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Effect of Free Float Ratio on the Behavior of Shares Valuation in Companies Listed in Latin American Capital Market

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Additional information is available at the end of the chapter

Abstract

Free float is generally defined as the number of outstanding shares minus the number of shares that are restricted from trading. This restriction comes from the fact that these shares belong strategic investors who do not usually negotiate their holdings. The ownership structure of the capital of each company can condition share's prices and trading volume. The objective of this chapter is to identify if there is a relationship between floating capital ratio and volumes operated, volatility of prices and performance of the shares. The data analyzed correspond to Latin American companies listed in Argentina, Brazil, Chile, Peru and Colombia at the end of 2016. The applied statistical methodology is a simple linear regression. As a result of the study, it is observed that, in Peru and Colombia, greater floating capital affects the equity' retorn in the market. The contribution of this research is the analysis of the free float impact on the explained variables in stock markets of Latin American countries. This study presents two limitations; the use of data from a cross-sectional sample and the number of companies that formed the sample.

Keywords: free float, annual returns, traded volume, volatility, linear regression

1. Introduction

For several years, explanations have been sought to describe the behavior of stock prices in markets as well as the reasons for their valuation changes. Consequently, the analysis of financial and market information is relevant [1]. Financial information presented by companies allows the elaboration of different ratios that are useful for academicals porpoises and for investors. This analysis can be done to compare variations in valuation over several years

for the same company, to compare companies from the same country within a sector or to compare a sector in different countries. Regional analysis is interesting because it allows us to detect different behaviors within the companies that operate in similar environments.

Using financial information from different items of companies' assets, liabilities and earnings allows us to analyze profitability ratios, returns persistence, debt ratios and companies solvency [2, 3]. The return ratio on equity is usually considered by investors and analysts, since it measures profitability of the resources contributed by the owners. There is a perception that the higher the return on equity, the better will be the performance of share prices. However, this hypothesis is not proven by previous empirical research since high values of ratios do not always lead to higher returns on shares [4].

For the purpose of measuring the size of a company, we use the concept of stock market capitalization, defined as the market value of an enterprise. This provides an interesting fact because it is the capital of the company multiplied by the price of it equities in the stock market, and therefore, it is a way of quantifying the size of the capital market. The total market capitalization is the sum of all companies' capitalizations that quoted at a certain date.

It is important to measure market capitalization in absolute terms and in relative terms related to the gross product of each country in order to observe its behavior and draw conclusions [1]. Now that capital is owned by different shareholders, with different characteristics. Nevertheless, there is no doubt that the ownership structure of traded shares in markets can have its effects [5].

Hardouvelis and Karalas (2016) [6] mentioned the importance of the presence of institutional investors in markets and the impact of this on prices. They remarked that the percentage owned by institutional shareholders increased dramatically from about 45% average in the mid-90s to about 80% in recent years. Then, different authors [7] asserted that the intervention of governments affects the liquidity in markets because of different measures adopted that are related to the countries economical evolution.

In the case that the shareholders are state agencies, decisions are taken differently from institutional investors in general because they do not act freely in the market. They have to complete with certain standards in each country.

In Argentina, it is observed in companies listed that in addition to the concentration observed in the capital by majority shareholders, there exists the Sustainability Guarantee Fund (FGS) created in 2009 after the National Senate approved the reform of the Argentine Pension System, which implied the disappearance of private retirement and the Retirement and Pension Funds Administrators (AFJP). In 2016, Law No. 27260 in a National Program of Historical Reparation affects the resources of the Sustainability Guarantee Fund of the Argentine Social Security System for Retirees and Pensioners. Therefore, this fund can generate an offer of shares in the market but not with periodicity, affecting market liquidity. For this reason, it is possible to consider the adjusted floating capital by subtracting the holding portion of the FGS.

Other studies quantify the performance of the company as of its accounting profitability, in relation to the property concentration [5], but in this chapter, the analysis is oriented to the magnitude of the floating capital. The aim is to demonstrate the effect of floating capital on the

share's prices in markets, volatility and finally traded volume. The approach adopted follows the methodology of Çalişkan and Kerestecioğlu.

The study is carried out in companies whose shares are part of the most representative indexes of Latin American markets—from Argentina, Brazil, Chile, Peru and Colombia. The reason why shares of these indices are studied is because they are the ones that have greater stock market presence. According to what is mentioned on O'shee et al. in Latin America, two important aspects characterize the ownership and control structures. In the first place, companies show a high degree of ownership concentration and second, many firms are indirectly controlled by industrial and financial conglomerates that operate in Latin America.

The model proposed analyze data corresponding to 181 companies of the selected Latin Americans indices and applies three simple linear regressions, where the explanatory variable is always the magnitude of the free float ratio, and response variables are the share price variation, the share price volatility and the traded volume. Before applying the model, a descriptive analysis of the variables used in each selected country is carried out to contextualize the results obtained. The results show that there are diverse conclusions for each country and for the different regressions implemented. It will be possible to repeat the same analysis next year and verify the conclusions observed.

This chapter has been organized in five parts. In the first part, we introduce the topic that will be investigated, in the second part, we mention the literary revision of works on different capital markets, the third part describes the methodology followed at work, the fourth part shows the results obtained and finally the fifth one presents the conclusions.

2. Literature review

Çalişkan y Kerestecioğlu defined free float as the number of outstanding shares minus shares that are restricted from trading. The free float ratio is the quantity of shares available for public trading. Shares that are restricted from trading are called stable shareholdings, and include shares held by a parent company for control of a subsidiary, shares held by the government, and cross-shareholdings among companies. It has been said that the relationship between ownership structure and corporate performance has been a popular subject for researchers recently. Ownership structure studies mostly focus on firm performance, which is typically defined by accounting profit, or other metrics based on financial statements.

On the other hand, free float ratio studies examine the market performance of stocks. Free float ratio gives information about the ownership structure of a company. A low free float ratio indicates a concentrated ownership structure as well as a small and shallow market for stocks of that company. Free float ratio can affect stock prices in two ways. First, if the free float ratio is low, investors will tend to avoid that stock. Secondly, lower free float ratio means that there is less amount of shares in the market, which might cause low liquidity in the market for that stock. Investors dislike illiquidity. The authors examined the effect of free float ratio on market performance of stocks in Turkey. They attempt to answer the following questions; first, how much do free float ratios affect stock prices of selected firms? Second, do free float ratios affect

daily trading volume? Third, do free float ratios affect price volatility? For that research, 194 firms were selected from Istanbul Stock Exchange Market for the period from 25.02.2011 to 09.03.2012. The statistical method applied was linear regression. Results showed that there is no evidence of relationship between price return and free float ratio. In other words, investors did not pay more or less for stocks depending on whether free float ratio was considered to be high or low. On the other hand, there seems to be a positive relationship between free float ratio and price volatility. Finally, free float ratio is directly related to trading volumes. In other words, higher free float ratio results in higher liquidity in the market.

Bostancı and Kılıç examined the free float ratios effects on market performance of stocks in Turkey. Their research includes 199 listed firms on Istanbul Stock Exchange Market for the year 2007. The relationship between free float ratio and the dependent variables average daily closing price, price volatility and average daily trading activity is measured by regression models. Findings suggest that the market rewards higher floating ratio, that is, average daily closing price and trading activity is significantly higher for stocks with higher free float ratio. They also notice that price volatility, which is associated with the risk of a stock, increases with free float ratio. Finally, the effect of free float ratio on these variables is measured by controlling size of firms through a multivariable regression model. According to regression results, effects of floating ratio do not increase or decrease as the firm size increases or decreases. As a conclusion, these results are compatible with the previous studies and prove that free float ratio does matter for investors. Higher floating ratio implies higher market value for stocks, higher liquidity in the market and lower financial costs for corporations. They support suggesting initiatives to corporations and policy makers to increase floating ratios that will result on the decrease of financial costs and ensure capital market development. Although the regression results of the study are robust, the regressions depend on 1 year data, which contain all the sectors and eliminate the free float variations within a stock.

Chan et al. asserted that the intervention of the Hong Kong government offers a clear case for examining how market liquidity is affected by a substantial decline in free float. For many companies listed in Asian and emerging markets, government, controlling companies affiliated companies, and majority owners control a large percentage of the shares. As a result, the amount of shares outstanding considered available for trading could be relatively small. When investigating the liquidity of these markets, it is possible to determine the amount of free-floating shares available. The author also indicates that the amount of free-floating shares is often difficult to define, as it is not easy to determine the identity of ultimate beneficial owners. Sometimes, the trail becomes tangled and it is not possible to accurately monitor ownership across thousands of securities.

The same topic is addressed by other authors [8, 9] saying that in August 1998, after an intervention in the stock market by the Hong Kong government, there was a dramatic decrease in the amount of the shares in the market and this caused a decline on the free floats. The intervention of the Hong Kong government in the stock market offers a natural experiment to examining how the market liquidity was adversely affected by a substantial decline in free float in the market. The trading volume of the stocks listed in the Hang Seng Index (HSI) decreased substantially in 1999, while trading volumes of the group of control stocks did not decline. Also, stocks listed on the HSI experienced price increases. This showed that the government

intervention affected the liquidity of the Hang Seng Index (HIS) stocks. On the other hand, they did not find a relationship between free float ratio and price variations of the stocks.

O'shee et al. focused their studies on showing the level of ownership concentration in Latin American companies and explained the impact of this characteristic in the performance of the enterprises. For this, they analyzed 271 companies listed in five South American emerging markets with the methodology of panel analysis. They observed that in global markets, near 46% of a company's stock is concentrated in the hands of the three main shareholders and, for companies that operate in South American markets that percentage rises up to 70%. In the chapter, they concluded that, on an average, a stock portfolio conformed by companies with the greatest concentration of holdings generates higher yields than the yields produced by portfolio conformed by companies with less concentration of shareholdings. This indicates that stock investors require a higher yield, due to the greater risk they face as minority share-holders in companies with an elevated concentration of holdings. The investigation carried out for emerging countries, seem to show more homogeneous results; likewise, the positive interdependence between the concentration of ownership and the returns of the companies appears to be clearer.

Hardouvelis and Karalas studied the relation of expected stock returns with fund style con-centration in stock ownership over the period 1997–2015. Their sample consists of common stocks trading on the NYSE, AMEX and NASDAQ between the first quarter of 1997 and the fourth quarter of 2015. The econometric results confirm the positive association and are robust to the inclusion of known risk-factors as determinants of expected stock returns, the returns of the investment styles themselves, plus a set of style-related control variables like liquidity, size, or volatility characteristics of stocks.

Ginglinger and Hamon [10] investigated how ownership concentration and the separation of ownership and control affect secondary-market liquidity in France. They found that firms with a large insider block holder exhibit significantly lower liquidity. However, different methods of enhancing control affect liquidity in different ways. Pyramidal structures impair market liquidity. Double voting right shares, a French specific method to control enhance-ment rewarding long-term shareholders and restraining insiders from trading their shares, lead to increased liquidity, especially for small firms. Their results suggest that by using double voting rights to enhance their control, a more transparent decoupling mechanism, rather than pyramidal methods, a more doubtfully decoupling mechanism, block holders offer higher secondary-market liquidity to outside investors.

3. Data and methodology

The objective of this chapter is to show if there is a relationship between floating capi-tal ratios and volumes operated in stock markets, volatility of prices and performance of shares. For this, data compiled include Latin American companies at the end 2016. The total number of enterprises studied is 181 and they belong to Argentina, Brazil, Chile, Peru and Colombia. Data were obtained from Thomson Reuters Eikon platform. (For detail, see Appendices).

Information corresponds to companies that are included in the main indices of the countries under study, as shown in **Table 1**. and the data compiled concerns to the evolution of prices, their volatility and the volume traded during financial year 2016.

The applied statistical methodology is a simple linear regression, in which the magnitude of the floating capital ratio is used as the explanatory variable of the model. The explained variables are the Neperian logarithm of the annual percentage return (LREA), the annual volatility (DESV) and the annual average traded volume of shares, expressed in millions of the local currency of each country (VOLAM).

Volatility is a measure of the risk of price movements for a security calculated from the standard deviation of the day-to-day logarithmic historical price changes. The 260-day price volatility equals the annualized standard deviation of the relative price change for the 260 most recent daily trading closing prices, expressed as a percentage.

The volume was calculated based on the annual accumulated volume, divided by the number of working days of the year. The applied model is:

$$LREA_{ik} = \beta_0 + \beta_1 FREF_{ik} + \varepsilon_i \tag{1}$$

$$DESV_{ik} = \beta_0 + \beta_1 FREF_{ik} + \varepsilon_i \tag{2}$$

$$VOLAM_{ik} = \beta_0 + \beta_1 FREF_{ik} + \varepsilon_i \tag{3}$$

The variables are:

$FREF_{ik}$ is free float as a percentage of shares outstanding of the company i-th and of the country k-th.

$LREA_{ik}$ is the Neperian logarithm of the annual return in percentage of the company i-th and the country k-th.

$DESV_{ik}$ is the volatility of the i-th company and the k-th country.

$VOLAM_{ik}$ is the annual traded volume in millions of pesos of the i-th company in the country k-th.

COUNTRY	INDEX	Number of companies
Argentina	MERVAL	26
Brazil	BOVESPA	57
Chile	IPSA	39
Peru	I GENERAL	34
Colombia	COLCAP	25

Table 1. Size of sample.

The explanatory variable in the developed regressions is floating capital ratio (FREF). Floating capital can be used as a representative measure of market size, understood as the value of all shares outstanding for trading. The explained variable in the first regression (Eq.(1)) of the proposed model is "annual percentage returns" which is defined as the annual variation of prices of each share that compound the selected indices of each country. It is constructed as the Neperian logarithm of annual returns for each company that conforms the sample in each country. The annual returns are obtained as the quotient of the homogeneous prices at the end of 2016, "Price A_{it}", of the i-th company and those that correspond to the homogeneous price of the same company at the annual close of the previous year (2015), "Price $_{A\ i(t-1)}$". In order to obtain the percentages of variation, this result is multiplied by 100.

$$\text{LREA}_{ik} = \ln \left(\frac{PriceA_{it}}{PriceA_{i(t-1)}} \right) * 100 \tag{4}$$

The next variable is annual typical deviation of the variation in prices (Eq. (2)) of shares from each country, which is used as a response variable. (DESV_{ik}).

A measure of the risk of price variation for a security is calculated from the standard deviation of day-to-day logarithmic historical price changes. The 260-day price volatility equals the annualized standard deviation of the relative price change for the 260 most recent daily trading closing price, expressed as a percentage.

Regarding the standard deviation, it must be borne in mind that it is a measure of risk in absolute terms. The higher the standard deviation, the greater variability of the assets price and therefore the greater its risk. It is a very useful statistical measure as long as the distribution of probability of the asset's performance is normal.

The third proposal uses the variable average daily traded volume of each i-th company (VOLAM_{ik}), (Eq. (3)) and is considered in millions of the currency of each country. Its calculation is performed as the accumulated annual volume divided by the days susceptible of negotiation between both dates.

4. Result

4.1. Descriptive analysis of the explained and explanatory variables

The importance of data is potential and it only becomes information when it is associated within a suitable context. Data must be analyzed and transformed; only in this way it produces knowledge and support decision-making.

To begin the analysis of the data the descriptive statistics, although it is very simple, it does become important in many studies. Results allow us to compare experimental evidences with theories and hypotheses, validating empirical arguments from mathematical models designed and adjusted by experts in the corresponding topic. For this reason, descriptive statistics of the variables used in the model proposed in this chapter are carried out.

O'shee et al. mentioned in his article that Latin American companies that are publicly traded are characterized as being highly concentrated. In them, they clearly identified that majority shareholders can be of great strength for the firm due to their active position within it and because they represent a financial source for company in times of crisis.

The first variable to describe is floating capital, which is studied by different authors obtaining interesting results.

In Argentina, the ownership structure changed dramatically in the nineties, when almost all state enterprises were privatized; but even so, high levels of concentration were maintained. This can be seen in the fact that the 20 largest companies show majority shareholders that hold around the 65% of the capital. In Brazil, on average, main shareholder own 41% of the firm, while the most important five hold 61%. In Chile and Peru, it is shown that the first three major shareholders own about three quarters of all shares. Colombia shows the lowest level of concentration and numbers are similar to those held by companies in Europe and Asia [5].

Table 2 gives the descriptive statistics for Free Float ratio divided into quartiles. It is possible to observe 60.22% (15.47 + 44.75%) of the companies included in the sample have less than 50% of their free float listed in the market.

In the selected temporal space and in this sample, it is possible to affirm that Brazil is the country where stocks that make up the BOVESPA index have the highest percentage of free float on the market. Since 61.40% (17.54 + 43.86%) of its companies have free float higher than 50% and there is no company with less than 25% of their capital as free float.

The opposite situation is what we found in Chile. In its capital market the 87.18% (20.51 + 66.67%) of the stocks in the 39 companies that make up the IPSA Index are property of the major shareholders.

In Argentina, these numbers change substantially and are more similar to Chile if the holdings of the FGS are incorporated as part of the majority shareholders holdings. **Table 3** shows how the FREF is modified if the FGS holding is considered. It is called FREF adjusted (FREF AJUS) to that difference. In Colombia, 68% of the companies that are part of the index have major-

COUNTRY	Sample	Companies with FREF <25%		Companies with FREF >25% ^FREF <50%		Companies with FREF >50% ^FREF <75%		Companies with FREF >75%	
Argentina	26	5	19.23%	12	46.15%	4	15.38%	5	19.24%
Brazil	57	0	0.00%	22	38.60%	10	17.54%	25	43.86%
Chile	39	8	20.51%	26	66.67%	3	7.69%	2	5.13%
Peru	34	9	26.47%	10	29.41%	3	8.82%	12	35.30%
Colombia	25	6	24.00%	11	44.00%	1	4.00%	7	28.00%
TOTAL	181	28	15.47%	81	44.75%	21	11.60%	51	28.18%

Table 2. Descriptive analysis of FREF in different countries.

Companies	FREF	FGS	FREF AJUS
Banco Macro SA	61.59	30.97	30.62
San Miguel SA	46.86	26.96	19.90
Edenor SA	51.00	26.81	24.19
Consultatio SA	31.07	26.62	4.45
Distribuidora Gas Cuyana SA	30.00	26.62	3.38
Siderar SA	39.06	26.03	13.03
Telecom SA	96.14	24.99	71.15
Pampa Energía SA	84.31	23.23	61.08
Trans. Gas Sur SA	49.00	23.11	25.89
Mirgor SA	51.74	21.54	30.20
Grupo Financiero Galicia SA	88.40	21.28	67.12
Transener SA	47.35	19.57	27.78

Table 3. Details of free float adjusted in different companies in Argentina.

ity shareholding participation in more than 50%. This is similar to the average mentioned in another article written by different authors [5].

Investors obtain returns for their investments in shares by two ways: dividens and price appreciation. In most Latin American markets, the payment of dividends is irregular and it is not of significance, therefore price differential is what is important for investors. **Table 4** shows the descriptive statistics for the Neperian logarithm of the annual return (LREA Eq. (4)) in percentage of the companies in different countries. These exposed values are not comparable, since this return is in the countries own currencies but it allows us to observe some extreme values, average and individual deviation of each country individually.

It is observed that in all the indexes analyzed, there were stocks whose prices in 2016 fell compared to the previous year. In the case of Argentina, only 2 shares out of 26 maintained that negative behavior, even including 8 companies whose yields were higher than 100%. The average value of the variable LREA is 52.71 and the standard deviation is 39.33. The country with the smallest range of variation of the variable shown in **Table 4** is Colombia. Only one company has a slight negative variation in its price and only one has yields over 100%.

Observing the volatility in **Table 5**, which is a measure of the risk of price movements for a value calculated from the standard deviation of the historical changes in daily logarithmic prices, it can be seen that the highest volatility is found in Peru and Brazil. The variable DESV reached values of 97.53 and 64.75 respectively. The minimum value is also obtained by Brazil in a magnitude of 8.43.

Once the descriptive analysis of the relevant variables has been carried out, an analysis of the results of the regression is accomplished.

COUNTRY	Sample	Mean	Std. Dev	Min	Max
Argentina	26	52.71	39.33	−18.68	129.43
Brazil	57	36.44	37.32	−62.95	137.62
Chile	39	13.63	23.7	−33.15	99.43
Perú	34	51.92	37.15	−8.01	137.63
Colombia	25	17.81	17.01	−0.22	75.32

Table 4. Descriptive analysis of LREA in different countries.

4.2. Results of the regressions

The results of this work, based on an empirical study, seek to assess the relationship between the magnitude of the floating capital ratio and the selected market indicators such as the traded volume, annual returns and the standard deviation of price variation. According to Çalişkan and Kerestecioğlu, a high floating capital ratio is positive for investors in case they need to exercise their rights after buying shares. The results of the regression model proposed in the equation (Eq. (1)) are calculated and shown in **Table 6**.

FREF coefficient ($\beta 1$) (Eq.(1)) is negative and statistically insignificant for Argentina, so it can be concluded that for the analyzed data there is no relationship between price variation and floating capital ratio. For Brazil and Chile, there is direct relationship but no significance.

For the case of Colombia and Peru this relationship, according to the results obtained, is direct and statistically significant. Therefore, it is concluded that the results obtained are not of equal sense and importance in all the countries analyzed.

Price volatility (DESV) regression is performed for the floating capital ratio. Results are shown in **Table 7**.

FREF coefficients($\beta 1$) (Eq.(2)) are negative and statistically insignificant for Argentina and Chile, so it can be concluded that for the analyzed data, there is no relationship between price volatility and floating capital ratio. For Brazil and Colombia, there is direct relationship but no significance.

COUNTRY	Sample	Mean	Std. Dev	Min	Max
Argentina	26	36.71	6.15	28.93	48.44
Brazil	57	34.16	11.35	8.43	64.75
Chile	39	23.74	7.72	14.68	47.45
Peru	34	34.35	20.16	12.90	97.53
Colombia	25	18.22	5.5	10.62	35.03

Table 5. Descriptive analysis of DESV in different countries.

Country	LREA	Coef.	Std.Err.	t	P > |t|	[95% Conf.Interval]	
Argentina	FREF	−0.2787	0.3127	−0.89	0.382	−0.9242	0.36671
	_cons	66.68	17.48	3.81	0.001	30.60	102.77
Brazil	FREF	0.1425	0.1959	0.73	0.47	−0.2501	0.5353
	_cons	26.91	14.00	1.92	0.06	−1.15	54.98
Chile	FREF	0.2622	0.2181	1.2	0.237	−0.1798	0.704
	_cons	4.00	8.85	0.45	0.654	−13.93	21.95
Perú	FREF	0.399	0.175	2.28	0.029	0.04313	0.7565
	_cons	30.86	11.00	2.80	0.008	8.45	53.28
Colombia	FREF	0.2767	0.0939	2.95	0.007	0.08245	0.471144
	_cons	4.62	5.37	0.86	0.398	−6.49	15.73

Table 6. Estimated coefficients, standard errors and significance of variables. Variable response LREA.

In the case of Peru, this relationship, according to the results obtained, is direct and statistically significant. Therefore, it is shown again that the results obtained are not of equal sense and important in all the countries studied.

The coefficient of FREF ($\beta 1$)(Eq. (2)) for Peru is 0.2939 and significant at 5% level as P > \|t\| is 0.041. This suggests that FREF is significantly positive correlated with price volatility. Higher free float ratio means higher risk for the stock. Peru was the only Latin American country analyzed which shows a coefficient of significance.

Finally, the results of the regression proposed in Eq. (3) that seeks to prove whether there is a relationship between the volume traded and the floating capital ratio are shown in **Table 8**.

Country	DESV	Coef.	Std.Err.	t	P > |t|	[95% Conf.Interval]	
Argentina	FREF	−0.0486	0.0487	−1	0.329	−0.1492	0.05198
	_cons	39.14	2.73	14.37		33.52	44.77
Brazil	FREF	0.0132346	0.0598	0.22	0.826	−0.1067	0.1332
	_cons	33.28	4.28	7.78		24.70	41.86
Chile	FREF	−0.00305	0.0724	−0.04	0.967	−0.1498	0.1437
	_cons	23.85	2.94	8.11		17.89	29.81
Peru	FREF	0.2939	0.0959	2.13	0.041	0.0084	0.399
	_cons	23.61	6.03	3.92		11.33	35.89
Colombia	FREF	0.00757	0.0355	0.21	0.833	−0.066	0.081199
	_cons	17.85	2.03	8.78		13.65	22.07

Table 7. Estimated coefficients, standard errors and significance of the variables. Variable response DESV.

Country	VOLAM	Coef.	Std.Err.	t	P > |t|	[95% Conf.Interval]	
Argentina	FREF	0.0944	0.069	1.37	0.185	−0.0482	0.237
	_cons	3.3073	3.863	0.86	0.4	−4.66	11.28
Brazil	FREF	0.377	0.5232	0.72	0.473	−0.6708	1.4263
	_cons	61.06	37.40	1.63	0.108	−13.89	136.01
Chile	FREF	2.0296	12.76	0.16	0.875	−23.8373	27.89
	_cons	1278.75	518.03	2.47	0.018	229.11	2328.38
Perú	FREF	6.39	7.167	0.89	0.379	−8.2	20.9898
	_cons	576.87	450.35	1.28	0.209	−340.47	1494.21
Colombia	FREF	36.7117	29.7348	1.23	0.229	−24.799	98.223
	_cons	2490.83	1699.5	1.73	0.097	−574.85	6456.51

Table 8. Estimated coefficients, standard errors and significance of variables. Variable response VOLAM.

The coefficients (Eq. (3)) that result from the regression for all countries are not statistically significant. Unlike what Caliskan and Kerestecioglu (2013) say, we find that for the countries under study and for this temporary space, it is not possible to demonstrate that there is a relationship between both variables.

5. Conclusion

Floating capital ratio can affect the price of shares in two ways: first, a small quantity of shares can make a stock unattractive to investors, and second, a low floating capital in the market represents less amount of shares available to negotiate, which can cause inadequate liquidity [7]. These statements make it possible to conclude that a low floating capital ratio has the effect of reducing the value of shares due to insufficient demand from investors [11].

Different authors studied the effect of stock property concentration on stock return (7), others address the adverse change in market liquidity of stocks as a result of the decrease in free float (6), or the effect of the free float ratio (FFR) on stock return, risk, and trading activity (8).

This study documented the effects of floating capital ratio on price returns, price volatility and traded volume in Latin American capital markets. Data from 181 firms listed at the end of 2016 was used. These enterprises are part of the most representative indices of each market based on traded volume or market capitalization. Results obtained applying linear regressions methods show different situations in each country.

It is observed, for this temporary space and according to the sample requested, that in the case of Argentina, free float ratio is not statistically significant in the variation share prices. Volatility or the negotiated volume presents an inverse relationship with floating capital.

In the studies made for the countries of Peru and Colombia, we found that greater floating capital affects profitability in a positive way but only in Peru, it is possible to say that a greater floating capital affects volatility in stock prices. For the case of Chile and Brazil, it is not possible to obtain conclusions since results were not significant.

As a conclusion, these findings are compatible with the previous studies and prove that free float ratio does matter for the investors. Higher floating ratio implies higher market value for stocks for the cases of Peru and Colombia. Therefore, these results provide empirical evidence for the growing practice of weighting stocks according to free float ratio for the construction of indexes. They also support designing incentive measures to present to corporations and policy makers for enlarging floating ratios that will decrease cost of capital and ensure capital market development. Although the regression results of this study were robust and clear, it depends on 1-year data, which eliminates the free float variations within a stock. Therefore, examining effects of free float ratio for different sectors or for firms whose floating ratios change substantially within a time horizon may bring interesting results for further studies [11].

The study shows that there is no relationship between floating capital ratio and the traded volume for this temporary space and for the companies selected. It will be possible to repeat the same analysis next year and check whether these conclusions can be different or continue ratifying the current results.

Nevertheless, this study presents two limitations: the first is the use of data from a cross-sectional sample, that is, it takes data corresponding to a set of companies for a moment in time, and the other limitation is that the selected companies are only those that make up the indexes, due to the availability of public information.

Future lines of research can be oriented to confirm if the results obtained in the present study (2016 period of analysis) are maintained over the years and to integrate the findings of effects of stock concentration of property (government holdings and majority shareholders)on stock return (7) with the effects of the floating capital ratio in stock markets.

Appendices

No.	Companies	FREF	DESV	VOLAM	LREA
1	Agrometal SA	45.20	48.00	1.66	129.44
2	Petrolera Pampa SA	36.90	33.12	1.45	110.63
3	Autopistas del Sol SA	100.00	39.10	0.86	105.61
4	Petróleo Brasilero SA	49.58	39.94	41.18	101.46
5	Holcim SA	20.39	36.54	3.79	101.27
6	San Miguel SA	46.86	40.44	3.26	89.03
7	Central Costanera SA	24.32	48.17	2.39	80.22
8	Central Puerto SA	20.98	33.35	2.58	70.39
9	Distribuidora Gas Cuyana	30.00	48.45	0.97	65.12
10	Pampa Energía	84.31	33.19	19.94	64.00
11	Trans. Gas Norte	20.01	43.14	0.61	63.23
12	Transener SA	47.35	43.18	4.40	59.87
13	Trans. Gas Sur	49.00	36.05	2.34	56.05

No.	Companies	FREF	DESV	VOLAM	LREA
14	Tenaris SA	39.45	28.94	9.62	56.04
15	Edenor SA	51.00	33.52	5.12	50.84
16	Mirgor SA	51.74	46.99	7.56	44.76
17	Cresud SA	69.19	30.86	11.78	33.00
18	Telecom SA	96.14	32.30	4.68	28.26
19	Banco Macro SA	61.59	34.65	10.58	26.37
20	Y.P.F. SA	48.99	33.66	19.38	17.11
21	Consultatio SA	31.07	31.18	3.69	15.73
22	Grupo Financiero Galicia SA	88.40	31.23	19.96	15.16
23	Siderar SA	39.06	32.79	9.00	14.89
24	Banco Francés SA	24.05	29.71	8.27	4.56
25	Aluar Aluminio SA	27.42	31.55	5.29	−13.74
26	Comercial del Plata	100.00	34.43	8.63	−18.68

N 1. Information of companies of the MERVAL-ARGENTINA. *Source*: Thomson Reuters Eikon.

No.	Companies	FREF	DESV	VOLAM	LREA
1	AMBEV ON/d	28.07	18.82	235.53	−4.89
2	BRASIL ON/d	37.54	41.14	202.68	68.99
3	BRADESCO ON/d	26.05	28.14	39.69	49.15
4	BRADESCO PN/d	97.76	28.38	295.73	55.22
5	BBSEGURIDADE O/d	33.69	26.95	125.92	21.15
6	BRADESPAR PN/d	98.55	47.59	25.80	109.83
7	BRF FOODS ON/d	95.31	29.14	113.18	−11.06
8	BRASKEM PNA/d	54.93	33.50	39.14	32.08
9	BR MALLS PAR O/d	95.55	33.33	61.78	33.62
10	BMF BOVESPA ON/d	97.56	26.12	173.57	44.64
11	CCR RODOVIAS O/d	48.78	34.04	70.43	28.66
12	CIELO ON/d	41.20	29.58	161.20	1.31
13	CEMIG PN/d	92.57	47.51	51.03	34.89
14	CPFL ENERGIA O/d	66.11	8.43	37.14	54.28
15	COPEL PNB/d	78.74	39.36	18.38	16.18
16	COSAN ON/d	37.71	31.31	33.85	48.44
17	SID NACIONAL O/d	44.30	53.53	65.68	99.79
18	CYRELA REALT O/d	64.38	37.91	24.99	34.05

No.	Companies	FREF	DESV	VOLAM	LREA
19	ECORODOVIAS ON/d	35.75	38.86	23.71	51.07
20	ENGIE BRASIL/d	31.29	19.14	31.99	9.42
21	ELETROBRAS ON/d	31.67	64.75	30.69	137.63
22	ELETROBRAS PNB/d	92.78	53.89	30.49	90.82
23	EMBRAER ON/d	94.59	28.90	49.50	−62.96
24	ENERGIAS BR ON/d	48.73	24.15	28.92	21.02
25	EQUATORIAL ON/d	100.00	21.24	51.94	48.45
26	ESTACIO PART O/d	85.56	46.02	34.04	24.55
27	FIBRIA ON/d	41.46	38.56	66.09	−46.93
28	GERDAU PN/d	80.12	43.31	106.64	84.73
29	GERDAU MET PN/d	98.30	53.56	69.32	106.18
30	HYPERMARCAS ON/d	59.15	21.69	70.54	20.28
31	ITAUSA PN/d	82.95	24.34	163.42	36.01
32	ITAUUNIBANCO P/d	100.00	26.12	413.68	40.52
33	JBS ON/d	34.21	63.82	94.75	−3.42
34	KLABIN UNT/d	100.00	28.91	49.31	−25.21
35	KROTON ON/d	93.54	36.46	123.05	36.22
36	LOJAS AMERIC P/d	64.99	35.56	37.49	5.63
37	LOJAS RENNER O/d	84.98	29.34	71.43	32.46
38	MARFRIG ON/d	42.63	35.65	15.75	4.01
39	MRV ON/d	64.46	29.14	30.25	26.13
40	MULTIPLAN ON/d	69.33	26.80	37.64	45.48
41	NATURA ON/d	40.04	38.52	33.76	−0.32
42	P.ACUCAR-CBD P/d	93.82	33.47	46.56	26.87
43	PETROBRAS ON/d	49.58	35.49	149.59	68.14
44	PETROBRAS/d	76.06	39.92	586.91	79.72
45	QUALICORP ON/d	100.00	34.98	33.75	41.50
46	RAIADROGASIL O/d	67.38	24.07	63.75	55.51
47	RUMO/d	90.69	43.83	43.57	−1.62
48	LOCALIZA ON/d	71.94	32.22	34.90	34.93
49	SANTANDER BR U/d	100.00	35.14	25.78	66.88
50	SABESP ON/d	49.74	33.87	49.88	42.86
51	TRANS ALIANCA /d	100.00	23.43	22.76	34.80
52	TIM PART ON/d	33.40	23.65	21.35	15.86
53	ULTRAPAR ON/d	70.07	21.01	87.84	14.74

No.	Companies	FREF	DESV	VOLAM	LREA
54	USIMINAS PNA/d	79.38	55.02	70.18	98.96
55	VALE ON/d	39.64	41.91	126.03	68.43
56	TELEF BRASIL P/d	37.09	18.80	84.72	25.28
57	WEG ON/d	35.65	27.10	32.05	6.14

N 2. Information of companies of the BOVESPA- BRAZIL. *Source*: Thomson Reuters Eikon.

No.	Companies	FREF	DESV	VOLAM	LREA
1	AGUAS ANDINAS /d	32.60	24.46	1875.71	−5.16
2	EMB ANDINA B/d	39.44	24.05	642.72	16.35
3	ANTAR CHILE/d	3.94	17.53	164.13	1.50
4	AESGENER/d	30.42	28.01	1043.89	−27.06
5	BANMEDICA/d	31.58	21.65	179.14	22.92
6	BCI/d	34.95	18.20	1686.37	25.67
7	CAP/d	36.70	47.46	1563.67	99.43
8	CMPC/d	39.36	22.08	1935.19	−11.52
9	CERVECERIAS UN/d	16.41	17.40	1822.74	−12.03
10	CENCOSUD/d	39.74	17.24	5408.48	28.12
11	BANCO DE CHILE/d	20.78	15.87	2171.01	10.67
12	SM BANCO CHILE/d	100.00	14.69	437.37	15.04
13	VINA CONCHA TO/d	31.88	16.96	741.81	0.68
14	COLBUN/d	35.31	20.23	1286.89	−25.31
15	EMPRESAS COPEC/d	25.24	21.82	2049.63	4.95
16	ENGIE ENERGIA /d	44.49	18.19	837.73	7.14
17	EMBONOR B/d	62.27	20.89	276.32	27.81
18	ENEL AMERICAS/d	43.90	19.09	3289.75	2.88
19	ENEL GENERACIO/d	34.65	20.15	2537.08	−33.15
20	ENTEL/d	35.89	19.93	1551.88	11.35
21	FALABELLA/d	33.19	17.36	6052.37	16.21
22	FORUS/d	26.52	25.64	353.92	25.35
23	IAM SA/d	24.33	26.74	422.19	−3.38
24	INV LA CONSTRU/d	24.99	27.41	358.04	13.97
25	ITAU CORPBANCA/d	22.07	18.18	1847.03	−4.05
26	LATAM AIRLINES/d	47.24	26.17	2830.31	42.08
27	MASISA/d	30.04	39.45	138.35	61.44

No.	Companies	FREF	DESV	VOLAM	LREA
28	ORO BLANCO/d	20.23	44.67	293.03	12.92
29	PARQ ARAUCO/d	55.80	19.09	1145.36	29.15
30	QUINENCO/d	14.82	23.45	217.47	23.11
31	RIPLEY CORP/d	28.79	22.70	561.83	30.36
32	SMSAAM/d	39.89	22.23	209.26	14.04
33	SALFACORP/d	76.21	38.17	146.27	25.65
34	GRUPO SECURITY/d	37.53	21.00	221.15	17.42
35	SIGDO KOPPERS/d	34.82	22.82	165.11	0.00
36	SONDA/d	47.88	20.89	1190.40	−6.19
37	SOQUIMICH B/d	69.93	30.30	2667.48	35.55
38	SANTANDER CHIL/d	29.82	18.84	2065.53	14.44
39	VAPORES/d	27.98	35.02	390.35	23.39

N 3. Information of companies of the IPSA-CHILE. *Source*: Thomson Reuters Eikon.

No	Companies	FREF	DESV	VOLAM	LREA
1	ALICORP/d	75.66	16.88	6561.95	24.71
2	ANDINO INVEST/d	26.12	40.47	24.85	53.41
3	AUSTRAL GROUP/d	10.65	46.15	16.18	18.92
4	BCO CONTINENTA/d	7.76	20.10	2211.62	56.07
5	CEM PACASMAYO/d	49.99	18.76	4011.91	30.50
6	BUENAVENTURA/d	49.36	36.13	282.66	67.59
7	ATACOCHA/d	100.00	50.25	151.22	137.63
8	CREDICORP/d	65.20	20.04	1035.22	49.67
9	ENGEPE/d	16.40	26.82	623.63	13.91
10	ENEL DIST PERU/d	100.00	23.29	351.87	23.19
11	CASA GRANDE/d	37.57	26.96	124.55	71.69
12	FERREYROS/d	100.00	22.88	1720.30	29.01
13	GRANA Y MONTER/d	77.08	82.84	2513.65	89.05
14	INRETAIL PERU/d	27.31	14.06	865.85	32.52
15	INTERGROUP/d	42.95	17.69	2564.01	38.68
16	INV CENTENARIO/d	62.90	23.92	10.99	−8.00
17	LUZ DEL SUR/d	16.07	16.49	495.57	40.53
18	MINSUR/d	100.00	28.88	717.87	87.55
19	PANORO/d	82.84	57.10	13.36	76.64

No	Companies	FREF	DESV	VOLAM	LREA
20	RELAPASA/d	17.62	37.21	243.67	70.61
21	SIDER/d	9.97	36.91	78.47	109.86
22	CERRO VERDE/d	5.86	29.48	84.56	32.16
23	MINERA EL BROC/d	35.27	31.55	38.58	33.35
24	TREVALI MINING/d	98.99	51.46	44.58	87.31
25	BACKUS JOHNSTO/d	11.10	19.94	94.79	26.11
26	UNACEM/d	32.33	24.79	924.05	46.95
27	ACEROS AREQUIP/d	100.00	34.65	490.94	65.54
28	SOUTHERN COPPE/d	10.56	24.19	99.80	24.69
29	VOLCAN MINERA/d	100.00	36.03	2856.84	135.67
30	BOLSA DE VALOR/d	74.47	12.91	8.57	5.11
31	CANDENTE/d	95.77	97.53	5.06	35.67
32	ENGIE ENER PER/d	38.23	15.01	1776.72	14.15
33	PERUV METALS/d	87.10	77.51	12.57	126.69
34	VOLCAN MINERA/d	25.75	49.13	2.72	18.23

N 4. Information of companies of the I GENERAL-PERU. *Source*: Thomson Reuters Eikon.

No	Companies	FREF	DESV	VOLAM	LREA
1	ECOPETROL/d	10.97	22.50	15747.98	21.77
2	EEB/d	18.99	11.96	947.38	5.10
3	GRUPOAVAL/d	2.25	19.11	291.99	7.93
4	PFAVAL/d	47.19	14.68	4687.84	10.86
5	BCOLOMBIA/d	34.94	19.97	7916.54	18.41
6	PFBCOLOM/d	97.55	19.69	19438.60	22.98
7	ISA/d	36.49	15.20	3435.78	30.18
8	BOGOTA/d	10.46	20.16	743.53	1.17
9	GRUPOSURA/d	46.38	14.33	8267.88	6.77
10	PFGRUPSURA/d	89.93	14.63	5078.49	6.13
11	GRUPOARGOS/d	74.54	16.44	4273.79	17.41
12	PFGRUPOARG/d	92.98	15.17	3074.15	17.16
13	CEMARGOS/d	35.45	16.58	6257.46	19.90
14	PFCEMARGOS/d	92.02	14.26	2854.31	15.54
15	NUTRESA/d	41.06	10.62	3821.21	9.60
16	PROMIGAS/d	11.53	28.08	41.74	3.92

No	Companies	FREF	DESV	VOLAM	LREA
17	EXITO/d	35.39	12.76	9485.99	9.87
18	CORFICOLCF/d	36.26	24.75	3747.63	−0.22
19	CLH/d	25.12	18.70	3531.05	9.27
20	PFDAVVNDA/d	92.40	15.97	7224.65	31.93
21	CELSIA/d	42.99	13.66	1293.18	36.29
22	ETB/d	10.57	18.28	551.91	14.50
23	CNEC/d	80.07	24.66	1183.16	50.88
24	CONCONCRET/d	26.21	18.30	322.47	2.74
25	PFAVH/d	100.00	35.04	3052.93	75.33

N 5. Information of companies of the COLCAP- COLOMBIA. Source: Thomson Reuters Eikon.

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