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Structure-Performance Relation in Nepalese Banking Industry

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***Abstract*—This paper aims at testing the structure-performance hypotheses in the context of Nepalese banking industry for the period of 2001-2009 under the Berger and Hannan (1993) empirical framework. The empirical results suggest that traditional structure-conduct-performance hypothesis and quit life hypothesis are better explain concentration-profitability relation in Nepalese banking industry. There is weak support for efficiency structure hypotheses. The results of this study hold significant policy and managerial implications.**

Keywords- Structure-conduct performance hypothesis, efficiency structure hypothesis, banking institutions.

I. INTRODUCTION

Nepalese banking industry has undergone significant changes over the past three decade. Nepal Rastra Bank (NRB) as a central bank undertook major changes in policy measures including interest rate deregulation; indirect methods of monetary control and use of open market operations as the main policy tool; abolishment of the statutory provision of liquidity ratio; market based forex system; flexible licensing policy; and prudential legal framework. These changes resulted into entry of foreign-joint venture banks and domestic private banks into the market and widened the scale and scope of activities undertaken by the banks. Some previous studies [1; 2] reported that there was decreasing market concentration (i.e. increasing market competition), and low and even negative factor productivity with significant level of cost inefficiency in Nepalese banking industry over the period of 2001 to 2009. However, the nature of relationship between market concentration, efficiency and performance in the industry remains unexplored.

There are two basic and competing theoretical approaches in industrial organization literature explaining the relationship between market structure, efficiency and performance: market power paradigm and efficiency structure paradigm [3]. The market power paradigm emphasizes on impact of market structure, say concentration on firm's behaviors and performance whereas efficiency structure paradigm emphasize on impact of individual firm's efficiency on market share and profitability [4]. Within market power paradigm there are two hypotheses: traditional structure-conduct performance (SCP) hypothesis and relative market power (RMP) hypothesis. In a classical fashion, SCP hypothesis states that the banks in concentrated market may have higher performance because the banks in concentrated market may involve in collusive behavior and may charge higher prices for products and services they offer [5]. Hence, higher market concentration impairs the competition but increases the performance [3]. In a slightly different way, RMP hypothesis states that the banks with relatively larger market share and a range of differentiated product lines are better able to exercise their market power to gain superior profit [3]. Therefore, SCP emphasize more and/or abnormal profit deriving from higher concentration whereas RMP emphasize excess profit deriving from larger banks' individual market share but not necessarily from collusive behaviors.

There are also two hypotheses under efficiency structure paradigm: X-efficiency hypothesis and scale efficiency hypothesis. X-efficiency hypothesis postulates that market concentration is resulted from the efficiency of the bank. The bank with higher operational (cost and/or technical) efficiency may have some competitive advantages which help to increase bank's market share. Therefore, bank's higher profit is derived from operational efficiency, not from the collusive behaviors as predicted by market power paradigm. The scale efficiency hypothesis, however, emphasize more on the level of scale economies. The banks operating at scale efficient level have lower cost per unit which helps to increase profitability.

Besides these explanations, the quiet life hypothesis states that monopoly power allows managers a quit life free from competition which results into higher market concentration and higher inefficiencies of individual banks [6]. Increased market competition reduces the rents and costs which increases the welfare and the efficiency. Therefore, the competitive banking market promotes the higher level of efficiency.

As these approaches have distinct policy implications, there has been an extensive research effort to test these hypotheses in banking industry of different economies around the world. This study aims at testing structure-performance hypotheses in the context of Nepalese banking industry by using Berger and Hannan empirical framework. It is first of its type to report the evidences from Nepalese perspective.

This paper is organized into six sections starting with this introduction. Section II presents an overview of the Nepalese banking industry. Section III reviews related empirical

literature. Section IV discusses the Berger and Hannan empirical methodology and data employed. Section V presents and discuss the empirical results; and Section VI concludes the paper.

II. AN OVERVIEW OF NEPALESE BANKING INDUSTRY

Nepal has a short history of the modern banking practices that starts from the establishment of Nepal Bank Limited as a first commercial bank in 1937. The establishment of Nepal Rastra Bank in 1956 as a central bank gave new dimension to Nepalese financial system. Nepal adopted financial sector liberalization process during 1980s. As a result, many joint-venture and private banks entered into the market. By the end of mid-July 2009, 26 commercial banks were in operation in Nepal. Of the 26 commercial banks, 3 were state-owned and 23 were privately owned (17 domestic and 6 foreign joint-ventures).

Table I provides some selected statistics for Nepalese banking industry. The group share of state, private and foreign owned commercial banks in total assets of the banking sector indicates decrease in the dominance of large state-owned banks as a consequence of financial sector liberalization and reformation [7; 8].

The relatively high value for the ratio of total banking sector assets to real GDP signifies the importance of banking system in Nepalese economy. Banks are the major lenders to private sectors because Nepalese capital market is at the initial state of development and bank financing is important source of financing for firms [8; 9].

TABLE I. SELECTED STATISTICS FOR NEPALESE BANKING INDUSTRY

Indicators\Year	**2001**	**2005**	**2009**
Number of licensed commercial banks	15	18	26
% Share of Total Assets (No. of banks)			
State	48.35 (2)	40.16 (3[a])	26.69 (3)
Private-Domestic	12.09 (7)	23.51 (9)	42.03 (16[b])
Private-Foreign	39.56 (6)	36.33 (6)	31.28 (6)
Branches per 1,000 sq. km	2.92	2.87	5.11
Branches per 100,000 people	1.86	1.67	2.72
Total bank assets to real GDP (%)	79	102	190
Total bank deposits to real GDP (%)	57	69	132
Asset share of the three largest banks (%)	58	35	25
Bank loans to government (% of GDP)	0.91	0.67	0.61
Bank loans to private sector (% of GDP)	33	44	93

[a] Agricultural Development Bank was promoted as commercial banks in 2005.

[b] KIST Finance Company was promoted as commercial banks during last quarter of 2009, hence not included.

Source: Reference [7] and Author's calculation

In contrast, the lending is very nominal to government sectors because government sector receives budget, loan or credit from government or other government owned financial institutions like Employment Provident Fund, Nepal Industrial Development Corporation, etc. The cumulative lending to private and government institutions is lower than deposits to GDP ratios, so reflects comparatively low level of credit to the household and firms. The low level of branch network/extension reflects lack of wider access to banking and higher geographic concentration of banks. Most of the banks' head office is located in Kathmandu and their branches are clustered around major cities of the country.

III. REVIEW OF EMPIRICAL WORKS

The earlier empirical works on structure-performance relation were largely confined to US banking markets and often yielded positive relationship between concentration and profitability. However, the studies prior to Berger and Hannan [3] did not take into account the differences in productive efficiency of individual banks while testing the structure-performance relation. Berger and Hannan [3] and Berger [10] developed an empirical approach that incorporates market power and efficiency structure paradigm hypotheses. The recent studies used this or similar approaches while testing structure-performance relation in different banking markets. Table 2 summarizes some important studies on bank performance with their major findings.

Empirically, Berger [10] found some supports for enhanced efficiency structure hypotheses when using an extensive U.S. dataset. For example, after controlling for differences in efficiency, Berger [10] presented mixed results. Although the author found that market share is positively related to profitability when efficiency is controlled for, concentration in the banking market is usually negatively related to profit. A similar study on the European banking sector, by Punt and Van Rooij [11], also has mixed results. While they find some support for a positive relationship between concentration and profitability, their results are not robust to different specifications of profitability.

Goldberg and Rai [12] used the Berger and Hannan [3] framework in European context and studied the relationship between market competition and performance considering efficiency. The authors did not find a positive and significant relationship between concentration and profitability However, they found support for one of the two versions of the efficient-structure hypothesis for banks located in countries with low market concentration. Therefore, the authors concluded that cross-border acquisitions and growth might not hamper the competition. In a separate study, Maudos [13] analyzed the relationship between market structure and performance in the Spanish banking industry and found support for efficiency structure hypotheses.

Beck *et al.*[14] used a dataset of developed and developing countries to examine the effects of concentration on credit availability while controlling for regulatory policies such as entry, ownership structure, and restrictions on bank activities. They found that firms face higher financing obstacles in concentrated banking markets. The negative effect, however, is mitigated by efficient legal systems, less corruption, high levels of financial and economic development, and the presence of foreign banks. In fact, the effect is insignificant for countries that have a well-developed financial system.

Demirgüç-Kunt *et al.* [15] examined the effect of concentration and various regulatory policies affecting competition on net interest margins. The regulatory policies include entry restrictions, restrictions on the activities that banks can undertake, and restrictions on opening a bank. Each of these is found to increase net interest margins. Bank concentration was also associated with higher margins, but the effects became insignificant once regulatory policies and general environmental factors (such as property rights) were controlled for.

Chirwa [16] studied the relationship between market structure and profitability of commercial banks in Malawi. The author observed that increase in number of firms in the banking market increases the market competition; and higher concentration leads to higher profits indicating a long-run relationship exists between profitability and market structure in Malawian banking.

Hahn [17] investigated the determinants of banking profitability and banking market conditions in Austria over the sample period of 1995-2002. Using a panel econometric analysis the author tests three hypotheses: the structure-conduct-performance hypothesis, the efficient-structure hypothesis and the relative market-power hypothesis. Furthermore, the author also tests the market contestability. The author found some evidences on market power hypothesis In addition, X-efficiency was detected to exert a positive and autonomous influence on banking performance in Austria. The Panzar-Rosse analysis suggested monopolistic market behavior in Austrian banking industry. In this line, author concludes that the Austrian banks do exert, on average, some local market power but the gains in terms of excess profits are rather minor due to low deterrence powers of the incumbent banks.

The study by Wong *et al.* [18] used the Berger and Hannan [3] approach to identify the major determinants of a bank's profit, and the general level of profitability of a banking market. The authors observed that in Hong Kong banking industry, market structure, such as market concentration and market shares of banks, is not a major contributory factor of performance. Cost efficiency of banks, which measures the ability of banks to optimize their input mix for producing outputs, is a major determinant of banks' profitability. They also observed that larger banks are more cost efficient than smaller banks; larger banks can offer services at lower prices to compete with smaller banks, yet attaining a similar or even higher level of profits. The authors conclude that smaller banks are more vulnerable to intense competitions in the loan market than larger banks, particularly in cut-throat price wars.

In a very recent study on US banking, Tregenna [19] analyzed the effects of structure on profitability for the period of 1994-2005. Bank level panel data are used to test the effects of concentration, market power, bank size and operational efficiency on profitability. The author observed that efficiency is a strong determinant of profitability, whereas there was robust evidence for positive concentration-profitability relation. However, the proxy measure of efficiency was operating cost ratio.

Seelanatha [20] examined structure-performance relation for banking industry in Sri Lanka. Under the Berger and Hannan approach, the study used four hypotheses. The author found that traditional structure conduct performance argument is not held in the banking industry in Sri Lanka and the banks performance does not depend on either market concentration or market power of individual firms but on the level of efficiency of the banking units.

The empirical works in foreign countries reviewed above have supported either or both of paradigms. However, there is lack of such studies in the context of Nepal. Therefore, this study examines the structure-performance relation in Nepalese banking market. The next section describes the empirical methodology adopted in this study.

IV. EMPIRICAL MODEL AND DATA SOURCE

A. *The Berger and Hannan Model*

Berger and Hannan [3] model directly incorporates both structural measure and efficiency measures so that four hypotheses, two from market power paradigm and two from efficiency paradigm, can be tested jointly. It requires series of tests to determine which of the four hypotheses is valid.

The basic reduced form model is:

$$P_{it} = f(CE_{it}, SE_{it}, CON_t, MS_{it}, Z_{it}) + e_{it} \quad (1)$$

where P, is a measure of performance (return on assets) of bank i, on time t, CE is a measure of cost efficiency, indicating the ability of banks to produce a given level of output at minimum cost combination, SE is a measure of scale-efficiency, reflecting the ability of banks to produce at optimal output levels (economies of scale) for given similar production and management technology, CON. is a measure of market concentration for given year and measured by Herfindahl-Hirschman Index (HHI is computed as the sum of the square of the market share of each bank for given year), MS is market share of bank i, Z is a set of control variables and e is random error term.

If efficiency structure hypotheses hold true, then expected signs of the coefficients for efficiency measures are greater than zero and positive and signs of coefficient for structural measures are zero, that is: $CE > 0$, $SE > 0$, $CON = 0$ and $MS = 0$ because more efficient banks are more profitable. Furthermore, in efficient-structure hypotheses, the causation is expected to run from efficiency to profits and prices and then to market structure. Therefore, a necessary condition for the efficiency structure hypotheses to hold is that efficiency affects market structure. To fulfill the necessary condition, following two equations are also tested:

$$MS_{it} = f(CE_{it}, SE_{it}, Z_{it}) + e_{it} \quad (2)$$

$$CON_t = f(CE_{it}, SE_{it}, Z_{it}) + e_{it} \quad (3)$$

In equation (2) and (3), the signs of coefficients for efficiency measures should be positive because more efficient firms will have larger market shares.

On the other hand, if either of the market power hypotheses holds true, then the expected signs of the coefficients for structural measures (concentration and market share) should be positive and greater than zero, that is $CONC > 0$ or $MS > 0$.

To support the market power hypotheses, additional relationships are tested:

$$CE_{it} = f(CON_t, MS_{it}, Z_{it}) + e_{it} \quad (4)$$

$$SE_{it} = f(CON_t, MS_{it}, Z_{it}) + e_{it} \quad (5)$$

Berger and Hannan [3] refer to these conditions as testing Hicks [6] 'quiet life' hypothesis. This hypothesis predicts a reverse causation, that is, as firms enjoy greater market power and concentration, inefficiency follows not because of non-competitive pricing but more so because of a relaxed environment that produces no incentives to minimize costs [12].

This study applies the above methodology to test the structure-performance hypotheses in Nepalese banking industry over a nine-year period (2001-2009). The parameters in above equations are estimated by using Zellner (1962) seemingly unrelated regression (SUR) technique. The efficiency measures are estimated by using non-parametric technique called Data Envelopment Analysis (DEA). This study adopts the efficiency estimates from author's previous work [2].

B. Data Sources and Variable Definition

This study considers only the commercial banks in operation for the sample period of nine years from 2001 to 2009. Therefore, there are minimum of 15 banks (for 2001) and maximum of 25 banks (for 2009) each year during sample period. The KIST bank was promoted as commercial banks in 2009. Hence it is not included in study. The nine year sample period is regarded as sufficient to capture characteristics of Nepalese banking industry. The choice of sample period is also confined by the availability of data.

This study is mainly based on accounting (secondary) data of commercial banks for the period of 2001-2009. The required data have been extracted from annual reports and financial statements of the banks available in Securities Board (SEBO) database and Nepal Rasta Bank (NRB) database. There are total 171 bank observations.

Table II presents the variables description and their proxies used in this study.

TABLE II. DEFINITION OF VARIABLES

Variable	Symbol	Proxy Measure
Performance Measure	P	Return on Assets
Market Concentration	CR3	Market share of three largest banks
	CR5	Market share of five largest banks
	HHI	Herfindahl-Hirschman Index
Market Share	MS	Market share of bank based on total assets
Efficiency Measures	CE	Cost efficiency computed under Data Envelopment Analysis, non-parametric technique
	TE	Technical efficiency under DEA technique
	SE	Scale efficiency under DEA technique
Control variables	TA	Total assets of bank
	LOAN	Ratio of total loan to total assets
	OWN	Dummy variable for ownership measure that takes value 0 if bank is state-owned, otherwise 1
	gGDP	Real growth rate of gross domestic product.

V. EMPIRICAL RESULTS AND DISCUSSION

This section presents the findings of the empirical analysis. First, it briefly explains the market concentration and efficiency of banking industry along with descriptive statistics of variables used in the study. The next subsection formally tests the structure-performance hypotheses.

A. Market Concentration, Bank Efficiency and Descriptive Statistics

Nepalese banking industry, for long, is characterized by the dominance of few large and State-owned banks. However, increase in the number of new banks in the market and increasing competitive business environment in recently years have reduced the degree of dominance of State-owned banks. In Table III, the concentration ratio of "Three-banks" (CR3) mostly represents the market share of State-owned banks, particular since 2005. Still, State-owned banks possess about twenty five percent market share of the industry and five largest banks possess about forty percent.

TABLE III. CONCENTRATION AND EFFICIENCY MEASURES

		Concentration Measures			**Efficiency Measures**		
Year	**No. of Banks**	***CR3***	***CR5***	***HHI***	***CE***	***TE***	***SE***
2001	15	0.581	0.768	0.153	0.578	0.685	0.869
2002	16	0.534	0.656	0.136	0.623	0.698	0.875
2003	17	0.479	0.623	0.120	0.644	0.718	0.861
2004	17	0.442	0.596	0.108	0.618	0.714	0.851
2005	18	0.352	0.488	0.088	0.643	0.741	0.827
2006	18	0.314	0.465	0.079	0.597	0.686	0.79
2007	20	0.307	0.460	0.075	0.618	0.735	0.834
2008	25	0.274	0.424	0.063	0.664	0.772	0.851
2009	25	0.255	0.397	0.057	0.653	0.781	0.8430
Average	***19***	***0.393***	***0.542***	***0.098***	***0.633***	***0.734***	***0.847***

TABLE IV. DESCRIPTIVE STATISTICS

	Mean	Median	Stdev	Max	Min
ROA	0.0056	0.0116	0.0385	0.1823	-0.1892
HHI	0.0977	0.0880	0.0335	0.1528	0.0571
MS	0.0526	0.0346	0.0488	0.2714	0.0020
CET	0.6325	0.6420	0.1303	1.0000	0.2320
SET	0.8475	0.8794	0.1291	1.0000	0.4140
lnTA	22.624	22.579	0.933	24.375	19.415
LOAN	0.5845	0.6142	0.1549	0.8296	0.1747
gGDP	0.0359	0.0390	0.0146	0.0490	0.0010

Note: see Table 2 for variable description

All three concentration measures declined significantly in 2005 which may be the reflective of policy directive to increase the capital base for small banks. The decreasing Herfindahl-Hirschman Index suggests that Nepalese banking industry is becoming less concentrated and more competitive in recent years.

Regarding the bank efficiency, there is significant level of cost inefficiency (about 37 percent) among banks which is largely caused by technical inefficiency however the level of inefficiency has decreased over the sample period. The scale inefficiency is on an average equal over the sample period (which is about 15 percent).

Table IV presents the descriptive statistics for the data used in this study. The average profitability (return on assets) of Nepalese banks is about 1.16 percent (indicated by median statistics). There is higher variability on performance measure. The average size of bank is about Rs. 10 billion and average banks have about 60 percent loan to total assets ratio. The macroeconomic development is quite low during the period with average growth rate of 3.6 percent.

Table V presents the Pearson correlation coefficient matrix of the variables used while testing structure-performance hypotheses. Some high degree of correlation observed between market share and total assets and scale efficiency; and scale efficiency and loan. However there is low correlation among control variables. Since this study employs Zellner [21] Seemingly Unrelated Regression technique to estimate the parameters, the higher correlation among other explanatory variables may not be a serious problem [22].

TABLE V. CORRELATION MATRIX

	ROA	*HHI*	*MS*	*CE*	*SE*	*LnTA*	*LOAN*	*GDP*
ROA	1.00							
HHI	-0.24	1.00						
MS	-0.18	0.17	1.00					
CE	0.25	-0.13	-0.63	1.00				
SE	-0.09	0.08	-0.76	0.57	1.00			
lnTA	0.08	-0.24	0.80	-0.54	-0.78	1.00		
LOAN	0.05	-0.25	-0.69	0.53	0.67	-0.50	1.00	
GDP	0.21	-0.27	-0.06	0.01	-0.02	0.09	0.09	1.00
OWN	0.12	0.01	-0.75	0.56	0.64	-0.56	0.50	0.01

Note: see Table 2 for variable description

B. Berger and Hannan Model Regression Results

Table 6 presents the SUR estimates for equations one to five. The Equation (1) is the main equation and remaing four equations are auxiliary equations. All the equations are statistically significant and have reasonably sound explanatory power comparing with similar studies in other economies [10; 12; 17]. The Breusch-Pagan test of independence signifies the appropriateness of SUR technique for parameters estimation.

Looking at the equation one, the coefficient of HHI is positive and statistically significant at 5 percent level which suggests that increase in HHI increases the profitability. This finding is in support for the traditional structure-conduct-performance hypothesis, that is, banks in concentration banks are able to earn higher profits. However, the coefficient of market share based on total assets, MS is negative and statistically significant. This evidence suggests that market power has negative influence on profitability which is opposite to the relative market power hypothesis. Therefore, larger Nepalese banks do not necessarily earn higher profits. This evidence might be the reflective of State-owned banks which are the largest but least profitable banks during the sample period.

Regarding the coefficient of cost efficiency, it is positive and statistically significant. The positive and significant influence of cost efficiency on bank profitability does not interfere with the traditional structure-conduct performance hypothesis. The cost efficiency exerts a direct and autonomous influence on profitability. Hence, cost efficient banks are more profitable. However, referring to the equation two both cost efficiency and scale efficiency have negative coefficients, that means, cost and scale efficient banks help to decrease the market concentration. These results suggest that competitive market condition can be achieved through enhancing cost and scale efficiency. Therefore, policy makers should focus on the policies to enhance the efficiency of banks. The coefficients of efficiency measures are negative and statistically significant in equation three. The negative coefficients may indicate that efficient banks are clustered in niche markets and penetrate the small market segments for higher profitability. These evidences provide weak support for X-efficiency hypothesis and no support for scale efficiency hypothesis.

In addition, the coefficient of HHI in equation four and coefficient of MS in equation five are statistically significant and negative. The results from equation four and five provide some supports for Hicks [6] quite life hypothesis: as banks enjoy greater market power and concentration, inefficiency follows not because of non-competitive pricing but more so because of relaxed environment that produces no incentive to minimize the costs [12].

Regarding control variables, bank size, and GDP growth rate have positive influence on banks' profitability. The evidences suggest that increase in assets base of bank provides advantages to grab the additional profit, and the favorable macroeconomic growth helps banks to realize higher profits. The positive and statistically significant coefficients of lnTA and gGDP signify it. Furthermore,

macroeconomic growth makes banking market more competitive (less concentrated). The sign and significance of coefficient of GDP growth rate in equation two suggests it. In addition, OWN which is the dummy variables that captures the ownership structure (State-owned versus privately banks) has significant coefficient only in equation

TABLE VI. SUR ESTIMATES FOR STRUCTURE-PERFORMANCE RELATION

	Dependent Variables				
	Eq. (1)	Eq. (2)	Eq. (3)	Eq. (4)	Eq. (5)
	ROA	HHI	MS	CE	SE
HHI	0.243			-1.674	0.140
	0.114			*0.330*	*0.254*
	(0.034)			(0.000)	(0.582)
MS	-0.734			-0.303	-1.276
	0.144			0.419	0.322
	(0.000)			(0.470)	(0.000)
CE	0.111	-0.142	-0.075		
	0.025	0.020	0.016		
	(0.000)	(0.000)	(0.000)		
SE	-0.130	-0.048	-0.092		
	0.033	0.028	0.022		
	(0.000)	(0.083)	(0.000)		
lnTA	0.026	-0.022	0.018	-0.057	-0.046
	0.006	0.004	0.003	0.018	0.014
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)
gGDP	0.412	-0.513	-0.332	-0.707	-0.118
	0.196	0.165	0.131	0.599	0.451
	(0.035)	(0.002)	(0.011)	(0.238)	(0.793)
OWN	-0.017	0.010	-0.041	0.095	0.033
	0.012	0.008	0.006	0.035	0.027
	(0.159)	(0.252)	(0.000)	(0.006)	(0.215)
Constant	-0.536	0.719	-0.185	2.025	1.925
	0.157	*0.100*	*0.080*	*0.398*	*0.304*
	(0.001)	(0.000)	(0.021)	(0.000)	(0.000)
Chi Square	79.82	88.76	705.42	174.13	376.11
p-value	0.000	0.000	0.000	0.000	0.000
Adj. R-sq	0.294	0.144	0.782	0.391	0.660
N	171	171	171	171	171
Breusch-Pagan test of independence: chi-square = 120.67, p-value = 0.000					
Note: Standard errors are given below the estimates and p-values are given in parenthesis below the standard errors.					

three and four. The results suggest that private banks have relatively lower market share and have higher cost efficiency.

The results are robust. For robustness check, each equation is estimated assuming single equation (OLS) method. The sign and significance of estimates are similar to the results reported in Table 6. Furthermore, as suggested by literature, there may presence bidirectional causation between efficiency and profitability. Hence, the system of equations is estimated including ROA as explanatory variable in equation four and five using SUR method. Again, the results lead to the similar conclusions.

VI. CONCLUDING REMARKS

This paper empirically assessed structure-performance relation in Nepalese banking industry for the period of 2001-2009 using Berger and Hannan empirical approach. From the results, it can be concluded that traditional structure-conduct-performance hypothesis and quit life hypothesis are better able to explain structure-performance relation in relation while there are also some but weak supports for X-efficiency hypothesis.

The empirical results of this study have a number of policy and managerial applications. First, the market concentration has dual effects: decrease in market concentration increases the bank profitability and cost efficiency. Hence, policy makers should focus on policies that promote market competition. Second, the banking efficiency has dual favorable effects: increase in banking efficiency increases the market competition and profitability of banks. Hence, bank should enhance their managerial efficiency (cost/scale efficiency) which helps to increase profitability at bank level and competition at industry level. Finally, favorable macroeconomic condition is essential for industry structure and profitability.

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