Internet Appendix to:

Do Underwriters Price-Up IPOs to Prevent Withdrawal?

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Table IA1. Robustness of High vs. Low Probability of Withdrawal Definition

This table reports the robustness of the main results in Tables 3 and 4 to alternative definitions of the dummy variable HIGH_PW. The dependent variable is EQP_RETURN, the NASDAQ-adjusted return between the offer price and the closing price three trading days prior to the end of the quiet period. In our main tests HIGH_PW equals 1 for offerings with a PW estimate in the top quartile of the distribution, and zero for IPOs in the bottom quartile. Columns 1 to 5 below report coefficient estimates when using alternative definitions of HIGH_PW, which are stated above each column number. In each specification, HIGH_PW takes a value of one for offerings in the top PW group (e.g. the top quintile in column 4), and a value of zero for IPOs in the bottom group. In Panel A, Price adjustment dummies indicate the location of the offer price relative to the filing price range, as defined in Section III.B. In panel B, DUMMY_LOW is an indicator variable with a value of one for offerings priced at the low boundary, and zero for offerings priced below the low boundary. Heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: All Price Adjustment Groups (Table 3 format)

Dependent variable: EQP_RETURN	Definition of HIGH_PW (Top vs. Bottom):				
	Median (1)	Tercile (2)	Quartile (3)	Quintile (4)	Decile (5)
Constant	0.440***	0.427**	0.375*	0.564**	0.264
	(0.150)	(0.174)	(0.202)	(0.234)	(0.225)
ABOVE_HIGH	0.373***	0.339***	0.336***	0.358***	0.373***
	(0.038)	(0.050)	(0.048)	(0.046)	(0.067)
AT_HIGH	0.137***	0.102**	0.095**	0.120***	0.155***
	(0.039)	(0.046)	(0.041)	(0.041)	(0.053)
MID_HIGH	-0.005	-0.036	-0.013	0.035	0.086
	(0.038)	(0.050)	(0.045)	(0.042)	(0.053)
LOW_MID	-0.005	-0.007	-0.033	-0.008	0.010
	(0.044)	(0.057)	(0.047)	(0.049)	(0.054)
AT_LOW	-0.046	-0.052	-0.036	-0.007	0.031
	(0.029)	(0.041)	(0.038)	(0.040)	(0.043)
BELOW_LOW	-0.073***	-0.075**	-0.054	-0.030	0.037
	(0.025)	(0.035)	(0.033)	(0.032)	(0.041)
ABOVE_HIGH × HIGH_PW	-0.009	0.003	-0.020	-0.032	-0.106
	(0.070)	(0.081)	(0.096)	(0.107)	(0.156)
AT_HIGH × HIGH_PW	-0.026	0.023	0.070	0.016	-0.172
	(0.048)	(0.054)	(0.066)	(0.070)	(0.129)
MID_HIGH × HIGH_PW	-0.008	0.029	0.003	-0.047	-0.126
	(0.067)	(0.062)	(0.073)	(0.079)	(0.151)
AT_MID × HIGH_PW	-0.011	-0.012	-0.002	0.005	-0.114
	(0.036)	(0.054)	(0.061)	(0.067)	(0.118)
LOW_MID × HIGH_PW	-0.073	-0.053	-0.052	-0.095	-0.149
	(0.057)	(0.075)	(0.076)	(0.080)	(0.134)
AT_LOW × HIGH_PW	-0.091***	-0.095**	-0.139***	-0.184***	-0.296**
	(0.030)	(0.044)	(0.052)	(0.062)	(0.116)
BELOW_LOW × HIGH_PW	0.010	-0.008	-0.057	-0.101*	-0.213*
	(0.027)	(0.037)	(0.047)	(0.053)	(0.118)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	3,723	2,476	1,854	1,484	740
R-squared	0.293	0.301	0.284	0.269	0.288

Panel B. Priced At Low vs. Priced Below Low (Table 4 format)

Dependent variable: EQP_RETURN	Definition of HIGH_PW (Top vs. Bottom):				
	Median	Tercile	Quartile	Quintile	Decile
	(1)	(2)	(3)	(4)	(5)
Constant	0.176	0.192	0.119	0.199	0.380**
	(0.141)	(0.198)	(0.159)	(0.176)	(0.187)
DUMMY_LOW	0.047**	0.058**	0.052*	0.055*	0.029
	(0.019)	(0.026)	(0.027)	(0.031)	(0.033)
HIGH_PW	0.051**	0.054	0.004	-0.061	-0.171*
	(0.023)	(0.035)	(0.042)	(0.056)	(0.097)
DUMMY_LOW × HIGH_PW	-0.088***	-0.101***	-0.095**	-0.089**	-0.116**
	(0.028)	(0.037)	(0.037)	(0.043)	(0.050)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1,171	808	601	488	260
R-squared	0.094	0.102	0.112	0.116	0.278

Table IA2. Pricing Intention OLS Regressions: NASDAQ Adjusted 1st-Day Return

The dependent variable is the 1st-day NASDAQ-adjusted return. In panel A, price adjustment dummies indicate the location of the offer price relative to the filing price range, as defined in Section III.B. In panel B, DUMMY_LOW takes a value of one for offerings priced at the low boundary, and zero for offerings priced below the low boundary. PW is the ex-ante withdrawal probability, as estimated in Table A1. HIGH_PW indicates PW in the top quartile of the distribution vs. in the bottom quartile. Heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: All Price Adjustment Groups (Table 3 format)

	Dependent Variable: 1st-day NASDAQ-adjusted return					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.167***	0.355***	0.820**	0.132***	0.344***	1.165***
	(0.021)	(0.103)	(0.332)	(0.019)	(0.128)	(0.450)
ABOVE_HIGH	0.491***	0.397***	0.389***	0.393***	0.342***	0.339***
	(0.041)	(0.036)	(0.038)	(0.044)	(0.038)	(0.037)
AT_HIGH	0.190***	0.138***	0.129***	0.125***	0.097***	0.104***
	(0.032)	(0.032)	(0.033)	(0.033)	(0.030)	(0.031)
MID_HIGH	-0.012	0.024	0.041	-0.011	0.013	0.029
	(0.030)	(0.037)	(0.038)	(0.026)	(0.031)	(0.034)
LOW_MID	-0.112***	-0.007	-0.014	-0.075***	-0.027	-0.047
	(0.025)	(0.029)	(0.031)	(0.026)	(0.034)	(0.038)
AT_LOW	-0.111***	-0.061**	-0.084***	-0.070***	-0.046**	-0.054**
	(0.023)	(0.024)	(0.024)	(0.022)	(0.023)	(0.026)
BELOW_LOW	-0.147***	-0.064***	-0.080***	-0.102***	-0.048**	-0.068***
	(0.022)	(0.023)	(0.024)	(0.021)	(0.022)	(0.024)
AT_HIGH × PW	-0.034	-0.486***	-0.449**			
	(0.221)	(0.185)	(0.182)			
AT_HIGH × PW	0.009	-0.257*	-0.199			
	(0.141)	(0.147)	(0.147)			
MID_HIGH × PW	-0.161**	-0.204	-0.259			
	(0.072)	(0.171)	(0.172)			
AT_MID × PW	-0.032	-0.088	-0.121			
	(0.147)	(0.166)	(0.160)			
LOW_MID × PW	0.029	-0.391**	-0.320**			
	(0.069)	(0.155)	(0.163)			
AT_LOW × PW	-0.078*	-0.376***	-0.280***			
	(0.041)	(0.087)	(0.094)			
BELOW_LOW × PW	0.097	-0.204**	-0.138			
	(0.059)	(0.099)	(0.108)			
ABOVE_HIGH × HIGH_PW				0.059	-0.063	-0.092
				(0.067)	(0.073)	(0.072)
AT_HIGH × HIGH_PW				0.085*	0.010	-0.022
				(0.046)	(0.055)	(0.055)
MID_HIGH × HIGH_PW				-0.038	-0.079*	-0.135***
				(0.024)	(0.047)	(0.052)
AT_MID × HIGH_PW				0.021	-0.034	-0.082*
				(0.035)	(0.039)	(0.043)
LOW_MID × HIGH_PW				0.021	-0.091	-0.092
				(0.027)	(0.061)	(0.065)
AT_LOW × HIGH_PW				-0.033**	-0.122***	-0.155***
				(0.013)	(0.039)	(0.040)
BELOW_LOW × HIGH_PW				0.003	-0.082**	-0.105***
				(0.012)	(0.037)	(0.038)
Controls	No	Yes	Yes	No	Yes	Yes
Time FE	No	No	Yes	No	No	Yes
Observations	3,779	3,723	3,723	1,886	1,854	1,854
R-squared	0.201	0.359	0.381	0.205	0.337	0.369

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Panel B. Priced At Low vs. Priced Below Low (Table 4 format)

			Dependent Variable: FIRST_DAY_RETURN			
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.020***	0.121**	0.307	0.030***	0.210***	0.552*
	(0.007)	(0.060)	(0.213)	(0.007)	(0.075)	(0.293)
DUMMY_LOW	0.037***	0.036***	0.035***	0.032***	0.033***	0.033**
	(0.011)	(0.010)	(0.011)	(0.012)	(0.012)	(0.013)
PW	0.097	0.043	0.022			
	(0.059)	(0.082)	(0.083)			
DUMMY_LOW × PW	-0.175**	-0.188***	-0.177**			
	(0.072)	(0.069)	(0.076)			
HIGH_PW				0.003	-0.027	-0.067***
				(0.012)	(0.021)	(0.024)
DUMMY_LOW × HIGH_PW				-0.036**	-0.043**	-0.038**
				(0.018)	(0.018)	(0.019)
Controls	No	Yes	Yes	No	Yes	Yes
Time FE	No	No	Yes	No	No	Yes
Observations	1,191	1,171	1,171	610	601	601
R-squared	0.012	0.078	0.163	0.012	0.100	0.247

Table IA3. Pricing Intention OLS Regressions: Robustness to Excess Return Period

The dependent variable is the NASDAQ-adjusted return over 10 calendar days (D0_10_RETURN), 15 calendar days (D0_15_RETURN), and 20 calendar days (D0_20_RETURN) post offering. If there was no trading on the respective day, we use the first closing price that becomes available within the three calendar days that follow. Price adjustment dummies indicate the location of the offer price relative to the filing price range, as defined in Section III.B. In panel B, DUMMY_LOW equals one for offerings priced at the low boundary, and zero for offerings priced below the low boundary. PW is the ex-ante withdrawal probability, estimated in Appendix Table A1. HIGH_PW indicates PW in the top quartile of the distribution vs. in the bottom quartile. Heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: All Price Adjustment Groups (Table 3 format)

Dependent variable:	D0_10_RETURN		D0_15_RETURN		D0_20_RETURN	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.185	0.784	-0.012	0.647	0.412	0.592
	(0.398)	(0.564)	(0.416)	(0.573)	(0.510)	(0.580)
ABOVE_HIGH	0.394***	0.352***	0.392***	0.353***	0.411***	0.364***
	(0.037)	(0.042)	(0.038)	(0.045)	(0.039)	(0.045)
AT_HIGH	0.149***	0.134***	0.150***	0.133***	0.164***	0.131***
	(0.035)	(0.037)	(0.036)	(0.040)	(0.041)	(0.039)
MID_HIGH	0.043	0.030	0.034	0.018	0.022	0.013
	(0.039)	(0.042)	(0.042)	(0.046)	(0.046)	(0.048)
LOW_MID	-0.009	-0.050	-0.007	-0.057	0.009	-0.052
	(0.034)	(0.051)	(0.036)	(0.054)	(0.041)	(0.055)
AT_LOW	-0.064**	-0.028	-0.061**	-0.019	-0.050*	-0.029
	(0.025)	(0.034)	(0.026)	(0.036)	(0.028)	(0.036)
BELOW_LOW	-0.080***	-0.068**	-0.088***	-0.076**	-0.080***	-0.080**
	(0.024)	(0.029)	(0.024)	(0.031)	(0.025)	(0.031)
AT_HIGH × PW	-0.250		-0.223		-0.195	
	(0.173)		(0.197)		(0.197)	
MID_HIGH × PW	-0.264		-0.258		-0.172	
	(0.231)		(0.246)		(0.302)	
AT_MID × PW	-0.109		-0.129		-0.127	
	(0.137)		(0.133)		(0.138)	
LOW_MID × PW	-0.252		-0.251		-0.309	
	(0.175)		(0.191)		(0.223)	
AT_LOW × PW	-0.383***		-0.415***		-0.472***	
	(0.121)		(0.130)		(0.147)	
BELOW_LOW × PW	-0.099		-0.047		-0.063	
	(0.115)		(0.133)		(0.136)	
ABOVE_HIGH × HIGH_PW		-0.101		-0.122		-0.039
		(0.083)		(0.087)		(0.094)
AT_HIGH × HIGH_PW		-0.001		0.025		0.023
		(0.063)		(0.068)		(0.062)
MID_HIGH × HIGH_PW		-0.128**		-0.110		-0.080
		(0.065)		(0.071)		(0.077)
AT_MID × HIGH_PW		-0.063		-0.059		-0.041
		(0.055)		(0.061)		(0.063)
LOW_MID × HIGH_PW		-0.058		-0.053		-0.046
		(0.074)		(0.082)		(0.084)
AT_LOW × HIGH_PW		-0.192***		-0.201***		-0.193***
		(0.050)		(0.053)		(0.054)
BELOW_LOW × HIGH_PW		-0.089**		-0.074		-0.060
		(0.044)		(0.048)		(0.049)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,737	1,859	3,689	1,834	3,743	1,864
R-squared	0.328	0.324	0.317	0.313	0.313	0.333

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Panel B. Priced At Low vs. Priced Below Low (Table 4 format)

	D0_10_RETURN		D0_15_RETURN		D0_20_RETURN	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.292	0.631	0.196	0.536	0.255	0.541
	(0.354)	(0.521)	(0.408)	(0.605)	(0.438)	(0.576)
DUMMY_LOW	0.045***	0.055**	0.058***	0.072***	0.053***	0.066**
	(0.016)	(0.024)	(0.018)	(0.026)	(0.020)	(0.026)
PW	-0.034		0.020		0.039	
	(0.101)		(0.126)		(0.121)	
DUMMY_LOW × PW	-0.244**		-0.339***		-0.321***	
	(0.096)		(0.115)		(0.123)	
HIGH_PW		-0.077*		-0.085*		-0.085*
		(0.039)		(0.047)		(0.046)
DUMMY_LOW × HIGH_PW		-0.077**		-0.105***		-0.098***
		(0.033)		(0.038)		(0.038)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1172	600	1162	596	1174	602
R-squared	0.132	0.225	0.153	0.264	0.187	0.283

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Table IA4. Out-of-Sample Analysis of Pricing Intention, 2001-2007 and 2008-2015

The dependent variable is EQP_RETURN, the NASDAQ-adjusted return between the offer price and the closing price three trading days prior to the end of the quiet period. Price adjustment dummies indicate the location of the offer price relative to the filing price range, as defined in Section III.B. PW is the ex-ante withdrawal probability, imputed from a probit model estimated over 1996-2000 for the 2001-2007 regression, and 1996-2007 for the 2008-2015 regression. Estimated probit models for these two subsamples are presented in Appendix Table A1. HIGH_PW equals 1 for offerings with a PW estimate in the top quartile of the respective regression subsample, and zero for IPOs in the bottom quartile. Columns 1 to 3 include interactions between the price location dummies and PW. Columns 4 to 6 include interactions between the price location dummies and HIGH_PW. All specifications include price adjustment level fixed effects. Heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: Pricing Intention, 2001 to 2007; Probit Estimation, 1996-2000

	Dependent variable: EQP_RETURN					
	(1)	(2)	(3)	(4)	(5)	(6)
ABOVE_HIGH × PW	-0.047	-0.160	-0.175			
	(0.148)	(0.174)	(0.175)			
AT_HIGH × PW	-0.063	-0.171	-0.168			
	(0.118)	(0.151)	(0.156)			
MID_HIGH × PW	0.097	0.050	0.008			
	(0.289)	(0.310)	(0.312)			
AT_MID × PW	-0.048	-0.017	-0.019			
	(0.076)	(0.100)	(0.101)			
LOW_MID × PW	-0.029	-0.100	-0.080			
	(0.110)	(0.123)	(0.122)			
AT_LOW × PW	-0.284***	-0.338***	-0.343***			
	(0.071)	(0.100)	(0.104)			
BELOW_LOW × PW	0.052	-0.050	-0.002			
	(0.074)	(0.110)	(0.119)			
ABOVE_HIGH × HIGH_PW				0.002	-0.042	-0.086
				(0.083)	(0.103)	(0.096)
AT_HIGH × HIGH_PW				-0.038	-0.085	-0.085
				(0.055)	(0.073)	(0.079)
MID_HIGH × HIGH_PW				0.042	0.012	0.014
				(0.143)	(0.145)	(0.145)
AT_MID × HIGH_PW				0.032	0.031	0.036
				(0.049)	(0.070)	(0.072)
LOW_MID × HIGH_PW				-0.024	-0.052	-0.056
				(0.066)	(0.095)	(0.099)
AT_LOW × HIGH_PW				-0.167***	-0.204***	-0.219***
				(0.049)	(0.070)	(0.079)
BELOW_LOW × HIGH_PW				-0.030	-0.069	-0.053
				(0.036)	(0.066)	(0.073)
Price Adjustment Level FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Time FE	No	No	Yes	No	No	Yes
Observations	838	834	834	417	415	415
R-squared	0.225	0.289	0.316	0.259	0.350	0.415

Panel B: Pricing Intention, 2008 to 2015; Probit Estimation, 1996-2007

	Dependent variable: EQP_RETURN					
	(1)	(2)	(3)	(4)	(5)	(6)
ABOVE_HIGH × PW	0.197	0.087	0.124			
	(0.357)	(0.499)	(0.534)			
AT_HIGH × PW	-0.080	0.116	0.109			
	(0.396)	(0.491)	(0.494)			
MID_HIGH × PW	-0.416	0.516	0.385			
	(0.360)	(0.862)	(0.966)			
AT_MID × PW	0.220	0.169	0.071			
	(0.472)	(0.862)	(0.857)			
LOW_MID × PW	-0.146	-0.132	-0.096			
	(0.250)	(0.463)	(0.495)			
AT_LOW × PW	-0.300**	-0.549*	-0.669**			
	(0.141)	(0.294)	(0.304)			
BELOW_LOW × PW	-0.056	-0.150	-0.214			
	(0.109)	(0.280)	(0.271)			
ABOVE_HIGH × HIGH_PW				-0.108	-0.256*	-0.210
				(0.092)	(0.135)	(0.128)
AT_HIGH × HIGH_PW				0.047	-0.062	-0.053
				(0.115)	(0.172)	(0.178)
MID_HIGH × HIGH_PW				0.150	0.189	0.220
				(0.258)	(0.425)	(0.481)
AT_MID × HIGH_PW				-0.013	-0.193*	-0.202
				(0.093)	(0.117)	(0.127)
LOW_MID × HIGH_PW				0.006	-0.301**	-0.405**
				(0.104)	(0.135)	(0.167)
AT_LOW × HIGH_PW				-0.133***	-0.344**	-0.322**
				(0.043)	(0.138)	(0.136)
BELOW_LOW × HIGH_PW				-0.025	-0.179*	-0.179
				(0.043)	(0.108)	(0.113)
Price Adjustment Level FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Time FE	No	No	Yes	No	No	Yes
Observations	772	720	720	386	354	354
R-squared	0.115	0.170	0.209	0.084	0.154	0.217

Table IA5. Overallotment Option Exercise by Price Adjustment Level

This table shows the relation between the exercise of the overallotment option (OAO) and the price adjustment levels. Panel A presents means and medians for the following two OAO variables: the shares sold under the OAO as a percentage of the total offering (OA_SOLD_PERCENTAGE) and a dummy variable to indicate offerings where OA_SOLD_PERCENTAGE is strictly below 15% (DUMMY_OA_SOLD_BELOW_15PCT). Panel B presents t-tests for the difference in the average OA_SOLD_PERCENTAGE between the priced-at-low group and each of the other groups. Data on the overallotment exercise are from TSDC.

Panel B. Mean and Median by Price Adjustment Level

	OA_SOLD_PERCENTAGE		DUMMY_OA_SOLD_BELOW_15PCT	
	Mean	Median	Mean	Median
Price Adjustment Level:				
Below low	0.080	0.105	0.569	1
At low	0.074	0.064	0.594	1
Between low and mid	0.075	0.072	0.582	1
At mid	0.087	0.150	0.498	0
Between mid and high	0.098	0.150	0.417	0
At high	0.121	0.150	0.262	0
Above high	0.134	0.150	0.164	0
Full sample	0.100	0.150	0.413	0

Panel B. OA Sold Percentage: Tests for differences in means between the priced-at-low group and each of the other price adjustment groups

	OA_SOLD_PERCENTAGE: Differences Between Groups	
	Difference in Means	t-stat
At low – Below low	0.074 – 0.080 = -0.006	1.43
At low – Between low and mid	0.074 – 0.075 = -0.001	0.09
At low – At mid	0.074 – 0.087 = -0.013***	3.42
At low – Between mid and high	0.074 – 0.098 = -0.023***	3.43
At low – At high	0.074 – 0.121 = -0.047***	12.84
At low – Above high	0.074 – 0.134 = -0.060***	17.61