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There has been growth in globalization as a result of increased liberalization. This has also resulted in an increase in the role of financial institutions, such as banks. It is the purpose of this study to test Classen's (2001) hypothesis that increase foreign bank presence has positive welfare implications and that the functioning of national banking markets are improved as a result. Using financial data for 2003 this paper will examine the influence of foreign bank entry on Latin American domestic markets.

LITERATURE REVIEW

There has been growth in globalization as a result of increased liberalization. This has also resulted in an increase in the role of financial institutions, such as banks. Internationalization of banking has occurred to accommodate this increased trade. Foreign banks have gone abroad either by opening up a subsidiary or via acquisition of domestic banks. These activities have been made possible since trade liberalization has also been accompanied by financial market liberalization.

The influence of foreign bank entry and its potential benefits has been a subject of interest in the literature Claessens, et.al. (2001), Levine (1996) Bonitsis and Rivera-Solis (1995), Rivera-Solis (1997) and Rivera-Solis (1991). In essence, there are two basic hypotheses: 1) The presence of foreign banks through increased competition and their possession of superior skills and technology to provide a better quality of financial services (Levine 1996 & 1997) With regard to the first hypothesis, Claessens et al. (2001) concluded that foreign bank entry had "positive welfare implications" and that the functioning of national banking markets were improved as a result of foreign bank entry. Clarke et al (1999), Claessens and Glaessner (1998), found similar results. This could be called the Efficient Structure Hypothesis. (Smirlock, 1985) 2) It is not the foreign bank's superior efficiency but rather conditions prior to entry that are relevant Kumbhakar et al. (2001), and (Montinola and Moreno 2001. This could be referred to as the Structure-Conduct-Performance hypothesis (SCP).

It is the purpose of this study to test Classen's (2001) hypothesis that increase foreign bank presence has positive welfare implications and that the functioning of national banking markets are improved as a result.

METHODOLOGY

The methodology used in this study follows the methodology employed by Smirlock (1985) in his study concentration and profitability. The empirical model incorporates both market share and concentration, and

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is as follows:

$$n = a + b_1 MS + b_2 CR + b_3 MSCR + Sb_i Z \qquad (1)$$

where ï represents the profit rate, MS is the market share of the bank, CR is the foreign bank's concentration ratio, MSCR is MS multiplied by CR (representing an interaction term), and Z "is a vector of additional control variables that prior studies have found to affect profitability."(Smirlock, 1985, p.73)

According to Smirlock (1985) the above model is very useful in evaluating the two competing hypotheses. If $b_1 > 0$ and $b_2 = 0$, the efficient structure hypothesis is supported. If $b_1 = 0$ and $b_2 > 0$, the profits are not affected by market share but are influenced by market concentration, supporting the SCP hypothesis. If both b_1 and b_2 are greater than zero, then the results could be subject to different interpretations. The supporters of the SCP hypothesis would view the results as showing "that all firms in concentrated markets earn monopoly rents from collusion" (Smirlock, 1985, p.74) and monopoly rents going to the largest firms not the most efficient firms. The supporters of the E-S hypothesis would see the results as evidence "that leading firms are more efficient than their rivals"(Smirlock, 1985, p.74) In order to interpret the findings correctly, Smirlock (1985) introduced MSCR as an additional regressor. If the coefficient for MSCR is positive, then collusion is present. However, if it is less than zero, then collusion is not extant.

DATA

Data was obtained for nineteen Latin American countries from the Latin Banking Guide and Directory 2003 published by Latin Finance. This issue has income and balance sheet data for most of the banks in all nineteen countries. It also includes important financial indicators and ratios.

EMPIRICAL FINDINGS

At the time of this writing, the empirical results were completed for the five Central American countries (Guatemala, El Salvador, Honduras, Costa Rica, and Nicaragua), the South American Countries (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela), and Mexico.

Data for this study were collected on the banking system of each of the countries cited. Panama was not included in this study as the majority of its banks are all foreign owned due to the nature of its liberal policy towards foreign banks.

To test the hypothesis that "there is no relationship between concentration and profitability, but rather between market share and bank profitability" [12] , the following model was constructed:

$$n = a + b_1 MSD + b_2 CR + b_3 MSCR + b_3 ADQCY + b_4 QUALITY + b_6 FR \qquad (2)$$

The variables were:

n= Profitability. Two different measures were used: 1) return on equity (ROE), and return on total assets (ROA). Return on equity has been suggested by Weiss [13] as the measure to use, while others have preferred return on total assets. This study will use both.
MSD: this variable is each bank's total deposits divided by the market's total deposits.
MS: This variable is each bank's total assets divided by the banking system's total assets.
CR: this variable measures the four bank deposit concentration ratio for all banks in the industry.
MSCR: MSCR is MS multiplied by CR (representing an interaction term.
ADQCY: Equity over assets. This variable was included since it measures capital adequacy. It is possible improved capital adequacy has a positive impact upon profitability.
QUALITY: Asset quality measured by overdue loans to gross loans. This variable was included since improved asset quality has an influence bank profits. The expected sign of the coefficient can be positive or negative depending on whether or not the ratio of overdue loans to gross loans decreases or increases. .
FR: Multinational bank. This dummy variable has a value of one if the bank is a subsidiary or a branch of a foreign bank, and zero of it is not. This variable was introduced to measure of foreign bank influence on bank profitability. The expected sign of the coefficient is negative, as increased foreign bank presence is expected to increase competition and decrease industry bank profits.

Regressions were run on individual countries having a sufficiently large banking sector to allow robust results, i.e. Argentina, Brazil, Mexico, and Venezuela. Due to the small size of some of the banking sectors (less than 30 banks) and the cultural and historical ties, regressions were run by geographical region, i.e. Mexico (North America), Central America, and South America. Tables 1 through 12 present the findings of this study.

TABLE 1
Econometric Regression Equation: Argentina ROE

ROE[t] = -1.8513992636519 MSD[t] +1510.8115696526 MSCR[t] -0.076958951684638 ADEQUACY[t] +0.12021871359215 QUALITY[t] -4.8905116514403 FR[t] -69769.474904282 MS[t] +0.2696582460019 cr[t] -1.0754082069298E-11 + e[t]

Variable	Parameter	S.E.	T-STAT H0: parameter = 0
MSD[t]	-1.851399	2.668327	-0.693843
MSCR[t]	1510.81157	5125.379066	0.294771
ADEQUACY[t]	-0.076959	0.061975	-1.241771
QUALITY[t]	0.120219	0.054881	2.190531**
FR[t]	-4.890512	3.605366	-1.356454
MS[t]	-69769.474904	236689.763902	-0.294772
cr[t]	0.269658	0.197777	1.363446
Constant	-0	8.61103	-0

Multiple R	0.485381
R-squared	0.235595
Adjusted R-squared	0.057233
F-TEST	1.320885
Observations	38
Degrees of Freedom	30
Multiple Linear Regression - Residual Statistics	
Standard Error	8.61103
Sum Squared Errors	2224.49505
Log Likelihood	-131.243947
Durbin-Watson	2.047237

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 2
Econometric Regression Equation: Argentina ROA

Multiple Linear Regression - Estimated Regression Equation

ROA[t] = -0.30911107864535 MSD[t] -0.0094413865986214 MSCR[t] +0.037340224116665 ADEQUACY[t] +0.066571246913822 QUALITY[t] -1.0939763701827 FR[t] +1.2015683650123 + e[t]

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value
MSD[t]	-0.309111	0.919075	-0.336329	0.738819
MSCR[t]	-0.009441	0.016469	-0.573283	0.57046
ADEQUACY[t]	0.03734	0.021027	1.775821	0.085274 *
QUALITY[t]	0.066571	0.019146	3.47696	0.001482 ***
FR[t]	-1.093976	1.266605	-0.863707	0.394177
Constant	1.201568	1.009982	1.189693	0.24292

Multiple R	0.593796
R-squared	0.352594
Adjusted R-squared	0.251436
F-TEST	3.485597
Observations	38
Degrees of Freedom	32
Multiple Linear Regression - Residual Statistics	
Standard Error	3.03102
Sum Squared Errors	293.986609
Log Likelihood	-92.792677
Durbin-Watson	2.059168
Von Neumann Ratio	2.114821

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 3
Return on Equity: Brazil

Multiple Linear Regression - Estimated Regression Equation

ROE[t] = +0.012352315405034 mscr[t] -9.3818898815644 F[t] -0.24232888804576 msd[t] +0.050781408295243 quality[t] - 0.20945058915734 adequacy[t] +18.653472670358 + e[t]

Variable	Parameter	S.E.	T-STAT H0: parameter = 0
mscr[t]	0.012352	0.051935	0.23784
F[t]	-9.38189	3.872722	-2.422557 **
msd[t]	-0.242329	2.865973	-0.084554
quality[t]	0.050781	0.137253	0.369983
adequacy[t]	-0.209451	0.085042	-2.462911 **
Constant	18.653473	3.384136	5.512033 0

Multiple R	0.348117
R-squared	0.121186
Adjusted R-squared	0.085462
F-TEST	3.392264
Observations	129
Degrees of Freedom	123
Multiple Linear Regression - Residual Statistics	
Standard Error	21.287389
Sum Squared Errors	55737.808294
Log Likelihood	-574.467872
Durbin-Watson	2.206801

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 4
Econometric Regression Equation: Brazil ROA

Multiple Linear Regression - Estimated Regression Equation

ROA[t] = +0.0027716400575682 mscr[t] -0.85990147781308 F[t] -0.19345075650233 msd[t] +0.037123962215547 quality[t] - 0.047742568747237 adequacy[t] +2.3861326827078 + e[t]

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value
mscr[t]	0.002772	0.017515	0.158244	0.874524
F[t]	-0.859901	1.306059	-0.658394	0.511516
msd[t]	-0.193451	0.966537	-0.200148	0.841695
quality[t]	0.037124	0.046288	0.80202	0.424088
adequacy[t]	-0.047743	0.02868	-1.664663	0.098525 *
Constant	2.386133	1.141286	2.090741	0.03861

Multiple R	0.180437
R-squared	0.032557
F-TEST	0.827868
Observations	129
Degrees of Freedom	123
Multiple Linear Regression - Residual Statistics	
Standard Error	7.179082
Sum Squared Errors	6339.324239
Log Likelihood	-434.252192
Durbin-Watson	2.479818

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 5
Econometric Regression Equation: Mexico ROE Multiple

Linear Regression - Estimated Regression Equation

ROE(%)[t] = -1.6231289773858 fr[t] -0.022743041503457 mscr[t] +0.090320820030729 quality[t] +0.037670332711596 adequacy[t] +1.6573256824251 msd[t] +3.021984594962 + e[t]

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value
fr[t]	-1.623129	2.433224	-0.667069	0.511091
mscr[t]	-0.022743	0.020784	-1.09424	0.284711
quality[t]	0.090321	0.182201	0.49572	0.624601
adequacy[t]	0.03767	0.070957	0.530891	0.600373
msd[t]	1.657326	1.440843	1.150247	0.261375
Constant	3.021985	2.229379	1.355528	0.18787

Multiple Linear Regression - Regression Statistics	
Multiple R	0.329133
R-squared	0.108329
F-TEST	0.58315
Observations	30
Degrees of Freedom	24
Multiple Linear Regression - Residual Statistics	
Standard Error	6.268453
Sum Squared Errors	943.04393
Log Likelihood	-94.286888
Durbin-Watson	2.261331

TABLE 6
Econometric Regression Equation: Mexico ROA

ROA(%)[t] = -0.03895162635887 fr[t] -0.0015733171104558 mscr[t] +0.085950403930817 quality[t] +0.050290670008084 adequacy[t] +0.11145554874401 msd[t] -0.41578067670018 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	1-tail p-value
fr[t]	-0.038952	0.377675	-0.103135	0.918713	
mscr[t]	-0.001573	0.003226	-0.48769	0.630195	
quality[t]	0.08595	0.028281	3.039207	0.005653	***
adequacy[t]	0.050291	0.011014	4.566225	0.000125	***
msd[t]	0.111456	0.223642	0.498367	0.622762	
Constant	-0.415781	0.346035	-1.201557	0.241258	

Multiple Linear Regression - Regression Statistics

Multiple R	0.846497
R-squared	0.716557
Adjusted R-squared	0.657507
F-TEST	12.134629
Observations	30
Degrees of Freedom	24
Multiple Linear Regression - Residual Statistics	
Standard Error	0.972963
Sum Squared Errors	22.719769
Log Likelihood	-38.398727
Durbin-Watson	1.941477

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 7
Econometric Regression Equation Venezuela ROE

ROE(%)[t] = -1.6363658532505 fb[t] -0.076227094943016 mscr[t] +4.5236553542856 ms[t] -0.1483279916532 adequacy[t] -0.17838247076507 quality[t] +21.914437889692 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
fb[t]	-1.636366	5.877949	-0.278391	0.782399	
mscr[t]	-0.076227	0.134788	-0.565534	0.575424	
ms[t]	4.523655	7.640219	0.592085	0.557711	
adequacy[t]	-0.148328	0.073845	-2.00864	0.052571	**
quality[t]	-0.178382	0.119855	-1.488323	0.145883	
Constant	21.914438	2.909495	7.532042	0	

Multiple Linear Regression - Regression Statistics

Multiple R	0.529954
R-squared	0.280851
Adjusted R-squared	0.175094
F-TEST	2.655621
Observations	40
Degrees of Freedom	34
Multiple Linear Regression - Residual Statistics	
Standard Error	9.664245
Sum Squared Errors	3175.519386
Log Likelihood	-144.244482
Durbin-Watson	2.120138

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 8
Eonometric Regression Equation Venezuela ROA

ROA(%)[t] = -0.046864878919551 fb[t] -0.0043036617743585 mscr[t] +0.2422758082146 ms[t] +0.027881541261952 adequacy[t] -0.049413911556652 quality[t] +2.8177118237717 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
fb[t]	-0.046865	1.111505	-0.042163	0.966615	
mscr[t]	-0.004304	0.025488	-0.16885	0.866915	
ms[t]	0.242276	1.444745	0.167694	0.867817	
adequacy[t]	0.027882	0.013964	1.996688	0.053916	**
quality[t]	-0.049414	0.022664	-2.180262	0.036255	**
Constant	2.817712	0.550178	5.121456	1.2E-05	

Multiple Linear Regression - Regression Statistics

Multiple R	0.406043
R-squared	0.164871
Adjusted R-squared	0.042058
F-TEST	1.342454
Observations	40
Degrees of Freedom	34
Multiple Linear Regression - Residual Statistics	
Standard Error	1.827483
Sum Squared Errors	113.549643
Log Likelihood	-77.624755
Durbin-Watson	2.506149

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

TABLE 9
Econometric Regression Equation: Central America ROE

ROE[t] = -1.9085445354637 fb[t] +0.0088460075862965 mscr[t] -0.45557097544923 [t] -0.18222169622886 ms[t] -0.55711294982498 adequacy[t] -0.069405441066807 quality[t] +21.51307694065 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
fb[t]	-1.908545	3.364685	-0.567228	0.572323	
mscr[t]	0.008846	0.008137	1.087167	0.280589	
[t]	-0.455571	0.604572	-0.753543	0.453581	
ms[t]	-0.182222	0.177039	-1.029275	0.306796	
adequacy[t]	-0.557113	0.260108	-2.141856	0.035589	**
quality[t]	-0.069405	0.054345	-1.27712	0.205663	
Constant	21.513077	4.95043	4.345699	4.5E-05	

Multiple Linear Regression - Regression Statistics

Multiple R	0.398666
R-squared	0.158934
Adjusted R-squared	0.088845
F-TEST	2.267612
Observations	79
Degrees of Freedom	72
Multiple Linear Regression - Residual Statistics	
Standard Error	10.121476
Sum Squared Errors	7375.988102
Log Likelihood	-291.289367
Durbin-Watson	2.090254

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

Table 10
Econometric Regression Equation: Central America ROA

ROA[t] = -0.030501484278068 fb[t] +0.00058367971630013 mscr[t] -0.024072165061212 [t] +0.098270346834668 ms[t] -0.070573986716409 adequacy[t] -0.0056619273353024 quality[t] +0.81016233222098 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
fb[t]	-0.030501	0.302599	-0.100798	0.919991	
mscr[t]	0.000584	0.000732	0.797627	0.42771	
[t]	-0.024072	0.054372	-0.442734	0.659285	
ms[t]	0.09827	0.015922	6.172062	0	***
adequacy[t]	-0.070574	0.023393	-3.016949	0.003528	***
quality[t]	-0.005662	0.004887	-1.158454	0.250507	
Constant	0.810162	0.445212	1.819724	0.072958	

Multiple Linear Regression - Regression Statistics

Multiple R	0.623987
R-squared	0.38936
Adjusted R-squared	0.338473
F-TEST	7.651502
Observations	79
Degrees of Freedom	72
Multiple Linear Regression - Residual Statistics	

Standard Error	0.910264
Sum Squared Errors	59.657862
Log Likelihood	-101.003679
Durbin-Watson	2.387851

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

Table 11
Econometric Regression Equation: Latin America ROE

ROE[t] = -8.2346542241138 FR[t] -0.14607699147828 MSD[t] +1.0346450134483E-05 MSCR[t] -0.16177006324311 ADEQUACY[t] +0.037721991091462 QUALITY[t] +17.765463959592 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
FR[t]	-8.234654	1.797618	-4.580869	7E-06	***
MSD[t]	-0.146077	0.391384	-0.373232	0.709232	
MSCR[t]	1E-05	0.006114	0.001692	0.998651	
ADEQUACY[t]	-0.16177	0.040862	-3.958919	9.4E-05	***
QUALITY[t]	0.037722	0.057777	0.652891	0.514314	
Constant	17.765464	1.582222	11.228173	0	

Multiple Linear Regression - Regression Statistics

Multiple R	0.335076
R-squared	0.112276
Adjusted R-squared	0.097865
F-TEST	7.790928
Observations	314
Degrees of Freedom	308
Multiple Linear Regression - Residual Statistics	
Standard Error	15.425317
Sum Squared Errors	73285.649278
Log Likelihood	-1301.624854
Durbin-Watson	2.093857

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

Table 12
Econometric Regression Equation Latin America ROA

ROA[t] = -0.024519500779628 MSD[t] -0.00022515333279731 MSCR[t] +0.00018289763846875 ADEQUACY[t] +0.041511747689393 QUALITY[t] -1.1979077497465 FR[t] +1.8587540635818 + e[t]

Multiple Linear Regression - Ordinary Least Squares

Variable	Parameter	S.E.	T-STAT H0: parameter = 0	2-tail p-value	
MSD[t]	-0.02452	0.126266	-0.194189	0.846156	
MSCR[t]	-0.000225	0.001973	-0.11414	0.909201	
ADEQUACY[t]	0.000183	0.013183	0.013874	0.988939	
QUALITY[t]	0.041512	0.01864	2.227068	0.026665	**
FR[t]	-1.197908	0.579937	-2.065582	0.039704	**
Constant	1.858754	0.510447	3.641423	0.000318	

Multiple Linear Regression - Regression Statistics

Multiple R	0.182288
R-squared	0.033229
Adjusted R-squared	0.017535

F-TEST	2.11725
Observations	314
Degrees of Freedom	308
Multiple Linear Regression - Residual Statistics	
Standard Error	4.976425
Sum Squared Errors	7627.560003
Log Likelihood	-946.397156
Durbin-Watson	2.328666

* significant at the 10 percent level
** significant at the 5 percent level
*** significant at the 1 percent level

Tables 1 through 12 for equations ROE and ROA provide some interesting results. The sign for the variable MSCR is positive in about half of the cases, but in no case is it statistically significant. It appears that once market share is taken into consideration; market concentration continues to be statistically insignificant. FR for Mexico and El Salvador had the expected sign since increased competition affects profit margins On the other hand, FR was statistically significant for ROE for Argentina, Brazil, and Latin America. The signs of the coefficients were negative indicating that foreign bank presence had a negative impact on return on equity. In all other instances FR was statistically insignificant for both ROE and ROA. Adequacy was statistically significant for most of the equations for ROE and ROA. Quality was statistically significant for ROA for Argentina, Mexico, Venezuela, and Latin America.

SUMMARY AND CONCLUSION

These findings do not appear to support the S-C-P hypothesis. Once market share was taken into account, concentration continued to be statistically insignificant, but MSD was also statistically insignificant. It also appears that capital adequacy and asset quality in play an important influence on both ROE and ROA. As a result, the E-S hypothesis does appear to be supported. These findings tend to support Smirlock's (1985) contention that concentration in banking markets do not lead to monopoly profits, and that the relationship between concentration and profitability as indicated in previous studies is spurious. Furthermore, the presence of concentration is a result of the "superior efficiency of the leading firms" rather than a result of collusion. Furthermore, the empirical results do not appear to support Classen's (2001) hypothesis that an increase foreign bank presence has positive welfare implications and that the functioning of national banking markets are improved as a result.

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