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# EFFECTS OF FREE FLOAT RATIOS ON STOCK PRICES: AN APPLICATION ON ISE

## *FİİLİ DOLAŞIM PAYLARININ HİSSE SENEDİ FİYATLARI ÜZERİNE ETKİLERİ: IMKB'DE BİR UYGULAMA*

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**ABSTRACT:** This study investigates the effect of the free float ratio (FFR) on stock return, risk, and trading activity in the Turkish capital market. Daily free float ratios are calculated 194 firms trading on Istanbul Stock Exchange for the period between 25.02.2011 and 09.03.2012. Results show no relationship between free float ratio and price return. On the other hand, trade activity and price volatility are significantly positively correlation with free float ratio.

**Keywords:** Free Float Ratio; Market Performance; Borsa Istanbul

**JEL Classification:** G12

***ÖZET:*** *Bu çalışma, fiili dolaşım paylarının, Türkiye'deki hisse senetleri piyasa performanslarının üzerindeki etkisini incelemektedir. Bu amaç doğrultusunda, İstanbul Menkul Kıymetler Borsası'nda faaliyet gösteren 194 firmaya ait, 25.02.2011 ila 09.03.2012 tarihlerini kapsayan, günlük fiili dolaşım payları seçilmiştir. Fiili dolaşım payların etkilerinin gösterilmesi için, günlük fiyat getirileri, fiyat oynaklığı ve işlem hacmi bağımlı değişken olarak seçilerek regresyon modeli ile analiz edilmiştir. Analiz sonuçlarına göre, hisse senedi fiyat getirisi ile fiili dolaşım payları arasında hiç bir ilişki bulunamamıştır. Bir diğer taraftan, işlem hacmi ve fiyat oynaklığı ile fiili dolaşım payları arasında anlamlı bir ilişkinin olduğu ortaya konmuştur.*

***Anahtar kelimeler:*** *Fiili Dolaşım Payları; Piyasa Performansı, Borsa İstanbul*

## 1. Introduction

The free float is generally defined as the number of outstanding shares minus shares that are restricted from trading. The free float ratio is the quantity of shares available to public. 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.

The percentage of tradable shares, or the floating ratio, could affect corporate governance, either directly or indirectly through the market for corporate control. From a signaling perspective, firms with higher floating ratios may be associated with better governance since the government has less influence while other shareholders are more likely to exercise their rights (Wang and Xu, 2007, p.9).

The relationship between ownership structure and corporate performance has been a popular subject for the researchers recently. Ownership structure studies mostly focus on firm performance which is typically defined as 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. Low free float ratio indicates a concentrated ownership structure as well as a small and a shallow market for stocks of that company. 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 lesser quantity of shares in the market which might cause to inadequate liquidity in the market of that stock. Investors dislike illiquidity too. As a result low float ratio has a value reducing effect on stocks due to the insufficient demand of investors (Bostancı and Kılıç, 2010, p. 2).

This study examines the effect of free float ratio on market performance of stocks in Turkey. We attempt to answer the following questions: First, to what extents 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? With this regard, daily free float ratios were selected from 194 firms on Istanbul Stock Exchange for the period from 25.02.2011 to 09.03.2012. In order to show effect of free float ratio; the dependent variables - daily average price change, daily trading activity, price volatility - were analyzed by regression models.

## 2. Literature Review

Lins and Warnock (2004) examined the relationship between a firm's shareholder base and its corporate governance structure. They found that a firm's corporate governance environment, at both the firm and country level, is directly related to the willingness of a large and sophisticated group of foreign investors to hold its shares. Overall, their findings showed that firms whose managers have sufficiently high control rights that they may reasonably be expected to expropriate minority equity investors attract significantly less U.S. investment, especially in countries with poor external governance. Their results were consistent with the notion that a reduction in the shareholder base represents an important channel through which poor expected corporate governance contributes to a reduction in firm value. Their findings also suggested that the prices that U.S. investors were asked to pay for non-U.S. firms with poor expected governance were not low enough to fully compensate them for expected expropriation or the increased estimation risk associated with expected poor disclosure by these firms.

In the Chinese stock market, Cui and Wu (2007) found that the size of nontradable shares was negatively related to expected stock returns after controlling for several common liquidity measures such as turnover rate, trading volume and liquidity ratio, as well as the size of tradable shares. While their results did not support the view that the size effect could be fully explained by liquidity, we also found some evidence in support of the importance of liquidity in the size effect. Since the size of tradable shares was directly related to stock liquidity, the size effect of tradable shares was substantially stronger than that of nontradable shares. This indicated that a significant component of the size effect, when size was measured by tradable shares, came from the difference in liquidity between large and small stocks.

In another study of the Chinese market, Wang and Xu (2007) argued that the percentage of tradable shares, or the floating ratio, could affect corporate governance, either directly or indirectly through the market for corporate control. Firms with higher floating ratios could be associated with better governance since

the government had less influence while other shareholders were more likely to exercise their rights. Since effective corporate governance has a positive impact on firm performance, firms with higher free float ratio should achieve higher returns. They revealed that their three-factor model (market factor, size and free float) was able to explain %90 of the variation in portfolio returns and the free float ratio was positively related with expected stock returns.

Kaserer and Wagner (2004) using a sample from the German stock market from 1990 to2002, show a correlation between free float and management benefit. They found a significant positive contiguity between the degree of free float and management benefit. According to the study, there were two types of companies which were classified as little free float companies and high free float companies. When comparing the two types of companies, they proved that the increase in management benefit was more important for the high free float companies than the little free float companies resulting in a conflict of interest between shareholders and managers.

In August 1998, after 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 also this caused decline in the free floats. According to Kalok, Yue-Cheong and Wai-Ming (2002), the intervention by the Hong Kong government in the stock market offers a natural experiment for examining how the market liquidity was adversely affected by a substantial decline in free float in the market. The trading volume of the component stocks underlying the Hang Seng Index (HSI) decreased substantially in 1999, while the trading volume of the control stocks did not decline. Relative to the control stocks, the HSI component stocks also experience an increase in price impact of trades in 1999. This showed that the government intervention has affected the liquidity of the HSI stocks. On the other hand, they did not find a relationship between free float ratio and the price increase of the stocks.

Ginglinger and Hamon (2007) used the data of all French listed firms in the market, period from July 1998 to July 2003, to understand contiguity between ownership concentration and market liquidity in France. They made three contributions to understanding the ownership-liquidity relation. First, they found that block ownership, whether measured directly or by ultimate ownership, was detrimental to the firm's market liquidity. Second, controlling for free float, deviation of control from ownership was associated with lower liquidity, confirming the adverse selection hypothesis. Third, different devices used to enhance control have different effects on liquidity, since pyramid structures impair liquidity, whereas double voting rights enhanced liquidity. Double voting rights reduced the number of insiders trading on private information, because if an insider sells a share with the rights and buys it back, the share only has a single voting right. By using double voting rights to enhance their control rather than other devices, blockholders reduced the degree of asymmetric information and offer higher secondary market liquidity to outside investors.

Morgan Stanley Capital International (MSCI) changed the way they calculate index weighting after the East Asian financial crisis (Aggarwal, Klapper and Wysocki, 2005). The basic justification of the change in method of weight calculation was the negative impact of low free float ration on liquidity. In some indexes, low free float stocks were directly excluded, for example, MSCI Global Investable Market Indices

excluded the securities with free float ratio less than 15% (Bostancı and Kılıç, 2010, p.7).

The introduction of free float adjustments is expected to have a significant impact on the strategies of global fund managers. Passive investors will have to implement substantial portfolio re-balancing in order to track an adjusted benchmark, while active investors will have to consider their overweight and underweight stock and sector positions relative to a new benchmark. Re-weightings could have implications for equity markets with a relatively high proportion of companies with state holdings, cross-shareholdings and family ownership, which reduce the free-float. Consequently, they might accelerate moves to move away from the above ownership and control structures (Nestor, 2000, p. 8-9).

In 2005, S&P 500, S&P MidCap 400, and S&P SmallCap 600 changed their calculation method from market capitalization to free float weighting. As a result of this change, the weights of many stocks decreased in these S&P indices. These stocks experienced a decline in demand by index funds that had to sell the stocks to reflect their new, decreased weights. By involving only weight changes, the change of the S&P indexes to free float weighting allowed isolating the effect of the demand for stocks from other possible competing effects offered in the literature. In addition, this event allows comparing the effects of decreased demand among large, medium and small stocks. (Biktimirov, 2008, p.18)

Lam, Lin and Michayluk (2011) examined the adoption of a free float methodology to the index calculation on S&P 500 index changes. The evidence supported that the adoption of a free float methodology was effective in reducing price distortions created by demand that was disproportionate to supply for low float stocks. These findings supported the existence of stock market demand and supply curves in the medium to long-term and their influence on observable liquidity measured and gave support to a liquidity component in asset pricing.

Gao (2002) stated that the float ratio in China's market was extremely low due to widespread government ownership. As an existing state-owned enterprise converted to a listed corporation, only one-third of its shares were typically issued to the public. The rest remain in the hands of either the government or the business itself and were not allowed to trade. In contrast the average free-float ratio was 86.2% for developed markets and 77.5% for emerging markets. The U.S. had the highest free-float ratio at 93.9%, while Hong Kong had the lowest at 48.5%.

Gursoy and Aydogan (2002) described the main characteristics of ownership structure of the Turkish firms listed on the Istanbul Stock Exchange (ISE) and examined the impact of ownership structure on performance of Turkish firms. They found that low free float ratio reflects low firm-level governance , and is interpreted as a negative signal by potential investors.

Imisiker and Tas (2011) made a dataset of all manipulation cases identified by the Capital Markets Board of Turkey from 1998 to 2006 to identify the firm characteristics. They found evidence for severe manipulation in stocks with higher free float ratios.

Bostancı and Kılıç (2010) used data for 199 firms listed on Istanbul Stock Exchange to test the effect of free float ratio on stock price returns, price volatility and trade activity (liquidity) for the year 2007. They found that market rewards higher floating ratio:average daily closing price and trading activity were significantly higher for stocks with higher free float ratio. However risk (as measured by price volatility) increased with free float ratio. Finally, there was no effect of free float ratio on the firm size.

Stefan Neher (2007) investigated that the equity distributions of the free float of shareholders and shares at six different Swiss cantonal banks. The percentage of shareholders and shares held in the home canton of a given cantonal bank was significantly higher than compared to the averages of the rest of the cantonal banks. When scaling this data to the population/legal entities in a given canton, in all cases, the shareholder and share ratio was much higher for the home canton than the rest of the cantons.

Yurtoglu (2000) described the main characteristic of ownership structure of the Turkish companies listed on Istanbul Stock Exchange. In Turkey ownership was highly concentrated, families being the dominant shareholders. Concentrated ownership had a negative effect on performance resulting in lower return on assets, market to book ratios and dividend payments.

Ozer and Yamak (2001) showed the role of market controls on the relationship between ownership and performance in concentrated structures, using 153 non-financial firms from the concentrated company sample in Turkey. The relationship between ownership characteristics and performance was only found to be significant for the return on assets, return on equity and partially for asset turnover dimensions of performance.

Yurtoglu (2003) described the ownership structures of 305 publicly listed companies in Turkey for the year 2001. The majority of these firms were ultimately owned and controlled by families who organize a large number of companies under a pyramidal ownership structure or through a complicated web of inter-corporate equity linkages. Therefore, Turkey could be classified as an "insider system" country, with the insiders being the country's richest families.

Giannetti and Simonov (2004) analyzed whether investors took into account corporate governance when they select stocks. After controlling for the supply effect via free float and other firm characteristics, they found that all categories of investors who generally enjoyed only security benefits were reluctant to invest in companies with bad corporate governance. Overall, the effect of corporate governance on portfolio decisions was more pronounced for small and medium size companies.

## 3. Data and Methodology

Data was obtained from Istanbul Stock Exchange for 194 firms. It contains daily free float ratio, daily closing price, traded volume, trade activity for the period from 25.02.2011 to 09.03.2012. A linear regression framework was used to examine the effect of free float ratio on various dependent variables.

The independent variable, Free float ratio (FFR) is defined as the ratio of the total nominal value of publicly traded shares to the total nominal value of all shares of a firm:

$$\textit{Free Float Ratio (FFR)} = \frac{\textit{total nominal value of traded shares}}{\textit{Total nominal value of all shares}} \quad (1)$$

Our first dependent variable is the average daily price return (APR). It is defined as the logarithmic change in daily closing prices averaged across all trading days of the selected period. It is formulated as follows;

$$\textit{Average Daily Price Return (APR)} = \frac{\textit{total of daily logarithmic price return}}{\textit{number of trading days}} \quad (2)$$

The other dependent variable is the price volatility (PV) of stocks. It is calculated by the standard deviation of daily logarithmic price return for all trading days. It is formulated as follows;

$$\textit{Price Volatility (PV)} = \textit{Standard Deviation of Daily Logarithmic Price Return} \quad (3)$$

The last dependent variable is the trade activity (TA). Trade activity can present information about the buying or selling activity during the trading day. It also shows the demand of investors for the stocks, i.e. the liquidity in the market. Trade activity is formulated as follows:

$$\textit{Trade Activity (TA)} = \frac{\textit{total number of lots}}{\textit{number of trading days}} \quad (4)$$

## 4. Hypothesis

The first hypothesis of this study assesses the relationship between free float ratio and stock price return. It is expected that higher free float ratio encourages investors to be willing to pay more for the stocks. Because higher free float ratio is a better reason for investor to exercise their right, after buying that stocks of the firms.

$H_1$: Higher free float ratio triggers higher price return.

The second hypothesis tests the effect of free float ratio on price volatility. According to Bostancı and Kılıç (2010), lower free float ratio indicates weak and thin market structure for a stock. Therefore a little change in trade volume can cause a large change in price return in that market. In addition, if there is negative impact from a firm which has low free float ratio, the stocks' prices can be affected more.

$H_2$: Lower free float ratio causes higher price volatility.

The last hypothesis tests the relation between free float and trade activity. It is anticipated that higher free float ratio leads to higher trade activity due to the availability of a larger amount of stock for investors to buy and sell. This results in an increase trade activity.

$H_3$: Higher free float ratio supports higher trade activity.

## 5. Results

Table 1 gives the descriptive statistics for the variables used. Free float ratio (FFR) has a mean of 30.52%, suggesting that only about one third of the shares of the sample firms are publicly traded.

**Table 1. Result of Descriptive Statistics for Variables**

| Variable | N | Minimum | Maximum | Median | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| FFR | 194 | 1.52% | 95.94% | 27.78% | 30.52% | 19.65% |
| APR | 194 | -0.434% | 0.567% | -0.007% | -0.0224% | 0.12% |
| PV | 194 | 1.26% | 7.688% | 2.668% | 2.79892% | 0.83% |
| TA | 194 | 3.68 | 60546314.5 | 320364.3 | 1765771.5 | 5648442.1 |

### 5.1. Result of Regression of Price Return on Free Float Ratio

We run the following regression model;

$$APR_i=\beta_1 + \beta_2 FFR + \varepsilon_i \quad (5)$$

**Table 2. Price Return Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.113[a] | 0.013 | 0.008 | 0.00125962 |

a) Predictors: $\beta_1$, FFR ($\beta_2$)

**Table 3. Price Return Coefficients(a)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | B | Std. Error |
| 1 | $\beta_1$ | 0.0002 | 0.0001 | | 1.195 | 0.234 |
| | FFR ($\beta_2$) | 0.0000 | 0.0000 | -0.113 | -1.579 | 0.116 |

a) Dependent Variable: APR

Table 2 and Table 3 give the results of the regression of price return on free float ratio. The coefficient of FFR ($\beta_2$) is negative and insignificant; hence hypothesis 1 is not supported. In other words, there seems to be no significant relationship between average price return and the free float ratio, contrary to what previous studies found.

### 5.2. Result of Regression of Price Volatility on Free Float Ratio

Next, we regress price volatility on the free float ratio:

$$PV_i=\beta_1 + \beta_2 FFR + \varepsilon_i \quad (6)$$

**Table 4. Price Volatility Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.150[a] | 0.023 | 0.018 | 0.00827150 |

a) Predictors: $\beta_1$, FFR ($\beta_2$)

**Table 5. Price Volatility Coefficients**

| | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | B | Std. Error |
| 1 | $\beta_1$ | 0.026 | 0.001 | | 23.696 | 0.000 |
| | FFR ($\beta_2$) | 0.0006 | 0.000 | 0.150 | 2.107 | 0.036 |

a) Dependent Variable: PV

Table 4 and Table 5 the results. The coefficient of FFR ($\beta_2$) is 0.15 and significant at 5% level with an $R^2$ of 2.3%. This suggests that FFR is significantly positively correlated with price volatility: higher free float ratio means higher risk for the stock. As a result, hypothesis 2 is rejected.

Overall, this result provides the general principal of the market that potential return rises with an increase in risk.

### 5.3. Result of regression of Trade Activity on Free Float Ratio

This model can be expressed as follows:

$$TA_i = \beta_1 + \beta_2 FFR + \varepsilon_i \quad (7)$$

**Table 6. Trade Activity Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.173[a] | 0.030 | 0.025 | 5577257.17 |

a) Predictors: ($\beta_1$), FFR ($\beta_2$)

**Table 7. Trade Activity Coefficients**

| | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | B | Std. Error |
| 1 | $\beta_1$ | 243896.26 | 740992.16 | | 0.329 | 0.742 |
| | FFR ($\beta_2$) | 49853.94 | 20424.17 | 0.173 | 2.441 | 0.016 |

a) Dependent Variable: TA

Table 6 and Table 7 present the results of the regression model that assesses the relationship between trade activity and free float ratio.
The coefficient of trade activity is 0.173 and significant at 5% level. This means higher FFR ($\beta_2$) is associated with an increase in trading activity. This finding supports Hypothesis 3, and is in line with previous studies.

## 6. Conclusion

Free float ratio gives information about the ownership structure of a public company to the investors. Recently, global financial firms such as Morgan Stanley Capital International and Standard and Poor's have changed their methods to calculate portfolio weights. They also started using free float ratios of stocks for their indices. Despite this dramatic change, there are few studies in the literature that investigate the effect of free float ratio on the stocks.

Turkish capital market is an ideal setting to examine the effect of this change, since it consists of firms with highly concentrated ownership of family firms or business groups, and there is a low level of investor protection. Preliminary owners of the firms are unwilling to supply more shares, because, they do not want to lose their control. This reduces the quantity of shares available to the investing public. Therefore, low level free float ratios of listed companies indicate weak investor protection (Bostanci and Kilic, 2010).

This study documented the effects of free float ratio on price return, price volatility and trade activity of stocks in the Turkish capital market. We used data on 194 firms trading in Istanbul Stock Exchange period from 25.02.2011 to 09.03.2012. The

results show no evidence for a relationship between price return and free float ratio. In other words, investors in the market did not pay more or less for the stocks depending on the free float ratio. On the other hand, there is a positive relationship between free float ratio and price volatility contrary to the findings of prior studies. Finally, free float ratio is positively related to the trading activity. In other words higher free float ratio results in higher liquidity in the market.

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