

Review Article

Open Access

How Does ESG Ratings Influence IPO's Underpricing? Evidence from the US Market

Peter Schmunkamp

Department of Economics and business Administration Alexandru Ioan Cuza University Iași, Romania

ABSTRACT

Purpose: The purpose of this paper is to analyse the impact of ESG ratings on IPOs performance in the form of underpricing. It is also analysed whether the existence of neutral or positive ESG ratings has an impact on underpricing. In addition, it will also be analysed whether the degree of ESG rating influences the underpricing within the rated companies. The aim is to make a contribution that can lead to a further reduction in information asymmetries on the capital markets and analyse the effects of signals.

Design/Methodology/Approach: The RepRisk rating of approx. 360 sub-frames is used to determine the influence of these variables on the underpricing with the help of a linear regression. Control variables are used to consider influencing factors that have already been researched. The influence of these variables on underpricing is then determined in a linear regression analysis. Statistical robustness tests validate the results.

Findings: An all-encompassing statement on the question of whether ESG ratings as part of the IPO process can lead to a reduction of information asymmetries or be a qualitative signal regarding the Signaling Theory.

Originality/Value: This paper provides new and important insights into the relationship between ESG ratings and the underpricing phenomenon. It is intended to support existing theories.

JEL Classification

G11, Q56

*Corresponding author

Peter Schmunkamp, Department of Economics and business Administration Alexandru Ioan Cuza University Iași, Romania.

Received: January 10, 2025; **Accepted:** January 15, 2025; **Published:** January 23, 2025

Keywords: ESG, Sustainability, Underpricing, IPO, Signaling Theory

Introduction

Looking at the options for obtaining information on an IPO in relation to ESG criteria, there are few sources that can be used by investors to carry out a proper risk assessment before a company goes public [1]. For this reason, in addition to the voluntary publication of ESG information in IPO prospectuses, ESG ratings are a key source for assessing a company's sustainable activities. ESG ratings are published by various agencies and can be commissioned by companies themselves and thus represent an instrument that can be used by companies to voluntarily publish ESG information. In principle, ESG ratings are intended to represent an objective assessment of a company's sustainability, whereby scoring without subjective influences cannot be ruled out [2]. For example, ratings from different rating agencies sometimes lead to different results, as the weighting of different sustainability aspects can vary [3].

ESG ratings and sustainability strategies are increasingly influencing investors' decision-making processes, while interest from the academic and scientific community has also surged in recent years. This shift has led to a revaluation of traditional economic principles such as market regulation and market efficiency [4]. Investors are now using ESG criteria to identify

potential investments, either to avoid companies that conflict with their sustainability values or to find companies that demonstrate strong ESG performance and align with their investment goals [5].

Focusing on Initial Public Offerings (IPOs), ESG criteria and ratings play a crucial role in shaping communication strategies during the IPO process, ensuring that investors have access to relevant information for thorough analysis [6]. Effective communication is equally essential for facilitating a successful IPO and bolstering the company's capital base. The concept of IPO underpricing - where the offering price is set below the market value - can signal breakdowns in communication, leading to information asymmetries in capital markets [7]. Underpricing tends to reflect a broader market phenomenon where, despite short-term fluctuations, the disparity between the offering price and secondary market value persists across stock exchanges [8]. From this, a notable correlation may exist between ESG-ratings and the degree of underpricing in IPOs.

This study uses a model which indicates the level of ESG aspects by focusing on ESG ratings that are published before the IPO release date.

Research Hypothesis

To assess the hypothesized effects of the dependent variables, Ordinary Least Squares (OLS) regression is applied, as this method

is well-suited for IPO-related data analysis. A linear regression model is then used to examine the relationship between the dependent variable and other independent variables in the study. One part of the study will focus on companies that received an ESG rating and analyse whether the degree of ESG scoring influences the underpricing (H1). In a further step, the total number of IPOs will be analysed, and it will be investigated whether the existence of a neutral or positive ESG rating has an impact on the underpricing (H2). Ratings from a level of BB and higher are assumed to be at least neutral to positive. The following regression equation is specified to test the hypothesis:

$$H1: IR_{ad} = \alpha + ESG_{rating} + \ln(Assets) + \ln(revenues) + \ln(age) + VC_{dummy} + StockExchange_{dummy} + UW_{ranking}$$

$$H2: IR_{ad} = \alpha + ESG_{Rating_{dummy}} + \ln(Assets) + \ln(revenues) + \ln(age) + VC_{dummy} + StockExchange_{dummy} + UW_{ranking}$$

Methodology and Data

This study focuses on the impact of ESG ratings on IPO underpricing, using a sample of IPOs from the U.S. market based on their initial issuing date. The primary source of data for IPOs from 2007 to 2022 was Refinitiv Eikon. This database provided key information such as the issue date, stock exchange, economic sector, offer price, first closing price, and other financial details. Companies in the banking, insurance, and utilities sectors were excluded from the sample. The reason for this exclusion is that banks and insurance companies are subject to stringent capital requirement regulations, while utility companies are heavily influenced by regulatory intervention. These factors mean that such companies have unique motivations for accessing capital markets [9].

In order to use an ESG rating that is as objective as possible and cannot be controlled by the company's own information, the rating from the RepRisk ESG database is used. RepRisk essentially assesses the ESG risk and focusses on external and public data as the basis for the analysis. Information is collected daily using machine learning tools to determine a quantifiable value in the form of the RepRisk Index (RRI), which in turn results in a RepRisk Rating (RRR) - AAA to D - to enable comparability and benchmarking.

With the help of WRDS (Wharton Resreach Data Services) access, the daily ESG ratings for the years 2007 to 2023 were determined for all ISINs from the above-mentioned Refinitiv Eikon query.

Variables

Dependent Variables

In the development of the research hypothesis, it has already been outlined that the goal is to analyze which specific factors impact the extent of corporate disclosure, making information disclosure the dependent variable in this study. Before being incorporated as a variable, absolute information disclosure values will undergo a logarithmic transformation to better align with the assumed normal distribution. However, this variable will also function as an independent variable to assess whether it has a negative effect on underpricing.

Alongside voluntary ESG information disclosure, underpricing is applied as a dependent variable to represent the level of uncertainty as a proxy. Calculating underpricing and assessing the associated potential opportunity cost for issuers requires a quantitative approach, using initial return (IR) as the key measure. The unadjusted initial return is determined as follows:

$$IR = \frac{(P_{0,t} - E_i)}{E_i}$$

Since the unadjusted initial return (IR) provides limited insight into analyzing excess returns, it is adjusted by referencing an approximate market portfolio [10]. At the time of an IPO, there is no historical price data available, so a beta of one is assumed. A

market portfolio comparison could theoretically be made by using companies with similar characteristics, such as firm size, sector, or price-to-book ratio, to adjust the IR accordingly. However, due to the extensive data requirements and resource intensity of this method, it will not be applied here.

Instead of comparing peer companies, an equity market adjustment will be used, with the S&P 500 Index as the benchmark. This index, comprising the 500 largest U.S.-listed companies as determined by Standard & Poor's Corp. based on market capitalization, serves as a reliable proxy for overall market trends. Using the S&P 500 as a benchmark reflects broader market performance and enhances the accuracy of the IR analysis.

With this benchmark adjustment, the IR formula is modified as follows:

$$IR_{ad} = \frac{(P_{0,t} - E_i)}{E_i} - \frac{(M_{t0} - M_{t-1})}{M_{t-1}}$$

Independent Variables

The main variable in this research project is the ESG rating before the first IPO. As already described, the rating in the form of the RepRisk rating is taken as an indicator of the sustainability quality of a company. As the scale of the rating does not allow for a quantitative evaluation due to its ordinal structure, the respective rating scores were translated into an ESG quotient.

Control Variables

The control variables are organized into three main categories: firm characteristics, offer characteristics, and market characteristics.

Firm characteristics include proxies for company size, such as revenues, which may influence investor decisions. Generally, larger firms are perceived as lower-risk investments, so it is anticipated that firms with higher revenues will experience lower levels of underpricing [11]. Another factor in this category is total assets, which, similar to revenues, can reduce uncertainty and is thus included as a control variable. Additionally, firm age - calculated as the difference between the company's founding year and the IPO year - tends to lower IPO underpricing, as older firms often have more extensive financial records and publicly available information, reducing ex-ante uncertainty [12].

Market characteristics are represented by variables such as venture capital (VC) involvement. IPOs with venture capital backing tend to exhibit higher underpricing levels than those without, possibly due to the perceived risk associated with VC-backed firms [13]. Furthermore, IPOs on the NASDAQ tend to be more underpriced, as this exchange typically hosts smaller, newer, and technology-focused firms [14].

Offer characteristics include the bookrunner reputation in the IPO process. Companies backed by well-established underwriters

generally see less underpricing, as the reputation of a respected bookrunner signals reliability to investors. This study specifically focuses on the underwriter ranked first in the dataset, using a scale from 0 to 9.1 based on Ritter's underwriter ranking.

Table 1: ESG Ratings - Value

Rating Score	Value
AAA	0.9
AA	0.8
A	0.7
BBB	0.6
BB	0.5
B	0.3
CCC	0.001

Descriptive Statistics

The sample size is 365 and is mainly due to the lack of rating information. Considering the IPO activities without ESG rating, the sample would amount to 1803 observations. The average ESG rating adjusted is 0.8 and indicates a high level of ESG.

The table 2 shows an overview of the descriptive statistics clustered by ESG rating, transaction characteristics and firm and market characteristics.

TABLE 2: Summary Statistics – ESG Score

	n	Mean	sd	IQR	Min	p25	Median	p75	Max
ESG rating characteristics									
Rating before IPO	365	0,7940	0,0806	0,0000	0,0010	0,8000	0,8000	0,8000	0,9000
Transaction characteristics									
Total Assets	365	1.735,931	8.115,802	963,200	0,000	68,300	245,500	1.031,500	137.238,000
Total Revenues	365	1.069,276	4.324,322	588,200	0,000	0,000	124,200	588,200	66.468,300
Underpricing	365	0,156	0,383	0,327	- 1,000	-	0,113	0,327	1,741
Underpricing. adjusted	365	0,157	0,384	0,329	- 1,019	0,002	0,120	0,331	1,730
Offer Price	365	16,875	6,754	7,000	4,500	12,500	16,000	19,500	65,000
Bookrunner. ranking	365	8,350	1,088	1,000	1,001	8,001	8,987	9,001	9,001
Firm and market characteristics									
Company age	365	15,800	20,176	11,000	1,000	5,000	9,000	16,000	145,000
High Technology Dummy	365	0,504	0,501	1,000	-	-	1,000	1,000	1,000
Venture Capital Dummy	365	0,811	0,392	-	-	1,000	1,000	1,000	1,000

Source: By author

If the transaction characteristics are analysed, there is hardly any difference between the unadjusted and adjusted underpricing. This leads to the conclusion that the sample was not influenced by strong market fluctuations on the day of their respective publications. The average underpricing is 15.6% and is significantly higher compared to the entire sample (5.6%). The average asset volume reported on the IPO day was USD 1,735,931 million. In addition, revenues on the IPO day averaged USD 1,069,276 million. However, it should be noted that not every company has published its key financial figures as part of the IPO process. Looking at the range of the bookrunner ranking from 0 to 9.1, the average ranking of 8.35 in the observation set is very high. Around half of the companies (50.4%) went public on the NASDAQ. Around 81.1% of all companies analysed were backed by venture capital. The average age of the companies at the time of the respective IPO was 15.8 years.

The table 3 shows the distribution of the sample to the rating classes. Most of the companies are rated with a rating of AA (74.79%). The underpricing generally increases with each ESG scoring level, with rating classes B and BB being exceptions. This is due to the small number of companies in this class.

TABLE 3: Underpricing by ESG Score

	n	n in %	mean	sd	IQR	Min	p25	Median	p75	Max
A	28	7,67%	0,168	0,232	0,279	- 0,247	0,014	0,113	0,293	0,896
AA	273	74,79%	0,155	0,383	0,305	- 1,000	-	0,103	0,305	1,741
AAA	49	13,42%	0,150	0,452	0,375	- 1,000	-	0,184	0,375	1,069
B	1	0,27%	0,038	NA	-	0,038	0,038	0,038	0,038	0,038
BB	4	1,10%	0,394	0,355	0,459	0,091	0,125	0,315	0,584	0,852
BBB	9	2,47%	0,097	0,457	0,348	- 1,000	0,003	0,100	0,351	0,532
CCC	1	0,27%	- 0,176	NA	-	- 0,176	- 0,176	- 0,176	- 0,176	- 0,176

Source: By author

Looking at the total sample of 1,803 companies in the table 4, only 20% received a neutral or positive ESG rating. All other observations received a rating of B or worse, or no rating. It can also be seen that the average underpricing of 5.6 % is below that of the isolated sample. A lower volume of assets (695.41) and revenues (423.889) also suggests that a rating was assigned to larger companies. The average age of the overall sample is similar. This amounts to 13.14 years and is therefore slightly younger than the ESG rating group. Consequently, it can be assumed that more established companies are more likely to receive an ESG rating, as they have a larger information base.

TABLE 4: Summary Statistics – ESG Rating Dummy

	n	mean	sd	IQR	Min	p25	Median	p75	Max
ESG rating characteristics									
ESG.Rating. Dummy	1803	0,2019	0,4015	1,0000	0,0000	0,0000	0,0000	0,0000	1,0000
Transaction characteristics									
Total Assets	1803	695,641	3.909,670	325,900	0,000	15,850	74,000	341,750	137.238,000
Total Revenues	1803	423,889	2.314,637	151,950	0,000	0,000	5,600	151,950	66.468,300
Underpricing	1803	0,056	0,434	0,233	- 1,000	- 0,018	0,033	0,215	5,330
Underpricing. adjusted	1803	0,056	0,434	0,236	- 1,029	- 0,022	0,033	0,214	5,337
Offer Price	1803	14,070	5,849	7,000	3,500	10,000	14,000	17,000	65,000
Bookrunner. ranking	1803	7,643	1,899	2,113	1,001	6,888	8,376	9,001	9,001
Firm and market characteristics									
Company age	1803	13,144	18,416	11,000	1,000	3,000	8,000	14,000	187,000
High Technology Dummy	1803	0,657	0,475	1,000	-	-	1,000	1,000	1,000
Venture Capital Dummy	1803	0,663	0,473	1,000	-	-	1,000	1,000	1,000

Source: By author

Results

The table 5 shows the correlations depending on the independent variables of the isolated ESG rated data. There is a strong significance (confidence level of 99%) in the correlation between underpricing and the use of venture capital. This result is consistent with the assumption that VC-backed IPOs have a higher underpricing compared to IPOs without [15].

TABLE 5: ESG Score: Summary Underpricing Correlation

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-0,380842	0,261217	-1,458	0,0145733	
Bookrunner.ranking	0,037525	0,018702	2,007	0,045556	*
Dummy.Nasdaq	0,122571	0,040375	3,036	0,002575	**
ln_age	0,009879	0,042995	0,23	0,818403	
ln_assets	-0,001108	0,009387	-0,118	0,906142	
ln_revenues	0,003584	0,004723	0,759	0,448528	
Pct...Rating.before.IPO	0,017222	0,244588	0,07	0,943905	
VC.Dummy	0,174304	0,051462	3,387	0,000785	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: By author

Furthermore, the choice of stock exchange is also highly significant. If the NASDAQ is considered, companies that are smaller and younger and have a high high-tech focus are generally found here. These characteristics indicate a higher level of uncertainty on the part of investors, which in turn would result in a higher underpricing [16]. The above observation supports this thesis and is positive proof of this. The bookrunner ranking also positively impacts underpricing, aligning with the findings of Liu and Ritter (2011), who observed that companies tend to experience higher underpricing levels when the underwriter demonstrates greater quality or industry expertise [17].

Nevertheless, it should be noted that no significance was found regarding ESG scoring. This is not in line with the observation of other authors who were able to determine a reduction in uncertainty through positive ESG scoring [18].

If the overall sample is considered (table 6), there is also a high level of significance regarding the inclusion of VC. Furthermore, a high correlation between underpricing and the existence of a neutral or positive ESG rating can also be recognised (confidence level 99%). This is consistent with the theory that companies use underpricing to convey a signal of high quality [19].

TABLE 6: ESG Dummy: Summary Underpricing Correlation

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-0,171689	0,052299	-3,283	0,001047	**
Bookrunner.ranking	0,010359	0,006101	1,698	0,089687	
Dummy.Nasdaq	0,052355	0,022871	2,289	0,022187	*
ESG.Rating.Dummy	0,085961	0,025976	3,309	0,000954	***
ln_age	0,045576	0,022106	2,062	0,03938	*
ln_assets	0,009214	0,004188	2,2	0,027904	*
ln_revenues	0,003312	0,002323	1,426	0,154168	
VC.Dummy	0,084829	0,025087	3,381	0,000737	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: By author

Robustness Check

The tables 7 and 8 presents the outcomes of the statistical tests conducted. Multicollinearity was evaluated using the Variance Inflation Factor (VIF), with a VIF threshold of 5 or 10 typically considered critical [20]. No value is above the limit value, which is why there is no multicollinearity.

Tests for autocorrelation and model specification were also conducted. The Durbin-Watson (DW) test for autocorrelation yielded a DW value of 2.0191 and 1.9087, which is close to the ideal value of 2.0, indicating no significant autocorrelation. The Ramsey RESET test assessed model specification, with a resulting p-value of 0.57517 and 0.05331, which is sufficiently high to rule out specification error.

TABLE 7: ESG-Score: Statistical Tests

Variance Inflation Factor (VIF)								
		Bookrunner. ranking	Dummy. Nasdaq	ln_age	ln_assets	ln_revenues	Pct...Rating. before.IPO	VC.Dummy
		1,0880	1,0735	1,0357	1,2752	1,2751	1,0212	1,0696
(Intercept)	1	-0,615	-0,132	-0,219	-0,108	0,051	-0,778	0,028
Bookrunner. ranking	-0,615	1	0,179	0,015	0,022	-0,071	0,043	-0,208
Dummy. Nasdaq	-0,132	0,179	1	-0,103	0,084	0,06	-0,038	-0,087
ln_age	-0,219	0,015	-0,103	1	-0,027	0,015	0,107	-0,107
ln_assets	-0,108	0,022	0,084	-0,027	1	-0,441	0,039	-0,066
ln_revenues	0,051	-0,071	0,06	0,015	-0,441	1	0,031	-0,013
PctRating. before.IPO	-0,778	0,043	-0,038	0,107	0,039	0,031	1	-0,047
VC.Dummy	0,028	-0,208	-0,087	-0,107	-0,066	-0,013	-0,047	1

Durbin-Watson test			RESET test			
DW	p-value		RESET	df1	df2	p-value
2,0191	0,5675		0,57517	14	343	0,8842

TABLE 8: ESG-Rating Dummy: Statistical Tests

		Bookrunner. ranking	Dum-my. Nasdaq	ESG.Rating. Dummy	ln_age	ln_assets	ln_revenues	VC.Dummy
		1,347	1,183	1,092	1,191	1,352	1,383	1,412
(Intercept)	1	-0,853	-0,468	-0,042	-0,265	-0,037	0,217	0,181
Bookrunner. ranking	-0,853	1	0,287	-0,072	0,005	-0,049	-0,05	-0,367
Dummy. Nasdaq	-0,468	0,287	1	0,104	-0,042	0,064	0,137	-0,196
ESG.Rating. Dummy	-0,042	-0,072	0,104	1	-0,032	-0,019	-0,125	-0,076
ln_age	-0,265	0,005	-0,042	-0,032	1	-0,08	-0,12	-0,279
ln_assets	-0,037	-0,049	0,064	-0,019	-0,08	1	-0,393	-0,129
ln_revenues	0,217	-0,05	0,137	-0,125	-0,12	-0,393	1	-0,034
VC.Dummy	0,181	-0,367	-0,196	-0,076	-0,279	-0,129	-0,034	1

Durbin-Watson test			RESET test			
DW	p-value		RESET	df1	df2	p-value
1,9087	0,02535		1,6805	14	1781	0,05331

Source: By author

Conclusion

This paper examined the publication of ESG ratings during the IPO process, aiming to assess whether the rating can help reduce information asymmetry and thereby explain the phenomenon of IPO underpricing. Variables related to company, market, and transaction characteristics were analyzed, including bookrunner ranking, firm age, VC involvement, industry, IPO year, and financials. ESG ratings determined by RepRisk prior to the IPO were used to analyse the effect of the existence of ESG ratings on the one hand and the level of the rating on the other.

The results align broadly with existing research, showing a direct association between IPO underpricing and ESG ratings. This finding does not support the hypothesis from the literature that reducing information asymmetry through ESG disclosure can lower underpricing but is in line with the Signalling Theory that sees ESG ratings as a positive quality signal of firms [21]. However, this observation was only found in the sample analysing whether the presence of a neutral or positive rating has an impact on underpricing. If the subset of rated companies is analysed, it cannot be determined that the degree of ESG rating has an impact on underpricing.

Hypothesis 1 can therefore not be accepted and no correlation between the level of ESG rating and underpricing within a rated group of IPOs could be established.

In contrast, hypothesis 2 can be confirmed, as a significant correlation between underpricing and the existence of neutral or positive ESG ratings could be determined.

Overall, this study contributes to understanding the relationship between IPO underpricing and ESG ratings. The hypothesis that ESG ratings are used as part of a qualitative instrument according to the Signalling Theory holds only to a limited extent, it is relevant for investors to have a neutral or positive ESG Rating. Further research is necessary to explore the link between under pricing and voluntary ESG ratings.

Considering the methodology for determining ESG ratings, it should be noted that various rating agencies exist. In future, other ratings from other agencies should therefore also be analysed regarding the Signalling Theory. The extent to which differences exist about rating derivation should also be analysed.

It's also worth noting that not all companies initiating the IPO process in the studied period were included, as some withdrew before the first trading day or did not provide necessary financial information.

Moreover, additional company, market, and transaction characteristics should be considered in future models. Analyzing the impact of ESG ratings on short-term effects like underpricing, as well as examining its effect in other capital markets, especially emerging markets, would also be valuable avenues for further research.

List of Symbols	
α	Interference term
age	Age of the company at the time of the IPO in years
Assets	Reported assets before IPO in million USD
E_i	Issue price of the share (i)
ESG_rating	Decimal value of the rating from AAA to CCC
ESG Rating_daummy	Dummy whether firms have a neutral/positive ESG rating
IR	Initial Return
Mt_0	Market opening price (S+P 500) first trading day
Mt_{-1}	Closing price market (S+P 500) previous day first trading day
N	Number of IPO prospectuses in the sample
$P_{-o,t}$	First offerprice (o) on first trading day (t)
Revenues	Reported revenues before IPO in million USD
StockExchange_dummy	Dummy whether IPO was published on NASDAQ
UW_ranking	Ranking of the first-named underwriter of an IPO
VC_dummy	Dummy whether IPO is supported by venture capital

References

- Ilhan E, Krueger P, Sautner Z, Starks LT (2023) Climate Risk Disclosure and Institutional Investors. *Rev Finance Stud* 36: 2617-2650.
- Jámbor A, Zánócz A (2023) The Diversity of Environmental, Social, and Governance Aspects in Sustainability: A Systematic Literature Review. *Sustainability* 15: 13950-13958.
- Escrig-Olmedo E, Fernández-Izquierdo MÁ, Ferrero-Ferrero I, Rivera-Lirio JM, Muñoz-Torres MJ (2019) Rating the Raters: Evaluating how ESG Rating Agencies Integrate Sustainability Principles. *Sustainability* 11: 900-915.
- Friede G, Busch T, Bassen A (2015) ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment* 5: 210-233.
- Nakajima T, Hamori S, He X, Liu G, Zhang W (2021) ESG Investment in the Global Economy. Singapore: Springer Singapore <https://www.econbiz.de/Record/esg-investment-in-the-global-economy-nakajima-tadahiro/10012596933>.
- Zumente I, Lâce N (2021) ESG Rating—Necessity for the Investor or the Company? *Sustainability* 13: 8930-8940.
- Rock K (1986) Why new issues are underpriced. *Journal of Financial Economics* 15: 187-212.
- Rehkugler H, Schenek A (2001) Underpricing Oder Overpricing? IPOs am deutschen Kapitalmarkt. In: Wirtz BW, Salzer E, editors. *IPO-Management: Strukturen und Erfolgsfaktoren*. Wiesbaden: Gabler Verlag https://link.springer.com/chapter/10.1007/978-3-322-92966-2_13.
- Kennedy DB, Sivakumar R, Vetzal KR (2006) The implications of IPO underpricing for the firm and insiders: Tests of asymmetric information theories. *Journal of Empirical Finance* 13: 49-78.
- Beatty RP, Ritter JR (1985) Investment Banking, Reputation, and the Underpricing of Initial Public Offerings: Rodney L. White Center for Financial Research. <https://rodneywhitecenter.wharton.upenn.edu/wp-content/uploads/2014/03/8502.pdf>.
- Leone AJ, Rock S, Willenborg M (2007). Disclosure of Intended Use of Proceeds and Underpricing in Initial Public Offerings. *Journal of Accounting Research*. 45: 111-153.
- Engelen PJ, van Essen M (2010) Underpricing of IPOs: Firm-, issue- and country-specific characteristics. *Journal of Banking & Finance* 34: 1958-1969.
- Lowry M, Schwert G (2004) Is the IPO pricing process efficient? *Journal of Financial Economics* 71: 3-26.
- Corwin SA (2003) The Determinants of Underpricing for Seasoned Equity Offers. *The Journal of Finance* 58: 2249-2279.
- Elston JA, Yang JJ (2010) Venture capital, ownership structure, accounting standards and IPO underpricing: Evidence from Germany. *Journal of Economics and Business* 62: 517-536.
- Kim J, Pukthuanthong-Le K, Walker T (2008) Leverage and IPO under-pricing: high-tech versus low-tech IPOs. *Management Decision* 46: 106-130.
- Liu X, Ritter JR (2011) Local Underwriter Oligopolies and IPO Underpricing <https://site.warrington.ufl.edu/ritter/files/2015/04/Local-underwriter-oligopolies-and-IPO-underpricing-2011-05.pdf>.
- Horn M (2023) The Influence of ESG Ratings On Idiosyncratic Stock Risk: The Unrated, the Good, the Bad, and the Sinners. *Schmalenbach Z Betriebswirtsch Forsch* <https://pmc.ncbi.nlm.nih.gov/articles/PMC9942038/>.
- Hong H, Kacperczyk M (2009) The price of sin: The effects of social norms on markets. *Journal of Financial Economics* 93: 15-36.
- Cleff T (2012) Deskriptive Statistik und modern Date analyse: Eine computergestützte Einführung mit Excel, PASW (SPSS)

und STATA. 2nd ed. Wiesbaden: Gabler <https://katalog.ub.uni-heidelberg.de/cgi-bin/titel.cgi?katkey=67139290>.

21. Huang DZ-X (2022) Environmental, social and governance factors and assessing firm value: valuation, signalling and stakeholder perspectives. Account Finance 62: 1983-2010.

Copyright: ©2025 Peter Schmunkamp. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.