

Minority Compensation and Discount Rate Practice: Evidence from 223 Czech Squeeze-Outs (2005–2024)

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Abstract:

Analyzing 223 Czech squeeze-out valuation reports from 2005–2024, this study examines discount rate construction as a governance mechanism influencing minority compensation. We document the persistent dominance of the CAPM model, a shift toward domestic risk-free anchors, and evolving practices in WACC iteration and parameter transparency. Central to this study is the introduction of a novel 12-parameter ‘Transparency Index’ used to statistically test the verifiability of valuation reports over time, while also analyzing the applied company-independent equity market risk premium. Our findings reveal a statistically significant rise in report transparency, a curtailed use of excessive equity market risk premiums, and their improved consistency. These trends correlate with increased judicial scrutiny and legislative reforms in Czechia, suggesting that regulatory pressure has successfully disciplined valuation practices.

Keywords: Minority shareholder compensation; Discount rate; Squeeze-out; Valuation report; Cost of capital; Transparency; Risk premium

JEL Classification: G12; G30; G32

1. Introduction

The discount rate is as diverse as the methods used to calculate it - and the diversity in the underlying calculation is the key point of this paper. In the context of squeeze-outs (the compulsory buyout of minority shareholders), the choice and calibration of the discount rate become critical. Because the relationship between the discount rate and firm value is non-linear and convex, even minor changes in the rate can result in massive transfers of wealth, directly affecting the fairness of the transaction.

The relevance of this study extends beyond a purely methodological discussion. Defining the accurate discount rate remains one of the most persistent problems in business valuation (Vonlathen, 2024). Especially in squeeze-out procedures, the main challenge is to ensure the protection of minority shareholders in an environment where the expert is paid by the controlling shareholder. By examining Czech valuation practice, this paper contributes to the limited empirical evidence on how discount rates are determined.

The core of this paper is a comparative analysis of 223 expert valuation reports prepared for squeeze-out purposes in Czechia between 2005 and 2024. Its primary objective is to map the approaches used to determine the discount rate, with particular emphasis on the input parameters of the Capital Asset Pricing Model (CAPM) - cost of equity, cost of debt, and Weighted Average Cost of Capital (WACC) itself. The work builds on the parameter framework examined in Podškubka (2012) and Podškubka and Diviš (2016). However, this study moves beyond simple documentation. Given the judicial doctrine of verifiability enforced by Czech high courts, we not only identify these approaches but statistically test their quality. We introduce a novel 12-parameter “Transparency Index” to measure the verifiability of valuation reports and trace their evolution over time. Rather than judging the correctness of a specific approach or valuation, we test whether the underlying methodological choices have become more transparent and consistent in response to stricter regulation.

This study contributes to the literature in three ways. First, it provides the most comprehensive longitudinal analysis of discount rate determination in Czech squeeze-out valuations to date. Second, by applying the Jonckheere-Terpstra test for trend analysis and the Anderson-Darling test for distributional shifts, we provide empirical evidence of a statistically significant rise in report transparency and a “normalization” of equity market risk premiums. Third, the study informs ongoing debates on harmonizing valuation standards by documenting how regulatory pressure can successfully discipline valuation practices even in emerging markets.

The remainder of the paper proceeds as follows. Section 2 reviews prior literature relevant to squeeze-out valuation, regional shifts in valuation theory, and technical challenges in WACC construction. Section 3 outlines the institutional and legal framework of Czech squeeze-outs and demonstrates the economic impact of discount rate assumptions. Section 4 details the research hypotheses, dataset compilation, and the construction of the Transparency Index. Section 5 presents a descriptive analysis of the discount rate components (cost of equity, cost of debt, and WACC) and reports the results of the statistical tests concerning report transparency and distributional shifts in the equity market risk premium. Finally, Section 6 summarizes the key findings, discusses their implications for methodological consistency, and outlines study limitations alongside avenues for future research.

2. Literature Review

2.1 Squeeze-Outs as a Governance Problem

Research consistently highlights that squeeze-out transactions are not merely financial exercises but critical governance mechanisms. In concentrated ownership systems, fair valuation and judicial appraisal serve as pivotal safeguards against the expropriation of minority shareholders. Evidence shows that squeeze-out announcements can generate positive abnormal returns, with procedures that rely on appraisal typically yielding higher compensation for minorities but at the cost of longer resolution. Squeeze-outs are most likely in large, well-performing firms with strong controlling shareholders (Crociet al., 2012). Judicial process and method choice matter: when judges and litigants adopt the same valuation approach, outcomes tend to favor that litigant, underscoring how method selection itself can tilt results (Saastamoinen and Savolainen, 2019). In Ukraine, where institutional safeguards are weaker, rules may enable underpricing through appointed evaluators without robust qualification standards, prompting calls for reforms to protect minority shareholders (Koloheid et al., 2021).

2.2 The Regional Shift to Financing Theory

Valuation practice in Central Europe is undergoing a shift toward standardization to limit expert discretion. Poland's valuation practice historically showed unclear risk-free choices, arbitrary betas, and parameter inconsistency, but recent years show convergence toward unified DCF inputs (Zarzecki, 2024). Earlier works call for formal standards to professionalize the market and increase reliability (Szymański, 2009), and documents judg-

ment-heavy, non-standardized minority discounts that risk inconsistent and partially arbitrary outcomes (Byrka-Kita and Grudziński, 2017).

German practice illustrates the shift from the historically dominant investment-theoretical tradition to a financing-theoretical approach (Shiller, 1980) grounded in CAPM, as reflected in the German valuation standard IDW S 1 (Follert, 2023). CAPM reflects valuation transparency and practicality even amid court inconsistency across German Bundesländer at the beginning of the new millennia (Quill, 2020). Critics note that CAPM's assumptions sit uneasily with the exclusive-ownership reality of squeeze-outs and argue that investment-theoretical variants can better reflect party-specific perspectives, albeit at the expense of standardization (Follert, 2020). Attempts at global harmonization provide only high-level guidance; in practice, International Valuation Standards often function more as argumentative support than as a binding, situation-specific standard (Ballwieser, 2020a).

2.3 Technical Challenges in Discount Rate Construction

A specific challenge in the region is the application of WACC in environments with non-standard capital structures. In the Czech context, many firms report no target leverage, supporting pecking-order behavior and limited application of the static trade-off framework (Strýčková, 2017). Complementary Slovak evidence documents an inverse relationship among capital structure, cost of capital, and firm size consistent with compromise theory, while also emphasizing that squeeze-outs demand combined asset- and income-based methods to assess share value and consideration adequacy given transaction specifics (Valaskova et al., 2019; Sedlakova et al., 2019).

Crucially, literature emphasizes that WACC estimation is inherently iterative because firm value and WACC are jointly determined. Consequently, using fixed book weights or ignoring time-varying leverage is methodologically incorrect (Velez-Pareja and Tham, 2001), as consistency requires matching the risk and maturity of financing instruments to the horizon and risk of discounted cash flows (Adamczyk and Zbroszczyk, 2017). Extending the toolkit, an EBIT-based model allows the cost of debt to be inferred from observable inputs and an externally given cost of equity; while the textbook WACC holds instantaneously under constant leverage and no bankruptcy costs, time-varying leverage indicates different results over longer horizons (Baule, 2018).

While prior research on valuation practices in Germany (Follert, 2023; Quill, 2020) and Poland (Zarzecki, 2024) highlights gradual convergence toward CAPM-based approaches, our study reveals that Czech practice exhibits both similarities and unique

deviations – particularly in the treatment of risk premiums and iterative WACC calculation. These differences underscore the need for context-sensitive application of international valuation standards (Ballwieser, 2020b), as uniform adoption without adaptation may fail to capture local institutional realities.

3. Institutional Background and Theoretical Framework

3.1 Legal Framework of Czech Squeeze-Outs

In Czechia, the law prioritizes corporate efficiency by allowing a majority shareholder to “squeeze out” the minority to simplify the ownership structure. The process is governed by the Business Corporations Act (ZOK), specifically §§ 375–394. A shareholder owning 90% of the registered capital and voting rights (the “Principal Shareholder”) has the statutory right to call a General Meeting to approve the forced transfer of all other shares to themselves.

If the 90% threshold is met, the squeeze-out is essentially automatic. Minority shareholders generally cannot block the squeeze-out. Because this is a forced expropriation of property, the law mandates a safety valve, i.e., fair consideration, the monetary compensation paid to squeezed-out minority shareholders that must reflect the equitable value of their shares at the time of the general meeting, typically determined as a pro-rata share of the company’s value without applying minority or illiquidity discounts.

However, there exists a potential structural conflict of interest, as the fair consideration is determined by a court-appointed expert who is selected and paid by the majority shareholder. Unable to stop the squeeze-out, minority shareholders often resort to litigation solely to challenge the valuation methodology, arguing that the price was artificially lowered by manipulating inputs like the projected cash flows, terminal growth rate, or the discount rate.

3.2 The Economic Impact of Discount Rate Assumptions

In the discounted cash flow model (DCF) - the standard and most widely used approach in Czech judicial practice - the value of the company is inversely related to the discount rate, but this relationship is non-linear and convex. Even relatively minor changes in the discount rate by experts can translate into disproportionately large shifts in enterprise value and result in massive transfers of wealth between minority and majority shareholders.

The key mechanism behind this effect is simple: when the discount rate increases, future cash flows lose value faster; when it decreases, they gain value. Because DCF valuations depend on a long stream of future cash flows, even a one-percentage-point adjustment to the discount rate can materially alter the present value of the entire projection. The closer the discount rate lies to the long-term growth expectation, the more amplified this effect becomes, as the present value reacts sharply to changes in the spread between the two parameters.

This dynamic sensitivity demonstrates that the construction of the discount rate is not merely a technical exercise but the primary determinant of financial fairness. Given this sensitivity, the verifiability, transparency, and methodological discipline of the expert's input choices become the central issue for judicial review.

4. Methodology

4.1 Theoretical Framing and Research Questions

This paper situates its analysis within the broader debate on minority shareholder compensation, recognizing that concentrated ownership structures inherently create a controller-minority agency conflict. Where legal protection is weaker, ownership tends to concentrate, and private benefits can be extracted, including via related-party transactions or structuring steps around squeeze-outs. In this setting, the discount rate is not a purely technical input; it embeds assumptions about information quality and risk sharing.

Czech courts, led by the Supreme Court and the Constitutional Court, have consistently held that squeeze-outs are constitutionally permissible only if minority shareholders receive adequate consideration reflecting the value of their shares. Crucially, this requires courts to conduct a genuinely substantive review of expert valuations rather than accepting them mechanically. While income-based valuation methods (such as DCF) are the standard, courts emphasize that key assumptions - most notably the discount rate - must be economically justified and transparently reasoned.

Building on this legal-economic perspective, this study addresses three hypotheses:

- H1: The transparency and verifiability of valuation reports in squeeze-out cases have increased over the observed periods.
 - o Rationale: Increased judicial scrutiny and new legislation (Act No. 254/2019 Coll.) should compel experts to provide more detailed disclosures.

- H2: The consensus (central tendency) on the Equity Market Risk Premium (MRP) has remained stable over time.
 - o Rationale: As MRP is a market-wide parameter estimated by long-term historic averages, it should remain consistent regardless of the specific squeeze-out case.
- H3: The distribution of the applied MRP has normalized over time, with a significant reduction in positive skewness in the most recent period (2015–2024).
 - o Rationale: We expect that early periods featured more “outlier” valuations, while recent case law has forced a convergence of expert practice.

Building on the law-and-finance perspective and the empirical gaps in Central European valuation practice, this study further addresses how Czech valuation experts construct discount rates in squeeze-out appraisals and how this practice has evolved over time.

4.2 Dataset Compilation and the Final Sample

For collecting valuation reports, we used the same procedure as in the paper by Podškubka and Diviš (2016):

1. On the online platform www.in-server.cz, we obtained a list of companies in which a squeeze-out took place during the monitored period.
2. Using the company’s ID number, we searched the Collection of Deeds of the Commercial Register for the given valuation report.
3. The valuation report was then downloaded into a database, and its suitability for the given analysis was evaluated.

During the evaluation phase, the following reports were excluded from all analyses:

- 11 reports that could not be found in the Collection of Deeds
- 1 report that was incomprehensible

For monitoring the discount rate in income-based valuation, only expert valuation reports using income-based methods were included. For this reason, the following reports were further excluded from the original dataset:

- 34 reports without income-based valuation methods
- 1 report using a combined asset-income method
- 1 report where capitalized net income was not discounted

- 1 report where the regulatory WACC set by the Ministry of Finance of Czechia was used
- 1 report where the cost of equity was negative due to the absence of a going concern assumption

These are analyzed in conjunction with 57 reports from the reference period 2013–2015 and 72 reports from 2005–2006, resulting in a total longitudinal dataset of 223 expert reports. All data was extracted manually to ensure consistent interpretation of complex valuation arguments.

4.3 Variables and Statistical Methods

To empirically test H1, we introduced a novel, 12-parameter 'Transparency Index' derived from valuation reports. The index evaluates explicit disclosure of sources and methods across three core inputs: cost of equity, cost of debt, and WACC. These are divided into eight, two, and two sub-factors, respectively. Sub-factors are scored as binary variables (1 if disclosed, 0 otherwise). The overall index is a weighted average of these pillars – 40% for cost of equity, 30% for cost of debt, and 30% for WACC – yielding a continuous score between 0 and 1. Details of the index composition are provided in Table 1, and a descriptive analysis of each sub-factor is presented in Section 5.1.

Table 1 | Construction of the Transparency Index

Index pillar	Cost of equity	Cost of debt	WACC
Pillar weight	40%	30%	30%
Pillar sub-factors	<ol style="list-style-type: none"> 1. Method Used to Estimate the Cost of Equity 2. Market Used to Derive the Risk-free Rate 3. Maturity of Government Bonds Used in Stage 1 4. Source of the Beta Coefficient 5. Averaging Method Applied in the Calculation of the Equity Market Risk Premium 6. Sources of Risk Premiums 7. Types of Risk Premia 8. Differentiation of the Cost of Equity between Stage 1 and Stage 2 	<ol style="list-style-type: none"> 1. Method of Determining the Cost of Debt 2. Differentiation of Cost of Debt between Stage 1 and Stage 2 	<ol style="list-style-type: none"> 1. Method of Determining Capital Structure 2. Differentiation of WACC between Stage 1 and Stage 2
Reference	Table 2 to Table 9	Table 10, Table 11	Table 12, Table 13

Source: authors' own construction based on valuation reports

To test H2 and H3, we directly worked with the MRPs reported in the valuation reports.

For statistical analysis, we employed the Shapiro-Wilk test to assess normality. Since the data (both Transparency Index and MRP) deviated from normal distribution, non-parametric tests were used. The Jonckheere-Terpstra test was applied to detect ordered trends in transparency (H1), while the Kruskal-Wallis test and Anderson-Darling and Kolmogorov-Smirnov tests were used to analyze stability and distributional shifts in market risk premiums (H2, H3).

5. Results

This section presents the empirical findings regarding the transparency of valuation reports, the stability of the Equity Market Risk Premium, and empirical results concerning the discount rate calculation. The analysis is based on the longitudinal dataset of 223 reports, though effective sample sizes for specific tests vary slightly due to occasional missing data points for individual parameters.

5.1 Descriptive Analysis of Discount Rate Components

This subsection outlines the descriptive statistics, organized around the three core elements of the discount rate: cost of equity, cost of debt, and the WACC.

5.1.1 Cost of Equity

Across all observation windows, the CAPM retained a dominant position. In all periods, its share consistently exceeded 90% of all valuation reports.

Table 2 | Method Used to Estimate the Cost of Equity

Method	2005–2006		2013–2015		2015–2024	
	Count	Percentage	Count	Percentage	Count	Percentage
CAPM	65	90.3%	54	94.7%	89	94.7%
Build-up	2	2.8%	1	1.8%	1	1.1%
Fama-French	2	2.8%	0	0.0%	0	0.0%
Not specified	3	4.2%	2	3.5%	3	3.2%
rf + risk premiums	0	0.0%	0	0.0%	1	1.1%
Total	72		57		94	

Source: valuation reports; authors' calculations

The results confirm a persistently high preference for this model. Other approaches appear only marginally, with combined usage typically between 1% and 6%. Notably, CAPM's predominance holds regardless of the standard of value selected by the expert.

When determining the risk-free rate a trend can be observed: a growing reliance on the domestic market as the reference source for the risk-free rate, while the importance of the U.S. market has gradually declined (Table 3). Whereas in 2005–2006 the U.S. market dominated as the basis for the risk-free rate, the most recent period marks the first time that the Czech market overtook the U.S. in terms of how often the Czech market is used to determine the risk-free rate. A further positive development is the gradual decline in the share of reports that fail to disclose which market was used.

Table 3 | Market Used to Derive the Risk-free Rate

Market	2005–2006		2013–2015		2015–2024	
Czechia	16	22.2%	21	36.8%	48	51.1%
United States	44	61.1%	29	50.9%	31	33.0%
Other	0	0.0%	2	3.5%	4	4.3%
Not specified	12	16.7%	5	8.8%	5	5.3%
n/a	0	0.0%	0	0.0%	6	6.4%
Total	72		57		94	

Source: valuation reports; authors' calculations

The shift towards Czech government bonds is also reflected in the choice of data sources. The Czech National Bank (ČNB, 2025) has become the most frequently cited source, supplemented by a variety of international sources such as the Federal Reserve, U.S. Department of the Treasury, or both local commercial platforms like Patria, as well as international commercial platforms such as Bloomberg and Refinitiv. By contrast, the use of Professor Damodaran's database as a source for government bond yields has visibly declined. Row n/a refers to valuation reports that did not use government bonds to determine the risk-free rate.

Regarding government bond maturity, the ten-year term has consistently remained the most frequent choice across all periods. Its usage has gradually increased over time,

albeit only modestly in the most recent period. The preference for ten-year government bonds is also consistent with business valuation textbooks (Copeland et al., 2000).

Furthermore, reporting transparency has noticeably improved: while in the earliest period, maturity was not specified in nearly one-third of cases, this share has declined substantially, reaching only 11.70% in the most recent period. This indicates that information on maturity is now reported more frequently and with greater consistency in valuation practice.

Table 4 | Maturity of Government Bonds Used in Stage 1

Bond maturity	2005–2006		2013–2015		2015–2024	
Less than 10 years	2	2.8%	1	1.8%	0	0.0%
10 years	32	44.4%	30	52.6%	50	53.2%
10 – 20 years	7	9.7%	2	3.5%	1	1.1%
20 years	1	1.4%	1	1.8%	4	4.3%
30 years	7	9.7%	9	15.8%	16	17.0%
30+ years	1	1.4%	4	7.0%	0	0.0%
Average	3	4.2%	1	1.8%	6	6.4%
Not specified	19	26.4%	9	15.8%	11	11.7%
n/a	0	0.0%	0	0.0%	6	6.4%
Total	72		57		94	

Source: valuation reports; authors' calculations

With respect to data sources for estimating the Beta coefficient, one source clearly dominates: in the majority of valuation reports, the value of Beta was taken from Damodaran's database, which accounts for most specified cases. Nevertheless, the share of reports relying on Damodaran has declined compared to earlier periods. Subscription-based databases such as Capital IQ have begun to appear in practice, although their overall share remains low.

Table 5 | Source of the Beta Coefficient

Source	2005–2006		2013–2015		2015–2024	
Damodaran	58	80.6%	46	80.7%	63	67.0%
Capital IQ	0	0.0%	0	0.0%	8	8.5%
Other	5	6.9%	4	7.0%	6	6.4%
Not specified	7	9.7%	6	10.5%	12	12.8%
n/a (Beta not used)	2	2.8%	1	1.8%	5	5.3%
Total	72		57		94	

Source: valuation reports; authors' calculations

In a part of the valuation reports, the data source for Beta was either not disclosed or the coefficient was not used at all. In the latter case – apart from one instance where the build-up method was applied – omitting β contradicts the CAPM framework (Damodaran, n.d.).

Regarding methodological approaches, analogy-based approaches to estimate the Beta remain predominant. Specifically, the indirect calculation, consisting of the unlevered beta being releveraged, was applied in more than half of the cases, thus constituting an established element of valuation practice in Czechia. However, its frequency has declined over time: from 74% in 2005–2006 to 72% in 2013–2015, and further down to 59% in the most recent period. By contrast, the direct use of unlevered beta without further adjustment has gained in relative importance, now accounting for 28% of cases.

Experts are also increasingly reporting an explicit source for the Equity Market Risk Premium, with choices heavily concentrated around a single authority (Fernández et al., 2024). Similar to its prominence in estimating Beta, Damodaran's database is the prevailing reference for the MRP. His estimates were the most frequently cited across all periods, accounting for 53% in 2005–2006, peaking at 88% in 2013–2015, and remaining dominant at 78% in the 2015–2024 window.

Table 6 illustrates that experts have adopted different strategies over time when it comes to choosing which type of mean to use to estimate the MRP (Damodaran, 2023); the geometric mean has gradually gained a larger share, and new methods have appeared over time.

Table 6 | Averaging Method Applied in the Calculation of the Equity Market Risk Premium

Method	2005–2006		2013–2015		2015–2024	
Arithmetic mean	3	4.2%	16	28.1%	2	2.1%
Weighted arithmetic mean	0	0.0%	0	0.0%	3	3.2%
Geometric mean	15	20.8%	10	17.5%	24	25.5%
Median of the arithmetic and geometric mean	0	0.0%	2	3.5%	7	7.5%
Average of the arithmetic and geometric mean	0	0.0%	0	0.0%	3	3.2%
Not specified	52	72.2%	28	49.1%	54	57.5%
n/a	2	2.8%	1	1.8%	1	1.1%
Total	72		57		94	

Source: valuation reports; authors' calculations

Notably, although its use declines in the intermediate period, the geometric mean remains one of the more frequently applied methods and is the only approach that records a higher usage in the most recent period than in the initial one. Nevertheless, cases in which the calculation method was not specified still represent a substantial share of all records. While this share declined in 2013–2015 compared to the earlier period, it rose again to 57% in the most recent years.

In the most recent period, the practice to combine both geometric as well as arithmetic mean has become more widespread than before. Alongside the median between the arithmetic and geometric mean, also the mean between arithmetic and geometric averages and the weighted arithmetic was newly used in this period. These “grey-zone” techniques have gained some traction among experts.

An analysis of the development of sources used for determining further risk premiums reveals that expert practice in Czechia has gradually evolved over time. While some sources have remained stable, others have gained prominence only in more recent periods. As a result, the distribution of approaches has become more diversified (Table 7).

Table 7 | Sources of Risk Premiums

Source	2005–2006		2013–2015		2015–2024	
Ibbotson	12	16.7%	19	33.3%	18	19.2%
INFA model	4	5.6%	8	14.0%	4	4.3%
Expert estimate	9	12.5%	9	15.8%	7	7.5%
Duff & Phelps/Kroll	0	0.0%	1	1.8%	27	28.7%
Mařík	0	0.0%	0	0.0%	6	6.4%
Damodaran	0	0.0%	0	0.0%	4	4.3%
No risk premiums	22	30.6%	4	7.0%	16	17.2%
Not specified	25	34.7%	16	28.1%	12	12.8%
Total	72		57		94	

Source: valuation reports; authors' calculations

Ibbotson's yearbook maintained a strong historical presence but was surpassed in the most recent period by the Duff & Phelps Yearbook. This transition is expected, as Duff & Phelps took over Ibbotson's data after its final 2013 edition and subsequently rebranded to Kroll in 2021 (Kroll, 2025). Given these institutional changes, the persistent use of Ibbotson citations in modern reports is somewhat surprising.

Concurrently, experts are increasingly relying on established valuation authorities like Mařík and Damodaran. Positively, the proportion of reports failing to specify a data source has declined substantially, though it still represents a non-negligible segment of the sample.

When justifying specific risk premiums, firm size has consistently remained the primary factor. Including instances where size is part of a combined risk premium, its usage has grown steadily: from 35% in the earliest period to over 65% in the second, reaching nearly 77% in the most recent window. This high reliance aligns with Swiss valuation practices but contrasts with Germany and Austria, where alternative adjustments like total beta are preferred to capture small-company risk (KPMG, 2024).

This widespread application of the size premium is well-supported by academic literature. Grabowski (2018) and Hou and Dijk (2019) argue it remains a necessary ad-

justment, particularly for smaller companies where the traditional CAPM underestimates risk. Furthermore, Asness et al. (2018) confirm the existence of a significant, temporally stable size premium that is robust to various specifications, not solely concentrated in microcaps, and evident across 30 industries and 24 international equity markets.

Table 8 | Types of Risk Premia

RP type	2005–2006		2013–2015		2015–2024	
Size premium	21	29.2%	30	52.6%	41	43.6%
Liquidity premium	15	20.8%	9	15.8%	1	1.1%
Combination of risks	4	5.6%	8	14.0%	31	33.0%
Other risks	5	6.9%	3	5.3%	4	4.3%
No risk premiums	22	30.6%	4	7.0%	16	17.0%
Not specified	5	6.9%	3	5.3%	1	1.1%
Total	72		57		94	

Source: valuation reports; authors' calculations

Conversely, liquidity has almost entirely disappeared as an independent justification, emerging only sporadically in recent reports. While it is still incorporated within combined risk premiums in 14% of recent cases, this reflects a steady decline from previous periods (18% and 24%, respectively).

This downward trend is likely tied to the Czech Constitutional Court ruling ÚS 647/15, which explicitly rejects risk premiums for minority positions and heavily restricts liquidity discounts. This domestic legal constraint stands in sharp contrast to broader international practices; for example, 42% of surveyed Estonian valuation experts still apply minority discounts when valuing minority interests during squeeze-out proceedings (Pleer, 2020).

Table 9 | Differentiation of the Cost of Equity between Stage 1 and Stage 2

Differentiation	2005–2006		2013–2015		2015–2024	
	Identical	12	16.7%	16	28.1%	57
Differentiated	53	73.6%	39	68.4%	36	38.3%
Not specified	7	9.7%	2	3.5%	1	1.1%
Total	72		57		94	

Source: valuation reports; authors' calculations

Between 2015 and 2024, there was a concerning increase in reports applying a uniform cost of equity in Stage 1 and Stage 2 (Table 9). While earlier periods predominantly utilized differentiated rates, this trend reversed sharply in the 2015–2024 window, where 61% of reports used non-differentiated rates and only 38% applied differentiation.

This uniform application represents a methodological regression in Czech expert practice. As Copeland et al. (2000) outlines, the DCF entity model requires iteratively recalculating the levered cost of equity and WACC each year to accurately reflect dynamic changes in the capital structure. Consequently, differentiating discount rates across forecasting phases is analytically crucial.

Fortunately, reporting transparency continues to improve; instances where the discounting approach could not be clearly identified have steadily declined and are now exceptionally rare.

5.1.2 Cost of Debt

To estimate the cost of debt (and subsequently WACC), the sample was reduced to 84 valuation reports. This adjustment was necessary because the DCF Equity method was applied in 10 reports, where the cost of debt did not need to be determined.

In the analyzed period 2015–2024, notable shifts can be observed in approaches to determining the cost of debt compared to the two earlier periods. The method based on combining the risk-free rate with additional premiums has sharply declined. While it accounted for roughly one-third of all cases at the beginning of the observed timeframe, it is now only used marginally.

The most notable change occurred with the borrowing rate method, which has become the dominant approach. Within this category, four prevailing practices can be distinguished:

1. Company-specific borrowing rate – in 38% of reports, the interest rate was derived directly from the company’s borrowing rate (Czerwonka and Jaworski, 2021).
2. Bank borrowing rate – in nearly 17% of cases, the rate was determined based on loan offers or published interest rates of domestic banks, making this the second most frequent method.
3. Borrowing rates of comparable companies – in two reports, the cost of debt was adopted from comparable firms.
4. Combination – in one case, the expert averaged the company’s loan rate with the bank loan rate.

Table 10 | Method of Determining the Cost of Debt

Method	2005–2006		2013–2015		2015–2024	
Rf + premiums	24	33.3%	12	21.1%	3	3.6%
Borrowing rate	14	19.4%	22	38.6%	52	61.9%
Expert estimate	11	15.3%	6	10.5%	3	3.6%
Other methods	1	1.4%	0	0.0%	0	0.0%
Debt-free	6	8.3%	13	22.8%	19	22.6%
Not specified	16	22.2%	4	7.0%	7	8.3%
Total	72		57		84	

Source: valuation reports; authors’ calculations

Many reports differentiated between the cost of debt applied in the first and second stages in previous periods, as seen in Table 11. This pattern shifted markedly during 2015–2024, when nearly half of all cases applied identical rates across both stages. By contrast, such a practice was observed in only about one-sixth of reports from 2005–2006 and slightly exceeded one-fifth in 2013–2015.

Table 11 | Differentiation of Cost of Debt between Stage 1 and Stage 2

Differentiation	2005–2006		2013–2015		2015–2024	
Identical	12	16.7%	12	21.1%	40	47.6%
Differentiated	36	50.0%	27	47.4%	21	25.0%
Debt-free	6	8.3%	13	22.8%	19	22.6%
Not specified	18	25.0%	5	8.8%	4	4.8%
Total	72		57		84	

Source: valuation reports; authors' calculations

5.1.3 Weighted Average Cost of Capital

With regard to the methods of determining WACC, it is evident that the use of the iterative approach has been rising. As seen in Table 12, while in 2005–2006 this method was applied in nearly 50% of valuation reports, and in 2013–2015 its share even reached 58%, in the period 2015–2024 its prevalence increased to more than 60% of the sample. Other methods of determining a company's capital structure (Czerwonka and Jaworski, 2021; Vrbka et al., 2022), such as the industry capital structure or the target capital structure, have been rarely used.

As noted by Mařík et al. (2018), the use of the target structure is not inherently incorrect, provided that an ex-post validation of the net and gross values is performed. Nevertheless, the iterative method remains the preferred approach, as it represents the most accurate way of estimating the weights for WACC. Encouragingly, this approach has gained popularity in expert practice over the analyzed periods.

Other methods of determining capital structure observed in the reports include reliance on the accounting capital structure, as well as calculations where equity is always equated with its market value.

Table 12 | Method of Determining Capital Structure

Method	2005–2006		2013–2015		2015–2024	
Iterative approach	35	48.6%	33	57.9%	53	63.1%
Target structure	2	2.8%	1	1.8%	5	6.0%
Industry structure	0	0.0%	2	3.5%	7	8.3%
Structure of compar. companies	0	0.0%	0	0.0%	4	4.8%
Other	3	4.2%	4	7.0%	4	4.8%
Not specified	32	44.4%	17	29.8%	11	13.1%
Total	72		57		84	

Source: valuation reports; authors' calculations

Regarding the distinction of WACC across the DCF valuation stages, a development similar to that observed for the cost of equity and cost of debt can be identified (Table 13). In 2005–2006, differentiated WACC values were reported in the majority of cases (63%), and in 2013–2015, this approach remained dominant, with a share of 65%. However, in the 2015–2024 period, a notable shift occurred as the share of differentiated cases fell to just 40%.

According to international literature, however, calculating WACC without accounting for the actual and expected debt is methodologically incorrect: Fernández (2011) emphasizes that if capital structure is expected to evolve over time, WACC should be determined separately for each year so that it reflects the changing ratio between debt and equity.

It is worth noting that the share of valuation reports without any specification of the applied method has been steadily decreasing.

Table 13 | Differentiation of WACC between Stage 1 and Stage 2

Differentiation	2005–2006		2013–2015		2015–2024	
Identical	9	12.5%	15	26.3%	48	57.1%
Differentiated	45	62.5%	37	64.9%	34	40.5%
Not specified	18	25.0%	5	8.8%	2	2.4%
Total	72		57		84	

Source: valuation reports; authors' calculations

5.2 Transparency and Verifiability of Valuation Reports

Building on the descriptive analysis, we empirically tested whether the verifiability and transparency of valuation reports have improved over time (H1). Of the final sample of 223 observations, 10 are based on the DCF Equity method; for these, two of the three pillars of the Transparency Index (Cost of Debt and WACC) are not applicable. Those observations were removed from the Transparency Index evaluation.

An analysis of the index across the three observation windows reveals a consistent upward trend (Table 14). Specifically, the mean index score rose steadily from 73.5% in the initial 2005–2006 period to 85.6% in 2013–2015, ultimately reaching 90.5% in the final 2015–2024 timeframe.

The distribution of the index is negatively skewed in all periods, with the skewness becoming more pronounced over time (from -1.1 to -3.4), indicating a concentration of values at the higher end of the scale. This is further supported by the high kurtosis in the later periods (7.5 and 15.5), which reflects a peaked distribution with heavy tails, driven by a ceiling effect where a substantial portion of observations approaches the maximum value of 100%. Simultaneously, the standard deviation dropped from 26.4% to 14.8%, reflecting reduced variability in reporting quality.

Table 14 | Descriptive Statistics of the Transparency Index

Period	n	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurt
2005–06	72	0.0%	60.0%	80.0%	95.0%	100.0%	73.5%	26.4%	-1.1	-0.1
2013–15	57	0.0%	80.0%	95.0%	100.0%	100.0%	85.6%	20.9%	-2.6	7.5
2015–24	84	0.0%	90.0%	95.0%	100.0%	100.0%	90.5%	14.8%	-3.4	15.5

Source: authors' calculations

Given that the Shapiro-Wilk test rejected the null hypothesis of normality for all periods ($W_{\max} = 0.835$, $p < 0.001$ in all cases), we applied the non-parametric Jonckheere-Terpstra test to assess the statistical significance of Transparency Index improving trend.

The results showed a statistically highly significant upward trend in the observed periods (JT = 9,837; $p < 0.001$). These findings strongly support H1, confirming that valuation reports have become significantly more verifiable/transparent over the observed periods.

5.3 Stability and Distributional Shift of the Equity Market Risk Premium

We next examined the Equity Market Risk Premium to test for stability in central tendency (H2) and normalization of outliers (H3).

Central Tendency (H2)

As summarized in Table 15, the central market consensus on the risk premium has remained remarkably stable. The mean MRP fluctuates only marginally, ranging from 5.25% in the first period (2005–06) to 5.40% in the second (2013–15), and settling at 5.32% in the final period (2015–24). The standard deviation exhibits a slight downward trend (decreasing from 0.96% to 0.90%), suggesting a gradual convergence in professional practice regarding the estimation of market risk.

Table 15 | Descriptive Statistics of the Equity Market Risk Premium

Period	n	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurt
2005–06	66	4.50%	4.80%	4.80%	5.40%	10.50%	5.25%	0.96%	3.1	12.3
2013–15	54	2.90%	4.80%	5.80%	5.90%	8.50%	5.40%	0.92%	0.2	1.2
2015–24	82	1.50%	4.80%	5.30%	6.00%	7.50%	5.32%	0.90%	−0.9	3.3

Source: authors' calculations, n/a removed

The normality of the MRP distribution was tested by the Shapiro-Wilk test. The results indicated a significant deviation from normality in all three observed periods ($W_{\max} = 0.924$, $p_{\max} = 0.002$ in all cases). Given the non-normal nature of the data, the non-parametric Kruskal-Wallis test was employed to verify H2. The test results failed to reject the null hypothesis ($\chi^2(2) = 3.8$, $p = 0.15$).

We found no statistically significant evidence of a difference in the MRP across the three periods. This suggests that, despite potential economic fluctuations, the market consensus on the equity market risk premium has remained statistically stable over the observed timeframe.

Distributional Shift (H3)

While the average values of MRP remained stable, the shape of the distribution underwent a significant transformation. The first period (2005–06) is characterized by strong positive skewness (3.1) and extremely high kurtosis (12.3). The median (4.80%) aligns with the 1st quartile, indicating that a vast majority of valuations clustered around a lower base rate, with a “long tail” of outliers using significantly higher premiums (up to 10.50%).

In contrast, the second period shows a normalization of the distribution (skewness of 0.2), while the final period (2015–24) shifts to negative skewness (−0.9). This reversal indicates that in the recent period, the mass of observations has shifted towards the higher end of the range (median 5.30%, 3rd quartile 6.00%), while the “tail” is now formed by occasional inputs of very low risk premiums (minimum 1.50%).

To test for differences in the overall shape of the distributions, we employed the k-sample Anderson-Darling test. Given the nature of expert valuations, practitioners frequently rely on rounded consensus figures for the Equity Market Risk Premium (e.g. 4.80%, 5.30% or 6.00%), leading to a highly discrete dataset with a substantial proportion of identical values (168 tied observations out of a total sample size of 202). Consequently, we utilized the tie-adjusted version of the Anderson-Darling test statistic to accurately account for this discreteness. The test firmly rejected the null hypothesis that the samples across the three observed periods originate from a common underlying distribution ($T_{AD} = 3.92$, $p < 0.01$).

Subsequent post-hoc analysis was conducted to identify specific distributional differences between the periods. To robustly account for the high proportion of tied observations inherent to the discrete nature of the dataset, we utilized a bootstrap-based two-sample Kolmogorov-Smirnov test (10,000 resamples) rather than the standard exact Kolmogorov-Smirnov test. To control for the increased risk of Type I errors due to multiple comparisons, a Bonferroni correction was applied, establishing an adjusted significance threshold of $\alpha = 0.0167$. The results confirmed that the distribution of the equity market risk premium in the initial period (2005–06) is statistically distinct from both the second period 2013–15 ($D = 0.374$, $p < 0.001$) and the final period 2015–24 ($D = 0.328$, $p < 0.001$).

Conversely, the difference between the second and final periods was not statistically significant under the adjusted Bonferroni threshold ($D = 0.226$, $p = 0.034$). This statistical evidence refines our observation: a major structural shift – moving away from the positively skewed distribution featuring extreme outliers in the early years – occurred after

2006, leading to a more normalized and statistically consistent distribution that has stabilized across the two most recent periods.

In summary, while the central market consensus on risk remains unchanged, the elimination of extremely positive outliers indicates a standardization of expert practice. This convergence suggests that stricter judicial review has successfully curtailed the use of excessive risk premiums and improved consistency.

6. Conclusion and Discussion

The aim of this study was to analyze the evolution of discount rate determination across 223 Czech squeeze-out valuation reports from 2005 to 2024. By treating the discount rate as a governance mechanism rather than a purely technical input, we empirically tested whether increased judicial scrutiny and legislative reforms have improved the quality and consistency of expert valuations.

The core contribution of this paper lies in validating three hypotheses regarding the evolution of regional valuation practice. First, our analysis confirms a continuous, statistically significant improvement in the overall verifiability and transparency of expert reports (H1). This upward trajectory strongly suggests that valuation professionals have actively adapted to the stricter judicial doctrine of verifiability and broader regulatory tightening.

Furthermore, we examined the behavior of the Equity Market Risk Premium (MRP) to assess the consistency of expert inputs over the past two decades. Our findings demonstrate that the central market consensus on the MRP has remained remarkably stable, resisting severe fluctuations in the broader macroeconomic environment (H2). More importantly, while the average premium remained steady, the distribution of these premiums underwent a profound structural shift (H3). Our subsequent pairwise comparisons revealed that this evolution occurred in two distinct phases: a sharp departure from the highly variable, positively skewed distributions of the 2005–2006 period, followed by a statistically robust stabilization of expert practice in the subsequent years. The high variability and extreme positive outliers that characterized earlier valuations have effectively disappeared. This normalization indicates that regulatory and judicial pressures have successfully curtailed the application of excessive risk premiums, driving a much higher degree of standardization and consistency across the valuation profession.

Regarding specific methodological choices, the Capital Asset Pricing Model has remained the overwhelmingly dominant framework for estimating the cost of equity. Within this framework, a clear shift has occurred in the choice of the risk-free rate, with experts increasingly relying on domestic Czech government bonds as their primary anchor. For company-specific risk premiums, the Kroll Valuation Handbooks have emerged as the standard reference, while Damodaran's databases continue to dominate the estimation of Beta coefficients and country risk premiums. Overall, these developments highlight a growing reliance on a very narrow set of reference authorities.

Despite the overall progress in transparency, certain areas of Czech valuation practice still require targeted improvement. A non-negligible subset of reports remains opaque regarding data sources, which ultimately undermines the verifiability of the underlying valuations. Furthermore, our analysis identified a concerning methodological regression between 2015 and 2024, characterized by a sharp decline in differentiating the cost of capital between DCF valuation stages. During this period, experts frequently applied a single, constant discount rate across both valuation stages, a practice that is methodologically inaccurate. In contrast, the use of an iterative procedure for calculating the Weighted Average Cost of Capital (WACC) has increased substantially. This approach is widely regarded in academic literature as the theoretically sound and preferred method.

Like any empirical study, this analysis faces several limitations. First, the fact that fewer squeeze-outs took place in Czechia in the past ten years extended the observed period compared to the original reference periods. Although this limitation was partially mitigated by splitting the sample into two subperiods for specific parameters, the number of observed expert reports in the second subperiod proved to be low compared to previous periods, which lowers the sample size and in consequence its informative value. Second, the dataset consists exclusively of valuation reports for squeeze-out proceedings. Because these are subject to heightened regulatory scrutiny and litigation risks, the observed methodologies and high transparency levels may not fully reflect general valuation practices (e.g., private M&A) in Czechia.

On a further note, the collection and analysis of valuation reports required working with authentic documents that varied significantly in structure, terminology, and quality, necessitating partial data standardization, leading to the possibility that certain nuances may have been excluded due to the standardization of the results. Several reports were internally inconsistent, with contradictory statements or missing input

parameters. Consequently, constructing a reliable multivariate regression framework to control for firm-level characteristics or specific valuation experts was not feasible. Future research utilizing more standardized datasets could build on our findings by testing these specific cross-sectional sensitivities.

Future research can build on this study by including comparative samples from other Central European countries, which would allow a deeper understanding of regional patterns in discount-rate construction. Other research could focus on certain parameters of calculating the discount rate. For instance, investigating the impact of the size premium could help understand the great divergence in its prevalence across Central European countries.

Furthermore, given the macroeconomic turbulence of the past decade, future studies could analyze how valuation experts adjust risk premiums and cost of capital estimates in response to severe economic shocks, such as high inflation or geopolitical crises. Finally, exploring how emerging paradigms – such as the integration of Environmental, Social, and Governance risk factors – are gradually being incorporated into regional valuation models presents a highly relevant avenue for ongoing academic inquiry.

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Declaration of AI-Assisted Technologies

AI tools were utilized solely for language and stylistic refinement. All concepts, analyses, and conclusions remain the original work of the authors.

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