DETERMINANTS OF EMERGING MARKETS' COMMERCIAL BANK STOCK RETURNS

Eric Girard, Siena College
James Nolan, Siena College
Tony Pondillo, Siena College

ABSTRACT

Although banks are central to the economic development and growth of emerging markets (Benston, 2004), most studies have not investigated the determinants of stock returns of this sector in these countries. This study, contributes to the literature in finance by investigating and identifying factors that investors should be concerned about while deciding about their investments in commercial banks in emerging markets. Our results indicate that apart from fundamental risk factors like size and price to book, duration gap, bank concentration, corruption, debt servicing socio-economic conditions, and per-capita GDP also influence returns of commercial banks in emerging markets.

JEL: F3; G1; N2

KEYWORDS: multifactor models; commercial banks; emerging markets

INTRODUCTION

Equity risk premiums are central components of every risk and return model in finance and are fundamental and critical components in portfolio management. Although the understanding of the return generating process of individual stock is more established for developed markets, with several seminal papers (Fama and French, 1992), the understanding of the risk components that determine individual stock risk premiums less developed emerging markets. While Girard and Sinha (2006) evaluated risk return relationship for individual stocks in frontier emerging markets, this paper contributes to the literature in finance by investigating and identify the determinants of commercial banks stocks in forty-two emerging markets.

The stock performance of commercial banks in emerging markets is subject to two major issues. (a) The importance of banks to the financial system of the economy, and typical risks associated with emerging markets. For instance, Benston (2004) states that banks play a number of different roles in an economy: They provide products and services valued by both consumers and business; they play a vital role in development and growth of economies, as well as conduct of monetary policy. Benston (2004) also points out that to provide stability and to inspire confidence in the banking system, they tend to be highly regulated. As such, banks provide investors investment opportunities in a relative benign domestic environment. (b) Investment opportunities in emerging markets are, however, subject to a lot of risks, some of which have been well documented (Harvey 1995a, 1995b). Thus, from the perspective of investors, who consider investing in the commercial banking sector of emerging market, it is important to identify the risk factors that may influence returns, and this paper attempts to do just that.

Our findings indicate that firm fundamentals are just as important determinants of emerging market commercial bank stock returns, as country risk factors are, while global risk are basically irrelevant in influencing returns. Our findings also show that large and growth bank stock outperform small and value bank stocks, a finding which is contrary to what is traditionally observed in returns of stocks developed markets. Returns are also highly susceptible to socio-economic conditions, per capital GDP and level of foreign debt. Our results also indicate that duration gap influence stock performance, with low duration

gap banks outperforming high duration gap banks. The banking environment also influences stock performance, with banks in low bank concentration outperforming banks operating in high concentration environment.

The remainder of the paper is organized as follows. Section 2 briefly discusses the relevant literature. Data are described in Section 3. Section 4 provides analysis and interpretations of the empirical findings and Section 5 concludes the paper.

LITERATURE REVIEW

When investing abroad, many different approaches have been proposed for pricing local assets, whether financial or real. Harvey (1991) shows that a world CAPM works in developed markets if beta is allowed to change through time. Although the model entails strong assumptions of perfect market integration, it fails in emerging markets and is unreliable in smaller, less liquid developed markets. Erb, Harvey and Viskanta (1995) show country betas of less than one in many highly volatile emerging markets, and these country betas and returns are often inversely related.

Bekaert and Harvey (1995) suggest that (1) a time varying world beta reflects how investors expect to be rewarded for a change in risk in the world market and (2) CAPM needs to be modified to account for partial or nascent financial integration. For instance, if a world CAPM holds in integrated markets and a local CAPM holds in segmented markets, this information can be nested in a conditional beta CAPM. That is, the degree of integration with the world financial markets will determine what risks explain risk premiums in capital markets and a country asset pricing model should use a multifactor framework with local and common risk attributes.

A related approach to price risk around the world has been suggested by Erb, Harvey and Viskanta (1995) who show that a country risk rating model can provide further explanations for the return generating process in world markets. The authors explore composite risks such as political risk rating, economic risk rating, financial risk rating and country credit ratings from the International Country Risk Guide (ICRG), the Institutional Investor's Country Credit Rating, Euromoney's Country Credit Rating, Moody's, and S&P. They find that the ICRG composite is highly correlated with S&P's sovereign rating (more than any other rating measures). They conclude that ratings predict inflation and are correlated with wealth. They also observe that a lower rating (higher risk) is associated with higher expected returns. In another article, Erb, Harvey and Viskanta (1996b) investigate how ICRG composite risk scores (political, financial and economic risk) explain the cross-sections of expected returns on IFC country indexes. They find that economic and financial risks include the most information about expected returns in developed markets, while political risk has some marginal explanatory power in emerging equity markets. They also investigate the relationship between the world beta, the index volatility, one fundamental attribute at the country level (index aggregate book-to-price value) and composite risk scores. Their findings suggest that composite risk scores are highly correlated with country fundamentals. Similar conclusions have been reached by other authors. Oijen and Perotti (2001) indicate that changes in political risk are a priced factor and tend to have a strong effect on local stock market development and excess returns in emerging economies. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) find that countries with lower quality of legal rules and law enforcement have smaller and narrower capital markets. Demirgüç-Kunt and Maksimovic (1998) show that firms traded in countries with high ratings for the effectiveness of their legal systems are able to grow faster by relying more on external finance.

At the stock level, empirical research has shown that some fundamental firm-specific factors (such as size or book value to market value of equity) are more suited to describe the cross-sections of stock returns. Many papers have shown that high beta, small, value and high momentum firms have higher cross-sectional risk premiums in developed markets (Chan, Hamao and Lakonishok, 1991; Aggarwal, Hiraki,

and Rao, 1992; Fama and French, 1992 and 1996). As for the risks explaining the return-generating processes of stocks traded in emerging capital markets, findings are dichotomous. On one hand, Fama and French (1998), Patel (1998) and Rouwenhorst (1999) argue that risk premiums in emerging markets exhibit the same characteristics as in developed markets—i.e., significant momentum, small stocks outperform large stocks and value stocks outperform growth stocks. On the other hand, Claessens, Dasgupta, and Glen (1995, 1998), Lyn and Zychowicz (2004), Ramcharran (2004) and Girard and Omran (forthcoming) describe mixed results for the relationship between fundamental attributes and returns in emerging markets. In some cases, the authors find positive relationships between size and returns as well as a positive relationship between price to book value and returns, which is contrary to the conventional belief that small and value firms are riskier. Several arguments may account for these findings. Daniel and Titman (1997) argue that firms' characteristics explain the return premium—i.e., a value premium will exist in emerging markets if value stocks are less liquid than growth stocks. Harvey and Roper's (1999) argument is that the market growth has led to the mobilization of new capital and an increase in the number of firms rather than an increase in value. Furthermore, due to either the restrictions to debt financing or the immature debt markets, small firms have a capital structure made up principally of equity, while larger firms with their international exposure can more easily access leverage. For instance, Bolbol and Omran (2005) and Girard and Omran (2007) indicate that only large firms have higher leverage ratios in Arab markets. Claessens, Dasgupta, and Glen (1998) also suggest that market microstructure causes these substantial differences and that regulatory and tax regimes force investors to behave differently in nascent markets. The authors also hypothesize that the positive relationships between returns and size and market-to-book value can be attributed to the segmentation of financial markets.

In a recent article, Girard and Omran (2007) investigate how firm fundamentals and country risk ratings provide an explanation for the return-generating process of individual stocks traded in an Arab block comprised of 4 emerging markets and 1 frontier market. Their study shows that a constant beta is not a good proxy for risk in thinly traded emerging markets, and firm fundamentals and country risk rating factors are important in explaining the cross-sections of stock returns. Furthermore, they suggest that a pricing model including both firm's fundamentals and country risk rating factors has significantly better explanatory power than either CAPM, or a model which only includes a firms' fundamentals, or a model based only on country composite risk ratings. The authors conclude that financial transparency and political instability are still powerful obstacles to investments in these nascent emerging markets.

DATA

As of June 2004, the SP/IFC Emerging Markets DataBase (EMDB) reports data for 33 emerging stock markets and 20 frontier markets. IFC provides monthly closing prices dating as far back as 1975 and stock fundamentals from the 1980s onward. We retrieve all firms traded in the 53 emerging markets from at least 1986:01 until 2004:06. Monthly return, size, price-to-book ratio, book and common equity value, exchange rates, volume and days traded series are downloaded for each firm. We use the US dollar as the standard to make the average returns comparable across countries. Stocks are included in the sample as they become available and "dead stocks" are also included for the period during which they were traded. Not all firms are retained in the final sample though. The deciding criterion for retention is that stock return series must have at least 2 years of data. Data imperfections such as missing values and recording errors are handled by dropping the firm for the particular month of data imperfection but retaining it when it is available.

Table 1 shows the number of 'usable' stocks included in EMDB from 1986 to 2004, the number of deletions. Results are reported for the overall period, and three sub-periods: (i) 1986:01 to 1992:12, (ii) 1993:01 to 1998:12) and (iii) 1999:01 to 2004:06). The final sample consists of 3,491 firms including 343 commercial banks traded in 33 emerging markets and 9 frontier markets. As of June 2004, 1,869

emerging market stocks disappeared; the resulting survivorship ratio is 64 percent for commercial banks and 45 percent for the other stocks. Throughout the sample, we observe that commercial banks are increasingly more resilient as compared to other firms—i.e., their survivorship ratio is 49 percent versus 31 percent for all the other stocks from 1986 to 1993; 61 percent versus 41 percent from 1993 to 1998; and 75 percent Versus 57 percent from 1999 to 2004. In addition, the number of commercial banks has increased from the first period to the last, at a much faster rate than other stocks.

The bottom of Table 1 shows statistics for the number of observations, the median size, the median monthly volume and days traded, the median investable weight, and the median monthly return and standard deviation of monthly returns from 1986 to 2004. Our final sample consists of 252,314 monthly observations for non-banks and 28,602 for banks. Through out the period of study, commercial banks reveal idiosyncratic characteristics: They are always larger during each period, have recently become increasingly more liquid as compared to other stocks (this is true from 1999 to 2004). In addition, banks are usually traded more often (18.89 days versus 18.48 days) and are less accessible to foreign investors (the investable weight is 19 percent for banks and 25 percent for other stocks). Finally, we find commercial banks to have returned more than other stocks (-0.09 percent versus –1.21 percent per month) and to be somewhat less risky (24.74 percent versus 26.60 percent per month).

As far as for the fundamental risks of the stock selected, we report the median for local beta, world beta, price-to-book ratio, and size (in US dollars). As in Rouwenhorst (1999), local betas are computed by regressing each stock dollar's returns on a country index to which the firm belongs. This "size-unbiased" equally weighted country index is comprised of dollar-denominated stock returns averaged each month. Similarly, world betas are computed by regressing each stock dollar's returns on the MSCI World. One lag of the equally weighted country (or world) index is included to allow for a delayed response due to non-synchronous trading. Betas are computed with a minimum of two years and a maximum of five years of historical monthly returns.

We first observe that commercial banks have typically larger market capitalization and much lower price-to-book ratio than other stocks. In addition, although bank stocks (overall beta of 1.053) and other stocks (overall beta of 1.074) have on average very national similar betas, global betas are much lower. Considering that the monthly standard deviation of the MSCI World Index is at most half the figures reported for banks and other stocks in Table 1, it is indicating of the poor correlation of emerging markets with the US-dominated world index. Interestingly, bank stocks' median 'global' beta is getting smaller over the sample as compared to other stocks, which indicates that commercial bank stocks are increasingly more segmented from the rest of the world.

Summarizing, emerging markets commercial banks stocks are large value stocks as compared to other stocks. While they appear to have similar local systematic risk than other stocks, they seem more regulated and then more segmented from global factors. In fact, even if commercial bank are less accessible to foreign investors than other stock, they are more liquid and more often traded. Overall, commercial banks are less risky than other emerging market stocks and have returns better for the overall period of study.

Table 1: Descriptive Statistics

	Overall Period		1986-1992		1993-1998		1999-2004	
	Banks	Non-Banks	Banks	Non-Banks	Banks	Non-Banks	Banks	Non-Banks
Argentina	6	48	1	29	2	41	6	33
Bahrain	5	11					5	11
Bangladesh	9	72			1	49	9	71
Botswana	3	7			2	5	3	7
Brazil	14	135	6	63	13	114	11	104
Chile	9	61	3	35	4	52	8	50
China	5	305			2	233	5	283
Colombia	9	35	3	18	6	30	8	23
Cote d'Ivoire	2	19			1	8	2	19
Croatia	5	6			2	6	5	6
Czech Rep	5	72			5	70	4	35
Egypt	9	83			9	62	8	79
Estonia	1	14			1	9	1	14
Ghana	4	9			2	6	4	9
Hungary	1	26		12	1	23	1	17
India	14	188		68	11	157	14	149
Indonesia	19	130	11	79	7	66	8	69
Israel	6	64			6	46	6	61
Jamaica	4	23			4	20	4	18
Jordan	13	67	7	22	9	52	8	44
Kenya	9	16			6	11	9	16
Korea	23	264	13	70	19	186	17	230
Lebanon	3	3					3	3
Malaysia	16	219	7	68	9	160	12	168
Mexico	18	140	6	68	11	105	9	76
Morocco	4	19			3	15	4	19
Nigeria	12	38	3	22	6	34	12	25
Oman	7	39					7	39
Pakistan	7	128	2	73	6	88	7	58
Peru	4	59	1	17	4	45	4	45
Philippines	12	88	3	31	8	71	10	66
Poland	13	39			10	31	12	33
Russia	1	54			1	41	1	44
Saudi Arabia	10	23			9	12	10	23
Slovakia	3	20			2	18	3	19
South Africa	4	117	3	49	3	81	4	98
Sri Lanka	7	61			6	56	7	50
Taiwan	14	155	9	68	12	112	14	124
Thailand	15	133	9	44	10	95	11	80
Turkey	7	84	4	21	5	66	6	72
Venezuela	8	22	5	12	6	19	7	15
Zimbabwe	3	52		18	1	31	3	41
Total Count	**343**	**3148**	**96**	**887**	**225**	**2326**	**292**	**2446**
Dead Stocks	**125**	**1744**	**49**	**609**	**88**	**1382**	**74**	**1042**
Survivorship Ratio	**64%**	**45%**	**49%**	**31%**	**61%**	**41%**	**75%**	**57%**
# of Monthly Obs.	28,602	252,314	4,582	42,162	10,082	99,555	13,938	110,597
Market Cap. (x 10^6)	12.674	11.827	11.791	10.877	12.865	11.950	12.830	12.082
Price-to-Book value	2.341	3.928	3.395	2.643	2.273	3.142	2.039	5.130
Local Beta	1.053	1.074	1.068	1.022	1.043	1.062	1.055	1.105
World Beta	0.600	0.671	0.639	0.582	0.625	0.691	0.568	0.688
Volume (x 10^3)	1662.5	464.8	56.9585	296.074	169.829	194.163	3276.075	773.238
Days traded	18.891	18.478	18.47	17.211	19.43	18.665	18.641	18.796
Investable Weight	0.19	0.25	0.07	0.15	0.23	0.27	0.20	0.27
Monthly Local Return	-0.09%	-0.43%	1.09%	1.77%	-1.72%	-1.83%	0.71%	0.00%
Std. Dev.	24.74%	26.60%	20.11%	26.82%	31.75%	32.80%	19.78%	19.18%
Monthly U.S. $ Return	-0.84%	-1.21%	-0.98%	-0.80%	-2.30%	-2.22%	0.25%	-0.46%
Std. Dev.	20.76%	22.14%	19.96%	26.53%	21.25%	22.21%	20.59%	20.12%

This table gives, for each country, the number of stocks (commercial banks and other stocks) available stocks after deleting entries with missing information or stocks with less than two years of data In this table, from 1986:01 to 2004:06 for 42 markets. The last part of the table provides count summaries and survivorship ratios. "# of monthly observations" is the number of monthly observations. "Investable weight" is the percentage of foreign ownership authorized for each stock. "Market cap." is the median US Dollar market capitalization. "PB" is the median price-to-book value. "Local Beta" and "world beta" are median beta for each group.

These results are true for a portfolio comprised of all commercial banks traded in emerging markets. However, we only depict one aspect of the whole story about commercial bank stocks' risks. Indeed, commercial bank stocks are likely affected by country specific characteristics and must load on other factors related to segmentation, capital control or more generally to a country's political, economic and financial risks.

Based on Erb, Harvey and Viskanta (1995, 1996a, 1996b and 1998) who conclude after an extensive survey that the country risk ratings best explains emerging market index returns, we use the International Country Risk Guide risk scores as a proxy for country risk. ICRG assesses a country risk based on three dimensions – political, economic and financial. Each dimension is measured using several factors. The political risk dimension is measured using twelve factors and the economics and financial risk dimensions are measured using five factors each. The ICRG scale for each factor is calibrated such that a high score indicates low risk and a low score indicates high risk. Table 2 defines each risk factor and provides a summary of each country's annual risk ratings. As Girard and Omran (2006) suggest, risk factors should be differentially weighted to allow for greater weight for those factors that have more bearing on business. Since this is not the case with the ICRG composite risk rating, we use the twenty-two primary ICRG risk factors (twelve political, and five each economic and financial) in preference to the ICRG composite measures. Most likely, some risk variables are highly correlated with each other, which make their simultaneous use redundant. To eliminate this problem of endogeneity, we use a Principal Component Analysis (PCA) to create a grouping or factor that captures the essence of these variables.

We first run the Kaiser-Meyer-Olkin test (KMO) and Barlett test of sphericity; both are high for the sample and significant at the 1% level, indicating that the factor analysis is an appropriate technique for our data. Table 2 presents the results from the factor analysis. The number of common factors is found using a VARIMAX rotation. We find six newly extracted factors that are numbered from 1 to 6. The eigenvalues represent the proportion of total variance in all the variables that is accounted for by that factor. To decide the number of factors to retain, we use the Kaiser criterion which consists in dropping the eigenvalues less than one—i.e., unless a factor extracts at least as much as the equivalent of one original variable, we drop it. The "% of variance" represents values expressed as a percentage of the total. For instance, factor 1 accounts for 20.452 percent of the variance, factor 2 for 11.926 percent, and so on. The "Cumulated %" contains the cumulative variance extracted and shows that the six dominant factors whose eigenvalues are more than one, sum up to 66.988% of the total variance. These factors can be considered as the six major risk factors that characterize the 42 emerging market countries.

We also show the loading of each risk score variable within each factor. Interpretation and naming of the factors are not straightforward as they depend on the particular combination of observed variables that correlate highly with each factor. In order to minimize the subjective nature of the PCA, we carefully follow the procedure described in Tabachnick and Fidell (1996) and Seiler (2004). Furthermore, we only consider individual risk score loadings with "good" correlations. Comrey and Lee (1992) define a "good" correlation for a loading greater than 0.5 (or smaller than -0.5) — i.e., 25 percent overlapping variance.

Each factor's composite score is determined by taking into account the risk scores that load highly on it. Accordingly, following Seiler (2004), each factor's score is computed using a summated scale methodology where selected loading within each factor is added to determine a factor score. Since risk scores are not on a standardized scale, we have to ensure that each risk score selected for the composition of a risk factor is standardized so that equal importance is given to all risk scores in the summation process. The factor is finally computed using the logarithm of the sum.

Table 2 shows that the factors form coherent groups of associated variables that describe risk in the 42 emerging markets. Each of the six constructs is briefly reviewed below. The first factor's contributing variables are a mix of political (government stability and investment profile), financial (exchange rate

stability and international liquidity), and economic (budget balance, current account to GDP, growth in real GDP, and inflation) risk ratings. This factor accounts for 20.452 percent of the variance. The factor loadings are positive and interpreted according to rules of the normal ICRG scale — i.e., a high value indicates a low risk and a low value indicates a high risk.

The second factor takes into account issues of law and order, ethnic and religious tensions as well as internal and external conflicts. This factor accounts for 11.926% of the variance. The factor loading is positive and a high value indicates a low risk and a low value indicates a high risk. The third factor grouping consists of variables related to social and economic conditions and real growth in GDP to population. This factor accounts for 10.376% of the variance. Factor loadings are positive and a high (low) value indicates a low (high) risk as on the ICRG scale. The fourth factor consists of four political risk ratings: bureaucracy quality, corruption, democratic accountability, and military involvement in politics. This factor accounts for 11.633% of the variance. The factor loadings are also positive, so a high value indicates a low risk and a low value indicates a high risk on the ICRG rating scale. The fifth factor is dominated by current account to net export, which is a rating for international trade and openness. This factor accounts for 6.301% of the variance. A high (low) score relates to a low (high) risk. The sixth factor addresses debt servicing. This factor accounts for 6.301% of the variance. It has a positive factor loading and a high (low) value indicates a low (high) risk.

Table 2: Country Risk Ratings Data Reduction

Factor		1	2	3	4	5	6
Eigenvalue		4.499	2.624	2.559	2.283	1.386	1.386
% of Variance		20.452	11.926	11.633	10.376	6.301	6.301
Cumulative %		20.452	32.378	44.01	54.387	60.688	66.988
Factor Loading	**Risk Category**						
GDP Growth	Economic	**0.860**	0.009	-0.095	0.079	0.002	0.065
Current Accounts as a % of GDP	Economic	**0.780**	0.059	-0.056	-0.090	0.468	-0.091
Investment Profile	Political	**0.753**	0.098	0.241	0.281	0.069	0.009
Exchange Rate Stability	Financial	**0.729**	0.124	0.007	0.073	-0.028	0.263
Government Stability	Political	**0.710**	0.280	-0.193	-0.127	0.019	0.172
Budget Balance	Economic	**0.684**	0.108	0.342	0.013	0.279	-0.151
Inflation	Economic	**0.642**	-0.109	0.205	0.019	-0.031	0.406
International Liquidity	Financial	**0.560**	0.089	0.206	-0.008	-0.284	0.072
Internal Conflicts	Political	0.180	**0.737**	0.165	0.249	-0.001	0.264
Ethnic Tensions	Political	0.156	**0.679**	0.233	-0.053	-0.245	-0.198
External Conflicts	Political	0.001	**0.662**	-0.100	0.116	0.241	0.026
Religious Tensions	Political	0.070	**0.600**	0.268	0.217	0.053	-0.417
Law and Order	Political	0.218	**0.530**	0.229	0.252	-0.128	0.439
GDP per Inhabitant	Economic	-0.072	0.078	**0.829**	0.260	-0.057	-0.070
Socio-Economic Conditions	Political	0.105	0.083	**0.808**	0.138	0.011	0.144
Foreign Debt	Economic	0.207	0.246	**0.673**	0.012	0.117	0.250
Democratic Accountability	Political	0.077	0.042	-0.044	**0.816**	-0.092	-0.128
Bureaucracy Quality	Political	0.068	0.046	0.319	**0.690**	-0.047	0.089
Military in the Politics	Political	0.161	0.449	0.083	**0.630**	0.125	0.068
Corruption	Political	-0.205	0.345	0.270	**0.594**	0.089	0.101
Current Accounts as a % of Goods and Services	Financial	0.093	0.051	0.070	-0.021	**0.889**	0.092
Debt Servicing	Financial	0.318	0.018	0.231	0.005	0.152	**0.686**

This table shows the factor analysis and the component matrix. The extraction method is the PCA. The rotation method is Varimax with Kaiser Normalization. Rotation converged in 7 iterations. Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.831 and Bartlett's Test of Sphericity Approx. Chi-Square is 63,487.2 (df=231, significant at 99.99 percentile). I select individual risk scores with a cut-off at 0.5. The selected scores are further averaged to determine each factor's composite score.

ANALYSIS

We investigate whether stock risk premiums load into fundamental (local beta, price-to-book, and size), global (global beta) and the 6 country risk factors generated by the factor analysis. Thus, we examine the following multifactor representation:

$$wRi = w\alpha_0 + w\alpha_1 Beta(l) + w\alpha_2 Beta(w) + w\alpha_3 Ln(PB) + w\alpha_4 Ln(Size) + w\sum_{i=1}^{6} \lambda_i f_i + \varepsilon \quad (1)$$

where Ri is a vector of monthly risk premiums, f_i is a vector of 6 common risk score factors for each premium, and α_i and λ_i are vectors of risk premiums associated with each risk. W is a weight ($w = 1/\sqrt{PRES\_SQ}$) that can be used to modify the influence of large errors on the estimation of the 'best' fit values of a regression constant and regression coefficients. This weighted least-squares regressions (WLS regressions) is estimated through the origin (with a regression constant equal to 0) and corrects the problem of heteroskedastic errors—i.e., values of α_i and λ_i are estimated by minimizing $\sum w_i (R_i - \hat{R}_i)^2$. This process has the effect of minimizing the influence of a case with a large error and maximizing the influence of a case with a small error on the estimation of the coefficients. W is estimated by residualizing the independent variables.

We use equation 1 to identify the significant factors that explain risk premiums. Results are reported in table 3 for the overall period, and three sub-periods: (i) 1986:01 to 1992:12, (ii) 1993:01 to 1998:12) and (iii) 1999:01 to 2004:06.

R-squared for each equation indicates that about 7 to 15 percent of the variations in fundamental, country and global risk factors explain the variation in stock risk premiums. The variance inflation factors (not reported for sake of brevity) for each independent variable are extremely low for each period (less than 1.5, that is, more than 67 percent of the variance of each independent variable is not shared by other independent variables) indicating that the our regressions are not likely affected by multicollinearity. At the bottom of the table, the sum of the absolute value of the standardized coefficients is reported; the significance of the sum is determined by a Wald test.

The first interesting finding is that firms' fundamentals are overall as important as country risk factors in explaining stock risk premiums for commercial banks, and global factors are somewhat irrelevant– e.g., a 1 standard deviation shock on fundamentals leads to a 0.105 standard deviation shock on Ri, a 1 standard deviation shock on country risk factors leads to a 0.100 standard deviation shock on Ri, and a 1 standard deviation shock on world beta leads to a 0.009 standard deviation shock on Ri. However, this has not always been true through out the sample. Indeed, from 1986 to 1998, country risk factors have greater bearing on commercial banks stocks than fundamentals– e.g., a 1 standard deviation shock on fundamentals leads to a 0.148 (0.149) standard deviation shock on Ri from 1986 to 1992 (1993 to 1998), and a 1 standard deviation shock on country risk factors leads to a 0.484 (0.204) standard deviation shock on Ri from 1986 to 1992 (1993 to 1998). For the most recent period (1999-2004), fundamentals seem to have somewhat a greater effect on bank stock risk premiums– e.g., a 1 standard deviation shock on fundamentals leads to a 0.101 standard deviation shock on Ri, and a 1 standard deviation shock on country risk factors leads to a 0.060 standard deviation shock on Ri. As far as global beta, it has its higher impact on commercial banks stock risk premiums from 1993 to 1998, the period of the three major financial crisis (possibly, increased integration due to contagion), and it remains insignificant thereafter. These patterns are somewhat similar to other stocks traded in emerging capital markets.

Table 3: Comparison of Banks and Non-Banks Risk Determinants

	Overall Period		1986-1992		1993-1998		1999-2004	
	Banks	Non-Banks	Banks	Non-Banks	Banks	Non-Banks	Banks	Non-Banks
(Constant)	-0.018	-0.08***	0.608***	0.053	0.151**	0.05**	-0.094	-0.048**
Std. Error	0.033	0.011	0.124	0.036	0.069	0.022	0.068	0.023
BetaUS	0.006**	0.003***	0.003	0.003	-0.003	-0.001	0.009*	0.007***
Std. Error	0.003	0.001	0.006	0.003	0.006	0.002	0.005	0.001
SCOEF	0.014	0.006	0.009	0.000	-0.007	-0.003	0.016	0.017
BetaW	0.002	-0.003***	-0.002	0.002	0.007***	-0.002***	-0.004	-0.005***
Std. Error	0.002	0.001	0.004	0.002	0.002	0.001	0.003	0.001
SCOEF	0.009	-0.012	-0.008	0.005	0.039	-0.011	-0.014	-0.022
lnPB	0.017***	0.015***	0.022***	0.021***	0.028***	0.022***	0.012***	0.009***
Std. Error	0.002	0.002	0.004	0.002	0.003	0.001	0.003	0.001
SCOEF	0.072	0.071	0.115	0.074	0.116	0.106	0.049	0.05
Lnsize US	0.002**	0.003***	-0.002	0.001	0.003*	0.002***	0.004***	0.005***
Std. Error	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001
SCOEF	0.019	0.03	-0.024	0.01	0.026	0.021	0.036	0.046
f1	0.011	-0.008***	-0.064*	-0.076***	-0.087***	-0.082***	0.006	-0.025***
Std. Error	0.008	0.003	0.036	0.014	0.014	0.005	0.021	0.007
SCOEF	0.01	-0.007	-0.066	-0.066	-0.069	-0.064	0.003	-0.016
f2	-0.011	-0.013***	-0.089***	-0.03***	0.01	0.029***	0.010	0.009**
Std. Error	0.008	0.002	0.025	0.007	0.015	0.005	0.012	0.004
SCOEF	-0.011	-0.013	-0.091	-0.034	0.008	0.021	0.009	0.009
f3	-0.018***	-0.002	0.084***	0.069***	-0.03**	-0.006	-0.014**	-0.002
Std. Error	0.005	0.002	0.024	0.01	0.012	0.004	0.007	0.003
SCOEF	-0.029	-0.002	0.131	0.078	-0.037	-0.006	-0.025	-0.003
f4	0.016***	0.003**	0.053***	0.003	0.029***	0.01***	0.009	0.005***
Std. Error	0.004	0.001	0.013	0.005	0.009	0.003	0.006	0.002
SCOEF	0.026	0.005	0.09	0.003	0.046	0.014	0.014	0.009
f5	0.003	0.049***	-0.143***	0.036**	0.073***	0.068***	0.0001	0.023***
Std. Error	0.005	0.004	0.036	0.015	0.02	0.007	0.007	0.005
SCOEF	0.004	0.031	-0.072	0.015	0.044	0.039	0.000	0.018
f6	-0.019***	-0.014***	-0.031*	0.009	-0.043**	-0.028***	-0.007	-0.01***
Std. Error	0.006	0.002	0.016	0.007	0.018	0.006	0.008	0.003
SCOEF	-0.02	-0.014	-0.034	0.008	-0.031	-0.02	-0.009	-0.012
R-squared	0.088	0.093	0.113	0.095	0.152	0.135	0.073	0.081
N	28601	252313	4581	42161	10081	99554	13937	110596
F	22.324***	218.443***	5.959***	38.724***	23.664***	184.235***	7.458***	73.905***
# of Stocks	343	3148	96	887	225	2326	292	2446
Firm $\lvert\alpha 1\rvert + \lvert\alpha 3\rvert + \lvert\alpha 4\rvert$	0.105***	0.107***	0.148***	0.084***	0.149***	0.130***	0.101***	0.113***
Country $\sum\lvert\lambda_i\rvert$	0.100***	0.072***	0.484***	0.204***	0.235***	0.164***	0.060**	0.067***
Global $\lvert\alpha 2\rvert$	0.009	0.012***	0.008	0.005	0.039***	0.011***	0.014	0.022***

$$wRi = w\alpha_0 + w\alpha_1 Beta(l) + w\alpha_2 Beta(w) + w\alpha_3 Ln(PB) + w\alpha_4 Ln(Size) + w\sum_{i=1}^{6} \lambda_i f_i + \varepsilon .$$ *All regressions are estimated using a weighted least-squared technique to correct for heteroskedasticity. Standardized coefficients (SCOEF) are the coefficients obtained after standardizing the variables and they indicate that an increase in 1 standard deviation on one of the factors affects "beta" standard difference in Ri, holding constant the other predictors in the model. In addition, standard errors and t-statistics are calculated using the Newey-West heteroskedasticity and autocorrelation consistent (HAC) covariance matrix to correct for the presence of autocorrelation and heteroskedasticity. ***, ** and * indicate significance at the 1, 5 and 10 percent level, respectively.*

The signs associated with the fundamentals indicate that large stocks outperform small stocks and that growth stocks outperform value stocks. These relationships are opposite to our expectations. Fama and French (1992) in the US and Chan, Hamao and Lakonishok (1991) and Aggarwal, Hiraki, and Rao (1992) in Japan suggest that small value stocks outperform large growth stocks. However, Harvey and Roper (1999) report small positive relationships between size and returns in Asian emerging markets. Claessens, Dasgupta and Glen (1998), Ramcharran (2004), Lyn and Zychowicz (2004) and Girard and Omran (2006) report a positive relationship between returns, and size and market-to-book value in some emerging markets. Several arguments have been put forth to explain these findings. Harvey and Roper (1999) argue that market growth has led to the mobilization of new capital and an increase in the number of firms rather than an increase in value. Furthermore, due to immature debt markets, small firms have a capital structure made up principally of equity, while larger firms with their international exposure can more easily gain access to leverage. For instance, Bolbol and Omran (2005) indicate that only large firms have higher leverage ratios in Arab markets. Claessens, Dasgupta, and Glen (1998) also suggest that the market microstructure causes these substantial differences and that regulatory and tax regimes force investors to behave differently in nascent markets. The authors also hypothesize that the positive relationships between returns and size and market-to-book value can be attributed to the segmentation of financial markets. Finally, Girard and Omran (2006) argue that large firms are more likely affected by legal and regulatory risks — i.e., exchange rate volatility, risk of nationalization (repossession of privatized assets), defaults on government obligations, and revocation of concessions given by previous governments.

There is a significant positive relationship between the local beta and all stock risk premiums for the overall period (especially from 1999 to 2004). The relationship between the global beta and bank stock risk premiums is only significant from 1993 to 1998; it significantly negative for other stocks (overall period and 1993-2004). So, only recently, large 'local' beta stocks tend to outperform small 'local' beta stocks. The relationship between global beta stocks and risk premiums is inconclusive, indicating a high level of segmentation.

The impact of country risk factors is different between bank stocks and other stocks. For instance, bank stocks seem to be particularly sensitive to socio-economic conditions and individual wealth (f3) while other stocks are sensitive to the investment potential of the country (f1), the risk of conflicts (f2), and the risk associated with foreign trade (f5). All stocks are similarly affected by risks associated with corruption (f4) and debt servicing (f6).

In sum, we have identified that size, price-to-book value, individual wealth, corruption and debt servicing are the risks with the greatest bearing on bank stocks. Other stocks are not only affected by size and price to book value but also by the country investment opportunities, the risk of conflict, foreign trade, corruption debt servicing. From this observation alone, a bank stock selection criterion can be based on an expected increase in national income, a decrease in corruption and a more transparent financial system at the country level.

Next, we control for 2 well established measures of bank risk—i.e., bank concentration and duration gap. We retrieve local interest rates proxied by the lending rate, the annual GDP, and bank assets from the IMF databank (exact name?) for most countries. Taiwanese interest rates, GDP for Mexico, Russia, and South Africa are retrieved from Reuters. GDP data are unavailable for India, Lebanon and Taiwan and Bank asset data are unavailable for India and Taiwan. All data on bank assets are in U.S. Dollar (to the exception of Cote d'Ivoire and Zimbabwe which GDP is given in national currency) and all GDP data are in local currency. Using the exchange rate provided by EMDB, all series are converted into U.S. Dollars. We further retrieve from EMDB book value of equity and book value of total assets for each commercial bank used in our sample, these data are in monthly frequency and available for 30 markets as of 1998:01, and 1999:01 for the remaining markets.

Then, bank concentration ratios ($ bank assets to $GDP) are computed for each stock and each month. Stocks traded in India, Lebanon and Taiwan are excluded due to missing information. Duration gaps for each bank and each month are also estimated. For this, we first regress each stock local returns on the difference in lending rate in the country to which the firm belongs. One lag of the interest rate difference is included to allow for a delayed response due to non-synchronous trading. Durations are computed with a minimum of two years and a maximum of five years of historical monthly returns. Duration gaps are then estimated by multiplying the duration by the weight of equity (book value of equity to book value of total assets).

In order to investigate the effect of bank concentration and duration gap on bank stocks risk premiums, we build for each month and each country bank concentration and duration gap-sorted portfolios. For this, we use all bank stocks traded in each market from 1986:01 to 2004:06. At the beginning of each month, stocks with available ranking information are sorted into three portfolios (top 30%, middle 40%, bottom 30%) based on the logarithm of bank concentration and the logarithm of the absolute value of duration gap (explain in a footnote). For each month and each sorting, returns of these stocks are then averaged. In Table 4, we show the average return, standard deviation, duration gap, and the number of stocks making each tier for each grouping. Panel A shows the duration-gap sorted portfolios and panel B shows the bank concentration-sorted portfolios.

Results can be summarized as follows: bank stocks with low duration gap outperform bank stock with high duration gap, they also have high total risk measured by the standard deviation of returns. Furthermore, bank stocks evolving in a low bank concentration environment outperform those evolving in a low bank concentration environment; they also have high total risk measured by the standard deviation of returns.

Finally, we investigate how bank with different duration gaps and different bank concentration environments are affected by bank stock fundamentals, country, and global risk. For this, we run equation 1 in 4 portfolios of bank stocks: Low and high duration gap, and low and high bank concentration. Results are shown for the overall period (1986 to 2004) in Table 5.

R-squared for each equation indicates that about 10 percent of the variations in fundamental, country and global risk factors explain the variation in stock risk premiums. The variance inflation factors (not reported for sake of brevity) for each independent variable are extremely low for each period (less than 1.4, that is, more than 71 percent of the variance of each independent variable is not shared by other independent variables) indicating that the our regressions are not likely affected by multicollinearity. At the bottom of the table, the sum of the absolute value of the standardized coefficients is reported; the significance of the sum is determined by a Wald test.

The first interesting finding is that firms' fundamentals are overall less important than country risk factors in explaining stock risk premiums for commercial banks with extreme duration gaps and bank concentration. It indicates that stock fundamentals are endogenous to duration gap and bank concentration – e.g., a 1 standard deviation shock on fundamentals leads to a 0.120 to 0.122 (0.108 to 0.119) standard deviation shock on Ri for low and high bank concentration portfolios (duration gap portfolios), and a 1 standard deviation shock on country risk factors leads to a 0.204 to 0.143 (0.192 to 0.177) standard deviation shock on Ri for low and high bank concentration portfolios (duration gap portfolios). Global factors are only significantly relevant for banks evolving in a high bank concentration environment.

The signs associated with the fundamentals are the same as in Table 3, and indicate that large stocks outperform small stocks and that growth stocks outperform value stocks. However, the size factor is not significant for banks evolving in a high bank concentration environment. It might indicate that these

banks are typically larger. There is an insignificant relationship between the local beta and all stock risk premiums indicating that 'local' beta is endogenous to duration gap and bank concentration.

The impact of country risk factors is similar across duration gap sorted portfolios, indicating that country risk factors are independent from bank-specific duration gap. Specifically, high and low duration gap bank stocks are sensitive to corruption (f4) and debt servicing (f6). However, the impact of country risk factors is somewhat different across bank concentration-sorted portfolios. For instance, bank stocks traded in countries with high bank concentration seem to be particularly sensitive to socio-economic conditions and individual wealth (f3) and corruption (f4) while bank stocks traded in countries with low bank concentration are sensitive to the risk of conflicts (f2), all bank concentration-sorted portfolios have bank stocks sensitive to the risk associated with foreign trade (f5) and debt servicing (f6).

Table 4: Controlling for Bank-Specific Risk

Panel A: Duration Gap-Sorted Portfolios					
Duration Gap Tiers		**Overall Period**	**1986-1992**	**1993-1998**	**1999-2004**
Tier 1 (Low)	Avg Return	0.24%	n.a.	-3.18%	0.88%
	Std.Dev.	29.81%	n.a.	32.73%	29.19%
	Duration Gap	-0.02	n.a.	-0.03	-0.02
	# of Stocks	123	n.a.	78	114
Tier 2 (Average)	Avg Return	-0.62%	n.a.	-3.29%	0.21%
	Std.Dev.	17.89%	n.a.	29.24%	15.35%
	Duration Gap	-0.12	n.a.	-0.14	-0.12
	# of Stocks	121	n.a.	67	116
Tier 3 (High)	Avg Return	-0.70%	n.a.	-3.35%	-0.36%
	Std.Dev.	16.28%	n.a.	24.16%	14.97%
	Duration Gap	-14.55	n.a.	-17.71	-12.68
	# of Stocks	120	n.a.	56	116
Panel B: Bank Concentration-Sorted Portfolios					
Bank Concentration Tiers		**Overall Period**	**1986-1992**	**1993-1998**	**1999-2004**
Tier 1 (Low)	Avg Return	-0.10%	0.35%	-1.72%	1.23%
	Std. Dev.	24.48%	20.00%	18.78%	31.58%
	ln(BankCONC)	2.77	2.99	2.73	2.65
	# of Stocks	241	57	95	89
Tier 2 (Average)	Avg Return	-1.56%	-3.43%	-3.42%	-0.31%
	Std. Dev.	20.41%	14.29%	25.10%	17.68%
	ln(BankCONC)	4.46	3.94	4.35	4.57
	# of Stocks	278	35	106	137
Tier 3 (High)	Avg Return	-1.73%	-3.58%	-4.93%	-0.39%
	Std.Dev.	18.68%	21.10%	22.11%	14.74%
	ln(BankCONC)	12.24	12.43	12.42	12.06
	# of Stocks	186	25	72	89

Panel A shows the statistics for duration-gap sorted portfolios. Panel B shows the statistics the bank concentration-sorted portfolios.

Table 5: Banks Risk Determinants across Duration-Gap and Bank Concentration-Sorted Portfolios

	Bank Concentration		Duration Gap	
	Tier1 (Low)	Tier3 (High)	Tier1 (Low)	Tier3 (High)
(Constant)	0.030	-0.262***	-0.091	-0.145
Std. Error	0.092	0.069	0.160	0.106
Beta(l)	0.010*	0.002	0.015	0.002
Std. Error	0.006	0.006	0.011	0.006
SCOEF	0.023	0.004	0.020	0.006
Beta(w)	-0.004	-0.007**	-0.006	0.001
Std. Error	0.004	0.003	0.006	0.003
SCOEF	-0.016	-0.029	-0.016	0.007
Ln(PB)	0.016***	0.025***	0.016**	0.016***
Std. Error	0.004	0.003	0.007	0.003
SCOEF	0.05	0.111	0.044	0.08
Ln(size)	0.007***	-0.001	0.008**	0.003*
Std. Error	0.002	0.001	0.004	0.002
SCOEF	0.047	-0.007	0.044	0.033
f1	-0.001	-0.005	-0.045	-0.084**
Std. Error	0.018	0.013	0.044	0.033
SCOEF	0.000	-0.006	-0.022	-0.055
f2	-0.065***	-0.008	0.02	0.009
Std. Error	0.022	0.011	0.032	0.019
SCOEF	-0.047	-0.009	0.013	0.01
f3	-0.013	-0.021***	-0.013	-0.008
Std. Error	0.01	0.008	0.019	0.011
SCOEF	-0.016	-0.036	-0.014	-0.019
f4	0.013	0.025**	0.042**	0.020**
Std. Error	0.012	0.011	0.018	0.008
SCOEF	0.018	0.031	0.044	0.038
f5	0.084***	0.046**	-0.021*	0.014
Std. Error	0.019	0.023	0.012	0.018
SCOEF	0.056	0.024	-0.034	0.014
f6	-0.061***	-0.054***	-0.140***	-0.025**
Std. Error	0.011	0.019	0.037	0.012
SCOEF	-0.067	-0.037	-0.065	-0.041
R-squared	0.103	0.119	0.101	0.107
N	8,326	8,438	5,104	5,324
F	8.861***	12.057***	5.222***	6.116***
# of Stocks	241	186	123	120
Firm $\lvert\alpha 1\rvert + \lvert\alpha 3\rvert + \lvert\alpha 4\rvert$	0.120***	0.122***	0.108***	0.119***
Country $\sum \lvert\lambda_i\rvert$	0.204***	0.143***	0.192***	0.177***
Global $\lvert\alpha 2\rvert$	0.016	0.029**	0.016	0.007

*The table shows the results of WLS regressions between stock risk premiums (Ri) and ten risks for the overall period in 2 portfolios sorted by Bank concentration, and 2 portfolios sorted by duration gap. Standardized coefficients are the coefficients obtained after standardizing the variables and they indicate that an increase in 1 standard deviation on one of the factors affects "beta" standard difference in Ri, holding constant the other predictors in the model. Standard errors are Newey-West heteroskedasticity and autocorrelation corrected. ***, ** and * indicate significance at the 1, 5 and 10 percent level, respectively.*

In sum, we have identified that duration gap, bank concentration, size, price-to-book value, corruption and debt servicing are the risks with the greatest bearing on bank stocks. Thus, a decrease in duration gap, a low bank concentration, a decrease in corruption and a more transparent financial system at the country level are critical success factors for bank stock selection.

CONCLUSION

Although banks are central to a financial system in any economy, there have been relatively few studies that have investigated the factors that determine their stock returns especially in emerging markets. As pointed out by Benston (2004), banks provide highly valued products and services, act as conduits for monetary policy, and play a vital role in development and growth of economies. Just to inspire confidence in this system, governments have this sector highly regulated. The importance of banks in an economy, provide investors an opportunity for investment, and also to realize the benefits of growth, which is been observed in most emerging markets. But by their very nature, investments in emerging markets are risky. This paper thus contributes to the literature in finance by investigating and identifying the risk factors that determine stock returns of commercial banks emerging markets.

Our investigation reveals that fundamental factors as well as country risk factors determine stock returns of commercial banks in emerging markets. Duration gap, bank concentration, corruption, debt servicing, socio-economic conditions and even per-capita GDP influence bank stock returns in these countries.

REFERENCE

Aggarwal, R., Ramesh, P. R., Hiraki, T., 1992. Price/book value ratios and equity returns on the Tokyo stock exchange: empirical evidence of regularities. Financial Review 27 (4), 589-605.

Bekaert, G., Harvey, C., 1997. Emerging equity market volatility. Journal of Financial Economics 43 (1), 29-78.

Bekaert, G., Harvey, C., 2000. Foreign speculators and emerging equity markets. Journal of Finance 55 (2), 565-613.

Benston, George J., (2004), What's Special About Banks?, The Financial Review v39, pp 13-33

Bolbol, A., Omran, M., 2005. Investment and the stock market: evidence from Arab firm-level panel data. Emerging Markets Review 6 (1), 85-106.

Chan, L. K. C., Hamao, Y., Lakonishok, J., 1991. Fundamentals and stock returns in Japan. Journal of Finance 46, 1739-64.

Claessens, S., Dasgupta, S., Glen, J., 1998. The cross section of stock returns: evidence from emerging markets. Emerging Markets Quarterly 2, 4–13.

Comrey, A.L., Lee, H.B., 1992. A first course in factor analysis, 2nd Ed. (Hillsdale, NJ: Erlbaum).

Daniel, K., Titman, S., 1997. Evidence on the characteristics of cross-sectional variation in stock returns. Journal of Finance 52, 427-65.

Erb, C., Harvey, C., Viskanta, T., 1995. Country credit risk and global portfolio selection. Journal of Portfolio Management, Winter, 74-83.

Erb, C., Harvey, C., Viskanta, T., 1996a. Expected returns and volatility in 135 countries. Journal of Portfolio Management, Spring, 46-58.

Erb, C., Harvey, C., Viskanta, T., 1996b. Political risk, financial risk and economic risk. Financial Analysts Journal 52(6), 28-46.

Erb, C., Harvey, C., Viskanta, T., 1998. Risk in emerging markets. The Financial Survey, July/August, 42-46.

Fama, E.F., French, K.R., 1992. The cross-section of expected stock returns. Journal of Finance 47(2), 1992.

Fama, E.F., French, K.R., 1996. Multifactor explanations of asset pricing anomalies. Journal of Finance 51, 55–84.

Fama, E.F., French, K.R., 1998. Value versus growth: the international evidence. Journal of Finance 53, 1975–1999.

Girard E., Omran, M., 2007. What are the risks when investing in thin emerging equity markets: evidence from the Arab world. The Journal of International Financial Markets, Institutions & Money.

Girard E, Sinha, A. K., (2006) Risk and Return in the Next Frontier, Journal of Emerging Market Finance, Forthcoming,

Harvey, C. (1995a). The Cross-Section of Volatility and Autocorrelation in Emerging Markets. Finanzmarkt und Portfolio Management 9, 12-34.

Harvey, C. (1995b). The Risk Exposure of Emerging Equity Markets.World Bank Economic Review, 19-50.

Harvey, C., Roper, A., 1999. "The Asian bet" in Alison Harwood, Robert E. Litan and Michael Pomerleano, eds.: The crisis in emerging financial markets, Brookings Institution Press, 29-115.

Lyn, E., Zychowicz, E., 2004. Predicting stock returns in the developing markets of Eastern Europe. The Journal of Investing, Summer 2004.

Patel, S., 1998. Cross-sectional variation in emerging markets equity returns. January 1988-March 1997, Emerging Markets Quarterly 2, 57–70.

Ramcharran, H., 2004. Returns and pricing in emerging markets. The Journal of Investing, Spring 2004.

Rouwenhorst, K. G., 1999. Local return factors and turnover in emerging stock markets. Journal of Finance 54, 1439–64.

Seiler, M.J., 2004. Performing financial studies, a methodological cookbook. (Upper Saddle River, NJ: Pearson Prentice Hall).

Tabachnick, B., Fidell, L., 1996. Using multivariate statistics, 3rd Ed. (New York, NY: Harper Collins).

BIOGRAPHY

Eric Girard, James Nolan, Siena College and Tony Pondillo can be contacted at School of Business, Siena College, 515 Loudon Road, Loudonville, NY, 1221. Dr. Girard, the corresponding author, can also be contacted via email to egirard@siena.edu