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## ARTICLE INFO

Ahmet Kurtaran and Bünyamin Er (2008). The post-issue operating performance of IPOs in an emerging market: evidence from Istanbul Stock Exchange. *Investment Management and Financial Innovations*, 5(4)

## RELEASED ON

Friday, 28 November 2008

## JOURNAL

"Investment Management and Financial Innovations"

## FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

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## The post-issue operating performance of IPOs in an emerging market: evidence from Istanbul Stock Exchange

### Abstract

We analyze the post-issue operating performance of initial public offerings at the Istanbul Stock Exchange (ISE) as a developing market. We document a general decline in operating performance subsequent to the IPO. We then explore the relationship between managerial ownership and the change in the post-issue operating performance. We find a positive relation between the post-issue operating performance and the management ownership structure after the issue, but no relation between post-issue operating performance and underpricing level. Finally, we examine post-issue market-to-book ratio and price/earnings ratios to test the market expectations. Our results indicate post-issue declines in both ratios.

**Keywords:** initial public offerings, operating performance, management ownership, underpricing.

**JEL Classification:** G11, G12, G32.

### Introduction

Several studies have documented significant declines in operating performance after firms go public in various developing and developed economies. Jain and Kini (1994), Mikkelsen et al. (1997) and Teoh et al. (1998) provide evidence for the USA; Coakley et al. (2004) for the UK; Wang (2005) for China; and Kim et al. (2004) for Thailand.

Some researchers studied the short- and long-run performances of IPOs for the Istanbul Stock Exchange (Kıymaz, 2000; Güner et al., 2000; Aktaş, Aydoğan and Karan, 2003). In this study, we investigate the long-term operating performance of IPOs for the ISE. To our knowledge, this is the first paper that examines this issue deeply for the ISE. Like other researches significant declines in operating performance subsequent to IPO are documented. As Coakley et al. (2004) point out that declines in operating performance after the IPOs should not come as a great surprise since short- and long-term IPO investment performance also displays a similar trajectory.

The findings for the operating performances in this study were tested with respect to both the post-issue management ownership and the underpricing level. We arrived of a decision that the changes in the management level at IPOs have effect on operating performance. However, no relationship was found between the level of underpricing and the post-issue operating performance.

The investors' expectations on earnings growth after the IPO were examined in the last section of the study. Both investors and management have systematically optimistic expectations for the future prospect of the firm based on pre-IPO performance level. Jain and Kini (1994), comparing industry values for the U.S. market, reported that IPO firms carry high market to book (M/B) and price-earnings

(P/E) ratios at the IPO and declines after the IPO. Jain and Kini (1994) insisted that their results suggest that investors appear to value firms going public based on expectations that earnings growth will continue, while in fact the pre-IPO earnings levels on which expectations are formed are not even sustained. The findings in the present study are consistent with those of Jain and Kini (1994). Our results show that M/B and P/E ratios are high at the IPO but constantly fall in the long term after the IPO at the ISE.

Jain and Kini (1994) explain a number of potential approaches for the decline in the post-issue operating performance of IPO firms. One of their approaches is related to the potential for increased agency costs when a firm makes the transition from private to public ownership. They explain that a second reason could be that managers' attempt to window-dress their accounting numbers prior to going public. The third explanation, according to them, for the decline in operating performance is that entrepreneurs time their issues to coincide with periods of unusually good performance levels.

Going public typically leads to a significant change in the company's ownership structure. The reduction in management ownership level as a result of going public is likely to lead to the agency problem described by Jensen and Meckling (1976). According to Jensen and Meckling (1976), management's incentives for the company change whenever there are new shareholders. The interests of managers and shareholders diverge as managers' stake decreases and ownership is dispersed in their theory. According to the agency hypothesis, lower ownership retention by managers increases their incentives to undertake nonvalue maximizing project and to increase perquisite consumption. On the other hand, retaining higher ownership stake in the firm could mitigate the agency problem. This discussion implies that there could be such an expectation that the post-issue operating performance

would decline. To explain the decline in the post-issue operating performance some researchers such as Jain and Kini (1994) and Kutsana et al. (2002) use the agency theory while other researchers such as Ca and Wei (1997) and Mikkelsen et al. (1997) insist that the explanations based on the agency theory are not effective.

There are some motivations and benefits for the issuers behind the IPO process. There is a significant information asymmetry between issuers and investors at the IPO. Rao (1993) stated that there was no news about issuing firms in the media until one year before the issue date. In the case of IPOs, usually there is little information about the private firm that is available to the public. Investors have to rely primarily on the financial statements in the offering prospectus, which gives the issuers and the underwriters the incentive to report favorable accounting numbers. This leads to the thought that issuing firms have improvements in profitability before the offering and declines in profitability after the offering. Rangan (1997) and Teoh, Welch, and Wong (1997) tested earnings management hypothesis and found that issuers boost earnings relative to cash flows before the IPO.

An important explanation for the declines in the post-issue operating performance is the timing of offering. Issuers time their issues to coincide with periods of unusually good performance levels, which they know cannot be sustained in the future. Thus issuers take advantage of temporary improvements in performance to issue new shares when investors have overly optimistic expectations about the firms' future prospects. This is identified as window of opportunity by Ritter (1991) and Loughran and Ritter (1995). Brav and Gompers (1997), and Benning et al. (2005) further extended this debate. They all reached a conclusion that issuers take the advantage of windows of opportunity.

## 1. Regulatory framework and Turkish Capital Markets Board

The Capital Markets Law enacted in 1981 governs regulations on the issuance of securities instruments and the underlying provisions on IPOs. The Capital Markets Board (CMB) is the main regulatory body with responsibility for supervision and regulation of the Turkish securities markets. The CMB regularly promulgates new communiques and is continuously improving secondary legislation to ensure a transparent and sound capital markets environment. The CMB's principal function is to foster securities market development in Turkey and contribute to the efficient allocation of financial resources in the Turkish economy. It is also responsible for determining the operational principles of the capital markets and providing adequate protection for investors.

The CMB supervises and regulates, among others, public companies, banks and other financial intermediaries, mutual funds, investment corporations, investment consulting firms and rating firms that offer their services to institutions operating in the capital markets (Aziz, E. and Collak, O., 2007).

**1.1. The Istanbul Stock Exchange.** The Istanbul Stock Exchange is the only securities Exchange in Turkey established to provide trading in equities, bonds and bills, revenue-sharing certificates, private sector bonds, foreign securities and real estate certificates as well as international securities. It is supervised by the CMB to ensure proper operation. The ISE is a highly volatile market. Trading on the ISE has traditionally been characterized by short-term speculative trading, which is at least partially attributable to an underdeveloped institutional investor base in Turkey and to the small size of the retail investor base, which is comprised mainly of high-net-worth individuals (Aziz, E. and Collak, O., 2007).

**1.2. IPO process in Turkey.** *1.2.1. Threshold requirements in IPOs.* All securities and certain private placements publicly offered in Turkey need to be registered with the CMB. The registration is mandatory whether the company's existing shareholders are selling part of their shares to the public or the company is issuing new shares and offering the shares as part of a capital increase. Minimum offering sizes also need to be met in IPOs. The minimum size of an IPO is 25% if the issuer's share capital is equal to or less than YTL 11.12 million. If the issuer's share capital is between YTL 11.12 million and YTL 55.6 million, the initial offer ratio must be 15% of its share capital. Lastly, the offer rate must be 5% if the issuer's share capital is YTL 55.6 million or more. According to a decision of the CMB dated December 16, 2004, financial companies must have a minimum paid-in-capital of YTL 22.24 million for an IPO (Aziz, E. and Collak, O., 2007).

The CMB requirements do not differentiate between retail and institutional offerings. However, if the offer amount is YTL 111.2 million or more, at least 30% of the offering must be allocated to domestic retail investors. If the offer amount is less than YTL 11.2 million, at least 50% of the offering must be allocated to domestic retail investors.

*1.2.2. Listing requirements.* The ISE requires a company to meet certain profitability and minimum shareholding standards as a condition to listing securities on the ISE. Certain listing requirements in Communiqué I/26 and the ISE Regulation on Quotation are set out below.

- ◆ The latest annual and quarterly financial statements must have been independently audited and, for group companies, consolidated financial statements must have been prepared.
- ◆ A minimum of three calendar years must have elapsed since the company's incorporation (two years, if the free float rate is at least 25%).
- ◆ The company must have earned profits before taxes in the last two consecutive years (in the previous year, if the free float rate is at least 25%).
- ◆ The free float rate must be: (I) 25%, if capital is up to YTL 11.12 million; (II) 15%, if capital is between YTL 11.12 million and YTL 55.6 million; and (III) 5%, if capital is equal to or more than YTL 55.6 million.
- ◆ The ISE's executive council must have had the corporation's financial situation examined and accepted its ability to continue as a going concern.

**1.3. Turkish prospectus.** A Turkish prospectus needs to be filed with the CMB for registration, which will include all information reasonably necessary to enable a prospective investor to assess the merits of the issuer and the proposed investment. The CMB may refuse registration if the prospectus has not satisfied the required level of disclosure. The type and scope of information disclosed to the public under CMB regulations are considerably less detailed than disclosure requirements in the US or the UK. Table 1 presents information about comparison of public offering process in Turkey and USA (Aziz, E. and Collak, O., 2007).

If an international offering is made simultaneously with the IPO, the international Offering Circular is not reviewed by the CMB.

The offering period (bookbuilding) in a domestic IPO can be a minimum two business days. The bookbuilding period starts after three days (minimum) or five days (maximum) after the announcement of the Turkish prospectus. However, if a pre-bookbuilding is exercised, the pre-bookbuilding period should not exceed 30 days.

Table 1. Comparison of public offering process in Turkey and USA

	Public offerings in Turkey	Public offerings in USA
Underwriting	Required	Not required
Intermediator institution to public offering	Underwriter	Investment bank
Underwriting period	Before marketing of stocks	After marketing of stocks
Firm commitment and	No	Yes

spread application		
Prospects	Narrow content	Extended content
Quiet period	No	Yes
Stabilization after public offering	No	Yes

## 2. Data and sample statistics

This study is based on the IPOs taken to the public on the ISE over the 1992-2000 interval. Total 205 firms went public during the interval. There were only seven IPOs during the years of 2001, 2002 and 2003 due to financial crises of 2001 in Turkey. We did not include seven IPOs in our sample because of the significant effects of the mentioned financial crises on the financial tables of the IPOs firms and the smallness of the IPO numbers.

The data used in this study were obtained from the various publications prepared by ISE. Offerings of investment banks and closed-end mutual funds are excluded due to lack of data. The analyses of this study to measure operating performance are based on 175 offerings after exclusion of investment banks and closed-end mutual funds. The year of 1999 in which offerings were mostly by investment banks and closed-end mutual funds was the least representative year in the whole sample.

Table 2. Sample summary statistics of IPOs

Year	Number of issues	Number of IB* and CMF** of IPOs	Number of issues measuring performance	Percentage distribution (%)
1992	14	1	13	7.44
1993	16	-	16	9.14
1994	25	1	24	13.71
1995	29	6	23	13.14
1996	27	7	20	11.43
1997	29	2	27	15.43
1998	20	5	15	8.57
1999	10	7	3	1.71
2000	35	1	34	19.43
<b>Total</b>	<b>205</b>	<b>30</b>	<b>175</b>	<b>100.00</b>

Notes: \* IB: investment bank, \*\* CMF: closed-end mutual funds.

**2.1. The post-IPO operating performance.** Jain and Kini (1994) found declines in the post-issue operating performance compared to pre-IPO level for the U.S. market. Their results are consistent with the predictions of Jensen and Meckling's (1976) agency theory. They suggest that the decline in performance of companies that go public is explained in part by weakened incentives of managers. Moreover, they found a positive relation between per-

formance changes and the portion of shares retained by pre-offering owners. Jain and Kini (1994), besides agency cost theory, also use windows of opportunity as well as the market timing hypotheses to explain the declines in the offerings.

Coakley et al. (2004) analyzed the post-issue operating performance of UK initial public offerings at London Stock Exchange and found significant declines after the offerings. Their results are consistent with the market timing theory of capital structure and the prediction that entrepreneurs undertake IPOs only when operating performance is about to deteriorate. They concluded that the bubble years point to the influence of both market timing and investor sentiment on long-run operating performance.

Cai and Wei (1997) found that the post-issue deterioration in operating performance of initial public offerings listed on the Tokyo Stock Exchange cannot be attributed to the reduced managerial ownership. Cai and Wei (1997) insisted that their evidence provides strong support for the windows of opportunity explanations for the new issue puzzle by Loughran and Ritter (1995). They concluded that the declines in profitability is not related to the changes in the ownership level. Therefore, they claimed that the post-issue deterioration of performance for Japanese IPO firms cannot be attributed to the effects of moving from private to public ownership. Besides, they reached a conclusion that their evidence does not support the agency hypothesis of Jensen and Meckling (1976).

Kutsana et al. (2002) and Yan and Cai (2003) found declines in the post-issue operating performance of IPOs at Japanese over-the counter market. Yan and Cai (2003), in line with Cai and Wei (1997)'s results, indicated that the post-IPO deterioration in operating performance cannot be attributed to the reduced managerial ownership. However, Kutsana et al. (2002) stated that their evidence, inconsistent with Cai and Wei (1997)'s results, supports the view that the post-IPO deterioration in operating performance is partly attributable to the reduced management ownership. Yan and Cai (2003) suggested that the explanations based on the agency problem theory are not effective in interpreting the long-run operating performance of Japanese over-the-counter market IPOs. Yan and Cai (2003) did not find any evidence of significant associations between changes in alternative insider ownership and the evolution of operating performance. Their multiple regression analysis demonstrates robust evidence that is favorable for the hypotheses of windows of opportunity and market timing.

Kim et al. (2004) examined the operating performance of Thai firms after they go public. They did not

reach any finding showing that there is a relationship between the post-issue operating performance and management ownership level after the IPO. According to them, information asymmetry among participants should be more severe than that in developed markets due to the relatively undeveloped market structure. Therefore, they insisted that ownership structure may play a more important role in firm performance of emerging market firms than those of developed countries. However, they fail to find a positive linear relationship between managerial ownership and IPO-firm performance. Like Mikkelsen et al. (1997) and contrary to Jain and Kini (1994), they found no linear relationship.

We employ six variables as measures of operating performance in this study. The first measure is operating return on assets, which is operating income before interests and taxes divided by total assets. Our second operating performance measure is operating profit deflated by total assets at the end of the fiscal year. We also attempt to measure operating profit margin, which is operating profit divided by net sales. Another operating performance measure we used is equity capital turnover. The fifth measure is asset turnover. The final measure is operating cash flows deflated by total assets at the end of the fiscal year.

The change in operating performance is measured as the median change in either of our two operating performance measures. For example, the change in operating return on assets between the Year -1 and Year +1 is the change in operating return on assets between the year prior to the IPO and the year after the IPO.

The changes in operating performance of issuing firms are measured for three years after the IPO relative to the year before the IPO. Panel A of Table 3 presents the median change in operating return on assets for both the IPO year and three year interval after the IPO. Significance levels are tested using the Wilcoxon signed rank tests. The operating returns are 8.6%, 18.0%, -27.9%, and -32.7% for Years 0, +1, +2, +3 relative to Year -1. These changes are significant at 0.05 level. According to these findings, there are important changes in operating performance during the three-year time interval. The most important point here is that there is a steadily fall in the operating performance after the IPOs.

Reported in Panel B is the median change in operating profit divided by total assets. Here we also find a significant decline in the post-issue operating performance of IPO firms. The operating profit divided by total assets decline by -9.3%, -29.9%, -37.9%, and -40.5% for Years 0, +1, +2, and +3 relative to Year -1. All changes are significant at the 0.01 level.

Jain and Kini (1994) stated that while it is difficult to pinpoint the exact reason for the inferior operating performance of IPO firms, they mentioned several possibilities. According to them, declines in post-issue operating performance can be expected if the IPO firms cannot generate pre-IPO levels of positive net present value projects or if managers fail to maintain the required levels of capital expenditures. Alternatively, positive projects may have negative earnings early, so that operating performance declines while investment occurs. Following

Jain and Kini (1994), we study the growth in sales, asset turnover, and capital expenditures for IPO firms to determine if they can explain the underperformance documented in this study. The median percentage change in asset turnover in Panel E of Table 3 explains this. The median percentage change in asset turnover decreases by 12.8 percent over a four-year window from Year -1 to Year +3. Despite the high sales growth, the decline in asset turnover is indicative of the fact that IPO firms increase their assets faster than their sales.

Table 3. Operating performance of initial public offerings

Measure of operating performance	Year relative to completion of IPO			
	From -1 to 0	From -1 to +1	From -1 to +2	From -1 to +3
Panel A. Operating return on assets (EBIT / Total assets)				
Median level in Year -1 = 0.249				
Median change	-0.086 <sup>b</sup>	-0.180 <sup>a</sup>	-0.279 <sup>a</sup>	-0.327 <sup>a</sup>
Number of observations	156	156	154	148
Panel B. Operating profit / Total assets				
Median level in Year -1 = 0.221				
Median change	-0.150 <sup>a</sup>	-0.273 <sup>a</sup>	-0.504 <sup>a</sup>	-0.516 <sup>a</sup>
Number of observations	142	141	140	135
Panel C. Operating profit margin				
Median level in Year -1 = 0.181				
Median change	-0.087 <sup>c</sup>	-0.275 <sup>a</sup>	-0.371 <sup>a</sup>	-0.355 <sup>a</sup>
Number of observations	140	140	138	129
Panel D. Equity capital turnover				
Median level in Year -1 = 3.163				
Median change	-0.229 <sup>a</sup>	-0.219 <sup>a</sup>	-0.199 <sup>a</sup>	-0.226 <sup>a</sup>
Number of observations	139	139	139	139
Panel E. Asset turnover				
Median level in Year -1 = 1.208				
Median change	-0.066 <sup>a</sup>	-0.085 <sup>a</sup>	-0.091 <sup>b</sup>	-0.128 <sup>a</sup>
Number of observations	138	138	138	138
Panel F. Operating cash flows / Total assets				
Median level in Year -1 = 0.310				
Median change	-0.063	-0.137 <sup>b</sup>	-0.127 <sup>b</sup>	-0.179 <sup>b</sup>
Number of observations	139	139	138	128
Panel G. Sales				
Median level in Year -1 = 2084 million YTL) <sup>1</sup>				
Median change	0.126 <sup>a</sup>	0.909 <sup>a</sup>	2.277 <sup>a</sup>	4.556 <sup>a</sup>
Number of observations	143	139	137	133

Notes: <sup>a</sup> significant at 1 percent level, <sup>b</sup> significant at 5 percent level, <sup>c</sup> significant at 10 percent level.

In Panel G of Table 3, the median percentage change in sales is reported for Years 0, +1, +2 and

+3 relative to Year -1. There is an important increase in sales numbers from year to year as is seen in Table 3. In summary, we find evidence that IPO firms exhibit inferior post-IPO operating performance relative to the year prior to going public.

<sup>1</sup> The inflation rate was very high during the years we based on our study, so we deflated the sales numbers by Consumer Price Index

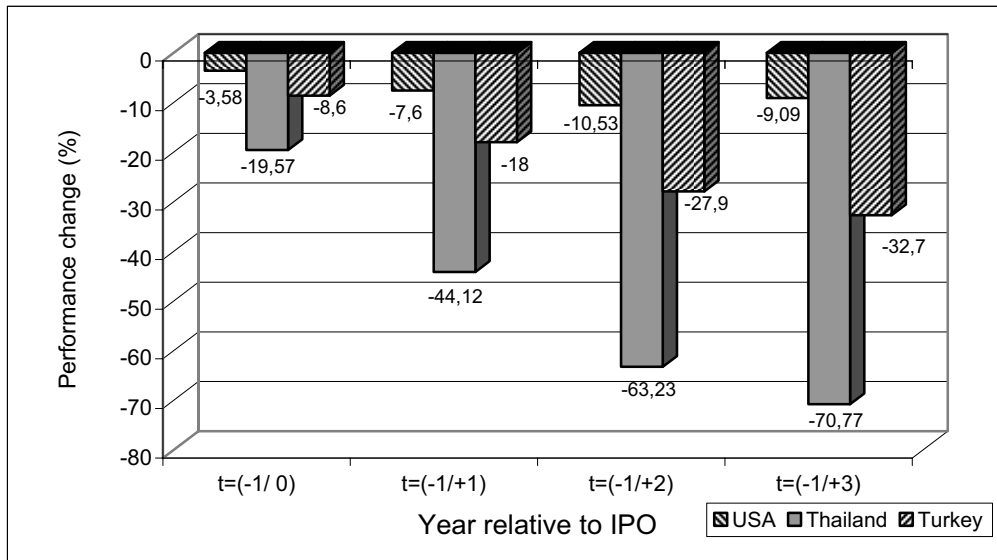


Fig. 1. Operating performance change: operating return on assets

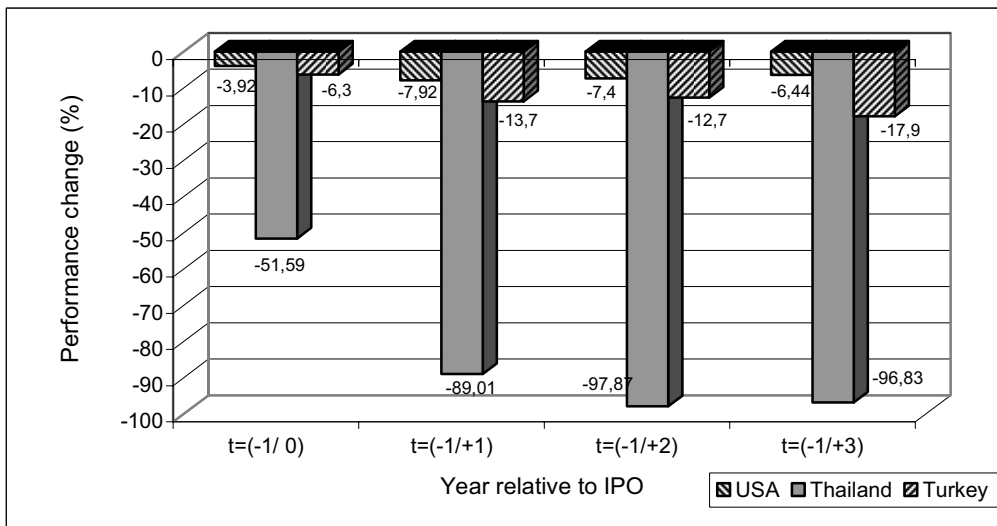


Fig. 2. Operating performance change: operating cash flows / assets

The findings of Jain and Kini (1995) for the U.S. market as a developed market, of Kim et al. (2002) for Thai market as a developing market, and ours for Turkish market as a developing market are compared in Figures 1 and 2. The changes in the operating return on assets are shown in Figure 1, while the changes in the operating cash flows deflated by total assets are offered in Figure 2. There are two noteworthy features in both figures. First one is that there is a decrease in the post-issue operating performance in each of three markets. Second, however, that there is a more decrease in developing countries than in developed ones. For instance, the changes in the operating return on assets between the pre-IPO year and three years after the IPO are -9.09% for the U.S. market, -70.70% for the Thai market, and -32.70 for the Turkish market. The changes in the operating cash flows deflated by total assets are -6.44% for the U.S. market, -96.83% for the Thai market, and -17.9% for the Turkish market.

**2.2. The ownership structure and operating performance of IPO firms.** An initial public offering of common stock causes significant changes in the ownership structure of a company. This potentially worsens managerial incentives and firm performance. The increased conflict of interest between managers and shareholders after the IPO should cause a decline in operating performance. Jain and Kini's (1994) evidence for the U.S. market supports this view. Jain and Kini report operating profitability declines significantly after flotation in the U.S. market and suggest this could be partly explained by the weakened managerial incentives. However, Mikkelsen et al.'s (1997) findings and conclusions contrast with those of Jain and Kini. Mikkelsen et al. found that the post-issue IPO decline in operating performance is unrelated to managerial ownership. Instead, they revealed that the variation in operating performance after going public is explained mostly by the size and age of the firms.

For emerging market countries, ownership structure of a firm plays a very important role in corporate finance (LaPorta et al., 1999). Due to relatively undeveloped market structure, information asymmetry among participants should be more severe than that in developed countries. Therefore, ownership structure may play a more important role in performance of emerging market firms rather than those of developed countries (Kim et al., 2004). Kim et al. examine changes in operating performance of Thai IPO firms, and fail to find any relationship between ownership structure and firm performance. Wang (2005) stated that his results for the Chinese IPO market support the contention that the portion of shares retained by original owners and ownership concentration are effective ways to reduce agency costs and thus improve performance. In our study of Turkish IPO firms, we might also expect performance declines when firms go public.

To analyze the effect of management ownership on firm performance, we split the sample into two groups based on the median alpha. We take the

measure “alpha” as the fraction of shares retained after the IPO by pre-IPO owners. Henceforth, the above median alpha subsample will be referred to as the high-ownership group and the below median alpha subsample as the low-ownership group.

In Table 4, the high-management and low-management ownership groups are compared using several variables for the operating performance prior to the IPO. We used Mann-Whitney U test to see if there are any differences in median values between high-ownership group and low-ownership group. The median alpha is found to be 83.33% for the whole sample.

We found some noteworthy statistically differences between two groups. The differences between two groups for the median operating cash flows divided by total assets and also for the median asset turnover for the year before the IPO are significant at 1 percent level. These values are 42.3% and 138.2% for the high ownership group while they are 21.1% and 107.6% for the low ownership group. We did not find significant differences between two groups in terms of the median issue size and median operating return on assets for the year prior to IPO.

Table 4. Summary statistics of IPO firms split by median proportion of the firm retained after the IPO (Alpha)

Variable	High ownership (Alpha $\geq$ % 83,33)	Low ownership (Alpha < % 83,33)	Mann-Whitney U Test Z statistic (p-value)
Median size of issue (\$ million)	7,77	8,56	-0.854
Number of observations	(95)	(80)	(0.393)
Median alpha (%)	85.30	75.50	-11.388 <sup>a</sup>
Number of observations	(95)	(80)	(0.000)
Median operating return on assets -1	0.259	0.22	-1.630
Number of observations	(83)	(80)	(0.103)
Median operating cash flows / total assets -1	0.423	0.211	-3.483 <sup>a</sup>
Number of observations	(74)	(73)	(0.000)
Median asset turnover -1	1.382	1.076	-2.120 <sup>b</sup>
Number of observations	(74)	(72)	(0.034)

Notes: <sup>a</sup> significant at 1 percent level, <sup>b</sup> significant at 5 percent level.

The relationship between the ownership level following the IPO and operating performance is reported in Table 5. We used Mann-Whitney U test. Our results as Z statistics values are shown in the table. We found an increase in the post-issue performance for only two measures for the high-ownership group. These two measures are equity capital turnover and operating cash flows deflated by total assets. The median change of equity capital turnover is -0.185% for the year before IPO and -0.156% for the third year after the IPO. The operating cash flow deflated by total assets also shows

a similar trend which increases from -0.082% to -0.037% for the year before IPO and for the third year after the IPO for the high-ownership group. All measures display a decline between the year before the IPO and the third year after the IPO for the low-ownership group. The most decrease was in the median operating profit margin measure which was -0.013% in the year before the IPO and -0.541% in the third year after the IPO.

Panel A of Table 5 reports the operating return on assets. Low-ownership group demonstrates a more sharp decline than that of the high-ownership group.



The median change in operating return on assets for the low-ownership group is -4.1% for the year before the IPO and -18.6%, -41.9% and -40.2% for the Years +1, +2, and +3 after the IPO. For the high-ownership group, it is -11.6% for the year before the IPO and -17.1%, -17.3% and -22.8% for the Years +1, +2, and +3 after the IPO. In Panel B of Table 5, there is a similar trend in the median change of the operating profit deflated by total assets. The differences in the median change of both operating return on assets and operating profit deflated by total assets are significant at 0.10 percent level.

However, operating profit margin somehow demonstrates a different trend for the both groups. There are some decreases for some years and some increases for some other years in the median change in operating profit margin for high- and low-ownership group. For the median change of operating profit margin, there is an increase between the year before the IPO and the year after the IPO (from -7.8% to -7.1%) and also a decrease between the year before IPO and 3 years after the IPO (from -7.8% to -12.4%) for the high-ownership group. However, the changes are not statistically significant. The low-ownership group also follows the same pattern. There is an increase between the year before the IPO and three years after the IPO (from -5.2% to -12.1%) but also a decrease between the Year +1 and Year +2 after the IPO in the median change of operating profit margin for the low-ownership group. The other three measures in Table 4 follow the same pattern as in the median change of operating profit margin for the low- and high-ownership group.

To sum up Table 5, there is a relatively superior post-issue operating performance of firms with

high-ownership retention by original owners in comparison to low-ownership group. These results are consistent with the implications of both Jensen and Meckling's (1976) agency model and Leland and Pyle's (1977) signaling model.

In Figures 3 and 4 we compare the effect of management ownership on the post-issue operating performance for the findings of Jain and Kini (1994) for the U.S. as a developed market and our findings for Turkey as a developing market. There are two noteworthy features in the figures. The first one is that the less management ownership retained after the IPO the less post-issue operating performance reported for two markets. For instance, the changes in the operating return on assets for the Years +1, +2, and +3 relative to pre-IPO Year for high-ownership and low-ownership groups in the US market are -2.76% and -4.55%, -4.80% and -8.74, -9.76% and -11.12%, and -7.88 and -9.72% respectively. These values for the Turkish market are -11.6 and -4.10, -17.1 and -18.6, -17.3% and -41.9, and -22.8% and -40.2% respectively. The second feature is that the decline in developing market is sharper than that in developed market. For instance, the changes in the operating cash flows deflated by total assets for the Years +1, +2, and +3 relative to pre-IPO Year for the high-ownership group are -3.21% and -8.20%, -6.86% and -11.3, -6.22 and -10.2%, and -4.95% and -3.7% respectively for the US market in comparison to Turkish market. These values for the low-ownership group are -5.21% and -4.80%, -8.69% and -14.6%, 8.35% and -18.9%, and -7.69% and -24.3% respectively for the US market in comparison to the Turkish market.

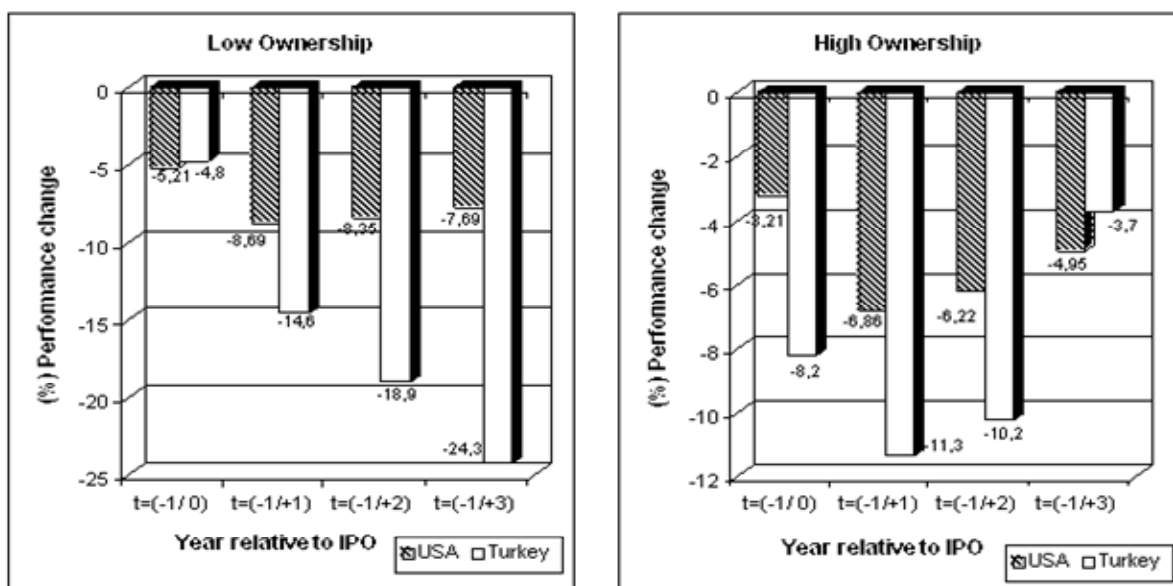


Fig. 3. Comparison of operating performance of US and Turkish IPOs split by median proportion of the firm retained after the IPO: operating return on assets

Table 5. Operating performance of IPO firms split by median proportion of the firm retained after the IPO (Alpha)

Measure of operating performance	Years relative to completion of IPO											
	-1 to 0			-1 to +1			-1 to +2			-1 to +3		
	Alpha ≥ %83.33	Alpha < %83.33	Z tatictic (p-value)	Alpha ≥ %83.33	Alpha < %83.33	Z tatictic (p-value)	Alpha ≥ %83.33	Alpha < %83.33	Z tatictic (p-value)	Alpha ≥ %83.33	Alpha < %83.33	Z tatictic (p-value)
Panel A. Operating return on assets												
Median change	-0.116 <sup>b</sup>	-0.041	-2.060 <sup>b</sup>	-0.171 <sup>b</sup>	-0.186 <sup>c</sup>	-2.652 <sup>a</sup>	-0.173 <sup>a</sup>	-0.419 <sup>a</sup>	-2.042 <sup>b</sup>	-0.228 <sup>a</sup>	-0.402 <sup>a</sup>	-1.739 <sup>c</sup>
Number of observations	81	75	(0.039)	80	76	(0.008)	80	74	(0.041)	78	78	(0.082)
Panel B. Operating profit / total assets												
Median change	-0.133 <sup>b</sup>	-0.013	-2.185 <sup>b</sup>	-0.203 <sup>b</sup>	-0.357 <sup>a</sup>	-2.120 <sup>b</sup>	-0.205 <sup>a</sup>	-0.445 <sup>a</sup>	-1.665 <sup>c</sup>	-0.296 <sup>a</sup>	-0.541 <sup>a</sup>	-2.181 <sup>b</sup>
Number of observations	69	71	(0.029)	69	71	(0.034)	69	68	(0.096)	66	63	(0.029)
Panel C. Operating profit margin												
Median change	-0.078 <sup>c</sup>	-0.052 <sup>b</sup>	-0.405	-0.071	-0.121 <sup>b</sup>	-0.328	-0.106 <sup>c</sup>	-0.091	-0.500	-0.124 <sup>a</sup>	-0.151 <sup>b</sup>	-0.426
Number of observations	68	69	(0.686)	69	69	(0.743)	69	67	(0.617)	69	62	(0.670)
Panel D. Equity capital turnover												
Median change	-0.185 <sup>a</sup>	-0.325 <sup>a</sup>	-2.168 <sup>b</sup>	-0.091 <sup>a</sup>	-0.258 <sup>a</sup>	-2.040 <sup>b</sup>	-0.159	-0.315 <sup>a</sup>	-2.750 <sup>a</sup>	-0.156 <sup>b</sup>	-0.389	-1.564
Number of observations	73	65	(0.030)	73	65	(0.041)	74	63	(0.006)	74	58	(0.118)
Panel E. Asset turnover												
Median change	-0.190 <sup>a</sup>	-0.056	-2.261 <sup>b</sup>	-0.279 <sup>a</sup>	-0.269 <sup>a</sup>	-0.008	-0.412 <sup>a</sup>	-0.539 <sup>a</sup>	-1.126	-0.505 <sup>a</sup>	-0.552 <sup>a</sup>	-0.482
Number of observations	70	72	(0.024)	69	72	(0.993)	68	72	(0.260)	67	68	(0.630)
Panel F. Operating cash flows / total assets												
Median change	-0.082 <sup>c</sup>	-0.048	-1.038	-0.113 <sup>c</sup>	-0.146 <sup>c</sup>	-2.080 <sup>b</sup>	-0.102	-0.189 <sup>a</sup>	-2.982 <sup>a</sup>	-0.037	-0.243 <sup>c</sup>	-2.307 <sup>b</sup>
Number of observations	70	69	(0.299)	70	69	(0.037)	70	68	(0.003)	65	63	(0.021)
Panel G. Sales												
Median change	0.097 <sup>b</sup>	0.165	-1.967	0.961	0.702 <sup>c</sup>	-1.754 <sup>c</sup>	2.415	1.844	-2.396 <sup>b</sup>	5.053	3.836	-1.815 <sup>c</sup>
Number of observations	76	67	(0.049)	73	66	(0.079)	73	64	(0.017)	73	60	(0.070)

Notes: <sup>a</sup> significant at 1 percent level, <sup>b</sup> significant at 5 percent level, <sup>c</sup> significant at 10 percent level.

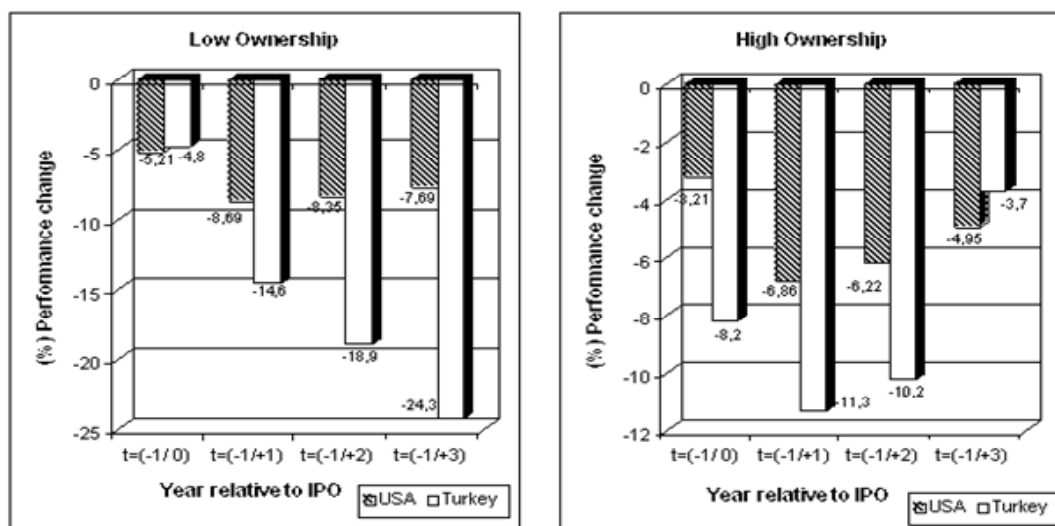


Fig. 4. Comparison of operating performance of US and Turkish IPOs split by median proportion of the firm retained after the IPO: operating cash flows / total assets

### 2.3. Operating performance and underpricing.

IPO underpricing tends to be a mechanism to signal a firm's quality to market (Allen and Faulhaber, 1989; Grinblatt and Hwang, 1989). High-quality firms, in general, underprice their stocks at the IPO and subsequently conduct a seasoned offering when market prices are established. The signaling model of underpricing thus suggests that IPO firms that underprice more should exhibit superior operating performance compared to those that do not. Kiymaz (2000) and Aktas et al. (2003) reported severe underpricing of Turkish IPOs. Our findings are also consistent with those results.

We follow the methodology of Jain and Kini (1994) to split the sample into two subsamples based on the median underpricing, and test whether the median change in average operating performance for 3 years before and after the IPO significantly differs in two subsamples. In Table 6, the IPO sample is split into two subsamples based on the median underpricing.

A comparison of the two subsamples for several variables measured at or prior to IPO is shown. The median underpricing is 8.70% for the whole sample. The alpha is the ratio the management owns after the IPO. To test whether there is a difference in the measures between the two groups, we used Mann-Whitney U test.

The differences in the median change of measures between the group with the median underpricing less than 8.70% or equal to 8.70% and the group with the median underpricing more than 8.70% are significant at 0.01% level as seen in Table 6. There are also statistically significant differences between the two groups for the measure of the operating cash flows deflated by total assets before the IPO. There are no differences in the median change between the two groups for the measures of operating return on assets, account receivables, issue size and alpha as seen in Table 6 according to p-values.

Table 6. Summary statistics of IPO firms split by median underpricing

Variable	Underpricing $\leq$ %8.70	Underpricing $>$ %8.70	Mann-Whitney U test Z statistic (p-value)
Median size of issue (\$ million)	8.78	6.89	-0.636
Number of observations	(69)	(70)	(0.525)
Median underpricing (%)	1.06	2.12	-10.252 <sup>a</sup>
Number of observations	(71)	(70)	(0.000)
Median alpha (%)	83.33	83.37	-0.523
Number of observations	(69)	(70)	(0.601)
Median operating return on assets t-1 (%)	23.80	26.00	-0.509
Number of observations	(64)	(67)	(0.611)
Median operating cash flows/ total assets t-1 (%)	26.30	36.27	-2.207 <sup>b</sup>
Number of observations	(60)	(60)	(0.027)
Median asset turnover t-1 (%)	1.19	1.18	-0.262
Number of observations	(61)	(60)	(0.793)

Notes: <sup>a</sup> significant at 1 percent level, <sup>b</sup> significant at 5 percent level.

Table 7. Operating performance of IPO firms split by median underpricing

	Years relative to completion of IPO											
	-1 to 0			-1 to +1			-1 to +2			-1 to +3		
Measure of operating performance	Underpricing ≤ %8.70	Underpricing >%8.70	Z statistic (p-value)	Underpricing ≤ %8.70	Underpricing >%8.70	Z statistic (p-value)	Underpricing ≤ %8.70	Underpricing >%8.70	Z statistic (p-value)	Underpricing ≤ %8.70	Underpricing >%8.70	Z statistic (p-value)
Panel A. Operating return on assets												
Median change	-0.071	-0.114	-0.610	-0.188	-0.186	-0.478	-0.314	-0.196	-0.508	-0.502	-0.357	-0.905
Number of observations	66	67	(0.542)	65	67	(0.633)	64	66	(0.612)	64	66	(0.365)
Panel B. Operating cash flows / total assets												
Median change	-0.063	-0.040	-0.334	0.013	-0.091	-0.744	-0.090	-0.115	-0.438	-0.089	-0.199	-0.498
Number of observations	61	60	(0.738)	61	60	(0.457)	61	59	(0.661)	58	54	(0.619)
Panel C. Asset turnover												
Median change	-0.078	-0.022	-0.873	-0.075	-0.053	-0.291	-0.046	-0.040	-0.264	-0.106	-0.130	-0.611
Number of observations	59	56	(0.383)	59	56	(0.771)	59	55	(0.792)	57	54	(0.541)
Panel D. Net sales												
Median change	0.125	0.138	-0.125	-0.860	1.023	-1.160	2.054	2.513	-0.777	4.332	5.593	-0.279
Number of observations	58	61	(0.901)	58	60	(0.246)	58	59	(0.437)	56	57	(0.781)
Panel E. Capital expenditures*												
Median change				-0.097	-0.061	-0.652	0.653	0.786	-0.867	1.149	1.461	-1.191
Number of observations				65	65	(0.514)	65	64	(0.386)	64	62	(0.234)

Note: \* changes are computed according to IPO year.

In Table 7, a comparison of operating performance for the two groups is provided for different time windows. Panel A displays the operating return on assets for the two groups for the time interval between the year before the IPO and the Years +1, +2, and +3 after the IPO. The median change in operating performance is sharper for the below median group than that of the above median group for the three year periods. There is a significant decrease for the below median group for the Year +2 which is 31.4% and for the Year +3 which is 50.2% relative to the year before the IPO.

In Panel B of Table 7, a comparison of operating cash flows deflated by total assets is reported. There is a more decrease for the IPO year relative to the pre-IPO year for the below median group than that of above median group. However, this trend changes in the following years. The operating cash flows deflated by total assets increase for the Year +1 for the below median group while decrease for the above median group kept decreasing. There is a decrease for both groups for the Year +2 and the Year +3.

The measure asset turnover decreases for all the years investigated for both groups. However, there is a more decrease for the below median group as seen in Panel C of Table 7. There is a steady and quick increase after the IPO year in net sales as reported in Panel D of Table 7. The above median group has more increase than that of the below median group in net sales. From the Panel D, it can be said that IPO firms which make more underpricing have more increases in net sales.

In Panel E, capital expenditures display decreases for the Year +1 relative to the IPO year for both groups but increases for the Years +2 and +3 relative to the IPO year. The below median group has more decreases in capital expenditures relative to the above median group for the Year +1 while the same group has a mild increase in capital expenditures relative to the above median group for the Year +2 and the Year +3. As a result of Panel E, the IPO firms which make more underpricing have more increases in capital expenditures than the IPO firms which make less underpricing. According to Mann-Whitney U test results, there is no statistically significant differences among those measures of the both groups reported in Table 7.

### 3. Market expectations and earnings performance

In this study, the evidence we reached with respect to the post-issue operating performance for the Istanbul Stock Exchange is in line with the findings of Jain and Kini (1994). Both our study and the others (e.g., Jain and Kini, 1994; Kim et al., 2004) indicate a decrease in the post-issue operating performance.

A common claim for such a decrease in all studies is the timing of the IPOs. Managers take advantage of temporary improvements in performance to issue new shares when investors have overly optimistic expectations about firms' future prospects. Besides, managers could attempt to window-dress their accounting numbers prior to going public.

Table 8. Market expectations and earning performance of initial public offerings

	0 to +1	0 to +2	0 to +3
Panel A. Price-earnings ratio			
Median level in Year 0	13.04		
Median change	-0.42 <sup>a</sup>	-0.61 <sup>a</sup>	-0.76 <sup>a</sup>
Number of observations	143	132	123
Panel B. Market to book ratio of assets			
Median level in Year 0	2.97		
Median change	-0.11	-0.31 <sup>b</sup>	-0.43 <sup>a</sup>
Number of observations	146	137	123

Notes: <sup>a</sup> significant at 1 percent level, <sup>b</sup> significant at 5 percent level.

To test the market expectations on earnings growth in the post-issue period and whether these expectations are fulfilled, following Jain and Kini (1994), we analyze the long-term earnings performance by using market-to-book and price/earning ratios for IPO firms.

The changes in earnings and market performances of the IPO firms for Years +1, +2, and +3 relative to IPO year are indicated in Table 8. As seen in the table, earnings and market performances steadily fall after the going public. These changes are significant at 0.05 level suggesting that there are significant and steadily decreases at the earnings and market performances after the IPO.

Table 8 demonstrates that IPO firms start out with high M/B and P/E ratios which decline significantly over time. Overall, these results suggest that investors appear to value firms going public based on expectations that earnings growth will continue, while in actuality the pre-IPO earnings levels on which expectations are formed are not even sustained for the Turkish market.

Further evidence consistent with investors having overly optimistic expectations based on pre-IPO performance levels is provided by Ritter (1991), Jain and Kini (1994), and Loughran and Ritter (1995).

### Conclusion

We analyze the post-issue operating performance on the Istanbul Stock Exchange. Using a number of operating performance measures, we compared the performances for three years after the IPO relative

to pre-IPO year. We found some significant declines in the post-issue operating performances.

Investigating the effect of management ownership structure after the IPO on the post-issue operating performance, we did not reach any clear evidence showing agency problem. In other words, we did not find any relation between the post-issue operating performance and management retention after the IPO. Besides, there is no relation between the post-issue operating performance and underpricing.

Overall, we come up with a result that the Turkish IPO firms did not sustain their pre-IPO performances. There are some increases in sales numbers and capital expenditures numbers after the IPO year in comparison to pre-IPO level while there are some decreases in profitability level after the IPO. However, investors appear to value firms going public based on their pre-IPO performance level, while in fact the pre-IPO performance levels on which investors formed their expectations are not even sustained.

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