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Abstract

This paper evaluates the performance of the Arab GCC banking industry in the context of the *Structure-Conduct-Performance* hypothesis in the period 1993-2002. The paper uses panel estimation differentiating between bank fixed effects and country fixed effects. It examines the *Relative-Market-Power* and the *Efficient-Structure* hypotheses differentiating between the two by employing a non-parametric measure of technical efficiency, and finds that the banking industry in the Arab GCC countries is best explained by the mainstream SCP hypothesis. The empirical results do not find any support for the Hicks (1935) "Quiet Life" version of the market power hypothesis.

JEL Codes: G2, L1

Key words: GCC Banking, Structure Conduct Performance.

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1 Introduction

Numerous studies have found a positive relationship between market structure and firm profitability. While there is general acceptance of the empirical relationship there is no consensus as to the causation. The relationship between market structure and performance is viewed from two competing hypothesis: The *Market Power Hypotheses* in the form of *Structure-Conduct-Performance (SCP)* and *Relative-Market-Power (RMP)*, and the *Efficient-Structure (ES) hypotheses* in the form *of X-efficiency or Scale efficiency*. This paper examines the profit-structure relationship in the Gulf Cooperation Council's (GCC)[1] banking industry over the period 1993-2002.

This paper has three objectives. First, to assess the relevance of the *Structure-Conduct-Performance* (SCP), the *Relative-Market-Power* (RMP) and the *Efficient-Structure (ES)* hypotheses in the GCC banking industry. Second, to examine the evidence for the Hicks (1935) *Quiet Life Hypothesis* (QL). Third, to fill a gap in the empirical literature applied to this geographic area.

The paper is structured into five sections. Section 2 discusses the degree of banking market concentration in each of the GCC countries and provides an overview of the literature on the performance-market structure relationship. Section 3 details the methodological framework and presents the data. Section 4 discusses the empirical findings and section 5 concludes

2 GCC Banking and Literature Review

The most frequently used measure of market structure is the 3-firm deposits concentration ratio and the second most frequently used is the Herfindahl-Hirschman Index (HHI)[2]. We present both indices in measuring market concentration in Table 1

[1] The Arab GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE).
[2] See Molyneux et al (1996)

below for 1995 and 2002. It reveals that GCC banking industries are characterised by high market concentration. In 2002, the three largest banks in Kuwait accounted for 62 per cent of total commercial banking sector deposits, whereas in the least concentrated market, the UAE, the top three held 44 per cent share of banking sector deposits. The Qatari banking sector was also highly concentrated, with a three-firm concentration ratio of 81 per cent. Saudi Arabia's three largest banks accounted for 51 per cent of the domestic banking sector. The three largest banks in Oman and Bahrain accounted for 81 per cent and 79 per cent, respectively. Overall, the high degree of concentration in GCC banking markets suggests that the strict licensing rules and restrictions on foreign bank entry have helped create these market structures. It can be seen that the UAE has the lowest level of concentration and this is almost certainly a consequence of less stringent restrictions on the licensing of domestic and foreign banks that have increased in number, especially in the late 1970s and 1980s.

Table 1: Trends in Concentration in the Deposits Market

Country	Bahrain		Kuwait		Oman		Qatar		Saudi Arabia		UAE	
Year	CR3	HHI	CR3	HHI	CR3	HHI	CR3	HHI	CR3	HHI	CR3	HHI
2002	0.79	2351	0.62	1897	0.81	2712	0.81	3565	0.51	1298	0.44	1064
1995	0.83	2738	0.61	1983	0.77	2258	0.81	3995	0.54	1468	0.53	1299

Source: Annual Reports

The *Structure-Conduct-Performance* (SCP) hypothesis of Bain (1951) may be summed up as markets characterised by a structure with relatively few firms and high barriers to entry will conduct pricing aimed at achieving joint profit maximisation through collusion, price leadership, or other tacit pricing arrangements. This type of price conduct should in turn yield profits and prices that are greater than the competitive

norm[3]. Our expectation based on table 1 is that a measure of concentration will be positively related to profit. A related theory is the *Relative-Market-Power Hypothesis (RMP)*, which asserts that only firms with large market shares and well-differentiated products are able to exercise market power and earn supernormal profits (see Shepherd 1982).

The *Quiet Life Hypothesis* (QL) of Hicks (1935) posits that firms with greater market power may take advantage of the gains from non-competitive pricing in a more relaxed environment in which less effort is put into the rigours of minimising cost. The "*Quiet Life Hypothesis*" is not a necessary part of the market power paradigm, but is often included in it (see Shepherd 1979). Berger and Hannan (1995) found that quiet life effects in banking appeared to be several times larger than social losses associated with the mispricing of products from market power[4]. If the quiet life hypothesis holds, then the positive profit-structure relationship is partially offset by cost increases from poorer cost efficiency which may explain why the profit-structure relationship is so weak in many banking papers (see the survey by Gilbert, 1984). It could also help explain why prices tend to be much more strongly related to concentration than profits.

An alternative hypothesis is the *efficient-structure (ES)* hypothesis that emerges from criticism of the SCP hypothesis (Demsetz, 1973 and Peltzman, 1977). The efficiency hypothesis postulates that the relationship between market structure and performance of any firm is defined by the efficiency of the firm. Firms with superior management or production technologies have lower costs and therefore higher profits.

[3] In his review of 45 studies on the relationship between performance and market structure in the banking industry, Gilbert (1984) concluded that about half of the studies uncovered a statistically significant relationship between performance and market structure and the numerical impact of concentration was minor.

[4] Failure to account for the possibility of quiet life effects may lead to biased coefficients in testing the efficient-structure condition that efficiency increases concentration and market share, see Berger and Hannan (1997).

The *ES hypothesis* has been usually proposed in two different forms, depending on the type of efficiency considered. In the *X-efficiency* form, more efficient firms have lower costs, higher profits and larger market share, because they have a superior ability in minimising costs to produce any given outputs. In the *Scale Efficiency* form, the same relationship described above is due to the fact that more scale efficient firms produce closer to the minimum average-cost point.

SCP studies of banking generally can be divided into two groups according to the measure of performance used. The first group uses some measure of the price of particular banking products and services in order to capture the performance of the firm, while the second uses a profitability measure, such as return on assets or return on equity. However, using the price of a single banking product as a measure of performance may be misleading because of the multi-product nature of a bank's output[5]. Profit measures may be more informative, but may also be more difficult to interpret because of the complexity of the accounting procedures involved. Molyneux and Forbes (1995) emphasize that profitability measures, where all product profit and losses are consolidated into one figure, are generally viewed as more suitable because they by-pass the problem of cross subsidisation.

Evanoff and Fortier (1988) suggest a number of reasons why the ROA measure is preferable to other profit measures. Firstly, although some studies have used bank product prices as the dependent variable, banking is a multi-product business and individual prices may be misleading. Prices can only be used if costs directly associated with these prices are explicitly accounted for as explanatory variables. Secondly, the potential for significant cross subsidisation between products obviously exists and

[5] See Goddard et al (2001)

pricing strategy will differ across markets. The use of a profit measures eliminates many of these problems and ROA has been used extensively in the literature[6].

Four approaches have been taken in distinguishing between the competing hypotheses[7]. The first approach explains profits in terms of market structure variables such as concentration and market share. The usual finding is a positive statistically significant coefficient of market share, and a statistically insignificant coefficient of concentration. Some argue that this finding supports the efficient-structure hypothesis, since both market share and profits are correlated with efficiency, which is excluded from this empirical specification (e.g. Smirlock, Gilligan, and Marshall, 1984, 1986); and Smirlock, 1985). However, this result is observationally equivalent to the RMP hypothesis, since firms with larger shares can exercise greater market power and earn higher profits (Shepherd, 1986).

The second approach attempts to solve the observational equivalence problem by adding independent measures of efficiency to the profits equation. If efficiency is properly controlled for, then market share or concentration should reflect only market power effects[8].

The third approach has used survey information on the prices of individual bank deposit and loan products (e.g. Berger and Hannan, 1989, 1997; and Hannan 1991) and regress these against the market structure variables to test the market-power hypotheses. A finding of less favourable prices for consumers (lower deposit rates or higher loan rates) in concentrated markets is taken as support for the market-power hypotheses. An

[6] For example, Molyneux and Thornton (1992), Molyneux and Forbes (1995), Berger (1995), and Goldberg and Rai (1996).
[7] Berger and Hannan (1997)
[8] Studies that have included proxies for scale efficiency include Shepherd (1982); and Allen and Hagin, (1989). Whereas Timme and Yang (1991) and Berger (1995) have included direct measures of technical efficiency.

advantage of this approach is that the exact prices paid or received are more accurate indicators of market power than are profits.

The fourth approach directly relates market structure to efficiency. Concentration and market share are regressed on the efficiency measures to test the efficient-structure condition that efficiency creates greater concentration or market share (see Berger, 1995; and Berger and Hannan, 1997). If the positive relationship between performance and structure is not spurious in the ES hypothesis, efficiency must be positively related to both performance and structure. The problem with this approach is that causation may also flow in the opposite direction, with market structure affecting efficiency. Under the market-power hypotheses, market structure is associated with market power, and firms may take some of the benefits of this power as a more relaxed environment in which there is less pressure to maximise efficiency. Under this `quiet life' addendum to the market-power hypotheses, higher concentration and market share will be negatively related to efficiency, giving a downward bias to the coefficients when the market structure variables are regressed on the efficiency variables.

In summary the majority of existing studies employ a single-equation model of bank profitability where a measure of profit rate is explained by a measure of market concentration, along with control variables. Substantial disagreement still remains concerning the role of market concentration on bank profitability. Principally, the disagreement is about interpretation. Does a positive effect of concentration on profits suggest relative market power or relative market efficiency? Existing studies provide a valuable procedural and methodological road map for future studies on the concentration-profitability issue. However, no such study exists for the GCC countries.

3 Methodology and data.

We follow closely the methodology of Berger and Hannan (1997) in testing the relationship between market structure and bank performance. The basic model can be expressed as

$$\pi_{i,j,t} = \alpha_0 + \alpha_i B_{i,j,t} + \beta_j X_{j,t} + \gamma_j Z_{i,j,t} + \varepsilon_{i,j,t} \qquad (1)$$

Where $\pi_{i,j,t}$ represents the measure of performance for bank *i* in country *j* at time *t*; $B_{i,j,t}$ are bank specific variables for bank *i* in country *j* at time *t*; $X_{j,t}$ are country variables for country *j* at time *t*; $Z_{i,j,t}$ represents market structure variables of bank *i* in country *j*.

Two measures of profitability are used in the literature; Return on Assets (ROA) and Return on Equity (ROE). ROA reflects management's ability to utilise the bank's financial and real investment resources to generate profits, specifically, it measures the profit earned per currency of assets. This ratio depends mainly on the bank's policy as well as some external factors related to the economy and government regulations. ROE reflects the effectiveness of management in utilising shareholders' funds. In this study we concentrate on ROA as the results for ROE are qualitatively similar.

Independent measures of efficiency are obtained from the non-parametric methods of Charnes et al. (1978) and Banker et al. (1984). Best-practice banks form the efficient frontier and are technically efficient. For each bank outside the frontier, a technical efficiency score relates its position to the best-practice peer bank.

Table 2 below describes the modelling framework of Berger and Hannan (1997). Model 1 describes the first approach which tests the positive relationship between market structure and profitability, ROA is regressed on market shares and market concentration and bank and economy specific variables, whilst efficiency measures are not directly considered. Model 2 describes the second approach and includes efficiency

measures as response variables. Model 3 describes the fourth approach of explaining the market structure measures. In addition, Model 4 includes the version of Hicks' (1935) "Quiet life" hypothesis proposed by Berger and Hannan (1997). We also consider two efficiency measures - Technical Efficiency and Scale Efficiency. The ES hypotheses can be stated in two different versions. In the technical efficiency version, higher profits and larger market shares are determined by superior skills in transforming input-quantities in output-quantities. In the scale efficiency version, profits and market share come from lower costs determined by an optimal operational scale.

Table 2: Models of market structure and profitability

Model	Approach	Dep. Variable	Explanatory variables
1	1st	ROA	CR3, MS, B and X variables*
2	2nd	ROA	CR3, MS, T-EFF, S-EFF, B and X variables
3	4th	CR3/MS	T-EFF, B and X variables
4	QLH	T-EFF, S-EFF	MS, CR3, B and X variables

ROA	Net after tax return on assets.
CR3	Highest three banks in the deposit market of each country.
MS	Deposit market share per country
Te-EFF	Technical efficiency score in input orientation (all GCC banks)
S-EFF	Scale efficiency score
DEPGRW	Economy deposit growth as a proxy for market growth
ASSET	Bank total assets (millions) in $s as a measure of bank size and economies of scale.
CAPAST	The ratio of capital to assets is a proxy for financial strength. The higher the capital-asset ratio the higher must ROA be for a given required return on equity.
LOANAST	The ratio of loan to assets as a proxy for risk. The higher is risk the higher is ROA as a compensating effect.
DDTTDEP	Ratio of demand deposits to total deposits as a proxy for liquid liabilities.
TEXPTA	Ratio of total expenses to total assets as a measure of operating costs.
POPBRANCH	The ratio of population per branch as a proxy for geographic diversification.
OBSTA	Ratio of off-balance sheet income to total income as a proxy for business diversification.
SPECIALIZ	Dummy variable for Islamic bank
GDPPC	Per capita income in $ as a proxy for local market conditions.

The data comprises 52 banks within the GCC economies over the period 1993-2002 for 5 countries and 1995-2002 for UAE. The data for the banks were collected from the respective annual statements. Table 3 summarises the data used in the analysis.

Table 3: Summary statistics

Variable	Mean	Std. Dev	Min	Max
ROA	.0175	.0159	-.1200	.0700
ASSET $ mill	4099.5	4912.2	195.1	28477.8
CR3	.6213	.1334	.430	.840
MS	.1203	.1102	0.0	0.6
DEPGRW	.0920	.0729	-.01	.45
CAPAST	.1326	.0597	-.03	.44
LOANAST	.5374	.1876	.060	.920
DDTTDEP	.2688	.2106	.040	.990
TEXPTA	.0508	.0159	.02	.22
POPBRANCH	12226.3	3020.6	8021	18873
OBSTA	.1525	.0950	.0188	.8416
GDPCC $ mill	14034.3	5861.5	6150.6	30847.7

Table 3 indicates the strong heterogeneity of the banks as measured by profit performance. Bank profitability within the GCC over this period varied from large losses to strong growth. The heterogeneity of the banks in the GCC is also underlined by the variability of $ assets. Other bank variables that highlight heterogeneity and structural differences is the ratio of demand deposits to total deposits and the ratio of off-balance sheet income to total income. Banks liquid liabilities as a proportion of deposit liabilities vary from 99% to 4%, while off-balance sheet income as a proportion of total income varies from 2% to 84%. Country heterogeneity is indicated by the differences in $ GDP per capita and the ratio of population per branch.

4 The empirical results

The modelling framework follows a two-stage strategy; first, to test for within country bank heterogeneity and second, to test for country heterogeneity against a pooled specification for the GCC as a whole. The modelling strategy involved tests for fixed effects versus pooled using the first approach described in Table 2 above. Table 4 presents the results of a set of F tests.

Table 4: Tests for Bank and Country Heterogeneity. H0: fixed effects = 0

Country	F test	Probability	Decision
Bahrain	F(5,44) = 0.41	0.8419	Accept
Kuwait	F(6,52) = 6.68	0.0000	Reject
Oman	F(4,35) = 1.64	0.1862	Accept
Qatar	F(5,44) = 2.84	0.0263	Reject
Saudi	F(9,78) = 3.27	0.0020	Reject
UAE	F(17,116) = 3.30	0.0001	Reject
Country FE	F(5,464) = 1.57	0.1677	Accept

The independent variables included all of the determining variables described in Table 2 above excluding the Islamic bank dummy SPECIALIZ for the within country bank heterogeneity tests[9]. The Islamic bank dummy variable was included in the country fixed effects model. The results of Table 4 in general reject bank homogeneity within each country (except for Bahrain and Oman) but do not reject across country homogeneity within the GCC as a whole. The conclusion of this exercise is to recognise

[9] The Islamic bank dummy variable was perfectly collinear with individual banks within individual countries.

that there is bank heterogeneity but not country heterogeneity within the GCC treating each country as a pooled entity.

In the remainder of this section we present the results for the models 1 and 2 in Table 5. The results for the determination of market structure (the fourth approach – model 3), are shown in Table 6, and Table 7 shows the results for the "Quiet Life Hypothesis".

Table 5: ROA Fixed Effects for all GCC banks (1st and 2nd approaches); t statistics in parenthesis

Model	Bank Fixed Effects	Bank Fixed Effects	Bank FE (INST)	Country Fixed Effects	Country FE (INST)
Intercept	-.4922*** (-4.14)	-.4941*** (-4.16)	-.4213*** (-2.94)	-.5390*** (-4.21)	-.4059* (-1.84)
Ln(GDPPC)	.0224*** (4.27)	.0229*** (4.42)	.0179* (1.93)	.0175*** (3.28)	.0077* (1.90)
CR3	.0614** (2.42)	.0596** (2.38)	.0676** (2.44)	.0881*** (3.55)	.0246** (2.22)
MS	-.0118 (-0.48)	-	-	-	-
Ln(ASSET)	-.0036 (-1.41)	-.0039 (-1.59)	-.0026 (-0.46)	.0118** (2.41)	.0059 (1.58)
CAPAST	.1270*** (5.82)	.1290*** (6.02)	.1423*** (5.61)	.1357*** (9.82)	.1703*** (4.65)
LOANAST	.0253*** (3.77)	.0254*** (3.79)	-.0186 (-0.39)	.0282*** (5.87)	.0636 (1.57)
TEXPTA	-0.4379*** (-10.26)	-.4380*** (-10.27)	-.5019** (-2.31)	-.4267*** (10.81)	.1835 (0.43)
Ln(POPBRNCH)	.0282*** (3.50)	.0281*** (3.50)	.0263*** (3.04)	.0316*** (3.70)	.0239* (1.85)
OBSTA	.0182** (1.99)	.0186** (2.06)	.0065 (0.46)	.0246*** (3.30)	.0442* (1.94)
SPECIALIZ	-	-	-	-.0092*** (-4.64)	-.0092** (-2.29)
Te-EFF	-	.0138*** (2.68)	.0187** (2.52)	.0103** (2.00)	-.0061 (-0.50)
within R^2	0.2993	0.2989	0.2218	.3746	.2809
H0: FE = 0	F(51,419)=3.81***	F(51,420)=3.88***	F(51,420)=3.44***	F(5,465)=2.18*	F(5,465)=1.26

*** significant at the 1%, ** significant at the 5%, * significant at the 10%

Table 5 shows some representative results derived from the first and second approaches described in Table 2 above for all GCC countries' banks. We present both the fixed effects model controlling for bank heterogeneity and the fixed effects model controlling for country heterogeneity. The first column includes concentration (CR3) and market

share (MS), but only CR3 is statistically significant. The lack of statistical significance of market share lends support to the SCP version of the market power hypothesis over the ES hypothesis or the RMP version. The second column excludes market share and controls for efficiency by including the non-parametric measure of technical efficiency[10]. Bank characteristics such as risk factors, financial strength, overhead expenses, and business diversification add to the explanation and also macro factors such as geographic diversification and GDP per capita have positive and significant effects. Column 3 re-estimates the model in column 2 for potential endogeneity in the regressors using instrumental variables. The loan-asset ratio and cost-asset ratio are treated as endogenous and the additional instruments are scale efficiency and total economy deposit growth[11]. Column 4 presents a stripped down country fixed effects version of column 3 but including the dummy variable for identifying Islamic banks[12] and column 5 is the instrumental variables estimate version of column 4.

The evidence presented here clearly supports the view that concentration is the principal structural determinant of profitability and not market share. But even controlling for efficiency and endogenous regressors as shown in columns 3 and 4, concentration remains positive and significant. It is also seen that allowing for concentration, the more technically efficient banks earn higher profits. Thus, the results support the conditions necessary for the SCP version of the market power hypothesis, that, in a more concentrated environment, banks have higher profits. Our results do not support the RMP hypothesis.

[10] Although the estimate of scale efficiency is obtained independently of technical efficiency, its inclusion in regressions created problems of multi-collinearity and was excluded from the subsequent regressions.

[11] The Hausman specification test for systematic differences in the coefficients produced a chi square (9) of 1.32 p(.9982).

[12] The F statistic for the fixed effects is on the margin of the conventional level of significance *prob(5.5%)*.

While the banking systems in GCC countries differ widely in terms of size and operation and commercial and Islamic banks have to deal with different environments, and different financial, legal and institutional conditions, we find that country differences are not as strong as bank differences.

Table 6 shows a sample of regressions based on the fourth approach (in table 2). In these two regressions, market structure (concentration and market share) variables are regressed on the efficiency variables in order to test the ES hypotheses. Under these hypotheses, greater efficiency should be associated with a higher market share and concentration. The results of Table 5 which show a positive relationship between efficiency and performance can be interpreted as supportive evidence for the ES hypothesis.

Table 6: Determinants of market structure (concentration and market share) for all GCC banks (4th approach); t statistics in parenthesis

Variable	CR3 Bank FE	CR3 Country FE	MS Bank FE	MS Country FE
Intercept	2.9478*** (16.05)	3.027*** (15.34)	.5528*** (2.92)	.2256 (1.19)
TEFFIC	-.0133 (-1.38)	-.0079 (-0.85)	.0077 (0.77)	.0847*** (3.67)
Ln(GDPPC)	-.0215** (-2.04)	-.0621*** (-6.43)	-.0403*** (-3.97)	-.0984*** (-4.96)
DEPSGROW	.0507*** (3.31)	.0573*** (3.50)	.- 	 -
Ln(ASSET)	-.0447** (-10.67)	-.0027** (2.21)	.0215*** (5.31)	.0897*** (27.00)
DDTTDEP	-0.0274** (-2.01)	 -	-	-
TEXPTA	.1656** (2.02	.2929*** (4.09)	-	.3688** (2.08)
Ln(POPBRNCH)	-.1906*** (-14.92)	-.1895*** (-14.03)	-.0228* (-1.74)	.
SPECIALZ	-	.0016 (0.50)	-	-.0504*** (-6.21)
OBSTA	-	-	-.0519*** (-2.97)	-.1463*** (-4.69)
Significance of regression	F(7,422)==56.9***	F(12,468)=1309.1***	F(5,424)=8.9***	F(11,469)=116.2***
H0: FE = 0	F(51,422)=203.1***	F(5,468)=1651.2***	F(51,424)=114.1***	F(5,463)=168.2***
*** Significant at 1%, ** significant at 5% and * significant at 10%.				

However, the results from Table 6 show that controlling for bank specific and macroeconomic effects, the regression coefficients from the CR3 regressions do not

support the ES hypothesis. In the concentration (CR3) regressions, the coefficients are negative but not statistically significant for technical efficiency. In the market share (MS) regressions, the sign on the TEFFIC coefficients are positive but significant for the country fixed effects model only.

However, the positive and significant effect of the cost-asset ratio is suggestive of the QL hypothesis. Higher concentration or market share can induce lax cost control by bank mangers. Although statistically insignificant, a potential explanation for the negative relationship between technical efficiency and concentration is that banks with market power are less diligent in controlling costs. Thus costs and efficiency may be jointly determined. This is also consistent with the Hicks' (1935) QL hypothesis. Indeed Berger and Hannan (1995) provide evidence suggesting that 'quiet life' effects in banking may be substantial. This suggests that the line of causation runs from structure to efficiency, rather than from efficiency to structure, as argued by proponents of the Efficient Structure Hypothesis. While the QL Hypothesis may also apply to scale efficiency, the focus is here is primarily on technical efficiency because it fits more closely with the concepts of lax management and/or expense-preference behaviour that raises costs.

As suggested by Hicks (1935), the reduction in competitive pressure in concentrated markets may result in lessened effort by managers to maximise operating efficiency. Thus, in addition to the traditionally recognised higher prices and reduced output from market power, there may also be higher cost per unit of output in concentrated markets because of slack management.

The basic hypothesis tested is that market power exercised by firms in concentrated markets allows them to avoid minimising costs without necessarily exiting the industry. Berger and Hannan (1998, p. 464) stated: "The reduced pressures to

minimise costs may result in lower costs efficiency for banks in concentrated markets through one or more of several mechanisms shirking by managers, the pursuit of objectives other than profit maximisation, political or other activities to defend or gain market power, or simple incompetence that is obscured by extra profits made available by the exercise of market power".

Table 7: QL Hypothesis, Dependent variable: Technical Efficiency; t values in parenthesis.

Variable	Bank Fixed Effects	Country Fixed Effects	Pooled
C	5.490*** (4.98)	5.224*** (4.67)	2.588*** (5.44)
CR3	-.3139 (-1.30)	-.1648 (-0.74)	-.1285** (-2.43)
Ln(GDPPC)	-.1460*** (-3.02)	-.1584*** (-3.35)	-.0256 (1.44)
Ln(ASSET)	-.0411* (-1.73)	-.0220*** (-3.66)	-.0214*** (-3.92)
DDTTDEP	-.0703 (-1.02)	-.0556* (-1.76)	-.0550* (-1.82)
TEXPTA	1.783*** (4.38)	1.4504*** (4.11)	1.5626*** (4.48)
SPECIALZ	-	.0193 (1.01)	.0196 (1.05)
OBSTA	-.1417* (-1.70)	-.1296** (-2.19)	-.1431** (-2.43)
Ln(POPBRNCH)	-.2947*** (-3.88)	-.2733*** (-3.61	-.1346*** (-3.72)
Sig of regression	F(7,422)=8.61***	F(13,467)=9.87***	F(8,472)=14.43***
H0: FE = 0	F(51,422)=1.95***	F(5,467)=2.27**	-

*** significant at the 1%, ** significant t the 5%, significant at the 10%

Table 7 shows the results of the tests for the QL hypothesis treating the cost-asset ratio as endogenous. The results of table 7 enables us to test the causal relationship between efficiency and market structure variables predicted by the QL variant of the market power hypothesis which proposes a "reverse causation" from market structure to efficiency. A negative and statistically significant relation is indicative of the "quiet life effect". Table 7 presents the bank fixed effects; country fixed effects and pooled estimation. Column 3 shows a significant negative relation between concentration and technical efficiency but the pooled specification is rejected on the conventional level of

significance. Columns 1 and 2 show the results for the bank fixed effects and the country fixed effects. We conclude that there is little evidence that banks in the more concentrated GCC markets exhibit lower technical efficiency for the period 1993-2002. This is in contrast to Berger and Hannan (1997, 1998), who find evidence that concentration (CR3) proxies market power and those banks with more market power are less diligent in controlling costs. Our results do not support the QL hypothesis and conclude that the empirical evidence supports the basic SCP version of the market power hypothesis that associates market concentration with profit performance.

8 Conclusion

The wave of horizontal mergers in banking has often been justified by participants and consultants as being based on cost savings from consolidations of back-office operations and branching networks. The fact that banking mergers in overlapping markets have not generally been found to improve cost efficiency (see Berger and Humphrey (1992)) could conceivably result from the efficiency costs of the higher concentration as measured here. That is, a reduction in market pressure to minimise costs may offset the technological cost economies associated with the consolidations. Consideration of these efficiency costs in banking legislation and regulation may also be important, because so many regulatory issues involve changes in the degree of competition or market contestability. Examples are policies relating to geographic barriers to entry, limits on the issuing of bank charters, and the power of banks and other financial institutions to enter each other's traditional lines of business (Berger and Hannan, 1998). In the context of GCC banking Murinde and Ryan (2003, p.15) give an indication of protection afforded domestic banks:

> Although foreign commercial banks were allowed to operate in Saudi Arabia before 1976, they were forced into partial or full nationalisation after 1976. Hence, in terms of the GATS, the banking market is closed to foreign banks. For example, no new licences have been issued since

1988. Moreover, state development banks are supported by huge subsidies and therefore operate on a non-competitive basis. Saudi banks seem to be the most profitable in the GCC in terms of return on average equity. However, published performance ratios do not take into account the subsidy element.

As a result, an uncompetitive environment in concentrated markets may result in excess profit taking by domestic banks.

This paper has analysed the relationship between market structure and bank performance in the GCC banking industry over the period 1993-2002. It has employed four hypotheses to test the relationship between efficiency, market structure and profitability. The voluminous empirical literature on this topic has typically not included independent measures of efficiency to control for efficiency and distinguish between the relative market power hypothesis and the efficient structure hypothesis. In contrast to previous research, we employ a non-parametric method of estimating efficiency rather than a parametric estimate. Consistent with the empirical findings in the banking literature, we find a positive relationship between firms' profits and market structure. The inclusion of an efficiency measure provides support for the traditional SCP rather than the RMP hypothesis. We also find little support for the quiet life hypothesis of Hicks (1935). In conclusion, GCC bank behaviour was consistent with the tradition SCP hypothesis where market structure helps explain performance even in the presence of technical efficiency.

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