International Scholars Journals

Global Journal of Business Management ISSN 6731-4538 Vol. 9 (5), pp. 001-009, May, 2015. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Measuring performance through capital structure: Evidence from banking sector of Pakistan

Muhammad Ayub Siddiqui[1]* and Adnan Shoaib[2]

[1]Department of Management Sciences, Bahria University, Islamabad-Pakistan.

[2]NUST Business School, National University of Science and Technology, H-12, Islamabad, Pakistan.

Accepted 29 November 2014

Capital structure of the financial institutions and banks determine agency cost of financial sector of the economy. In this study we explore the agency cost hypothesis of banking sector of Pakistan using panel data of 22 banks for the period 2002 to 2009. We employed the idea of using profit as a measure of efficiency of banks following Berger (2002) and the idea of using Tobin's Q as a measure of firm's performance following Morck, Shleifer, and Vishny (1988); Treece et al. (1994). Our study differs from the others in terms of methodology of panel data models which provide a better substitute for SUR and simultaneous equations employed by the other studies. Pooled data results prove agency cost hypothesis and the findings are in accordance with those of Pratomo and Ismail (2007) Berger and Di Patti (2002). Size of banks and consumer banking seem to have played significant role in their profit efficiency during the period from 2002 to 2009. Random effects and fixed effects models nevertheless, proved Miller-Modigliani (1958) proposition that capital structure does not affect value of the banks.

Key words: Capital structure, agency cost, equity capital ratio, return on equity.

INTRODUCTION

Though there are many theories related to the capital structure of businesses but Modigliani and Miller (1958) have got predominance in the area of finance. Firm value in the absence of transaction and other fixed costs are insensitive to the capital structure of the firm, according to Miller and Modigliani (1958). In other words, change in the capital structure has no apparent effect on the value of firm and therefore, it can be changed any time. Subsequently, various studies were conducted and led to the emanation of the agency cost hypothesis depicting an impact on capital structure of firm.

Optimal capital structure of banks withstands significant importance in Pakistan while we consider the fact of rapid growth of banking industries of the economy during the period of 2002 to 2009. Additionally, Pakistani banking sector was found deeply involved in trading activities of the stock markets. Banks did enormous amount of business from their schemes of consumer banking. Obviously they might have increased asset value, profit and wealth of the stockholders. Banks are also ultimate vendors of transmitting effective monetary policy of the central bank of the economy of Pakistan. In a way commercial banks share the responsibility of stabilizing economy. Economic significance of the financial institutions inspired us, like Berger and Di Patti (2003), to examine the agency cost hypothesis and M-M model in connection with Pakistani banks.

Achieving optimal capital structure of the business through reduction of agency cost is one of the ultimate goals of the businesses in the free market economies. Most of the studies addressed the issue of optimal capital structure through reducing agency cost because this is one of the key measures of performance of the businesses including banks in various countries. Despite significance of agency cost which leads to maximization of asset value of the business, very few studies have been conducted in the developing countries like Pakistan. Optimal capital structure through reducing agency cost of 22 banks which represent banking industry of the Pakistan Economy. This is brief description of the scope of our study.

*Corresponding author. E-mail: mayubsid@yahoo.co.in, ayub.siddiqui@nu.edu.pk. Tel: +92-333-5153203.

Agency of the business turns expensive to the firm when manager expands business activities while pursuing his own objectives rather than promoting interest of the organization. In the professionally managed firm, when the ownership of the firm is separate from control, managers tend to exert little efforts in the organizational processes which are essential in order to maximize shareholders' wealth and they are more focused on output that help them pursue their own preferences. In effect, agency cost is equal to the value which is lost on account of managers running the race of their personal utility maximization. We assume that the careful choice of capital structure may decrease the agency cost. Creation of debt reduces free cash flow and it also reduces the amount of cash flow available to managers. Furthermore, debts also contractually bound managers to pay interest on loans and restrict free cash flow.

Harris and Raviv (1991); Myers (2001) found that higher financial leverage positively affects firm's value and high leverage increases financial obligation of the manager. Lev (1974) claimed that firms with high leverage tend to show greater variability of their stock returns than relatively less levered firms. An increase in the leverage increases the risk of the firm by pushing up volatility of its stock returns. Higher leverage greatly contributes towards reduction of conflict between managers and shareholders in making the choice of investment (Myers, 1977); building risk bearing attitude (Jensen and Meckling, 1976), and liquidation condition (Stulz, 1990). Similarity of concerns of the two parties helps reduction of conflict which results in lowering of agency cost. According to our observation, the agency cost of banks in Pakistan is higher than that of other non financial institutions because the banks have access to secret information about their customers. Additionally, the central banks regulations compel commercial banks to maintain minimum equity capital and avoid taking excessive risk.

Using the panel data models we explore profit efficiency and market value of 22 Pakistani banks through their determinants such as equity-capital ratio (ECAP), earning risk (SDROE), consumers' loans as proportion of total assets (LOAN), size of each bank (SIZE), market power of each bank measured by Herfindahl index (HERF), and banks investment in securities (SEC). Tobin's Q is incorporated as the representative of the market value.

LITERATURE REVIEW

The idea of agency cost as one of the determinants of capital structure was propounded by Jensen and Meckling (1976), who based their studies on the findings of Fama and Miller (1972). In their study Jensen and Meckling introduced the idea of separating ownership from control and they also pointed out the possible conflict existing between owners and managers which results in an increase of the agency cost (Jensen and Meckling, 1976).

Berger and Di Patti (2002) examined the relationship between agency cost and firm performance under agency cost hypothesis and their findings are consistent with agency cost hypothesis. In their paper they applied the simultaneous equation model on the data of 7320 US Banks for the period from 1990 to 1995. Their findings are consistent with Stigler (1976); Berger and Mester (1997). The issue of simultaneity undermines results of simultaneous equation models.

Islamic banks of Malaysia are also consistent with the agency cost hypothesis and size of the bank is negatively correlated with the bank's performance (Pratomo and Ismail, 2007). According to Pratomo and Ismail (2007), high leverage leads to low agency cost which results into increasing efficiency. They used the data of five Malaysian Islamic banks from 1997 to 2004 and analyzed their data using the models identical to Berger and Di Patti (2002).

According to Shleifer and Vishny (1986), the more the block ownership is diverted to the outside or institutional holdings the more efficiently the manager is monitored, as the managers are liable to the institutional holdings and outside ownership. Higher inside ownership reduces agency cost at certain level but afterwards the effect is likely to be reversed at high level of inside holding as insiders become the major partner and accountability goes in their own hands and they perceive it to be less monitored from the outside (Morck, Shleifer and Vishny, 1988). Stulz (1988) argued that giving managers a huge share of the firm reduces the firm value. Market value of the firm increases with the increase of manager's share in the ownership of business (Stulz, 1988).

However, when the ownership of the manager reaches 50% or above, additional transfer of ownership to manager has no impact on value of the firm.

According to Harris and Raviv (1990), debt instrument in the capital structure allows investor to discipline management by reducing the discretionary power of the management on free cash flow of the firm (Jensen, 1986). The investor can use this information in making decision whether to liquidate the business or continue to operate (Harris and Raviv, 1990).

Jensen (1989) argued that if there is separation of ownership and control and investors do not have complete information about quality management and strategies of the business, then they can use debt in order to attain information about different aspects of the business. Studies have identified the role of debt in capital structure in terms of tax advantage of debt (Miller and Modigliani, 1989), debt as a signal for the quality of management of firm (Ross, 1977; Leland and Pyle, 1977), debt as anti-takeover device (Harris and Raviv, 1988), by reducing agency cost and restricting managerial discretion (Jensen, 1986).

Berger and De Young (1997) discovered the intertemporal relationship between quality of loan, efficiency and bank capital using the Granger Causality technique. They used the data of US commercial banks from 1985 to 1994. These results are contradictory with those of Kwan and Eisenbeis (1994), Hughes and Moon (1995); Resti (1995). Berger and De Young (1997) are also of the view that cost inefficient bank may tend to have high loan problems and bad quality loans.

Peristiani (1996) found a strong positive direct relationship between cost efficiency and bank management ranking. De Young (1997) also concluded the same relationship between rank of management and cost efficiency. In his study, De Young (1997) also revealed that management ranking of the bank is highly correlated with the asset quality rating of the bank.

Berger (1995) contemplated positive relationship between capital asset ratio and earnings of the bank. Berger investigated the results by applying Granger Causality model on the data of US Banks for period of 1983 to 1989. Findings of Berger (1995) are contradictory with the conventional negative relationship between earning and capital; as higher capital reduces the risk and hence decreases the return on equity (Berger, 1995). According to Keelay and Furlong (1990), value maximizing banks always experience more than desired portfolio risk which is sensitive to the rising capital of the banks. The behavior of the banks differs with different types of risk. Studies have identified that relatively safer banks tend to do more commitments in terms of guarantees of unsecured debts (Benveniste and Berger, 1987; James, 1988), while riskier banks tend to give more standby debts (Avery and Berger, 1991b; Berger and Udell, 1993).

Saunders, Strock and Travlos (1990) estimated the linear relationship between ownership and the choice of risk. They examined 38 US Banks using eight different parameters of the risk and found that the banks under more control of stockholders tend to take more risk as compared to managerially controlled bank. McConnell and Servaes (1990) examined quadratic relationship between Tobin's Q and insider and outsider holdings. Tobin's Q value rises first then declines; as the excess holdings on each side lead their cost to increase more than their benefits to the non financial firms.

Other than reducing the agency cost there are many other reasons for reorganizing capital structure. One of the purposes is the tax consideration or taking the advantage of tax shield. Singh and Hamid (1992) evaluated 9 developing countries and they found variation in signs and magnitude of determinants of capital structure among these countries. According to their study, variation of signs can be attributed to different taxes, legal and other market factors. Booth et al (2001) asses the portability or substitutability of the capital structure and find that in many countries debt ratio is inversely related to the tax rate. Similarly, Antoniou et al. (2002) analyzed different countries and found mixed results about the relationship between tax and capital structure. Graham (1996) and Givoly et al. (1992) examined the relationship of marginal tax rate and change in debt of US firms and found a positive relationship between marginal tax rate and the change in debt.

Review of literature so far concludes that the performance of capital structure can be improved by reducing the agency cost which is the major player in achieving the optimality of capital structure. Additionally, the firms managed by the shareholders are more willing to take risk than managerially controlled ones. Quality of loans was also found to have an impact on the performance of banks.

In Pakistan, banks and financial institutions are vital stakeholders of monetary policy in the economy and these institutions are responsible for the stability of the economy through coordination with real sector of the economy. Nevertheless, transmission of monetary policy is not transparent with the existence of agency cost which intuitively embeds other costs associated with it. Banks are the main source of channelising savings of the economy. Suboptimal value of banks assets puts pressure on the prices of loans and credits. That is why the pursuit of the objective of optimization has an important implication for the economy.

METHODOLOGY

Panel data models

Panel data models are endowed with certain special properties some of which are described in the following lines. Financial institutions are heterogeneous in their internal determinants and factors. Time series data of these financial institutions run the risk of biased results due to heterogeneity. Panel data models control this problem and also Panel data are more informative, inherit more variability, and carry less collinearity among the variables, more degrees of freedom and more efficiency.

In this study agency-cost hypothesis has been tested. According to this hypothesis high leverage or low equity to asset ratio helps reduce the agency cost of outside equity which ultimately increases the value of the firm. Though many studies have been conducted in order to examine the effect of leverage on firm value, but none of the studies has employed panel data models which are considered to be one of the most efficient models in econometrics. This paper explores the agency cost hypothesis of banking sector of Pakistan using a panel of 22 banks. We take Berger (2002) model of capital structure and bank performance as precedent with certain modifications around the relationship between leverage and profit efficiency and market value of the banking sector. Sample adopted in this study is highly representative of the banking sector of Pakistan. We use profit efficiency of the bank as measure of reducing agency cost and equity capital ratio as the inverse measure of the leverage. The bank size is assumed to be negatively related to the bank performance.

Data and variables

This study employs panel data models on 22 Pakistani banks for the period from 2002 to 2009. Annual reports of the banks and Karachi Stock Exchange (KSE) were used as data sources. The

main variables considered for this study include bank efficiency as dependent variable while the independent variables comprise of leverage ratio, earnings, risk, size, bank investments, and loans.

In this paper, we follow the approach of Berger and Di Patti (2002); Pratomo and Ismail (2007) who relates profit efficiency and capital structure. The model is estimated using two approaches one is the profit efficiency that is, value maximization and the other is market efficiency through wealth maximization.

ROE = f (ECAP, SDROE, LOAN, SIZE, HERF, SEC)

In the above model ROE has been used as proxy for the mea-surement of profit efficiency, and Tobin's Q is the measure of market value of the firm which is used as the basis for wealth maximization measure. So the first model is based on the concept of profit maximization and the second one is based on the idea of wealth maximization. These models give the comprehensive clarification of whether the Pakistani banks are consistent with agency cost hypothesis or not, on both levels; profit and market value. This model differs from the Berger (2002) and Pratomo and Ismail (2007) in many ways, as Berger (2002) used the simultaneous equation model for the analysis and furthermore Tobin's Q was ignored by these studies. So, in our model Tobin's Q is incorporated as the measure of the market value maximization. Variables of our models have been described in the following paragraphs.

Performance of banks: ROE and Tobin's Q

The literature has identified different measures of performance of a firm. Demsetz and Lehn (1985), Gorton and Rosen (1995); Lin (2000) used the financial ratios in order to measure performance of a firm. Saunders, Strock, and Travlos (1990) used stock returns as measure of firms' performance; Morck, Shleifer, and Vishny (1988) used the Tobin's Q as the measure of firms' performance.

We have two measures of firms' performance. Following the Berger (2002) approach we have used return on equity of the firm as a proxy for the profitability of banks. According to Berger (2002), profit as source of efficiency is a better measure than cost efficiency because it truly reflects the efficiency of management. The other measure of efficiency is Tobin's Q ratio which is calculated by dividing the market value to the book value of the bank. Treece et al (1994) argued that Q is the measure of the organization competence in the market. Morck, Sheilifer and Vishny (1988) employed Tobin's Q as a measure of the firms' performance. The higher value of Tobin's Q represents the possibility of issuing more stocks in order to raise revenue and value of firms' assets. Hayashi (1982) argued that Tobin's Q is sufficient to measure the value of the firm through stock valuation. Bond and Cumin (2001) established Tobin's Q as the standard measure of returns on investment in order to represent the market performance of a firm.

Leverage (ECAP)

As per agency cost hypothesis the higher leverage or low equity to capital ratio reduces the agency cost. There are several measures that can be used as a proxy of the leverage such as debt to total assets (Van Horn and Wackowicz, 2003); Debt to Equity can also be used as a measure of leverage (Westerfield, 2003). We have calculated leverage by taking the reciprocal of the equity-capital ratio which is shareholders equity divided by total assets following Berger (2002).

Earnings risk (SDROE)

We have used GARCH (1, 1) series as measure of uncertainty associated with ROE. This series has been employed as proxy for earnings risk for all the 22 banks. According to Berger (2002) riskier banks have more profit efficiency as the return on equity is adjusted to the risk associated with the bank. According to Keelay and Furlong (1990) the bank that maximizes its value, adjusts its risk of desired portfolio as per capital structure of the bank. The purpose of incorporating earnings risk is to identify changes in the earning with the change in capital structure.

Size

Size is the dummy variable and represents the size of the bank. Value of the variable is assigned 1 if assets of the bank are equal to or greater than 100 billion rupees and 0 otherwise. Pratomo and Ismail (2007) revealed negative effect of size on the banking efficiency.

Herfindahl index (HERF)

Herfindahl index is a measure of the market power of the bank. Herfindahl index is basically developed to see the efficiency and benefits of mergers and acquisition in the pursuit of the objective of market gains. In this paper, Herfindahl index of local deposits of the bank is calculated which represents market power of the banks. Inclusion of HERF measures the effect of market power of banks on their market efficiency. The Herfindahl index is calculated using the formula:

$$H = \sum_{I=1}^{N} S_I^2$$

where; 's' represents a bank's market share in terms of deposits. Value of the Herfidahl index varies from 0 to 1 where greater value leads to high market power and vice versa.

Whinstone (2006) used the Herfindahl index for examining the horizontal merger, because Herfindahl identifies gains from the market after merger. According to Porter and Zona, (1999), this HI measure can be used as a concentration index and also it is helpful in studying the cooperative behavior. Borenstein et al. (1999) argued that HERF is not always accurate measure of the competitiveness. According to Borenstein et al. (1999) HERF did not work in the market of electricity in the USA. Quite evidently literature supports HERF as the measure of concentration in market and competition among the firms. Its application is not only restricted to mergers and acquisition but it can also be used to measure concentration of markets.

Bank investments (SEC)

Investment is one of key measures of performance of the banks. Bank investment includes investment in different securities or fixed income assets or both. Higher returns from investment portfolio are indicative of better efficiency of the bank. Berger (2002) incorporated investment variable in different segregation to see its effect on the banking efficiency. We have employed this variable SEC, security as proportion of total assets of the bank.

Loans

This variable includes different types of loans made by the bank. They include consumer, corporate and business loans and other

Table 1. Pooled EGLS results

	Profitability of banks (ROE)		Market to book value of banks (TQ)	
Variable	**Cross-section weight**	**Period weight**	**Cross-section weight**	**Period weight**
ECAP	-1.1971*	-1.2182*	Redundant	Redundant
HERF	2.2183**	Redundant	113.8448**	Redundant
LOAN_R	0.1783*	0.1799*	0.4055*	1.4867
SDROE	0.0766**	Redundant	Redundant	Redundant
SIZE	0.0656*	0.1036*	2.7343*	2.8568*
SEC_R	Redundant	Redundant	Redundant	-2.1820

* Significant at 1% and less than 1%; ** Significant at 5% and less than 5%.

credits. We have developed variable of loan as a proportion of total assets. During the period of 2002-2009, consumers' loans have been the concern of banking business. That is why the variable of 'loan' is specific to borrowing by consumers. Loans as a determinant of market value and efficiency of banks have got its significance due to its quality. Berger and De Young (1997) explored intertemporal relationship between loans and banking efficiency.

Justification of panel data models

The flows of funds of the financial institutions are interrelated because total amount of money made of these funds is affected by a common set of factors such as ECAP, SDROE, LOAN, SIZE, HERF, and SEC which are bank-specific factors. If SUR models are employed they embed contemporaneous relationships between the error terms. The use of SUR models is assumed away for this study. Transformation of the models through GLS removes this problem. However, the application of this methodology requires that time-series observations as per cross-sectional unit should be at least equal to the total number of such units. Additionally in SUR models total number of parameters is large which results in loss of degree of freedom. The models also necessitate estimation of variance-covariance models. For these reasons the panel data models are considered as more flexible and they provide a better substitute methodology for financial time-series. The panel data models in the financial time-series cross-sectional data can be classified into fixed effects models and random effects models.

In the fixed effects models, the intercept terms differ across cross-sectional units but not over time. In this model, 22 banks represent cross-sectional units and the time period ranges from 2002 to 2009. Profit efficiency is the dependant variable in one model and market efficiency is the dependant variable in the other. In the fixed effects, the disturbance term μit is decomposed into an individual bank specific effect μ_i and the term v_{it} which can be termed as remainder disturbance. This vit captures unexplained information about the dependant variable. In order to control the cross-section Heteroskedasticity we choose cross-section weights to estimate GLS. Similarly period weights allow us to control period based Heteroskedasticity.

Random effects model is also known as error components model. This model assigns different intercepts for each bank. Similar to the fixed effects, the intercepts are constant over time. Additionally, model assumes the same relationship between the explanatory and explained variables cross-sectional and over time. Nevertheless, the intercepts for each bank is assumed to arise from a common intercept plus a random variable in terms of error term that varies across the banks and remains constant over time in the random effects model. The error term follows iid.

We also employ time-fixed effects models assuming that the value of dependant variable although changes over time but not necessarily across the cross-section. In this model intercepts are allowed to vary over time but remain the same across the banking entities.

Time-variant intercept is assumes different values over time but remains the same cross-sectionally. In Pakistan regulatory framework such as taxation on financial transactions of banks might have affected the banks efficiency both in terms of profit as well as market. The banks are equally affected by this policy of the government. For this reason, the time-fixed effects models have been considered in this study.

RESULTS AND ANALYSES

Pooled data model

The pooled regression is based on the assumption that the intercepts are the same for all the banks and for all the periods from 2002 to 2009. Return on equity as proxy for measuring profitability of the banks has been employed as dependant variable. At the second stage market to book value of the banks is considered as the dependant variable. Assuming reciprocal of leverage (ECAP), earnings risk (SDROE), size of bank, Herfindahl Index (HERF), bank investment in securities as proportion of total assets of the bank (SEC) and consumer oriented loans as proportion of assets (Loans) make our choice of variables and the results are reported in the Table 1. In order to control the problem of Heteroskedasticity across the banks and also across the time period, the estimation of pooled data was done in two stages. Results of both generalized least squares models are presented in the Tables1 and 2. Redundant tests were also employed for the variables revealing relatively less statistical significance for the determination of efficiency of the banks.

The investment ratio of the banks as pool was found to be redundant when we employed cross-section weights to control Heteroskedasticity. Results significantly improve. These findings conform to the results of most of the previous studies. With the increase in leverage, profitability of the banks in Pakistan significantly increases when we employ pooled data. The significance of these

Table 2. Fixed effects results

	Profitability of Banks (ROE)		Market to Book Value of Banks(TQ)	
Variable	**Cross-section weight**	**Period Random**	**Cross-section weight**	**Period Random**
ECAP	0.3965	0.1171	1.0535	2.9901
HERF	-4.6423	-10.2788	-323.8617	-265.8951*
LOAN_R	-0.0066	-0.0613	-0.5464	0.7978
SDROE	-0.1630**	-0.1961*	-0.5511	0.1186
SEC_R	-0.0241	0.0809	0.7013	-1.2987
R^2	0.6515	0.3339	0.6671	0.5893
F	8.7239*	2.8735*	9.3530*	8.2217*

* Significant at 1% and less than 1%; ** Significant at 5% and less than 5%.

these results is further reiterated when we use market value of the banks. Similarly, efficiency of the banks measured in terms of their profitability seems to have increased significantly with the increase in market power, earnings risk, and proportion of consumer loans. These results support the Agency Cost Hypothesis.

The market value of the banks evidently increased with the increase in size of the banking industry, consumers' loans and oligopoly power of the industry as a whole. However, reciprocal value of variable (ECAP) revealing leverage, earning risk and investment ratio in securities (SEC) were declared as redundant variables. Equity capital ratio of the banks surprisingly has emerged as redundant for growing the market value of the banks during the period from 2002 to 2009 in Pakistan. On the same pattern, banks investment in securities has also been depicted as redundant for the market value of the banks. During the period under discussion, banks seldom involved their business activities other than consumer banking wherein returns are quick and guaranteed. This identifies misappropriation of banks policies when they are ignoring real sector (not real estate) of the Pakistan Economy. The most interesting finding so far is the highly significant value of the intercept terms in all the four regression results summed up in Table 1. Some internal factors seem to have played significant role in improving profit efficiency and market value of the banks.

Fixed effects models

Pooled results assume the same intercept for all the 22 banks for the whole period of eight years from 2002 to 2009. Common intercept for all the banks under discussion does not seem appropriate assumption. In the fixed effects models such an assumption is relaxed. Time-specific and bank-specific heterogeneity is essentially explored in this study. One of the limitations of the fixed effects model is that they are not appropriate for the variables which have limited variation. That is why the models do not suit dummy variables. If included in the models, the dummy variables may emanate problem of collinearity. For these reasons the variable of size is not included while estimating fixed effects models. Results are reported in the Table 2.

These effects have been calculated assuming homogeneity of the constants across all the 22 banks. These assumptions hypothesize the fact as if all the banks have got identical management style. Statistically null hypothesis of identical management style is strongly rejected. F-statistic rejects the hypothesis with more than 99% confidence. AR term was included in the model owing to its time series characteristics. The value of AR coefficient is very low revealing ignorable level of auto-correlation. Additionally, AR roots are much less than 1. None of the variable depicts statistically significant effect of the profitability of the banks except risk associated with profitability of the banks. Surprisingly, there has been negative effect of rising risk on the profitability of banks. Perhaps Pakistani banks declined the option of investing in passive return-oriented avenues with possibility of increasing uncertainty. The other results are in accordance with Miller-Modigliani (1958) proposition that capital structure does not affect value of the banks.

Random effects models

Capital structure and management style of the banks have undergone certain changes during the period of study. Hence, we also employ random effect tests. This method considers constant terms as random and not fixed. The method against fixed models can employ random variables. This time 'size' was employed in the model. All the 22 banks are supposed to differ in terms of error term which is a random or stochastic variable.

This model has been tested in two stages: first using cross-section random with period fixed and the weighting option of Swamy-Arora random effects and second using cross-section random with period random and the weighting option of Swamy-Arora random effects. The results are presented in the Table 3. The results are not different from fixed effects models. Again the proposition of Miller-Modigliani (1958) is reiterated.

Table 3. Random effects results.

	Profitability of banks (ROE)		Market to Book Value of banks (TQ)	
Variable	**Cross-section random**	**Two-way random**	**Cross-section random**	**Two-way random**
ECAP	-0.6239	-0.8692	-4.0367	-2.1356
HERF	2.4210	2.9386	-45.14999	-60.9610
LOAN_R	0.0630	0.0794	0.9657	1.0727
SDROE	-0.1142	-0.1345**	0.8740	0.7376
SEC_R	0.0557	0.0859	-0.5923	-1.1313
SIZE	0.0350	-0.00296	0.7337	1.3234
F	1.2392	1.5366	5.7137*	0.7035

* Significant at 1% and less than 1%; ** Significant at 5% and less than 5%.

Table 4. Redundant fixed effects tests

Test cross-section and period fixed effects			
Effects test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	8.246223	(21,142)	0.0000
Cross-section χ^2	140.322566	21	0.0000
Period F	9.330224	(7,142)	0.0000
Period χ^2	66.597655	7	0.0000
Cross-section/period F	9.595953	(28,142)	0.0000
Cross-section/period χ^2	186.912618	28	0.0000

Redundant tests of effects

We have tested joint significance of all the tests and also joint significance of cross-section effects and the period effects. The results are reported in the Table 4 below for perusal. The first two tests results reveal joint significance of the cross-section effects using sums-of-squares (F-test) and the likelihood function (Chi-square test). Corresponding to these results there are period effects. The statistics along with their p-values strongly reject the null hypothesis that the models are redundant. The results accrue confidence to us for the earlier analysis done in respect of different specification of the fixed effects. Remaining results evaluate joint significance of the period effects, and of all the effects, respectively. All of the results suggest that the corresponding effects are statistically significant.

CONCLUSIONS AND RECOMMENDATIONS

Banks and financial institutions can be considered as main stakeholders in the line of implementing monetary policy of a free market economy. Price stability and high economic growth are amongst the objectives of the monetary policy for which coordination between monetary and real sectors of the economy is imperative. Capital structure of the financial institutions and banks determine agency cost of financial sector of the economy. Rising agency cost of banks might be one of the main sources of suboptimal value of banks assets. That is why pursuing the objective of optimization has an important implication for the economy.

Keeping in view structural importance of banking sector, this paper explores the agency cost hypothesis of this sector of Pakistan Economy using a panel of 22 banks for the period of 2002 to 2009. We borrowed the idea of using profit as a measure of efficiency of banks from Berger (2002) and the idea of using Tobin's Q as a measure of firm's performance from Morck, Shleifer, and Vishny (1988) and Treece et al (1994), in order to explore agency cost hypothesis. This study has employed one of the most efficient methodologies in terms of panel data models which are considered as more flexible and they are better substitute for SUR and simultaneous equations.

Pooled data of the 22 banks prove agency cost hypothesis and the results are in accordance with the findings of Pratomo and Ismail (2007) Berger and Di Patti (2002). Size of banks seems to have played significant role in raising not only their profit efficiency but also their market value during the period of 2002-2009. In the expansion of banking efficiency and their market value consumers loans contributed a vital share. Random effects and fixed effects models nevertheless, proved Miller-Modigliani (1958) proposition that capital structure does not affect

value of the banks. The results from these models do not withstand Agency Cost Hypothesis. Non diversified capital structure and non-committal attitude of banks towards avenues of credit other than consumer loans undermines the role of banking sector of Pakistan. Perhaps this might be the reason for the data proving application of Miller-Modigliani proposition for the period of 2002-2009. Given the categories of risk as Basel-II, Pakistani commercial banks would have experienced quite varying rate of interest in the country. The situation is quite different. State Bank of Pakistan seems to have been reluctant in revising interest rate during the last 30 months according to the varying rate of risk emanating in Pakistan on account of terrorism, lack of good governance in respect of financial matters and slashed revenues of the public sector coupled with increasing public sector borrowing.

There is need to have separate ownership from the management control in order for improving efficiency and quality of management of banks [as suggested by Jensen (1989)]. Pakistani banks had always been under the influence of affluent class of the people who borrowed from the banks and got written their loans off. A list of loan defaulters was published in the national daily newspapers on July 12, 2009. During the period which was considered for this study, the banking shifted from its conventional business towards consumer banking which has been one of good reasons for dwindling agency cost of banks. Unfortunately, this trend of the banks has created de-link between real sector and the monetary sector of the economy of Pakistan. Though consumer banking had been a trend in most of the countries after 9-11 event of USA but in Pakistan this type of banking could prove to be a suicide attempt for the real sector of the economy which was completely ignored by the financial institutions.

We feel the need for a policy shift from consumer banking to pro-real sector loaning for which banks must structure their capital on the lines of long term investment trends instead of short term gains from leasing of cars and houses. State bank of Pakistan should revise its interest downward enabling commercial banks to restructure their capital. There has always been risk-averse attitude of financial institutions in Pakistan due to the lack of innovations in search of diversified investment portfolio. Existing widespread recession in the country and shattered confidence of investors can be revamped provided that the banks are encouraged to engage themselves in real sectors of the country.

REFERENCES

Antoniou AGY, Paudyal K (2002). Determinants of corporate capital structure: Evidence from European countries. Working Paper [On line], Available: www.ssrn.com. (Accessed 27th July, 2010)

Avery RB, Berger AN (1991b). Risk-based capital and deposit insurance reform. J. Bank. Financ., 15: 847-874.

Benveniste LM, Berger AN (1987). Securitization with recourse: An instrument that offers uninsured depositors sequential claims. J. Bank. Financ., 11: 403-424.

Berger AN (1995). The relationship between capital and earnings in banking. J. Money Credit Bank., 27(1): 432-456.

Berger AN, DeYoung R (1997). Problem loans and cost efficiency in commercial banks. J. Bank. Financ., 21(1): 849-870.

Berger AN, Di P (2002). Capital structure and firm performance: a new approach to testing agency theory and an application to the banking industry. Feds Paper. (January 2003, paper No. 2002-54)

Berger AN, Mester LJ (1997). Inside the black box: what explains differences in the efficiencies of financial institutions? J. Bank. Financ., 21(1): 895-947.

Berger AN, Udell GF (1993). Securitization, risk, and the liquidity problem in banking. Chapter 4 in M Klausner, LJ White (eds)., Structural Change in Banking. Homewood, IL: Irwin Publishing. 227-291

Booth LAV, Demirguc-Kunt A, Maksimovic V (2001). Capital structures in developing countries. J. Financ., 56: 87-130.

Borenstein S, Bushnell JB, Knittel CR (1999). Market power in electricity markets: beyond concentration measures. Energy J., 20(4): 65-88.

Fama E, Miller M (1972). The Theory of Finance (First Edition). Dryden Press, Hinsdale, IL (Chapter No. 3). University of Chicago, USA

Givoly DHC, Ofer AR, Sarig O (1992). Taxes and capital structure: evidence from firms' response to the tax reform act of 1986. Rev. Financ. Stud., 5: 331-355.

Gorton G, Rosen R (1995). Corporate control, portfolio choice, and the decline of banking. J. Financ., 50: 1377-420.

Graham JR (1996). Debt and the marginal tax rate. J. Financ. Econ., 41: 41-73.

Harris M, Raviv A (1990). Capital structure and the informational role of debt. J. Financ., 45(1): 321-349.

Hughes J, Moon CG (1995). Measuring bank efficiency when managers trade return for reduced risk. Working paper, Dep. of Econ. Rutgers University, (New Jersey, USA)

Jensen MC (1986). Agency costs of free cash flow and corporate finance and takeovers. Am. Econ. Rev., 76: 323-339.

Jensen MC, Meckling W (1976). Theory of the firm: managerial behavior, agency costs, and capital structure. J. Finan. Econ., 3(1): 305-360.

Kwan S, Eisenbeis R (1994). An analysis of inefficiencies in banking: a stochastic cost frontier approach. Working paper. University of Albania (Paper No. 163).

Leland HE, Pyle DH (1976). Informational asymmetries, financial structure and financial intermediation. Working Paper. University of California, Berkeley, CA. (paper No. 41).

Lev B. (1974). On the association between operating leverage and risk. J. Finan. and Quantitative Anal, 9, 627-642.

McConnell JJ and Servaes H. (1990). Additional evidence on equity ownership and corporate value. J. Financ. Econ., 27, 595-612.

Mester LJ. (1993). Efficiency in the savings and loan industry. J. Bank. Financ., 17(1): 267-86.

Miller MH, Modigliani F (1958). The cost of capital, corporation finance and the theory of investment. Am. Econ. Rev., 48: 261-297.

Morck R, Shleifer A, Vishny RW (1988). Management ownership and corporate performance: An empirical analysis. J. Financ. Econ., 20: 293-316.

Myers SC (1977). The determinants of corporate borrowing. J. Financ. Econ., 5: 147-175.

Myers SC (2001). Capital structure. J. Econ. Perspect., 15(1): 81-102.

Porter RH, Zona JD (1999). Ohio school milk markets: An analysis of bidding. Rand J. Econ., 30(2): 263-288.

Pratomo WA, Ismail AG (2007). Islamic bank performance and capital structure. [Online], Available: http://mpra.ub.uni-muenchen.de/6012/MPRA (November 2007 / 06:24). MRPA J. [Acessed12th April, 2010]

Resti A (1995). Linear programming and econometric methods for bank efficiency evaluation: an empirical comparison based on a panel of Italian banks. Working paper (No. 21)

Ross SA (1977). The determination of financial structure: The incentive-signaling approach. Bell J. Econ., 8, 23-40.

Saunders A, Strock E Travlos N (1990). Ownership structure, deregulation, and bank risk-taking. J. Financ., 45: 643-654.

Shleifer A, Vishny RW (1986). Large shareholders and corporate control. J. Polit. Econ., 94: 461-488.
Singh A, Hamid J (1992). Corporate financial structures in developing countries. Int. Financ. Corporation Technical Paper, 1.
Stigler GJ (1976). The existence of x-efficiency. Am. Econ. Rev., 66: 213-16.
Stulz R (1990). Managerial discretion and optimal financing policies. J. Financ. Econ., 20, 3-27.
Stulz R (1988). Managerial control of voting rights: Financing policies and the market for corporate control. J. Financ. Econ., 20: 25-54.
Whinston MD (2006). Lectures on Antitrust Economics. The MIT Press, Cam- Bridge, MA, (Chapter No. 4).