, the central point in the issue of procyclical behaviour of banks is the passing through of lending into the macroeconomic sphere. Therefore, this section briefly discusses the extent to which lending depends on either demand or supply variables. Naturally, there is a strong correlation between demand for credit and the business cycle, our empirical model for lending is given as:

$$lending_t = \alpha_1 gdp_t + \alpha_2 unemployment_t + \alpha_2 M3_t + \alpha_4 profits_t + \alpha_5 non-bank\ deposit_t + \alpha_6 capital\ and\ reserves_t + \mu_t \quad (6)$$

The explanation of the above variables can be found in Appendix.

4. Empirical Results

To estimate equations (3), (5) and (6), we use an unbalanced bank-level panel data set for 16 Islamic banks (i.e., two full-pledged Islamic banks and fourteen Islamic windows). The data are annual and span the period from 1994 to 2004. In this manner a full cycle of the Malaysia economy is included, a point of particular importance given that the aim of this paper is, as mentioned, to analyze whether there is a relationship between the business cycle and profits, lending and loan loss provision.

Moreover, the impact of bank mergers during the period has also to be taken into account. Mergers pose an obstacle to calculating averages and, particularly, growth rates. To overcome this drawback so that the least number of observations possible is lost, it has been decided to artificially recreate the merger a period in advance. That is to say, if two Islamic windows merge at t, for the purposes solely of calculating averages and growth rates, the resulting institution is considered to have already existed at $t-1$, reconstructing it on the basis of the data from the individual institutions involved in the merger. A similar problem arises for institutions that, having belonged at t-1 to a consolidated group, leave such group at t. To calculate both the averages of certain variables and their growth rates, the figure at t-1 is obtained from their individually reported financial statements.

Table 1 shows the descriptive statistics of different variables to examine the bivariate relationship by comparing the average (mean) for each variable. The

reported results in Table 1 show that the values of each variable deviate slightly from the standard deviation. Therefore, they are very much volatile.

Table 1: Summary Statistics

	Mean	Std. Dev	Skewness	Kurtosis	Jarque-Bera
Profits	166007.4	745621.2	-2.881	1.018	1.165*
Provision	31969	47857.39	1.785	5.286	2.472*
Lending	1180390	2113984	2.911	1.114	1.378*
Non-bank deposit	649374.3	878020.9	1.811	9.729	8.029*
Capital and reserve	428001.2	1471679	5.366	3.022	1.177*
M3	470209.5	21086.74	0.083	2.036	1.316
GDP	87338	4.820	0.831	2.294	4.485
Unemployment	3.538	0.098	-2.736	1.285	1.746*

* Significant at 1%

To verify whether the sample data is normally distributed, the data will be tested using several techniques such as the skewness test, kurtosis, the Jarque bera as well as the value of mean and median. If a sample is normally distributed, then the value of skewness will be equal to zero, the value of kurtosis should be three and the value of mean should be the same as the value of its median while the value of Jarque bera should not be significant or with high value of probability. A sample data that is normally distributed should be an efficient estimator, unbiased and consistent. Based on the findings on the descriptive as shown in Table 1, it can be argued that the sample data is not normally distributed. The reason is that none of its characteristics is identical to the one recently discussed. The value of mean and median for all the variables are not the same while their skewness is not equal to zero. The values of kurtosis are not equal to three and the values of Jarque-Bera are significant. Therefore it can be concluded that based on the above, the Ordinary Least Squares estimation method is not a better estimation method to be used. Hence, the Generalize Least Square method is more appropriate and expected to yield a much better result.

Table 2: Panel Unit Roots Test

Variable	ADF-Fisher Chi-Square		Levin, Lin & Chu t*	
	At level	First Difference	At level	First Difference
Profits	450.049**	896.562*	236.811	-317.429*
Provision	456.416*	680.487*	-599.029*	-335.881*
Lending	193.443	299.213**	-122.569	-758.196*
Non-bank deposit	486.146**	878.169*	-0.097	-349.776*
Capital and reserve	243.563	NA	0.409	NA
M3	234.818	294.704	-600.037*	-375.515*
GDP	470.433	153.283*	-131.340***	-302.224*
Unemployment	857.551	739.274*	-161.802***	-119.641*

*Significant at 1%, **Significant at 5 %, **Significant at 10%
Note: Test statistic value is assigned as 'NA' due to the present of a p-value of one or zero.

Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

The standard unit root test has to be performed to cheque the stationarity of our data. However, it is often argued that the commonly used unit root tests such as the augmented Dickey-Fuller test and the Phillips-Perron test are not very powerful. As a response, panel unit root tests are developed. These tests are in essence motivated to increase the power through pooling information across units.

4.1 The ADF-Fisher Test

Maddala and Wu (1999) propose the test statistic, which is based on combining the P-values of the test statistics (of δi) of N independent ADF regressions from

$$\Delta q_{it}^{k} = \alpha_i + \beta_i q_{it-1}^{k} + \sum_{j=1}^{p_t} \gamma_{ij} \Delta q_{it-j}^{k} + e_{it} \qquad (7)$$

$$i = 1.....N \qquad t = 1.....T$$

The test is non-parametric and is based on Fisher (1932). Similar to Im et al (1997), this test allows for different first-order autoregressive coefficients and has the same null and alternative hypothesis in the estimation procedure. The test statistic (the Fisher test $P(\lambda)$) is as follows:

$$P(\lambda) = -2\sum_{i=1}^{N} \ln(\pi_i) \tag{8}$$

where π_i is the P-value of the test statistic for unit i. The Fisher test statistic $P(\lambda)$ is distributed as a chi-squared distribution with 2N d.f. Maddala and Wu show that the Fisher test achieves more accurate size and high power relative to the LL test. The advantage of this test is that it can use different lag lengths in the individual ADF regressions, although the IPS test must use the same lag length in all the individual ADF regressions. The Fisher test does not require a balanced panel as in the case of the IPS test. Therefore, in practise, the Fisher test is straightforward to use and may decrease the bias which is caused by the lag selection (Banerjee (1999) and Maddala and Wu (1999)).

ADF-Fisher assumes individual unit root process and use chi square test statistics. Table 2 present Macroeconomic factors (gdp, unemployment and M3), capital and reserves and lending have unit root at level but only M3 still have unit root at first difference.

4.2 Levin and Lin Test

Levin and Lin (1993) developed a panel unit root test that has more power than univariate unit root tests by imposing the same first order autoregressive coefficient and intercept on all series. This approach jointly tests if all series in the panel follow a unit root process. Evans and Karras (1996) enhance the panel approach by allowing for different intercepts and testing for both stochastic and absolute convergence. Stochastic convergence implies that innovations are transmitted one-for-one to all series in the panel, so that the variables are stationary. The panel procedure requires the following steps.

$$\Delta q_{it} = \alpha_i + \rho_i q_{i,j-1} + \sum_{j=1}^{p} \theta_{ij} \Delta q_{i,t-j} + e_{it} \qquad t=1,2\ldots T \tag{9}$$

The cross-sectional means for the panel are first subtracted from each series.

$$\Delta z_{it} = \delta_i + \rho z_{i,j-1} + \sum_{j=1}^{p} \theta_{ij} \Delta z_{i,j-1} + \mu_{it} \tag{10}$$

where uit=eit/ σi/F and $F\delta_i = \alpha_i / \sigma_i$ If the t-ratio for the estimated ρ, τ(ρ), exceeds a critical value from a Monte Carlo simulation, then we reject the null hypothesis of a unit root, H0: ρ =0, for all N economies in favour of a mean reverting process, H1: ρ >0. If PPP holds, one can then test if the constants are significantly different from zero for all economies by calculating the F-ratio,

$\phi(\delta) = \sum^{N}_{i=1} [\tau(\delta)]^2 / (N-1)$ Here, $\tau(\delta_i)$ is the t-ratio from the OLS estimate of i from the standard ADF regression given by equation (10). If the statistic exceeds the Monte Carlo critical value, then we reject a common intercept of zero for all economies. The Monte Carlo experiment is calculated following the steps of Evans and Karras (1996). Ordinary least squares estimates the parameters under the two nulls:

$$\Delta q_{it} = \alpha_i + \sum_{j=1}^{p} \theta_{ij} \Delta q_{i,t-j} + \nu_{it} \tag{11}$$

$$\Delta q_{it} = \rho_i q_{i,t-1} + \sum_{j=1}^{p} \theta_{ij} \Delta q_{i,t-j} + \nu_{it} \tag{12}$$

Levin, Lin & Chu (1993) assume common unit root process and used t-test. Based on figures reported in Tables 2, we find profits, lending, non-bank deposit and M3 have unit root at level and no unit root at first difference. M3 still have unit root at first difference.

Table 3, 4 and 5 shows the result from estimation for GLS model without effect (Model 1), random effect model (Model 2) and fixed effect model (Model 3).

Table 3: Profits and Business Cycle

Variable	None Effect	Random	Fixed
	Model 1	Model 2	Model 3
Constant		-10083799**	-6809317
		(-1.317)	(-1.012)
GDP	-0.685	-9.716**	-6.288
	(-0.109)	(-1.115)	(-0.807)
Unemployment	-23158.79	2572743***	679376.2
	(-0.186)	(0.389)	(0.213)
M3	0.320	1.995**	2.131
	(0.260)	(1.770)	(1.283)
Loans	0.038*	0.088	-0.272
	(2.754)	(-0.806)	(-1.041)
Non-bank deposit	-0.025**	-0.155	0.182
	(-0.766)	(0.578)	(0.646)
Capital and reserves	0.0006	0.008	0.008
	(0.054)	(0.049)	(0.124)
R^2	0.669	0.303	0.515
Adjusted R^2	0.605	0.135	0.158
F-test	-	0.181	0.706
DW	1.963	3.449	3.694
Hausman test	-	5596.832	-
Redundant Tests	-	-	11584.616

*Significant at 1%, **Significant at 5 %, **Significant at 10%.

As reported in column two Table 3, Model 1 explains the relationship between profits and business cycle with none-effect. We find M3, loans and a capital reserve are positively related to profits but only loans significant at one percent. The indicator for non-bank deposit enters a negative and significant coefficient (-0.025) at five percent. The coefficient of GDP is negative (-0.685) and not significant.

The non-GLS estimation method discussed above fails to take into consideration the individual characteristics of bank. These characteristics are taken explicitly in the estimation by taking individuality of banks into account the intercept varies among banks. As reported in column three Table 3, Model 2 presents the estimated coefficient for macroeconomics factors significantly at five and ten percent. The coefficient of GDP is negatively (-9.716) related with profits but M3 and unemployment are positively related, i. e., 1.995 and 2572743, respectively. The relationship between profits, and capital and reserves is negative. Finally, loans, and non-bank deposit seem to have no significant effect on profit margins.

Under the fixed effect estimation method in Model 3 (column four), the sign of the coefficients remain. However several coefficients are not significant. The relationship between GDP, loans and profits are negative. The unemployment coefficient carries, as expected, a significantly negative sign. Here, too, the correlation between profit and business cycle is in evidence. Where GDP growth reflects cyclical change, unemployment indicates the phase of the business cycle, although usually with some delay. A larger structural component of unemployment, moreover, indicates economic unbalance and less favourable economic conditions, which have their own adverse effects on profit margins.

Table 4: Provision and Business Cycle

Variable	None Effect	Random	Fixed
	Model 1	Model 2	Model 3
Constant	-	-241309.7	-572860,7*
		(-2.499)	(5.622)
GDP	0.812	0.789	-1.583**
	(1.826)	(1.096)	(1.797)
Unemployment	-19725.6	52727.55	202028,9*
	(-1.805)	(1.497)	(5.162)
Profits	-0.021	-0.008	0,023*
	(-1.174)	(-1.630)	(4.124)
Loans	0.017	0.015*	0,025*
	(1.344)	(1.048)	(3.949)
Capital and reserves	-0.003	-0.003	-0,000476
	(-1.631)	(-1.678)	(0.134)
R^2	0.888	0.390	0,963
Adjusted R^2	0.872	0.274	0,917
F-test	-	3333.460*	2119.029*
DW	1.439	0.517	3.604
Hausman test	-	166.943*	-
Redundant Tests	-	-	89110.173*

*Significant at 1%, **Significant at 5 %, **Significant at 10%, ( ) value t-Statistic

From column two Table 4, the figures explain the relationship between provision and business cycle. We find several coefficients are not significant. In Model 2, only coefficient profits is significant at first percent and has a positive sign. The coefficient of macroeconomics factors is positively related with provision but not significant.

Model 3 shows the high R^2 (0.963) and the adjusted R^2 (0.917) respectively suggest that the fixed effect model fits well the equation. Several coefficients are significant except capital and reserves. The coefficient on the GDP has also enter a negative sign suggesting that bank have anti-cyclical provisioning behaviour when the economy is down, bank provides more provisions thus creating pro-cyclical characteristics on capital and earnings. This is consistent with the argument that the current setting of the Basle minimum regulatory capital requirement are said to behave pro-cyclical that is anti-cyclical provisioning will result in a pro-cyclical capital and earnings behaviour. The reason may due to bank managers already incorporate the impact of macroeconomic factors in the loan portfolio variables or on their loan pricing. It rises when the economy is expanding thus providing additional cushion to capital when the economy is in recession. These conditions however do not apply to Islamic banks in Malaysia due to the non-limitation of the loan loss reserves. During the cyclical downturn from 1997 to 1999, the risk weighted capital ratios tend to increase due to increase in loan loss reserves.

Table 5: Lending and Business cycle

Variable	None Effect	Random	Fixed
	Model 1	Model 2	Model 3
Constant	-	-4725758	-4273133
		(-1.133)	(-1.006)
GDP	7.078	-3.173	-1.040
	(0.529)	(-0.697)	(-0.022)
Unemployment	-129466.2	1043502	-244290.7
	(-0.585)	(0.804)	(-0.174)
M3	-0.566	7.791	1.314
	(-0.367)	(0.827)	(1.299)
Profits	0.443**	0.326**	-0.175
	(1.236)	(1.714)	(-0.806)
Non-bank deposit	1.325*	1.763	0.490*
	(8.356)	(1.599)	(2.233)
Capital and reserves	0.610*	0.511	-0.215*
	(2.895)	(7.349)	(-1.829)
R^2	0.653	0.695	0.978
Adjusted R^2	0.586	0.622	0.948
F-test	-	9.515*	3.223*
DW	1.259	1.381	2.866
Hausman test	-	113.343*	-
Redundant Tests	-	-	79.534*

*Significant at 1%, **Significant at 5 %, **Significant at 10%, ( ) value t-Statistic

Table 5 shows that the influence of the cyclical variables used, such as GDP, real money supply and unemployment, are not significant for all models. The coefficient of GDP has negative sign.

The significant and positive coefficients of profit are reported in Model 1 and Model 2 at five percent level but not significant in the fixed effect model. The coefficient of non-bank deposit is positive and significant in Model 1 but significant and negative sign are reported in Model 3. Model 3 also shows the high R^2 (0.978) and the adjusted R^2 (0.948) respectively and suggest that the fixed effect model fits well the equation

5. Conclusions

According to current proposals for a new Basel capital accord, capital requirements for lending will be determined in greater measure than at present by current credit risk. Many assume that banks during a cyclical downturn are less willing to loan money on account of increased credit risk, thereby reinforcing the cyclical downswing in a so-called credit crunch. If banks are forced to maintain larger capital buffers in such circumstances, the presumed pro-cyclical nature of bank lending is liable to become even stronger. Against the backdrop of increasing concerns over pro-cyclical effects caused by the proposed new accord, our study investigated, first, to what extent banks' profits, additions to provisions for future credit losses and lending in 16 Islamic bank related to the business cycle over the period 1994-2004

References

Allen L and Saunders A, (2002), "A Survey of Cyclical Effects in Credit Risk Measurement Models ".Bank for International Settlements, Working Papers No 126.

Banerjee A., (1999), Panel Data Unit Roots And Cointegration: An Overview. *Oxford Bulletin of Economics and Statistics* 61: 607–629.

Basel Committee on Banking Supervision (BCBS) (2001), *The new Basel capital accord, consultative document*, BIS, Basel (www.bis.org).

Cavello, M., Majnoni, G. (2002), Do Banks Provision For Bad Loans In Good Times? Empirical Evidence And Policy Implications, in R. Levich, G.Majnoni and C. Reinhart eds, *Ratings, rating agencies and the global financial system*, Kluwer Academic Publishers, Boston, Dordrecht and London.

Danielsson, J., Embrechts, P., Goodhart, C., Keating, C., Muennich, F., Renault, O., Shin, H.S., (2001), An Academic Response to Basel II. Special Paper 130, Financial Market Group, London School of Economics.

Fisher, R.A. (1932), Statistical Methods for Research Workers, 4th Edition. Oliver & Boyd, Edinburgh.

Evans, Paul and Georgios Karras (1996), Convergence Revisited, Journal of Monetary Economics 37, 249-265.

Ervin, W., Wild, T. (2001), *Capital volatility and pro-cyclicality in the new accord*, Credit Suisse First Boston.

Herring,R. (1999), Credit Risk And Financial Instability. Oxford Review Of Economic Policy 15(3):63-79.

Bikker, J. A. and Hu, H. (2002), Cyclical Patterns In Profits, Provisioning And Lending Of Banks, Dnb Staff Report, Netherlands Central Bank.

Jackson, P. (1999), Capital Requirements And Bank Behaviour: The Impact Of The Basle Accord, *Basle committee on Banking Supervision Working Papers* No 1. (www.bis.org).

Im K.S., Pesaran, M.H., Shin, Y. (1997), Testing for unit roots in heterogeneous panels. Working paper, Department of Applied Economics, University of Cambridge.

Levin A., Lin and F. Chu, (1993), Unit root test in panel data: new results. Discussion paper 93-56, Department of Economics, University of California at San Diego.

Maddala G.S. and Wu, S. (1999), A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics* 61: 631–652.

Majnoni, G. and L. Laeven (2002), Loan Loss Provisioning and Economic Slowdowns: Too Much, Too Late World Bank Policy Research Working Paper No. 2749, January.

Rajan, R. (1994), "Why Bank Credit Policies Fluctuate: A Theory And Some Evidence", *Quarterly Journal of Economics,* 109(2): 339-441.

Appendix

A. Macroeconomic Factors

(1) Real GDP growth The GDP growth figure is the most general and most direct measure of macroeconomic developments. In our context, it is first and foremost an indicator of the demand for banking services, including the extension of loans, and the supply of funds, such as deposits, and as such is a direct determinant of profits. As a growth figure, it is the single most useful indicator of the business cycle, while the costs of banks are also expected to be linked to the GDP cycle. The GDP growth figure is made real by deflating it with GDP inflation.

(2) Unemployment (%) Unemployment does not directly influence profitability, but it is a major cyclical indicator. If short-term unemployment is primarily a reflection of the business cycle, long-term unemployment especially indicates structural disequilibrium in the economy. In addition, unemployment is a measure of the current phase in the business cycle, whereas a figure like GDP growth merely indicates the degree of change in the business cycle.

(3) Real money supply (M3; % change) The money supply is represented by the monetary aggregate M3, defined as the sum of cash and non-cash balances held by the public, short-term deposits, foreign-exchange holdings and short-term savings. Growth of the money supply makes real growth possible, and is primarily an indicator of future growth potential (see Boeschoten et al., 1994; Berk and Bikker, 1995). In the first place, it reflects the availability of money, which is strongly linked to the creation of money by banks through lending. Excessive money growth implies a risk of overheating the economy and its concomitant, rising inflation. The ECB therefore regards excessive M3 growth as a preamble to rising inflation. The impact of money supply on profits is mostly indirect, which is why this variable, too, functions mostly as a control variable. Like real GDP, the real money supply is deflated by GDP price increase.

B. Banking Sector Specific Factors

i) Loans (as a share of total assets): This variable represents the (relative) size of lending. Generally speaking, loans have a positive influence on profitability, because as a bank's core business, they are a major generator of interest income. But lending also entails operational costs and credit losses. If costs and risks are not expressed adequately in the price of credit (i.e. the mark-up rate), for instance, as a result of cross subsidisation, then lending becomes a loss-making business. In any case, this variable serves to characterise a bank's balance sheet. Like the variables that follow below, the loans variable is divided by total assets in order to standardise it and allow comparisons across countries and years.

(ii) Risk-weighted assets ratio (RWAR): This ratio is composed of the risk-weighted assets on the balance sheet plus the risk-weighted off-balance credit, divided by total assets, and is a measure of banks' risk profile. The risk weights are

determined by the Basel capital accord of 1988 and are independent of cyclical influences.21 As is the case with "loans", the impact of RWAR on profits depends on the extent to which risk has been factored into pricing. It should be noted, moreover, that the (old) Basel risk weights are usually very crude and imprecise.

(iii) Capital and reserves (as a share of balance sheet total): This includes paid-up capital, reserved funds, retained profits and other capital funds. Generally speaking, capital and reserves constitute the "own funds" or core capital of a bank and—as an item in the balance sheet total— its solvency. The more risk investments carry, the more capital is needed, so that the coefficient may become negative. While high-risk investments bring in more returns, greater capital could go together with high profits, so that a positive coefficient may be expected as well, depending on the degree to which risk pays off. If profits are defined as returns on equity, then a relatively small capital may leverage high profits, and one should expect to see a negative coefficient. If profit is defined as the margin on assets, capital and reserves become a "free" source of finance, so that from this perspective, one must expect a positive coefficient. Thus, on account of the many possible ways they may pass through to the results, the capital and reserves variable is primarily a control variable.

(iv) Non-bank deposits (as a share of balance sheet total): Non-bank deposits include all deposit liabilities of banks except interbank deposits. This variable characterises the funding structure of the banking system.