2021

National Cultures and Stock Prices: Evidence from the Emerging Markets

Ahmad E. Shahin *The American University in Cairo AUC*, aeshahin@aucegypt.edu

Mostafa Saleh *The American University in Cairo AUC*, mmasaleh@aucegypt.edu

School of Business at The American University in Cairo

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Ahmad **Shahin**, *Mostafa* **Saleh** [2]

December 2018

Keywords

Stock prices; behavioral finance; Hofstede; national cultures; emerging markets

Abstract

This report in the field of behavioral finance explores the effect of national culture factors and firm specific factors on the stock prices of publicly traded firms in the 36 countries in the emerging markets. Using linear regression, we tested 13 variables (three of them were Hofstede's indices for Individualism, Uncertainty Avoidance, and Long-term Orientation) against the stock prices. We found that in the Africa, America, and Europe regions, the cultural factors had no significant effect on stock prices. On the other hand we found that only individualistic behavior had a significant effect on stock prices in businesses in Arab and Asia. Moreover, we found that a firm's value and investment activities had a significant impact on stock prices in Africa and Asia regions, while a firm's size had that impact in Latin America and Arab regions.

1. Introduction

In a continuation to one of our team's interest in the field of behavioral finance, we chose to build on his previous research about the effect of different national cultures on the choice of capital structure, to research that effect on stock prices as well.

2. Research Question

We are to investigate the effect of firm specific factors and national culture specific factors on the stock prices of publicly traded firms in the emerging markets.

3. Literature Review

Starting with the research done by our team member, Adly et al. (2015) argues that there are significant effect of cash flows, cost of debt, Hofstede's cultural variables, in addition to their combinations on the choice of capital structure of firm in the emerging markets. Farooq and Amin (2017) argues that national cultures affects the sensitivity of investment to stock prices of firms in the emerging markets as well.

Those two papers were the foundation of our interest in further exploring the behavioral influence on the stock prices.

To properly understand this issue, we expanded our literature review, where we encountered with Olsen's (1998) statement that "the potential explanatory value of behavioral finance may be seen by focusing on the volatile nature of stock price".

Coval and Shumway (2005) focused on exploring how does the risk avoidance attitude affected the stock prices in Chicago Board of Trade. Moreover, Ji et al. (2008) discussed what we understood as the effect of long-term orientation attitude towards choice of investing in stock prices in China and Canada.

Todea and Buglea (2017) studied how investors with high individualistic attitude has shifted to focus more on market-wide information of stock prices, after the global financial crisis of 2008.

Finally, Liu (2018) showed that all of Hofstede's six cultural dimensions had an effect on the volatility of stock prices in 15 major markets.

[1] This research was done as a part of the requirements of a master degree course, FINC 5203: Advanced Topics in Finance and Investments, under supervision of Nashwa Saleh, PhD (nashwasaleh@aucegypt.edu)

[2] Email addresses of the collaborators, respectively: aeshahin@aucegypt.edu, mmasaleh@aucegypt.edu

4. Methodology

Based on our literature review, we decided to perform a linear regression on the variables illustrated in Table 1 below:

Table 1: Research Variables

Dependent Variable		**PRI**	Annual Stock Prices in December 31
Independent Variables	**Firm Specific-Control Group**	**TOQ**	Tobin's Q = Company Market Value / Total Assets *Proxy for size*
		CMC	Company Market Capitalization *Proxy for value*
		SIZ	Company size = Logarithm of Total Assets *Proxy for size*
		LEV	Leverage = Total Debt / Total Capital
		CPX	Capital Expenditures *Proxy for company's investment activities*
	Firm Specific-Main Variables	**EPS**	Earnings Per Share
		ANA	Number of Analysts covering a company
	Country Specific-Main Variables	**IDV**	Hofstede's Individualism Index
		UAI	Hofstede's Uncertainty Avoidance Index
		LTO	Hofstede's Long-term Orientation Index
	Country Specific-Control Group	**EFI**	Economic Freedom Index
		MCG	Country Market Capitalization as Percentage of GDP
		TVG	Total Value of Traded Shares as Percentage of GDP

And the regression model is as follows:

$$PRI = \alpha + \beta_1(TOQ) + \beta_2(CMC) + \beta_3(SIZ) + \beta_4(LEV) + \beta_5(CPX) + \beta_6(EPS) + \beta_7(ANA) + \beta_8(IDV) + \beta_9(UAI) + \beta_{10}(LTO) + \beta_{11}(EFI) + \beta_{12}(MCG) + \beta_{13}(TVG) + \varepsilon$$

5. Data

We used Thomson Reuters' Eikon software in AUC Citadel Capital Financial Center to collected the data for our variables from 36 countries in the emerging markets, covering 11,503 companies (data points), in the time frame of 2013 to 2017, which amounted to a total number of cases of 57,515.

Table 2: Covered Countries

Region	Country	Listed Companies
Africa	Kenya	64
	Mauritius	97
	Nigeria	203
	South Africa	380
America	Argentina	96
	Brazil	486
	Chile	211
	Colombia	74
	Mexico	172
	Peru	201
Asia	Bangladesh	338
	Indonesia	625
	Malaysia	939
	Pakistan	556
	Philippines	265
	Sri Lanka	293
	Thailand	783
	Vietnam	1541
Arab	Bahrain	42
	Egypt	269
	Jordan	195
	Kuwait	165
	Lebanon	11
	Morocco	74
	Oman	121
	Qatar	45
	Saudi Arabia	203
	Tunisia	86
	UAE	129
Europe	Bulgaria	295
	Croatia	126
	Czech	18
	Poland	853
	Romania	380
	Russia	764
	Turkey	403

Also, based on several trials of regressing the data on IBM SPSS Statistics software, we decided to regress the data of each region alone, which is shown in the next section.

6. Results and Discussion

All details are also available in the attached SPSS Output file:
FINC5203_2018F_ShahinSaleh_Project_Regression.pdf

6.1 Africa

Out of 3,720 cases, SPSS studied 1,864 cases (50.1%), where the Adjusted R Squared was 0.833, which means that our independent variables have successfully explained 83.3% of the variations in our dependent variable. We had to remove the variable ANA -which had 54% missing values- from the regression, in order to increase the number of analyzed cases, and for better Adjusted R Squared.
The following variables proved to have a significant effect on stock prices:

Table 3: Africa Results

Variable	Confidence	Correlation PRI
CMC	99.9%	+87%
CPX	99.9%	+25.9%
EPS	99.9%	+50.7%

It was noted that in the studied African countries, none of the cultural variables had a significant effect on stock prices.
We argue that for increased stock prices, African businesses should focus on investing in physically growing their businesses, and on improving their EPS ratios.

6.2 America

Out of 6,200 cases, SPSS studied 3,214 cases (51.8%), where the Adjusted R Squared was 0.242, which means that our independent variables have explained only 24.2% of the variations in our dependent variable. We had to remove the variable ANA -which had 54% missing values- from the regression, in order to increase the number of analyzed cases, and for better Adjusted R Squared.
The following variables proved to have a significant effect on stock prices:

Table 4: America Results

Variable	Confidence	Correlation PRI
CMC	99.3%	-2.4%
SIZ	99.9%	-17.7%
EPS	99.9%	-44.7%
IDV	99.4%	-5.7%

We observe that in Latin America, companies with larger physical size have slightly lower stock prices. On the other hand, Company Value and Individualism have too weak correlation with stock prices, hence we argue that there shall be no conclusions to be drawn from these results.
We do not have a practical explanation of why EPS in negatively correlated with stock prices, however we argue that further research shall be conducted regarding this region, where the fluctuation of foreign exchange rates to be included in analysis, in order to clarify the true correlation of EPS to stock prices.

6.3 Arab

Out of 6,700 cases, SPSS studied 3,794 cases (56.6%), where the Adjusted R Squared was 0.805, which means that our independent variables have successfully explained 80.5% of the variations in our dependent variable. We had to remove the variable ANA -which had 52% missing values- from the regression, in order to increase the number of analyzed cases, and for better Adjusted R Squared.
However, we got unusual results that the following variables proved to have a significant effect on stock prices, all at 99.9% confidence:

Table 5: Arab Results

Variable	Confidence	Correlation PRI
TOQ	99.9%	+20.2%
SIZ	99.9%	+12%
LEV	99.9%	-1%
EPS	99.9%	+88.8%
IDV	99.9%	+29.7%
UAI	99.9%	-11.9%
LTO	99.9%	-6.5%
TVG	99.9%	-11.6%

We argue that there is no practical meaning for the statistical significance of TVG on stock prices, hence we argue that there shall be no conclusions to be drawn from this result.
On the other hand, we observe that in the Arab region, businesses with large size are somehow awarded with higher stock prices.
We also conclude that for higher stock prices, Arab businesses should strongly focus on improving their EPS ratios.
Moreover, that individualistic investors are causing stock prices to increase, which is explained by Todea and Buglea (2017), as the Arab region did not suffer much from the financial crisis in 2008.
Also, we observe that risk-averse investors are slightly causing the stock prices to decrease, hence

we estimate that risk-taking investors could slightly cause the stock prices to increase.

Leverage and Long-term Orientation Behavior have too weak correlation with stock prices, hence we argue that there shall be no conclusions to be drawn from these results.

Finally, we tried to run separate regressions for oil-producing Arab countries and the non-oil-producing ones, and we found no changes in the statistical results that we got above.

6.4 Asia

Out of 26,700 cases, SPSS studied 15,646 cases (58.6%), where the Adjusted R Squared was 0.243, which means that our independent variables have explained only 24.3% of the variations in our dependent variable. We had to remove the variable ANA -which had 60% missing values- from the regression, in order to increase the number of analyzed cases, and for better Adjusted R Squared.

We got unusual results in this region as well, where the following variables proved to have a significant effect on stock prices:

Table 6: Asia Results

Variable	Confidence	Correlation PRI
CMC	99.9%	+21.4%
LEV	99.9%	-0.08%
CPX	99.9%	+13%
EPS	99.9%	+62.4%
IDV	99.9%	+29.7%
UAI	99.9%	+4.5%
LTO	99.8%	+3.1%
TVG	99.9%	-4.5%

We argue that despite the strong statistical significance of Leverage, Risk-averse Behavior, and Total Value of Shares Traded as Percentage of GDP, however we decided to draw no conclusions based on these results, as they all have too weak correlation with stock prices.

We also observe that in Asia, business with larger market value and capital expenditures are awarded with higher stock prices, hence we conclude that those business shall continue to invest in physical growth, and on improving their EPS ratios - for higher stock prices.

Finally, we observe that individualistic investors are somehow causing stock prices to increase, which we estimate that this is a result of possible inefficiencies in the Asian markets.

6.5 Europe

Out of 14,195 cases, SPSS studied 2,719 cases (19.1%), where the Adjusted R Squared was 0.589, which means that our independent variables have successfully explained 58.9% of the variations in our dependent variable.

Contrary to all other regions, we kept the variable ANA in the regression despite that it has 65% missing values, in order to get a better Adjusted R Squared, however this led to a decreased number of analyzed cases.

The following variables proved to have a significant effect on stock prices:

Table 7: Europe Results

Variable	Confidence	Correlation PRI
EPS	99.9%	+74.7%
ANA	99.9%	+8.7%
IDV	99.9%	-5.8%
UAI	99.9%	-3%
LTO	99.9%	+9.1%
MCG	99.9%	+16.9%

We argue that there is no practical meaning for the statistical significance of MCG on stock prices, hence we argue that there shall be no conclusions to be drawn from this result.

Also, despite the strong statistical significance of Number of Analysts and the three studied Hofstede's indices, however we decided to draw no conclusions based on these results, as they all have too weak correlation with stock prices.

Finally, we conclude that business in Europe region should focus on improving their EPS ratio, for higher stock prices.

7. Conclusion

In our research of the effect of national culture on stock prices, which covered 11,503 publicly traded companies from 36 countries in the emerging markets, in 5-year time frame between 2013 and 2017; we found that national culture had no statistical significant impact on stock prices in the Africa, America, and Europe regions. On the other hand, only individualistic behavior had a significant impact on stock prices in the Arab and Asia regions.

A common factor between all regions was the strong statistical impact of Earnings Per Share on stock prices, which is a logical result to the fact that investors are attracted to stocks that would offer better earnings, in which we conclude that

businesses in any region should focus on improving their EPS ratio to increase their stock prices.

We also found that a firm's value and investing activities had significant impact on stock prices in Africa and Asia regions, in which we conclude that businesses in these regions should also focus on growth in order to increase their stock prices.

We finally observed that a firm's size had a significant impact on stock prices in Latin America and Arab regions, in which we conclude that businesses in these regions should also focus on expanding their sizes in order to increase their stock prices.

8. Future Research

Although this research covered a wide range of countries, however it was limited in the number of years covered, in which we recommend that future research could cover a longer time frame that can divided into pre- and post-financial-crisis time frames, in order to explore the changes in investors behavior in the emerging markets.

We also recommend to differentiate between regions, by creating customized models for each region, in order to better observe the true impact of different factors on stock prices in the emerging markets.

Finally, we recommend future research to explore the combinatorial effects of the different factors on stock prices as well.

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