

Deliberate Discounts and Underpricing of Turkish IPOs

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Abstract

This study investigates underpricing and deliberate discounts in a unique sample of 113 initial, public offerings at Borsa Istanbul. Using pre-issue prospectuses and valuation reports, this study documents the degree of optimism, underwriter discounts and their association with initial returns. We hypothesise that first day returns should be proportional to the percentage discounts offered if value estimates are unbiased and deliberate discounts reflect fair value. The findings indicate that offered discounts are not proportional to the degree of optimism in value estimates, as share prices do not recover on the first day as much as percentage price discounts. Tests also show that optimistic value estimates are associated with larger price discounts and price discounts are negatively related to initial returns.

Keywords: Initial public offerings, underpricing, deliberate discount, initial return.

JEL Code: G14, G30, L25

Kasdi İskontolar ve Trk Halka Arzlarının Dşk Fiyatlaması

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Bu alıřma Borsa İstanbul'da ilk defa halka arz edilen 113 řirketin dřk fiyatlamasını ve kasdi iskontoları incelemektedir. alıřma ihra öncesi izahnameleri ve fiyat tespit raporlarını kullanarak fiyatlamadaki

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iyimserlik derecesini, yatırım bankası iskontolarını ve bunların ilk getirilerle ilişkisini ortaya koymaktadır. Çalışmada halka arz değer tahminlerinin önyargısız olduğu durumda ve kasdi iskontoların adil fiyatları yansıttığı takdirde ilk getirilerin yüzdelik kasdi iskonto ile orantılı olması gerektiği öne sürülmektedir. Bulgular yapılan iskontoların halka arz değer tahminlerindeki iyimserlik derecesi ile orantılı olmadığını göstermektedir, zira hisse fiyatları ilk gün ticaretinde kasdi iskonto yüzdesi kadar artış göstermemektedir. Testler ayrıca iyimser değer tahminlerinin daha yüksek fiyat iskontoları ile bağlantılı olduğunu ve fiyat iskontolarının ilk getirilerle negatif yönlü ilişkide olduğunu göstermektedir.

Anahtar Kelimeler: İlk halka arz, düşük fiyatlama, kasdi iskonto, ilk getiri.

JEL Kodu: G14, G30, L25

1. Introduction

Underpricing of initial public offerings (IPO) is widely documented around the world. Ibbotson (1975), Baron (1982), Rock (1986), Beatty and Ritter (1986) and Loughran and Ritter (2002) formulate theoretical framework, Ritter and Welch (2002) and Loughran and Ritter (2004) review the literature. Pricing of IPOs, underwriter reputation, share allocation and information asymmetry between issuers and investors are the central issues investigated within the broad spectrum of underpricing anomaly. Average IPO in the US is underpriced by 18.8% (Ritter & Welch, 2002).

This study explores intentional price discounts applied to the estimated fair value by underwriters in Turkish IPOs and their role in the initial underpricing. Existing studies on underpricing are mostly based on the observed price increases on the first day of trading in the aftermarket, and do not detail how much underwriters discount the fair value of the company at the IPO. To our knowledge, Roosenboom (2012) is the only exception, where he studies valuation methods by underwriters in valuation reports, and details the exact percentage discount applied to the offering price of French IPOs. He finds that underwriters apply a deliberate 18.2% average and median discount. At the valuation stage of IPO, underwriters and issuers are expected to be optimistic about the future prospects of the company, since they would probably not apply for the IPO at that certain time point otherwise. This optimism is documented in several studies for continental European IPOs (Paleari et

al., 2014; Vismara et al., 2015). Underwriters are likely to be aware of their optimistic bias and offer price discounts on the estimated firm value to account for the bias. Their strategy, however, could be a manipulative one as pointed out by Roosenboom (2012), as they could attempt to inflate value estimates since that would allow advertising larger price discounts. If that is the case, the offered discounts would be inversely related to initial returns as larger price discounts would indicate larger optimism in value estimations. This inference is the starting point and motivation of the study to investigate the association between first day returns, deliberate discounts and optimism. The fact that we investigate underpricing and its connection to pre-issue underwriter and issuer decisions makes this study a unique one.

Firms preparing to go public file IPO prospectuses and valuation reports following the publication of prospectus. These valuation reports detail how the share price is calculated, from the models used to value the firm to the peer valuation multiples, future cash flow estimates and company cost of capital. Underwriters often use multiple methods to value an IPO and assign weights to each method, taking weighted average value of these methods to obtain a fair value estimate. Eventually, investment banks responsible for the pricing indicate whether they would like to apply a discount to the offer price at the end of the document. This intentional discounting is the case for the large majority of Turkish IPOs as 97.3% of the IPOs during the study period explicitly acknowledge discounting the offer price.

This study comprises IPOs completed between January 2010 and December 2017 at Borsa Istanbul. 114 firms went public during this period. For these IPOs, we are able to access details of valuation procedure from the prospectuses or valuation reports for 113 firms. 110 of these firms (97.3%) state a discount in the offer price. The average deliberate discount is 21.98% while average underpricing is a smaller 6.81%. Results indicate that underpricing is negatively related to the deliberate discounts while deliberate discounts are positively associated with optimistic valuation. Tests of subsamples show that IPOs with lower initial returns have significantly larger optimistic bias and deliberate discounts relative to IPOs with higher initial returns.

The contribution of this paper is twofold: It provides the first investigation of deliberate underpricing in an emerging market and examines pre-issue price discounts vis-a-vis realised underpricing in the aftermarket. Second it

is the first study on IPO valuation and underpricing for the second wave of Turkish IPOs, i.e. after the most recent financial crisis.

The rest of the paper is organised as follows: Section 2 reviews the relevant literature. Section 3 details data and methodology. Section 4 presents results and Section 5 concludes the study.

2. Literature Review

IPO underpricing is documented in developed and developing markets alike (Ritter, 1984; 1991; Aggarwal et al., 1993; Kıymaz, 2000). The theorists argue that underwriters can discount the offering to facilitate the sale and to establish relations with institutional investors (Baron, 1982; Shiller, 1990). Tinic (1988) argues that issuers underprice to reduce their legal liability and to prevent lawsuits. Signaling theory establishes that underpricing signals issuer quality and high quality issuers underprice to gain favourable aftermarket investor attention (Allen & Faulhaber, 1989) and reap returns in the form of future issues (Welch, 1989). The favourable aftermarket conditions would also help sale of insider shares who lock up their holdings for a certain period after IPO. Habib and Ljungqvist (2001) propose that underwriters can forsake marketing expenditures in favour of less expensive underpricing. The literature places great emphasis on the asymmetric information theories to explain underpricing, however Ritter and Welch (2002) argue that simple market misvaluation and asset pricing risk premia are unlikely to explain underpricing, and it is vital to focus on the price-setting process to solve the underpricing puzzle. Kim and Ritter (1999), Purnanandam and Swaminatham (2004), and Zheng (2007) investigate valuation of IPOs by means of matched peer multiples to provide insight into fair value of offerings. Valuation by peer multiples is in fact, frequently used by underwriters in price calculations, along with dividend discount and discounted cash flow models. Reliance on one of these models alone can, however, produce biased results. Underwriters often use multiple models and determine weights of each model based on the issuer's industry, forecasts for the future and their judgement. Roosenboom (2007) examines the choice of valuation method by underwriters and their assigned weights in the fair value calculation. In the follow-up study, Roosenboom (2012) takes the first step towards directly explaining the price-setting process. He provides the first evidence of deliberate discounting by underwriters over the fair value estimation of IPO, and shows that initial aftermarket returns do not fully recover this deliberate discount.

Evidence on IPO underpricing is vast. For the purpose of this paper, we only present the Turkish evidence. Kiymaz (2000) investigates 163 IPOs during 1990-1996 and finds an average initial underpricing of 13.1% for Turkish IPOs. Durukan (2002) studies 173 IPOs and finds 14.61% initial underpricing. Bildik and Yilmaz (2008) find 5.94% median underpricing. Kurtaran (2013) documents 6.82% median underpricing and finds a negative relationship between underpricing and long term performance, consistent with Ritter (1991). None of these studies, however, delve into valuation reports to investigate deliberate underwriter discounts. This study aims to fill this gap in the literature. Investigation of price discounts is important because majority (97.3%) of IPOs in the investigation period openly declare major discounts and senior executives of some issuers voice these discounts in the offer price to gain investor attention. If the discount is truthfully offered over the fair value of IPO, post-issue price should proportionally recover in the short term as investors discover the true value of the firm and deliberate discounting percentages should explain the post-issue recovery.

3. Data and Methodology

We identify IPOs from January 2010 to December 2017 from Capital Markets Board (SPK). The information collected from SPK includes first trading date, number of shares offered, offer price, gross proceeds and over-allotment options if exercised. We supplement this data with IPO prospectuses and valuation reports collected from Public Disclosure Platform (KAP) and from investor relations section of issuer websites. From IPO prospectuses we collect data on incorporation date, IPO method, type of shares issued (primary or secondary), percentage shares issued and retained, lock-up period length, pre-issue accounting data and ownership. Price discount information is mostly obtained from valuation reports. We are able to collect pricing discount information from prospectuses for several early IPOs despite absence of their valuation reports. The initial sample of IPOs include 114 issues, 1 of which does not have issue prospectus. Of the remaining 113 IPOs, 3 do not implement deliberate discounting and their offer price equals the estimated fair value. 110 IPOs explicitly state a discount in the valuation reports or prospectuses. Final sample of the study consists of 113 IPOs for which we are able to determine price discounts from underwriter's valuation reports and prospectuses.

Table 1 presents summary statistics for sample characteristics. There is a declining IPO pattern for recent years; number of deals is largest at the beginning of sample period and lowest at the end of period. The relatively large number of deals at the start of decade can be explained by a financial recession effect such that issuers delaying an IPO go public in large numbers when market is stabilised, while the low number of deals in recent years can be attributed to economic and political instability in Turkey. Most issuers (72%) prefer a fixed price offering and 99 (87%) of offerings include issuance of new shares, proceeds of which go directly to financing new investments or payments of debt. On the other hand, 57 (50%) of issuers sell existing shares in the IPO, while only 14 (12%) of them are exclusively secondary shares.

Table 1. Sample and offer characteristics

Year	Number of IPOs	IPO Method		IPO Reason		
		Fixed Price	Book-building	Capital Increase	Shareholder Sale	Both
2010	22	12	10	6	5	11
2011	26	13	13	12	2	12
2012	25	23	2	18	1	6
2013	18	16	2	11	1	6
2014	13	10	3	6	3	4
2015	5	5	-	3	-	2
2016	1	1	-	-	-	1
2017	3	2	1	-	2	1
Total	113	82	31	56	14	43

Table 2 reports descriptive statistics for the sample. The median issuer is a family firm, and founded 15 years prior to IPO. On average, 91.68% of existing shares are retained (8.32% sold), capital is increased by 33.23%, and 29.63% of firm is publicly held following IPO. Only 8 (7% of) IPOs are backed by venture capital (VC) firms. 85% of IPOs are valued by market multiples (MM) method, 78% by discounted cash flows method and 13% by net asset value (NAV) method. Underwriters, on average, use 2 methods in valuation. While MM and DCF are the most preferred methods and often used simultaneously, NAV and sum of the parts method are used to value specific industries such as real estate investment trusts and holdings. The average IPO value is estimated at \$212 million and after discounting the final price is set at \$172 million. The average valuation bias is 26.68%, thus IPO firms are overvalued by

26.68% relative to first day closing value. 89% of the firms have optimistic valuation bias. The applied average intentional discount to the estimated IPO value is 21.98%, while the initial investor return stands at 6.81%. Summary statistics indicate that investors would not be able to obtain a positive first day return if underwriters do not apply price discounts to the estimated IPO value. The application of such a large discount appears to suggest that underwriters are aware of their optimistic bias and attempt to account for it. We test the relation between deliberate discounts, optimism and underpricing in the next section.

3.1. Models for tests of underpricing

Initial and aftermarket returns are calculated for each IPO using standard event methodology. The equation can be formulated as follows:

$$IR_{i,t} = \frac{P_{i,t}}{P_{i,0}} - 1$$

where $IR_{i,t}$ is the initial return of the share i at time t , $P_{i,t}$ is the price of share i at time t , and $P_{i,0}$ is the offer price of share i . Market index returns are calculated in the same manner and abnormal returns are calculated as share return minus market return. The returns are then stratified by several IPO characteristics and deliberate price discounts. We also calculate cumulative abnormal returns (CAR) up to 6 months to observe if deliberate discounts are recovered by the issuing firms following IPO. Finally, we perform cross-sectional regressions to investigate determinants of underpricing and the influence of deliberate discounts. In line with the literature, underpricing is modelled as a function of information asymmetry and market proxies, with added explanatory variable for deliberate discounting. In addition, we concur that underwriter decisions to apply an intentional discount should be related to the optimism in value estimates. Underwriters are likely to know better than anyone else whether their valuation procedure contains optimistic bias. In that case, they could apply larger deliberate discounts to offset the optimism in their estimations. We use two basic models and an expanded model with controls to investigate association between underpricing, deliberate discounting and optimistic valuation. The basic models can be written as follows:

$$DD = \alpha + \beta_1 OPTIMISM + \epsilon$$

$$Underpricing = \alpha + \beta_1 DD + \epsilon$$

Where DD (deliberate discount) percentage discount applied by underwriters to their fair value estimate. We consider only the final

offer price and do not take into account price updates. This applies to bookbuilding IPOs where underwriters may avoid assigning weights to valuation methods (discounted cash flows, peer multiples etc.) and initially determine the offer price as a price range. Deliberate discounts in the bookbuilding IPOs are calculated based on the final offer price. In these cases, minimum and maximum discounts are stated in the valuation reports. We calculate realised deliberate discount as final price relative to the midpoint of the discount range. For fixed price offerings, percentage discount is clearly stated in the valuation report.

Table 2. Descriptive statistics

Variable	Mean	Median	Percentiles		Min	Max	N
			25th	75th			
Age (years)	16.74	15	7	23	0	57	113
Family	0.65	1	0	1	0	1	113
Retention ratio (%)	91.68	99.30	85	1	55	1	113
Capital increase ratio (%)	33.23	33.3	12.65	43.75	0	2	113
Public ratio (%)	29.63	29.51	24.25	35.79	5.34	70.3	113
Type	0.87	1	1	1	0	1	113
VC	0.07	0	0	0	0	1	113
MM	0.85	1	1	1	0	1	113
DCF	0.78	1	1	1	0	1	113
NAV	0.13	0	0	0	0	1	113
Fair value estimate (mil \$)	212.28	49.38	20.04	195.56	6.37	3145.97	104
Final offer value (mil \$)	172.59	38.71	16.64	120.87	4.75	2852.35	113
First day market value (mil \$)	178.92	42.94	17.03	121.06	4.39	3187.92	113
Valuation bias by fair value (%)	26.68***	24.71***	10.25	39.87	-13.1	139	104
Deliberate discount (%)	21.98***	21***	16.75	29.3	0	46	113
Underpricing (%)	6.81***	1.9***	-0.01	11.05	-17.29	108	113
Optimism	0.89	1	1	1	0	1	104

Notes: Age is calculated as IPO year minus incorporation year. Family is a dummy variable, equals 1 if IPO is a family firm, 0 otherwise. Two or more members of a family must hold at least 50% of ordinary shares and a member of family must sit on board to qualify as family firm. Retention ratio is the percentage shares retained by existing shareholders at IPO. Capital increase ratio is percentage new shares issued relative to pre-issue equity. Public ratio is percentage shares public following IPO. Type, MM, DCF and NAV are dummy variables, representing new equity issue, use of market multiples, discounted cash flows and net asset value techniques by underwriters in IPO valuation. VC is a dummy for venture capital investment in the firm prior to IPO. Deliberate discount is the stated discount for fixed price offerings and midpoint discount for bookbuilding offerings calculated relative to final offer price. Values are converted to US Dollars using Central Bank bid conversion rate on the first trading day. *** indicates statistical significance at 1% level.

OPTIMISM is a dummy variable for positive valuation error, taking value of 1 if firm value is overestimated, zero otherwise. Valuation errors are measured from fair value relative to actual price on the first trading day. Specifically, they are measured as estimated fair value minus actual value, divided by actual value following Alford (1992) and Francis et al. (2002). The full model with controls can be stated as below:

$$\text{Underpricing} = \alpha + \beta_1 DD + \beta_2 LOCKUP + \beta_3 AGE + \beta_4 VC + \beta_5 MARKET + \beta_6 VOLATILITY + \beta_7 RETENTION + \beta_8 TYPE + \varepsilon$$

DD is the main variable of interest, measured as the percentage discount over the fair price calculated by underwriters. The expected sign of the coefficient is negative since higher underwriter discounts are hypothesised to be associated with more optimistic value estimates. Descriptive statistics show that initial returns are much smaller than deliberate discounts. The difference between percentage initial returns and discounts should be captured by underwriter optimism, hence the negative relationship.

LOCKUP is a dummy variable for IPOs with lock-up provisions, used as additional control for information asymmetry. SPK Board Bulletin dated 12 February 2013 Section B Clause 2 prohibits sale of existing shares for blockholders holding at least 10% of equity and senior executives for 1 year from the date of IPO for less than IPO price. Clauses 8-9 of SPK Issue Directive VII.128.1 published on June 23, 2013 reiterate above points and ban underpriced sale of blockholder and senior manager shares for a full year, and prohibit sale of shares for firms with market cap smaller than 40 million Turkish lira at offer price, unless the share price rises more than 25% relative to IPO price. Previous SPK Issue Directive I No: 40 dated 3 April 2010 does not impose lockup restrictions on insiders. Therefore, lockup provisions between 2010 and 2013 are determined on a voluntary basis. SPK lock-up clauses do not impose a total ban on the sale of shares, but aims to maintain price consistency in the aftermarket making the sale conditional on ownership ratio and share price. AGE variable is calculated as IPO year minus incorporation year. Ritter (1984) argues that firm age is inversely related to the risk. It is a control for ex ante uncertainty since older firms are likely to have more available information to the general public than younger firms. VC is a dummy variable for venture capital investors. Megginson and Weiss (1991) and Barry et al. (1990) associate VC investment with lower first day returns and conclude that VC investors

reduce underpricing by certifying offerings. Number of VC-backed IPOs are, however, small in our sample because Turkish market is mostly characterised by closely held family firms. Therefore, the influence of VC sponsors could be negligible in our sample. MARKET is the proxy for market conditions, since hot and cold market environment can affect the IPO process, demand for issue and first day trading. It is defined as buy and hold returns for BIST All Shares Index for 90 days prior to the first trading date. Better market conditions are likely to lead to higher first day returns, hence the expected relationship is positive. VOLATILITY is defined as standard deviation of daily market returns for 90 days prior to the first trading date. RETENTION is the percentage of shares retained by insiders following IPO. Signaling theories suggest that insiders can signal firm quality by retaining large part of their shares (Leland and Pyle, 1977), underpricing the offering and reap further benefits in the form of favourable investor attention and a possible secondary sale/seasoned equity offering (Allen and Faulhaber, 1989; Welch, 1989). Given the fact that IPOs are often accompanied by lockup provisions preventing insider sales for 180 or 365 days, insiders can signal their faith in the business by a high retention ratio. TYPE is a dummy variable equal to 1 if the issue is primary (capital increase), and 0 if the issue is secondary (sale of existing shares). In cases where primary issues and sale of existing shares transact simultaneously, the variable takes value of 1. This is because primary shares are issued mainly to finance future investment projects, whereas proceeds from sale of secondary shares directly go to the selling shareholder and the firm mostly does not benefit from it (Kiymaz, 2000).

4. Results

In this section we test for the relation between underpricing, deliberate discounts and optimistic valuation. First we stratify sample by initial returns (IR) and construct four subsamples based on the sign and median of initial returns. If valuation bias and offered discounts influence first day returns, the subsamples should display significant differences. The results presented in Table 3 show that IPOs with negative IR contain approximately twice valuation bias than IPOs with positive IR. The offered discounts by underwriters are also significantly larger for the negative IR subsample. Second panel displays differences between subsamples based on median IR. Smaller-than-median IR subsample has triple valuation bias than larger-than-median IR subsample. Similar to sign-based subsamples, the offered percentage discount is significantly

larger for small IR IPOs. Next we investigate the association between deliberate discounts, underpricing and returns by cross-sectional regressions.

Table 3. Underpricing, optimistic bias and deliberate discounts

	IR ≤ 0 (N=44)		IR ≥ 0 (N=78)		Difference	
	Mean	Median	Mean	Median	Mean	Median
Valuation bias (%)	42.9*** (12.86)	39.7*** [5.64]	20.2*** (7.18)	18.9*** [6.26]	*** (5.09)	*** [5.56]
Deliberate discounts (%)	26.5*** (19.5)	25*** [5.78]	20.2*** (17.26)	20*** [7.64]	*** (3.38)	*** [3.03]
	IR < Median (N=56)		IR > Median (N=56)			
Valuation bias (%)	39.1*** (13.9)	36.1*** [6.39]	12.99*** (5.00)	10.3*** [4.29]	*** (6.78)	*** [6.26]
Deliberate discounts (%)	25.3*** (21.8)	23.7*** [6.51]	18.7*** (13.22)	20*** [6.45]	*** (3.61)	*** [3.16]

Notes: This table presents tests of significance of differences between samples stratified by initial returns (IR). t-Statistics for significance of means are in parentheses, z-Statistics for significance of medians are in brackets. *** indicates significance at 1% level.

We perform four regressions, adjusted R²s of which range from 10.06% to 25.3%. Dependent variables are percentage discounts, initial returns, 30-day CAR and 60-day CAR respectively. We also run tests with long-run buy-and-hold abnormal returns as dependent variable, however do not present them because of their insignificance. The basic regression presented in the first column tests the effect of optimistic valuation on discounting. As expected, the Optimism coefficient is positively related to offered discounts, confirming our previous inference that underwriters are aware of their optimistic bias and adjust the offered discount accordingly. Underpricing regression in the second column shows that deliberate discounts are negatively associated with initial returns. As previously suggested and confirmed by the results of first regression, larger deliberate discounts tend to be offered for IPOs with larger valuation bias. Therefore the aftermarket performance of IPO is not necessarily in line with the magnitude of discount and likely to be negatively related with discounts due to inherent misvaluation. Of control variables, only market volatility appears to be related to underpricing, while others (not presented) are insignificant. The last two columns test the relationship between underpricing and short term returns. The two are positively related in the short term, however the association becomes

weaker in time and initial returns become completely irrelevant to returns in the long term.

Because of the underlying normality and homoskedasticity assumptions in the OLS regressions, we conduct two tests for each assumption. The Breusch-Pagan / Cook-Weisberg and White tests are utilized for homoskedasticity, Shapiro-Wilk and Jarque-Bera tests are carried out for normality. The values presented in the last four rows of the Table 4 show us clear evidence of heteroskedastic and non-normal residuals; the distributions are left-skewed. We deal with heteroskedasticity by performing the tests with robust (heteroskedasticity consistent) errors. To overcome the non-normality issue, we estimate a median non-parametric quantile regression for each OLS estimator. Non-parametric tests make no assumption about the distribution of residuals, hence non-normality does not obstruct the interpretation of their coefficients. The coefficients of quantile regressions and their signs remain similar to the reported OLS estimates, confirming the relationships documented in Table 4.

5. Conclusion

This study examines underpricing and price discounts in a unique sample of 113 Turkish IPOs during 2010-2017 period. The motivation for the study stems from the fact that no present study explores the association between underwriter discounts and underpricing. Prior studies in Turkey, for example, focus on the well-known underpricing anomaly observed on the first trading day and do not investigate the links between aftermarket pricing and pre-issue firm valuation and discounting. This study documents that average and median underpricing for recent Turkish IPOs is lower than previous studies relying on past decade deals (Kiyamaz, 2000; Kurtaran, 2013). Moreover, there are significant links between initial returns and deliberate discounts as well as deliberate discounts and optimistic valuation. While optimistic valuation bias of underwriters lead them to offer larger price discounts to potential investors, larger discounts are associated with lower initial returns. This result suggests that discounts offered by underwriters are not proportional to the degree of optimism in their value estimations. This is also confirmed by the lack of proportion between percentage discounts (21.98%) and initial returns (6.81%).

Table 4. Regressions

Dependent variables: DD, underpricing, 30-day CAR, 60-day CAR				
	Discounting	Underpricing	Returns1	Returns2
Constant	0.11*** (4.54)	-0.081 (-0.43)	0.01 (0.46)	0.026 (0.68)
Optimism	0.132*** (5.16)			
DD		-0.451** (-2.14)		
Volatility		9.2** (2.11)		
Underpricing			0.558*** (4.35)	0.637* (1.83)
Controls	No	Yes	No	No
Adj. R ² (%)	25.3	20.15	15.51	10.06
N	113	113	113	113
Breusch-Pagan / C-W	3.34 [0.067]	77.77 [0.000]	16.25 [0.000]	47.70 [0.000]
White Test	3.36 [0.067]	47.88 [0.213]	16.31 [0.000]	30.11 [0.000]
Shapiro-Wilk	2.72 [0.003]	6.72 [0.000]	4.17 [0.000]	3.055 [0.001]
Jarque-Bera	6.47 [0.039]	70.70 [0.000]	24.26 [0.000]	12.77 [0.001]

Notes: Table shows cross-sectional regressions with robust standard errors for the association between discounting, underpricing and returns. Dependent variables are DD, underpricing, 30-day cumulative abnormal returns (CAR), and 60-day CAR. t-Statistics are in parentheses. The underpricing regression model with controls is stated below: Insignificant controls are not presented. ***, ** and * indicate significance at 1%, 5% and 10% levels. Chi-square and z-values are given for tests of homoskedasticity and normality, p-values are given in brackets.

Turkish IPO market is attempting to recover following a period of internal and external destabilising factors. For investors, issuers and underwriters it is of utmost importance to provide and obtain unbiased information so that markets can complete their recovery. For its part, this study proposes that investors should not be deceived by the large advertised price discounts and keep their expectations more reasonable. In the long term, however, investors need not worry about this aspect since underpricing is only related to short term returns.

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