

finexpert
**German Takeover & Endgame Report
2019**

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Volume 1

Content

- 1** Preface & People
- 3** Management summary
- 5** Takeover Offer Analysis
- 9** Post-offer Structural Measures
- 18** Appraisal Proceedings to Structural Measures
- 24** Total Cost of Ownership

Preface

ValueTrust, finexpert and HHL proudly present the 1st German takeover&endgame report. The report gives a thorough empirical overview over the entire process of a takeover under German law starting from the offer bid over the acceptance period and completion to the “endgame” of structural measures reaching the 100% ownership in the target company.

This report replaces this year’s finexpert capital market report and finexpert multiple report, which will be published and updated every two years from now on.

Over the last 10 years we have collected a unique database tracking all German takeover offers made from 2005 on, including all following structural measures like the signing of a DPLA, delisting decisions and squeeze outs. Our database also includes the appraisal proceeding under German law reviewing the compensation offered to the minority shareholders, ending by a final court ruling or an out of court agreement between the parties. This allows to calculate the total cost of ownership as the full cost of finally achieving 100% ownership in the target company including the offer premium paid, the compensation offered to minority shareholders and the potential increase of the compensation in the appraisal proceeding.

This report complements the annual ValueTrust/finexpert takeover report giving detailed information on the German takeover offers published earlier this year. As we finished the intensive update of our database by end of Q3 2019, we decided to publish this report immediately. We will continue with the report on an annual basis and expect the next report, then updated with the 2019 takeover offers, structural measures and appraisal proceedings to be published in early 2020. We hope that the information provided in this report is of help for your business.

Best regards,

Prof. Dr. Bernhard Schwetzler and Prof. Dr. Christian Aders

People



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Management summary

Takeover offer analysis

German Takeover Law (WpÜG) requires a minimum bid price equal to the three-month volume-weighted average stock price of the target (referred to as “VWAP”). Premia offered by the bidder on top of this minimum price are quite moderate; the average premium since 2005 is about 18%. There is a remarkable number of offers made with a zero premium (26% of all offers since 2005). The toehold describes the fraction of ownership the bidder already has acquired when making the bid. For our German database we find the toehold to be remarkably high: for the final sample (only the cases with 100% ownership finally reached) the average toehold is 47.2%, 20% of these offers are made with a toehold of already more than 90%. We find a similar result also for our full sample including the takeover offers not yet finished by a squeeze-out: here the average toehold is 44.05% and more than 25% of the offers were made from a toehold of more than 75%. Thus, we observe takeover offers to be an important part of the endgame strategy in Germany. The success rate of German takeover offers, measured as the acquired percentage of the still outstanding shares at the offer is 31.4% over all cases.

Post-offer structural measures

After the completion of the takeover procedure the bidder has several measures at hand to finally reach the 100% ownership in the target company. The signing of a domination and profit- and loss sharing agreement (DPLA) between the company and the majority shareholder requires a 75% vote in a shareholder meeting. German corporate law requires to offer a compensation to the minority shareholders that decide to leave the company (and accept the compensation) and a guaranteed dividend payment to those who decide to stay. The law requires the minimum compensation to be offered to be the highest of two values: the VWAP relating to the 3 months before the DPLA announcement and the intrinsic value of the share calculated by a corporate valuation. In our sample we find that almost all compensation offers related to DPLA were just equal to the minimum required by law. Finally, the German corporate law offers several options to squeeze-out the remaining minority shareholders and pay a compensation. We find that in the vast majority of cases the compensation offer is again just to meet the minimum requirement.

Appraisal proceedings to structural measures

The DPLA compensation offer and the guaranteed dividend payment is subject to a review by a court. We find that during this appraisal procedure the compensation offer to be increased by 8.4% and the guaranteed dividend to be increased by 8.8%. The same appraisal procedure for squeeze-out compensation offers yields on average a 6.4% increase of the compensation by a final court ruling or an out-of-court settlement.

Management summary

Total Cost of Ownership (TCO)

TCO are calculated as the sum overall cost necessary to acquire 100% of the outstanding shares during and in the aftermath of a takeover offer. It comprises the price paid at the takeover offer, the cost on the compensation offer in connection with a DPLA signing (if provided) and a squeeze-out (or merger agreement). We find the average additional cost of finally reaching a 100% ownership to be 43% of the VWAP at the takeover offer. The biggest share of this cost is the takeover premium (60%) followed by the cost related to a DPLA signing. We also find the total duration of the process to finally reach 100% ownership from the takeover offer until the end of the appraisal procedure to be 5.5 years.

Takeover offer analysis

First major step in the taking-private process (hereinafter also takeover) is a public takeover bid. The success of the bid depends on numerous target-specific and bidder-specific factors, incl. offer premium, target resistance, ownership structure, bidder's toehold and negotiated undertakings etc. While some of these factors are predetermined, some others are set by the bidder's takeover strategy. The questions "*What premium shall be offered?*" and "*What toehold is optimal?*" are crucial for gaining full control and minimizing related costs.

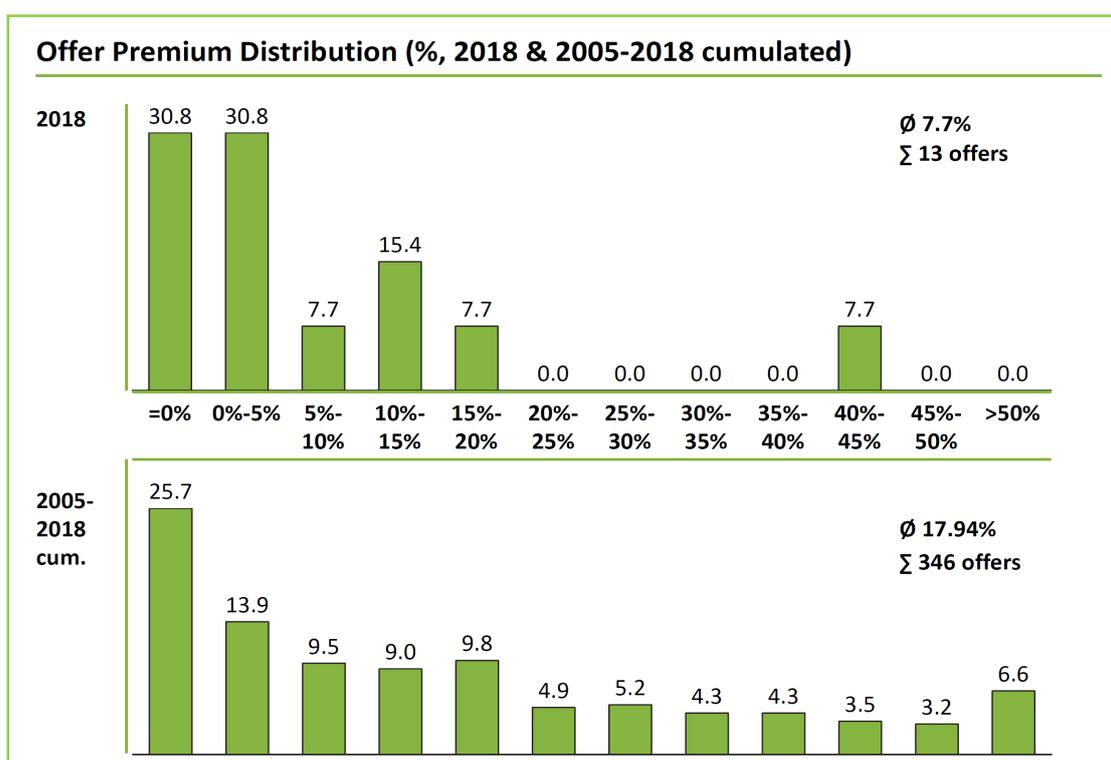


Figure 1: Offer Premium Distribution (% , 2008 & 2011-2018)

To shed the light upon these issues in the German takeover market, we analyze public bids over 2005-2018. Our databank contains 410 takeover offers out of which 368 are primary bids¹. The academic studies agree that the most important factor driving takeover bid's success is offer premium. We define offer premium as the mark-up of the bid price compared to the three-month volume weighted average stock price (VWAP) of the target firm prior to the bid. Due to a missing data and/or low trading volume, the VWAP for several target companies was not representative, and we exclude these cases from our analysis obtaining a sample of 346 offers. Figure 1 displays the distribu-

¹ A primary takeover bid denotes the initial offer, while a secondary takeover bid refers to a change of the previous offer (e.g. increase of acquisition premium, extension of deadlines).

Takeover offer analysis

tion of offer premiums in clustered intervals of 5% for 2018 and cumulated for the years 2005 to 2018. On average, the premiums in 2018 were much lower than over the last 13 years: more than 30% of all bids did not offer any premium, and another 30% of all bids had an offer premium between 0% and 5%. The zero-premium bids are frequently made when the offer is mandatory (i.e. required to be made by the WpÜG), and/or when the target company is financially constrained or distressed. In 25.7% of all takeover bids the acquirer offered the minimum price for target shares, i.e. VWAP over 3 months prior offer announcement. In part, the low premia are also due to a significant price run-up preceding the offer.

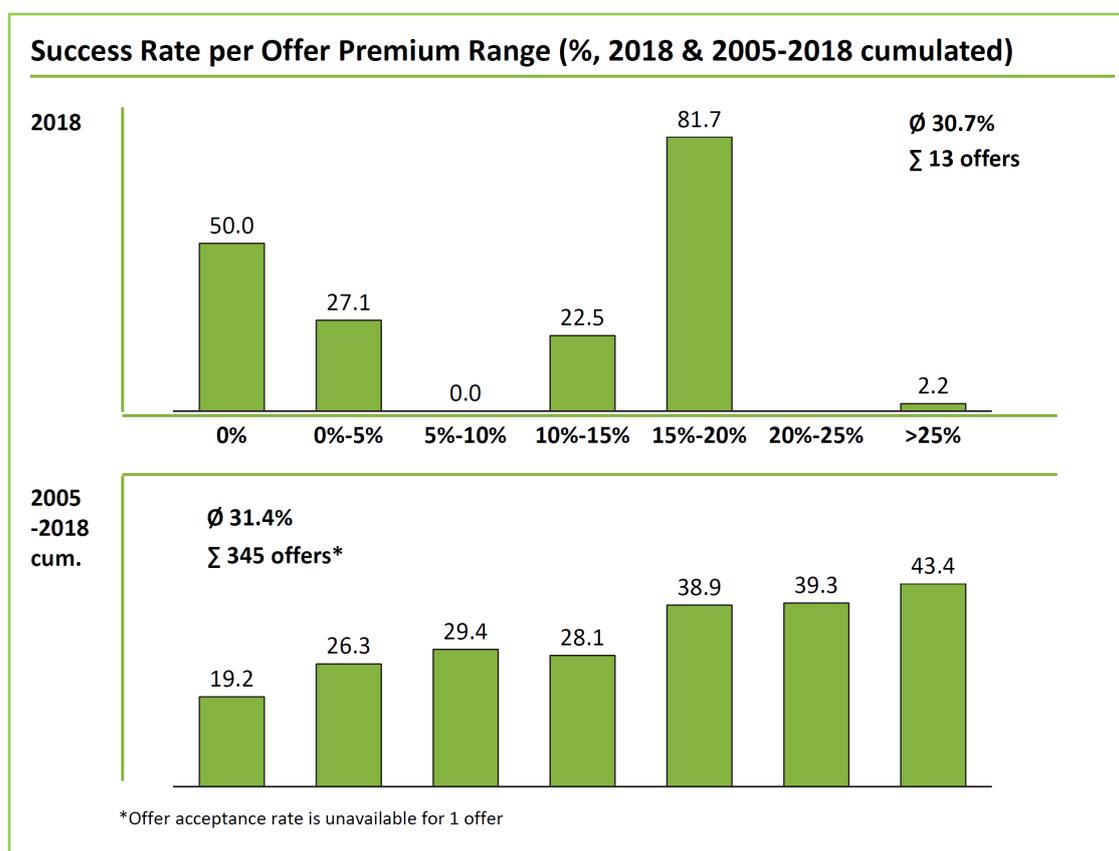


Figure 2: Success rate per offer premium range (% , 2018 & 2005-2018)

Figure 2 presents the average success rates² of takeover bids across offer premium intervals in 2018 compared to the cumulated average values of

²“Success rate” variable is defined as the number of shares acquired by the bidder during the acceptance period divided by the number of shares not under bidder’s control when the offer is launched. This variable takes the bidders toehold into account and has a value range of 0% to 100% for all offers (see Takeover Report 2018)

Takeover offer analysis

2005 to 2018. For 2005-2018 we observe the hypothesized relationship: cumulated average success rates are higher for the ranges with higher offer premiums. Yet, we also observe that an offer premium is not the only determining factor for a takeover success. As Figure 2 shows as a special case, Broadview Industries AG offered a premium of more than 44% to the shareholders of Westag & Getalit AG which ensued in a positive boards' recommendation, but has achieved only a 2.2% success rate. A recent research paper³ suggests that other factors like the bidder's toehold and the target's shareholder structure also have a significant impact on the offer's success rate.

Finally, we evaluate the market expectation on the success of the bid. Here, we concentrate on bids where the bidder owns less than 75% of the target before the bid; beyond 75% ownership we believe that the market reaction is not representative. We plot the individual offer premiums against target cumulated abnormal returns (CARs) for the event window of $-1/+1$ day and find a strong positive relationship shown in Figure 3.

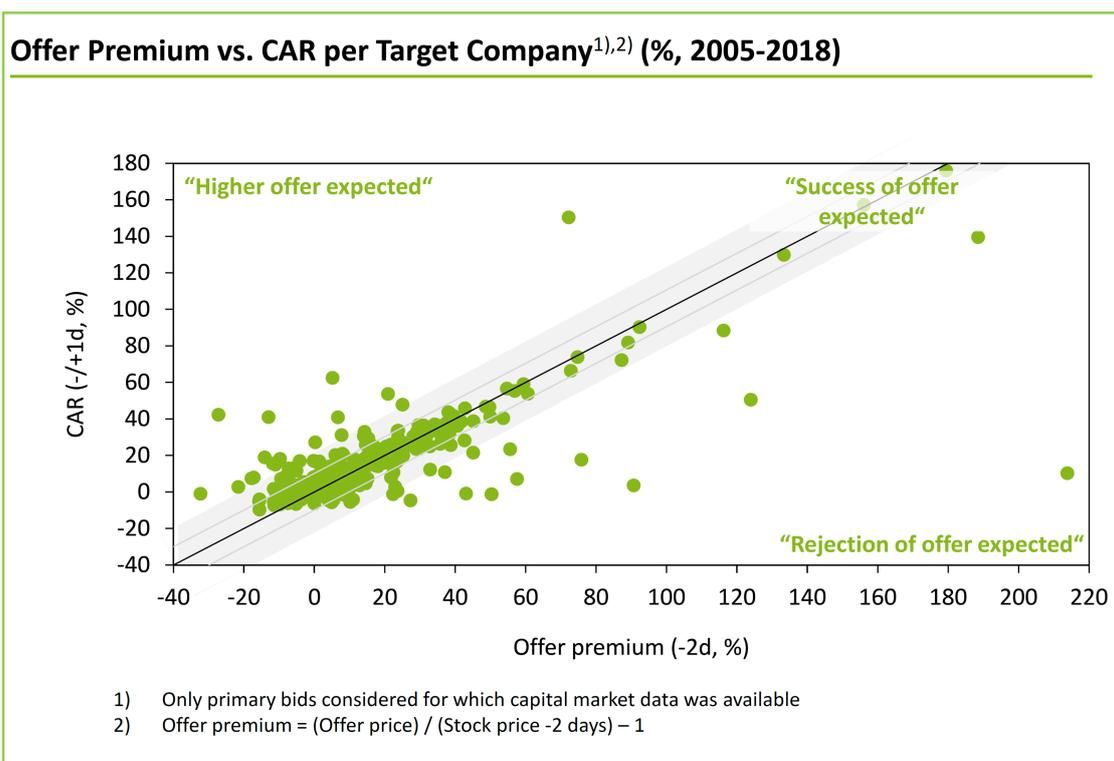


Figure 3: Offer premium vs. cumulated abnormal return per target company (% , 2005-2018)

³ Dobmeier/Lavrova/Schwetzler (2019): Index fund and ETF ownership and the German market for corporate control, Working Paper 2019, HHL Leipzig Graduate School of Management

Takeover offer analysis

The interpretation of this analysis is the following: If the target CAR stays behind the offer premium, the market attaches a low probability to a successful execution of the deal. Contrary, if the target CAR is significantly above the offer premium, the capital market expects an improved offer. When target CAR and offer premium are in line, then there is a significant probability for a success of the bid.

We have tested this interpretation for the observation period 2005 to 2018, by comparing the results from Figure 3 against the realized outcomes of the transactions. As we cannot assume a strict equality of offer premium and target CAR, we have put a tolerance area of +/-5%-percentage points around the equilibrium line to measure the category "success of offer expected." Based on this definition, the capital market would have predicted the bid outcomes correctly for 51.6% of the transactions. This value is significantly higher than the expectation of a random drawing (33.3%).

Post-offer structural measures

The structural measures taken within the framework of a takeover process are subject to specific provisions of the Takeover Act (WpÜG), Stock Corporation Act (AktG) and Transformation Act (UmwG).

Once the control stake is acquired, a further step towards extending the bidder's influence and obtaining full ownership is the signing of a domination and profit and loss transfer agreement (DPLA) between the corporation and its majority shareholder. This requires a 75% vote on a shareholder meeting. Signing a DPLA enables bidder to get direct control, to realize synergies without restrictions, to fully integrate the target company, and to exploit tax advantages of a fiscal unity.

With the 75% shareholders' consent, the target company and the acquirer can enter into a merger agreement (Verschmelzung). German regulation allows statutory mergers (transferring target's assets to acquirer) and consolidated mergers (transferring target's and acquirer's assets to a new entity).

For acquirers that hold over 90% shares of a target company, the complete exclusion of minority shareholders can be achieved through a merger and a subsequent Transformation Squeeze-Out (UmwG)⁴. Alternatively, with 95% of ownership stake the acquirer can proceed with the Stock Corporation Squeeze-Out (AktG). Finally, bidders that acquired at least 90% of the targeted shares within the scope of a takeover offer can request a Takeover Act Squeeze-Out (WpÜG). It is a «short-cut»⁵ procedure of squeezing out minority shareholders that is closely linked to the success of a takeover offer.

⁴ Transformation Squeeze-Out was implemented in 2011. Earlier the merger procedure did not allow for a forced exclusion of minority shareholders.

⁵ General Meeting and additional company valuation are not required. No possibility of action for annulment or appraisal proceeding. Appeal against a court decision of Takeover Act Squeeze-Out can be filed.

Post-offer structural measures

Our databank contains information on 368 takeover bids from 2005 to 2018 and the data on all structural measures following these bids. Of these, 172 takeover offers had subsequent structural measures. In total, for 169 structural measures minority shareholders initiated appraisal proceedings. 98 of these proceedings were finalized, i.e. there is no (further) appeal against the court decision. The other 71 appraisal proceedings are currently under court review. Figure 4 provides an overview of the takeover offers, structural measures, and related appraisal proceedings that constitute the databank and serve as a basis for the takeover endgame analysis.

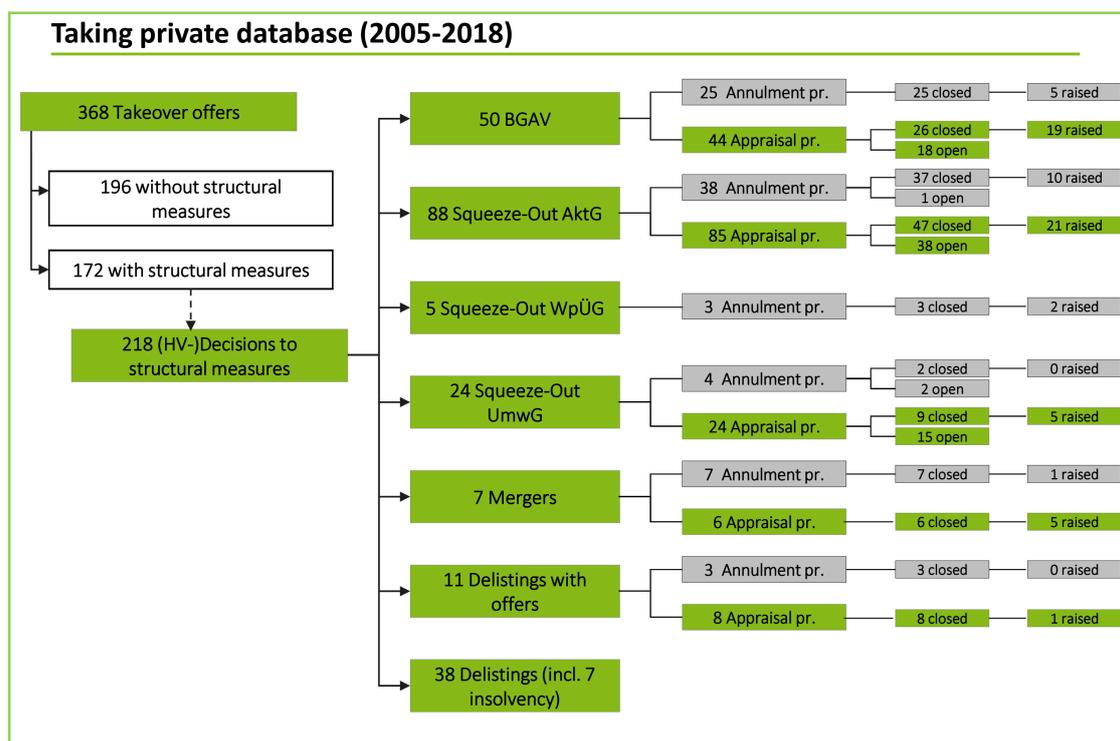


Figure 4: Overview of the taking-private database (as of 31.12.2018)

Post-offer structural measures

Out of 368 primary takeover bids published in 2005-2018 126 acquirers eventually obtained full ownership of the target company. We observe 17 different paths in taking-private strategies. Figure 5 presents the frequency of these paths and the number of completed takeovers (including closing of appraisal proceeding). The equal-sign (=) indicates that measures were taken concurrently, and the arrow-sign (→) shows the sequence of events. In 88 out of 126 cases, acquirers enforced a Stock Corporation Squeeze-Out. In the majority of cases there are no prior structural measures before the final squeeze-out (57 cases). Yet, in 32 takeovers, the signing of a DPLA was concluded within the frame of the chosen taking-private strategy. Takeover Act Squeeze-Out was rarely implemented in practice (only 5 cases)⁶. In 7 cases the takeover was resolved by a merger, of which the most recent case was in 2013. Being not a structural action per se, delisting also plays an important role in taking-private strategies, and is often used in parallel with other structural measures.

Structural measures post takeover offer		Frequency	Completed takeover (incl. appraisal proceeding)
1	Stock Corporation Squeeze-Out (AktG)	57	32
2	Transformation Squeeze-Out (UmwG)	20	8
3	Merger	4	4
4	Takeover Act Squeeze-Out (WpÜG)	1	1
5	1. Takeover Act Squeeze-Out (WpÜG) → 2. DPLA	3	3
6	DPLA = Stock Corporation Squeeze-Out (AktG)	5	2
7	1. DPLA → 2. Stock Corporation Squeeze-Out (AktG)	14	11
8	1. DPLA → 2. Merger	3	2
9	1. DPLA → 2. Transformation Squeeze-Out (UmwG)	1	0
10	1. DPLA = 1. Delisting* → 2. Stock Corporation Squeeze-Out (AktG)	3	2
11	1. DPLA → 1. Delisting → 2. Stock Corporation Squeeze-Out (AktG)	2	1
12	1. Delisting* → 2. Stock Corporation Squeeze-Out (AktG)	1	0
13	1. Delisting* → 2. Transformation Squeeze-Out (UmwG)	1	0
14	1. Delisting* → 2. DPLA → 3. Stock Corporation Squeeze-Out (AktG)	1	0
15	1. Delisting → 2. Stock Corporation Squeeze-Out (AktG)	5	1
16	1. Delisting → 2. Transformation Squeeze-Out (UmwG)	2	1
17	1. Delisting → 2. Takeover Act Squeeze-Out (WpÜG)	1	1

* Delisting with a purchase offer to shareholders

Figure 5: Taking-private strategies post takeover offers (2005-2018)

⁶ In some of these cases a DPLA was signed after the squeeze-out. The reason for this seemingly odd strategy was that some minority shareholders tried to challenge and block the squeeze-out.

Post-offer structural measures

The German Stock Corporation Act, requires a fair compensation to minority shareholders in the case of structural measures. In case of signing a DPLA, the law requires either an appropriate recurring compensation (so-called guaranteed dividend) for the shareholder who decide to stay in the company, and an appropriate compensation in case the shareholder leaves the company (pursuant to § 304 and § 305 of Stock Corporation Act). We study 50 DPLAs following the takeover offer to evaluate the associated costs. Figure 6 presents the distribution of offered guaranteed dividends relative to the offered compensation. In large number of cases (21.6%) the guaranteed dividends are between 5% and 6% of the offered compensation, being above 6% in more than 50% of all DPLA.

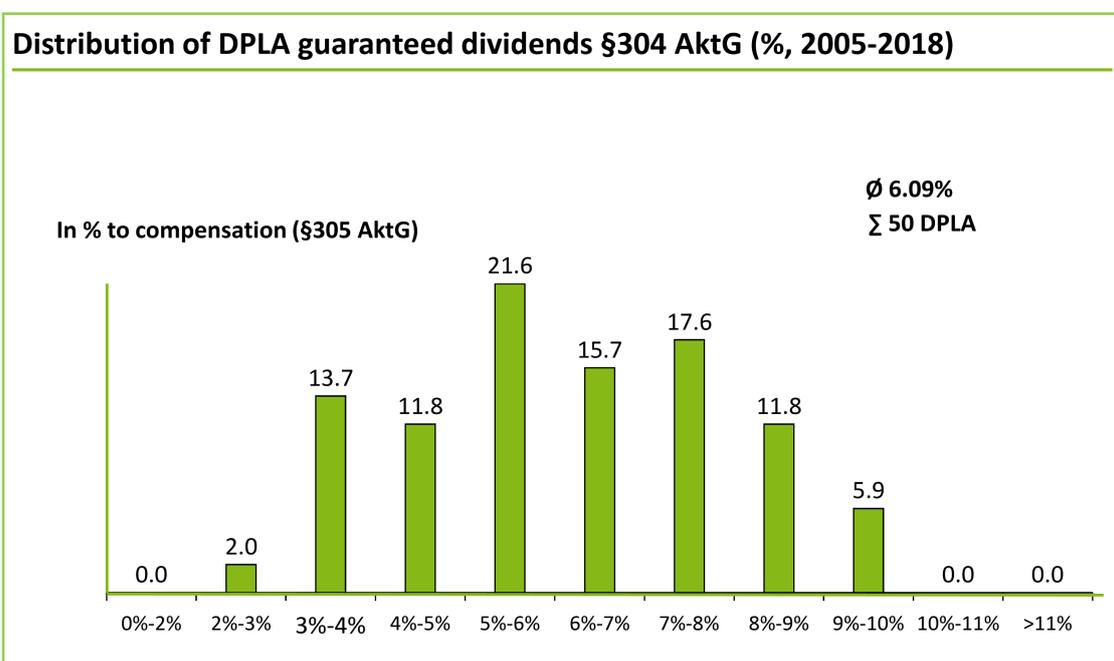


Figure 6: Distribution of DPLA guaranteed dividends §304 AktG (% , 2005-2018)

Post-offer structural measures

We further analyze an annual development of the mean and median value of DPLA guaranteed dividends relative to the riskless rate (return on German government bonds with 10 years maturity). Figure 7 shows that over the period of 2005 - 2018 the DPLA guaranteed dividends follow the development of a riskless rate, replicating the trend of cumulated annual values with a large amplitude. An average DPLA guaranteed dividend is 3-4 percentage points above the riskless rate. In 2018, we observe an increase in guaranteed dividends which is corresponding to a slight increase of a riskless rate.

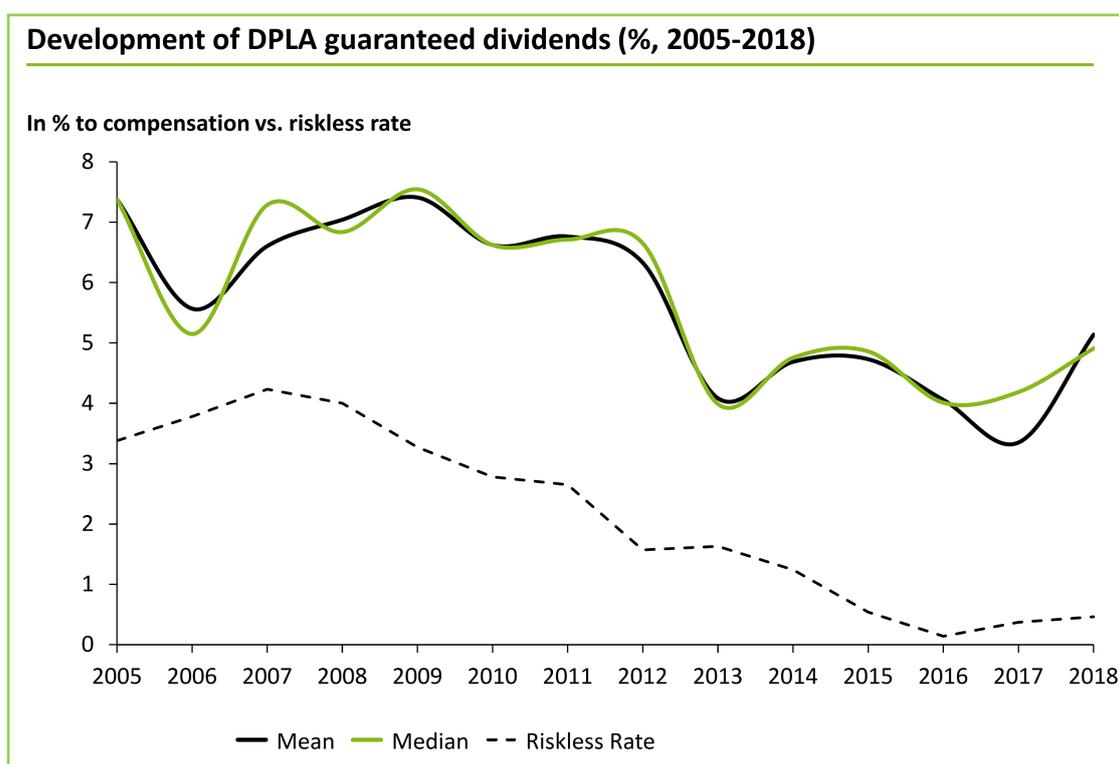


Figure 7: Development of DPLA guaranteed dividends §304 AktG (% , 2005-2018)

Post-offer structural measures

An appropriate compensation for the shares of minority shareholders shall be not less than the VWAP for 3 months prior announcement of DPLA, and not less than the equity value (“Ertragswert”) per share determined by a verified company valuation. Thus, the maximum of these two limits is considered to be the minimum appropriate compensation. Figure 8 shows the distribution of the premium over VWAP and over the regulatory minimum in DPLA compensations. We exclude the cases where VWAP is impossible to determine due to extremely low trading volume or shares not being listed in the regulated market. The equity values have been collected from the valuation reports issued to DPLA. In most of the cases, the majority shareholder offered a compensation above VWAP, on average the DPLA compensation was 8.89% higher than VWAP. Most of the premium was due to the fact that the “Ertragswert” was higher than the VWAP: in 72.5% of all DPLAs was the compensation offered equal to the regulatory minimum. In 27.5%, it included a premium of up to 25%. On average, the DPLA compensation exceeded the regulatory minimum by just 2.08%.

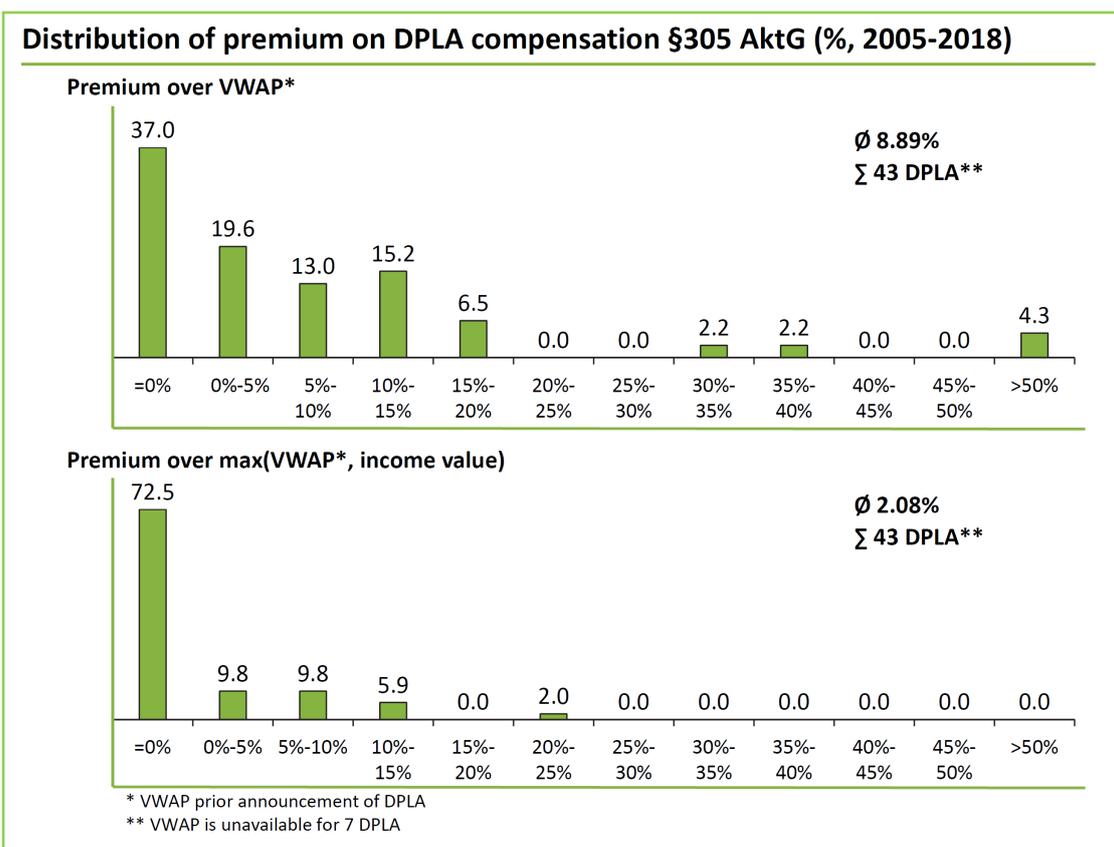


Figure 8: Distribution of premium on DPLA compensation §305 AktG (% , 2005-2018)

Post-offer structural measures

The German regulation for corporate squeeze-outs also requires a fair compensation for the minority shareholders forced to leave the corporation. Also here, the minimum compensation to be offered is equal to the higher of either the VWAP or an estimated and verified equity value (“Ertragswert”). The VWAP in this case is calculated for the 3 months prior the announcement of the Squeeze-Out. We examine first the premium of the compensation over the VWAP and over the regulatory minimum in Squeeze-Outs according to the German stock corporation act (§327 AktG). Figure 9 illustrates that on average the Squeeze-Out-related compensation offers were exceeding VWAP by 11.4%, however almost half of all settlements were equal to VWAP. The distribution of premiums over the regulatory minimum in Stock Corporation Squeeze-Outs is similar to the DPLA case; however, the average premium here is slightly lower: 1%.

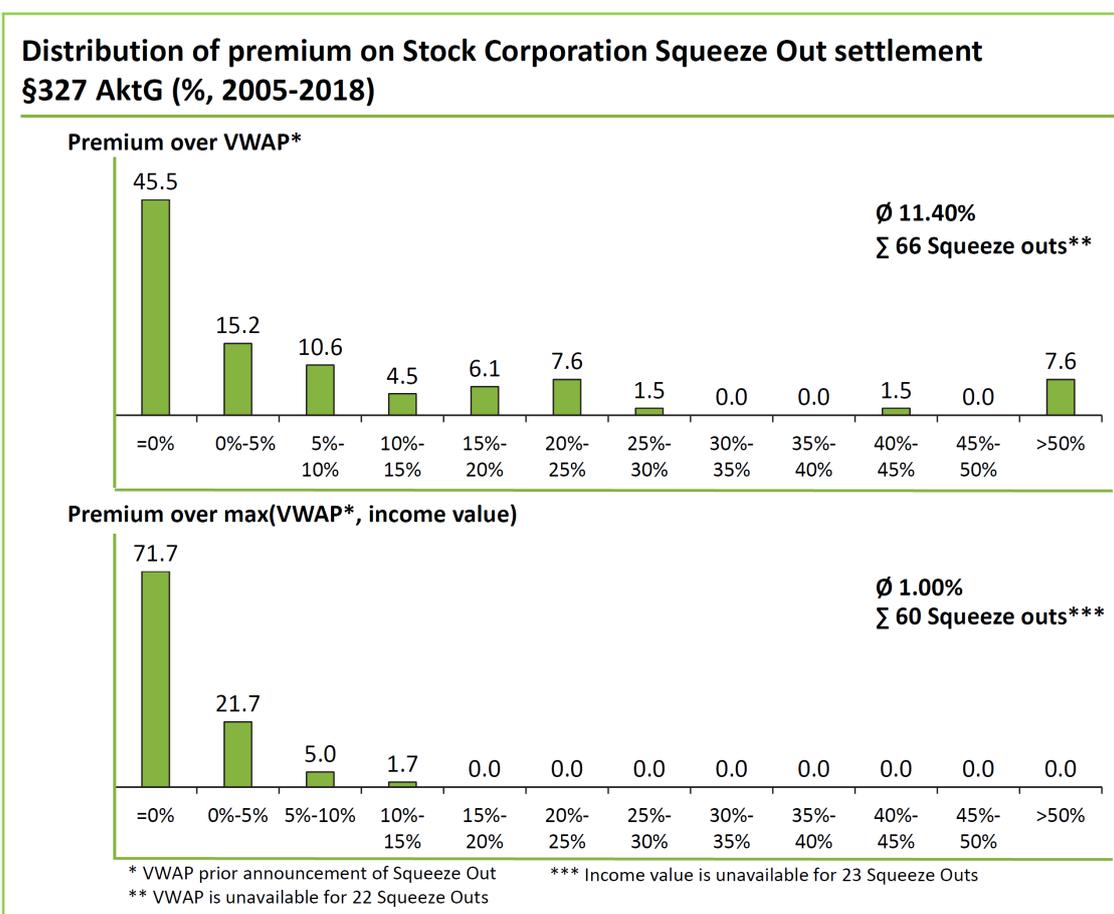


Figure 9: Distribution of premium on Stock Corporation Squeeze-Out compensation (% , 2005-2018)

Post-offer structural measures

Figure 10 presents the distribution of premium in Squeeze-Out compensations offered according to the German Transformation Act (UmwG). The premia in settlements for such Squeeze-Outs are lower than in DPLA compensations or other types of Squeeze-Outs. The premium over VWAP did not exceed 35% and was on average 7.52%. Only in 15% Squeeze-Outs the settlements exceeded the regulatory minimum, so the average premium was 0.46%.

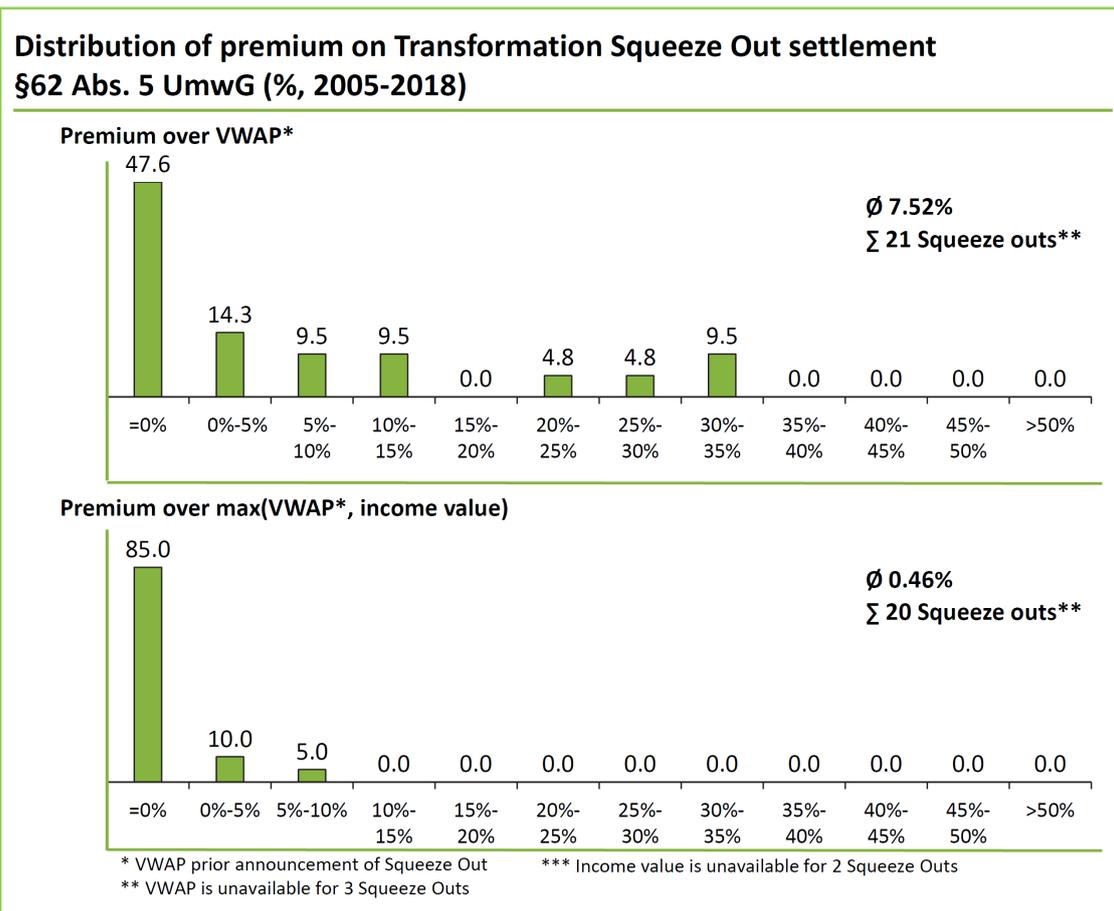


Figure 10: Distribution of premium on Transformation Squeeze-Out compensation (% , 2005-2018)

Post-offer structural measures

Finally, Figure 11 summarizes the distribution of premium in compensation to all structural measures.

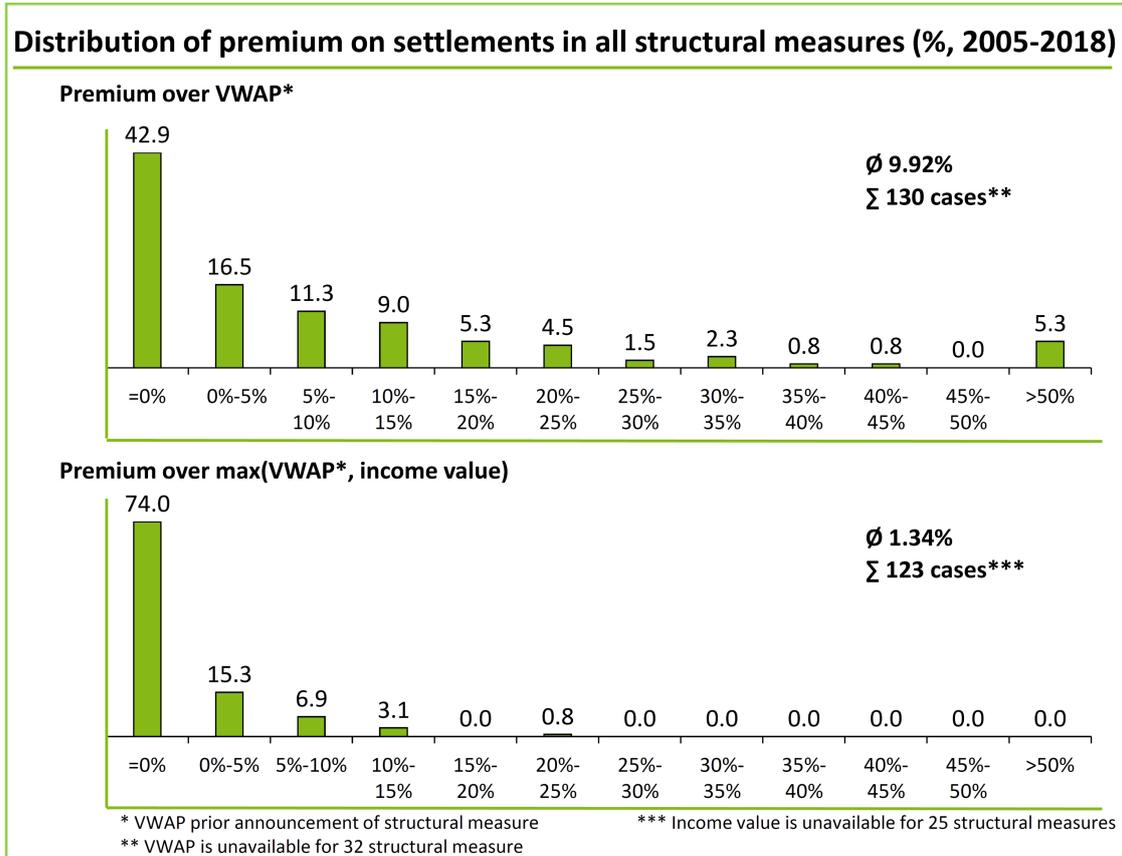


Figure 11: Distribution of premium on Transformation Squeeze-Out compensation (% , 2005-2018)

Appraisal proceedings to structural measures

Minority shareholders may start appraisal (appraisal) proceedings under which the fairness of the DPLA guarantee dividends, DPLA compensation, Merger exchange ratio and/or Squeeze-Out compensation shall be verified (Spruchverfahren). Appraisal proceedings cannot delay or block the enforcement of a structural measure. In contrast, an annulment proceeding against the General Meeting decision blocks the enforcement of a structural measure. The proceeding is carried out under the regional court (first instance) and can be resolved by a judicial compromised agreement or a court ruling. The compensation offer cannot be decreased in appraisal proceeding, and the majority shareholder shall carry all costs of litigation. The regional court decision is a subject to appeal under the higher regional court (second instance) whose decision is final. The higher regional court has a right to increase, decrease or annul the first instance ruling.

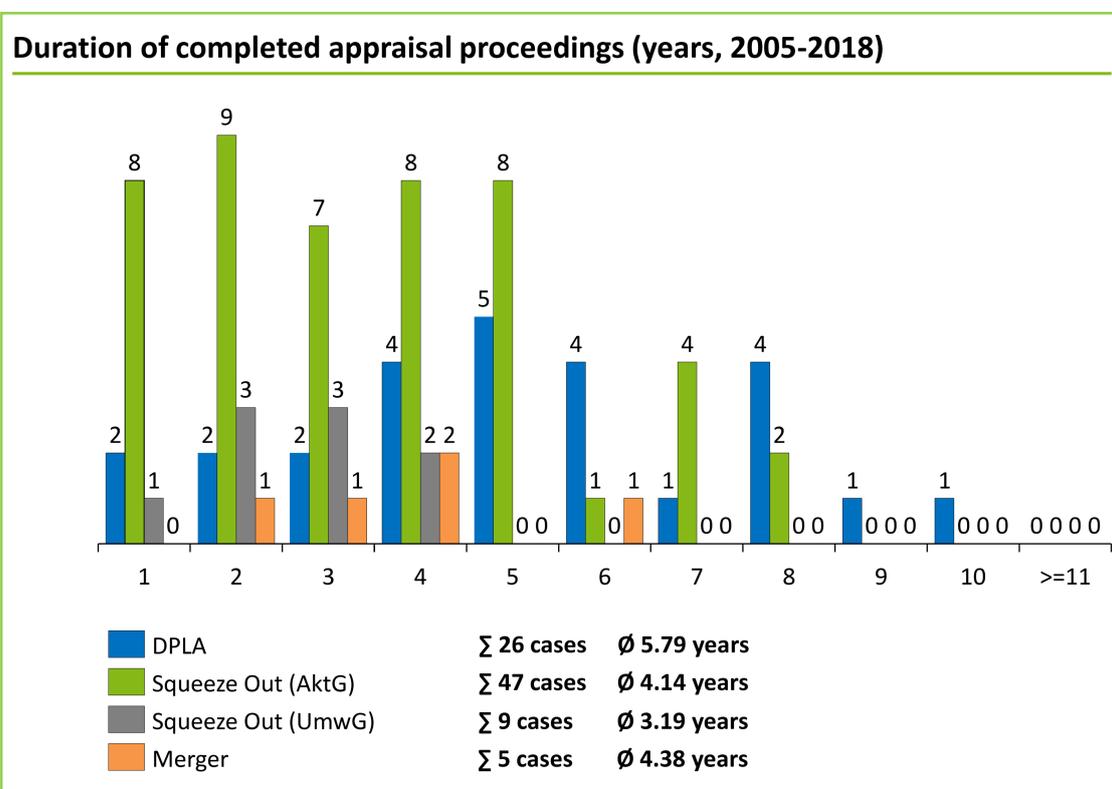


Figure 12: Duration of completed appraisal proceedings (years, 2005-2018)

In Figure 12, we first evaluate the duration of appraisal proceedings. On average, the appraisal proceedings to a compensation offer related to a DPLA run significantly longer than in other cases (5.8 years). In 6 DPLA proceedings the duration exceeded 8 years and only small number of cases could be resolved within 2 years. Appraisal proceedings of Stock Corporation

Appraisal proceedings to structural measures

Squeeze-Outs last on average 4.14 years; however, the data shows that the length of the proceeding spreads almost evenly over the first 6 years. Here, 21 out of 47 proceedings were resolved directly by first instance, thereof 17 by a compromised agreement. The proceedings related to Transformation Squeeze-Outs display the shortest duration: 3.19 years on average. Here, 7 out of 9 proceedings were carried out by both regional and high regional courts. There was only one Squeeze-Out case that directly followed a takeover offer and had no further appraisal proceeding. Within the group of Stock Corporation Squeeze-Out the minority shareholders of DIS Deutsche Industrie-Service AG waived their right for an appraisal proceeding. There are only 5 completed appraisal proceedings to Merger compensations with an average duration of 4.38 years. One further proceeding to Merger is still carried out since 2009 (since 2013 by second instance).

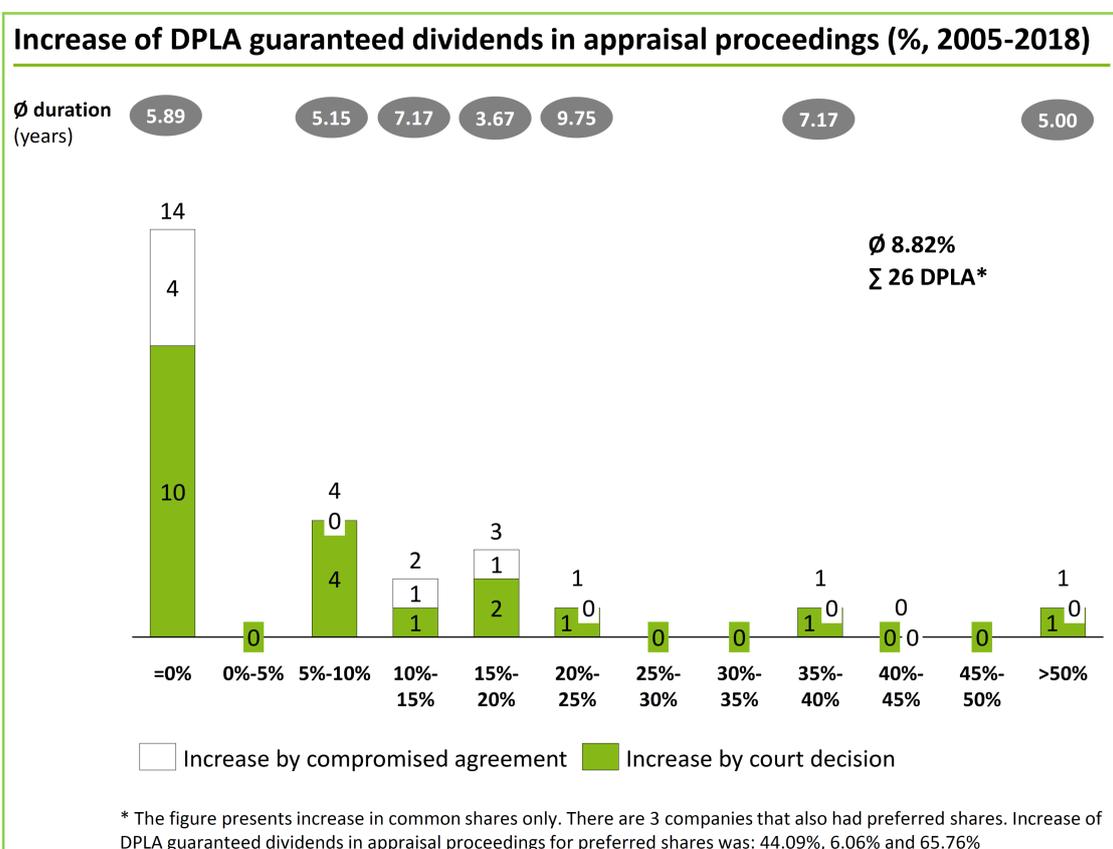


Figure 13: Increase of DPLA guaranteed dividends in appraisal proceedings (% , 2005-2018)

Figures 13 and 14 respectively present the increase of guaranteed dividends and compensation determined by a court in DPLA appraisal proceedings.

Appraisal proceedings to structural measures

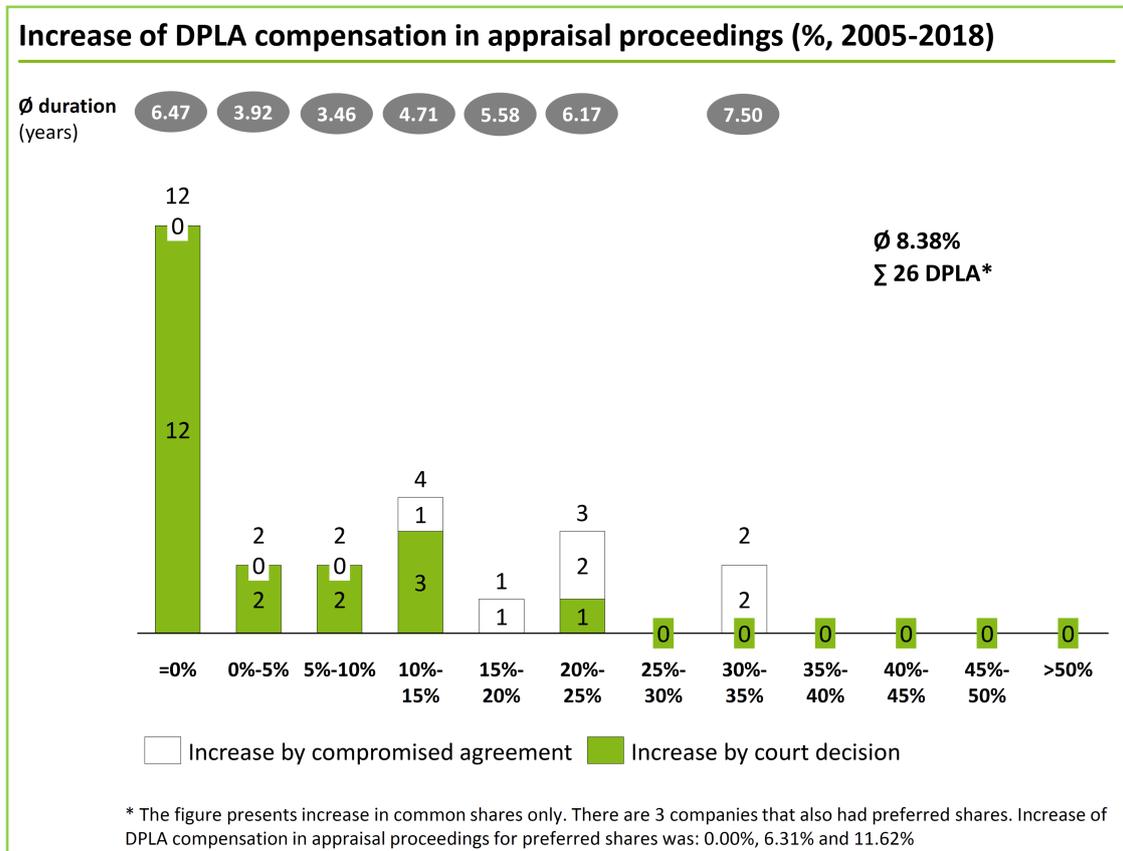


Figure 14: Increase of DPLA compensation in appraisal proceedings (% , 2005-2018)

In half of appraisal proceedings, the DPLA compensation was increased. We observe that almost all proceedings that ruled an increase of higher than 15% were resolved by a compromised agreement and had a much longer duration time relative to the cases with lower increase. Also, in most appraisal proceedings resolved by agreement, only the DPLA compensation was increased but not the dividend. On average, the increase to DPLA compensation is close to the increase of the guaranteed dividends (8.38% vs. 8.82%).

Appraisal proceedings to structural measures

Figure 15 depicts the distribution of an increase to Stock Corporation Squeeze-Out compensation offers in appraisal proceedings by the courts. In most cases, the increase of compensation was enforced by a compromised agreement; only in 6 cases out of 47 the increase was ruled by the court. In 2018, 6 appraisal proceedings were finalized with an increase of 9.41% on average; thereof 3 proceedings were closed by a mutual agreement in the first instance. The average settlement increase for all 47 Squeeze-Outs was 6.91%. Overall, we observe only one case with an extremely high increase of settlement exceeding 50%, but in the vast majority of cases the original compensation offer was ruled to be fair.

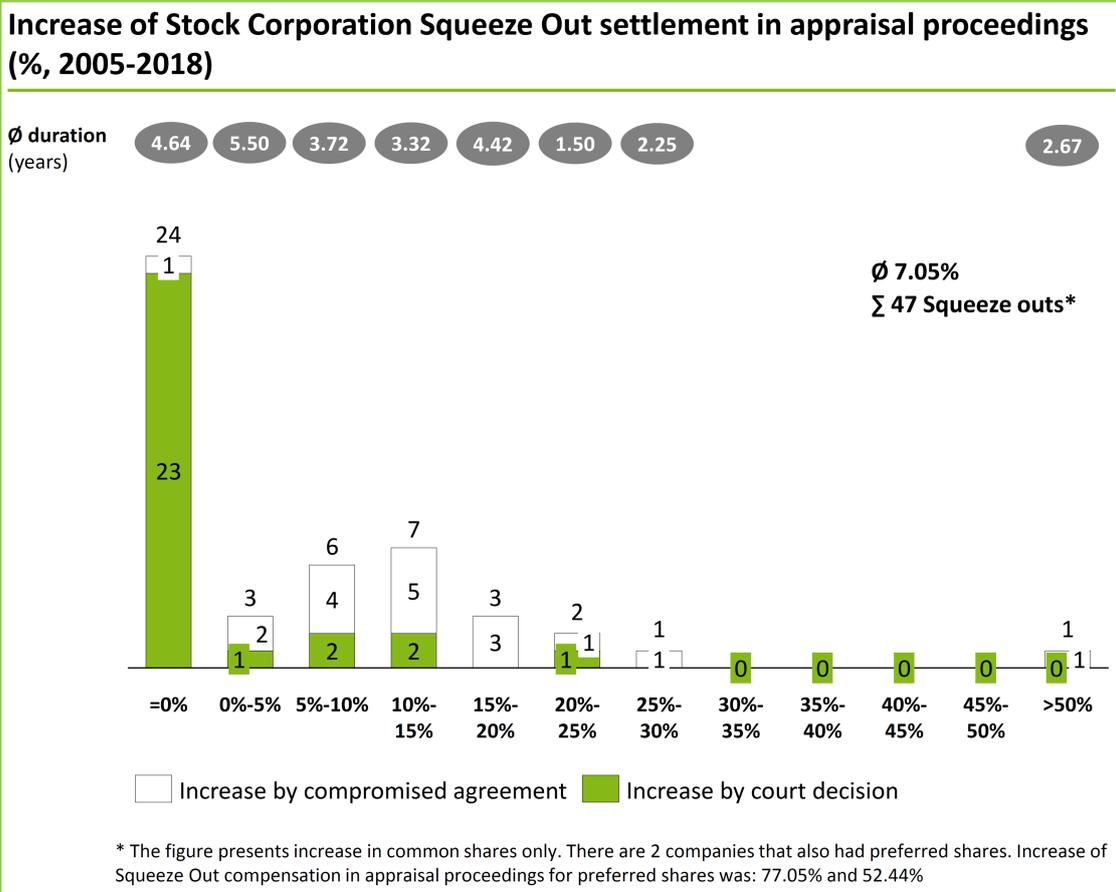


Figure 15: Increase of Stock Corporation Squeeze-Out settlement in appraisal proceedings (% , 2005-2018)

Appraisal proceedings to structural measures

Figure 16 shows the same distribution of compensation offers related to Transformation Squeeze-Out. In the majority of cases, the compensation was increased; however, the increase ruled by court decision did not exceed 15%. The only case where the settlement was increased by over 30% was resolved by a mutual agreement between the two parties (OnVista AG Squeeze-Out). In the proceeding to the compensation of the Squeeze-Out of PROCON Multimedia AG, the initial increase ruled by the regional court was later reduced by the second instance (from 12.64% to 3.85%). In 2018, 2 appraisal proceedings have been completed: both with an increase in first instance and a rejection of complaints in second instance. On average, the increase of compensation offers related to Transformation Squeeze-Out is relatively small: 6.36%.

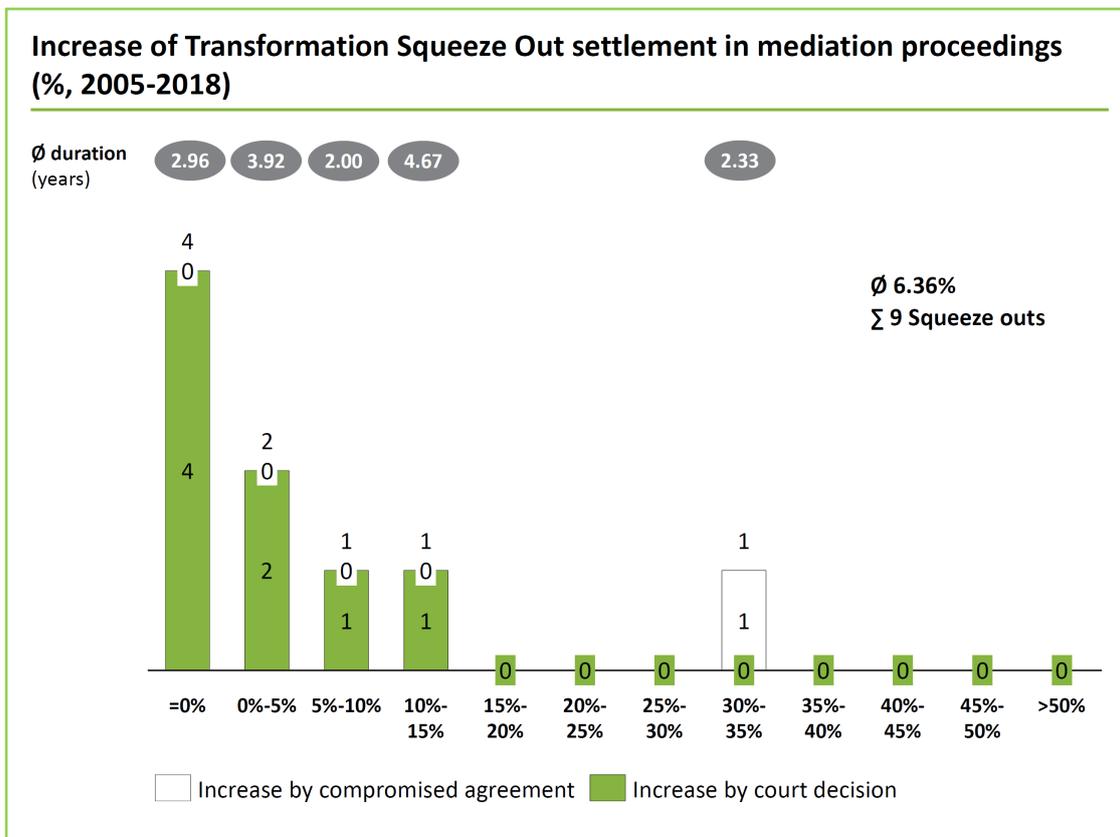


Figure 16: Increase of Transformation Squeeze-Out settlement in appraisal proceedings (% , 2005-2018)

Appraisal proceedings to structural measures

Figure 17 presents the increase of settlements in Merger cases ruled within the appraisal proceeding. Apart from the 5 mergers shown here, there is one additional completed merger case: the shareholders of Allbecon AG signed an agreement waving their right to an appraisal proceeding receiving in return an additional compensation. Figure 18 provides a combined overview.

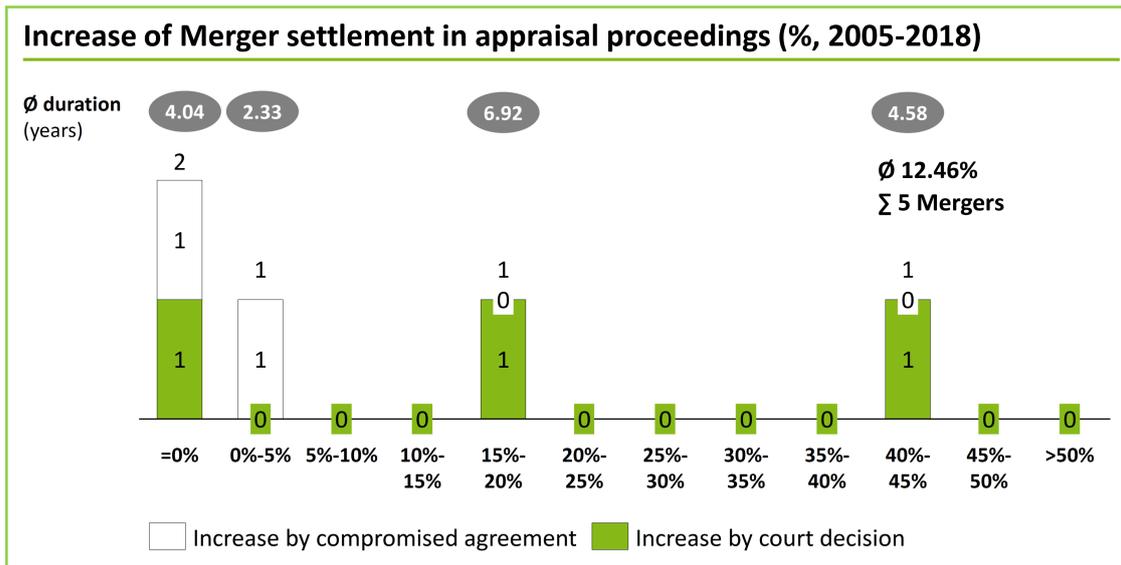


Figure 17: Increase of Merger settlement in appraisal proceedings (% , 2005-2018)

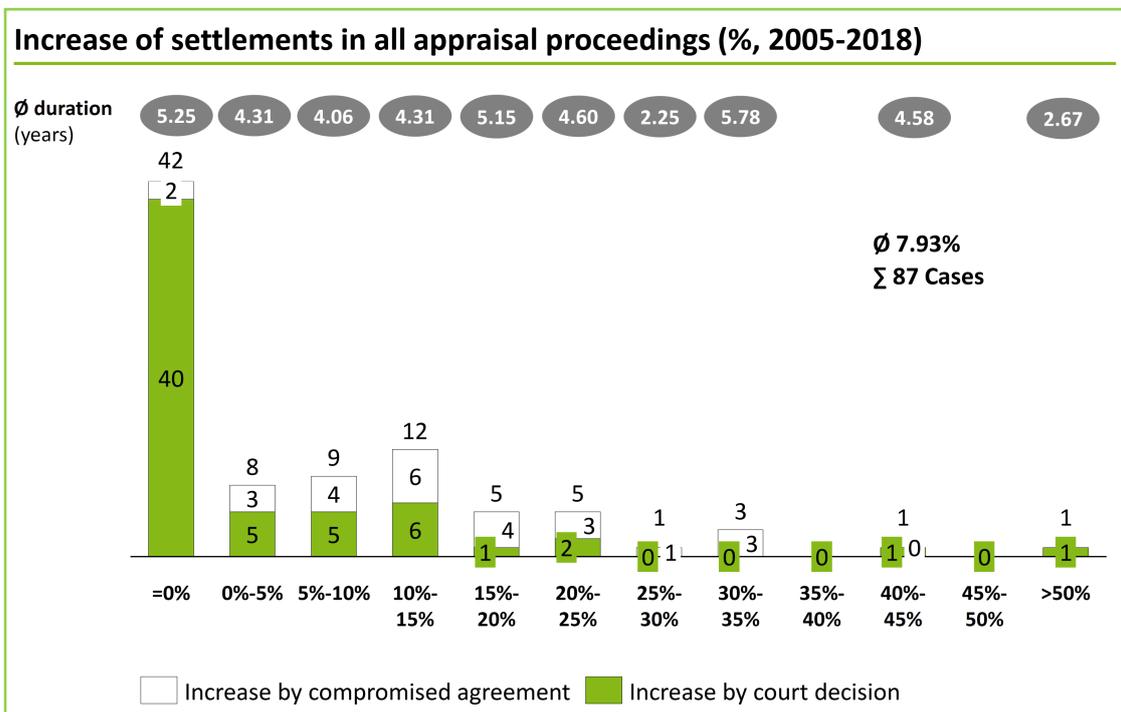


Figure 18: Increase of settlements in all appraisal proceedings (% , 2005-2018)

Total Cost of Ownership

In the last part of our report, we estimate the total costs in public takeovers that obtained 100% ownership and completed all related appraisal proceedings. Our sample contains 69 successful taking-private cases that cover all information from the first takeover offer over the potential signing of a DPLA until the final squeeze-out or merger agreement (including the final court ruling in appraisal proceeding). We start by characterizing the bidder by its initial toehold, offer premium, success of takeover bid and duration of the complete takeover process.

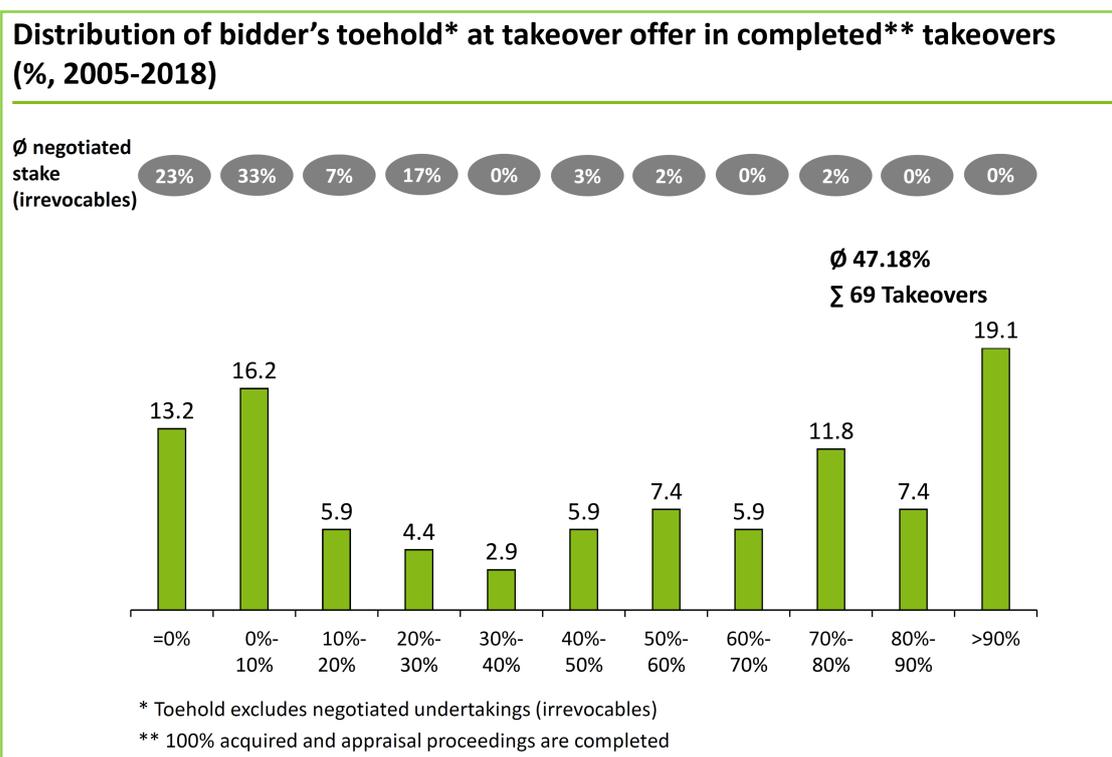


Figure 19: Distribution of bidder's toehold at takeover offer in completed takeovers (% , 2005-2018)

Figure 19 provides the overview to bidder's toehold at the offer announcement. 29.4% of all acquirers in the sample owned less than 10% of target shares at the offer announcement. However, many bidders closed purchase agreements with some target blockholders prior the bid. All financial instruments (§§ 25, 25a WpHG) and undertaking agreements (such as irrevocable acceptance obligations) that enable bidder to purchase target shares are excluded from toehold and presented in the bubbles above the chart⁷. For bid-

⁷ For example, in the acquisition of vwd Vereinigte Wirtschaftsdienste Aktiengesellschaft the bidder Vienna GmbH had no toehold, but concluded irrevocable acceptance agreements with 8 shareholders securing 90.35% of target shares.

Total Cost of Ownership

ders with a very low toehold these pre-negotiated undertakings were on average significantly higher than the bidder's initial equity stake. The average pre-negotiated stake was equal to 10.09%. More than half of the bids in our sample (51.6%) were launched by a control-holding shareholder (with a toehold above 50%); in 19.1% cases the bidder even held already more than 90% of the target company's shares.

The average offer premium of the finally completed takeovers in our sample is higher than the average premium of all bids of 2005-2018 (32.7% vs. 17.9%). Figure 20 depicts the distribution of offer premium of the completed takeovers in our sample (distribution within all bids). In 14.7% of completed takeovers, the offer premium exceeded 50%, yet 16.2% of the acquirers did not offer any premium on top of the required minimum offer of VWAP.

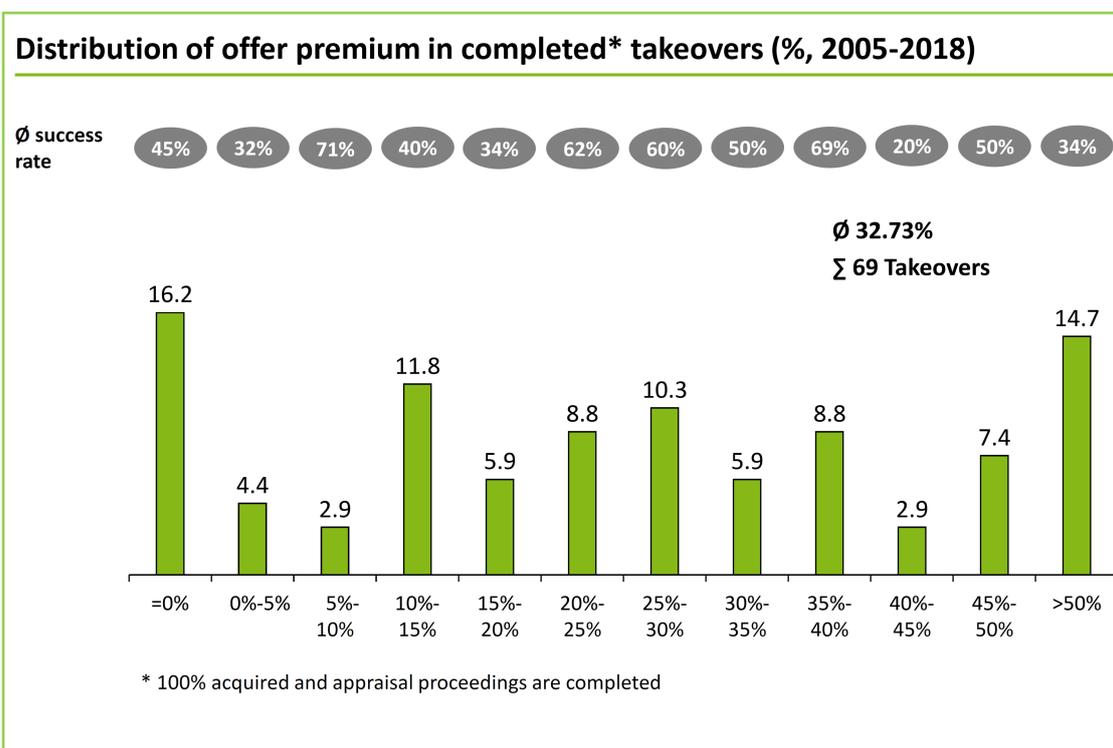


Figure 20: Distribution of offer premium in completed takeovers (% , 2005-2018)

The top line of Figure 20 shows the corresponding success rate. The average success rate for all bids (including the not yet completed takeover attempts) is about 31.4%. Thus, comparing the average success rate to the success rate values in Figure 20 we observe, that initial bids in completed takeovers were on average more successful than all other bids.

Total Cost of Ownership

On average, the bid's success rate of completed takeovers in our sample is 47.53%. The detailed overview of success rate distribution is shown by Figure 21. As we observe a large number of bids with a success rate below 10%, the final success of a takeover attempt obviously does not only depend on the success of the bid as its first step. In general, the distribution of success rate across completed takeovers does not show specific patterns across the offer premium and the pre-negotiated stake.

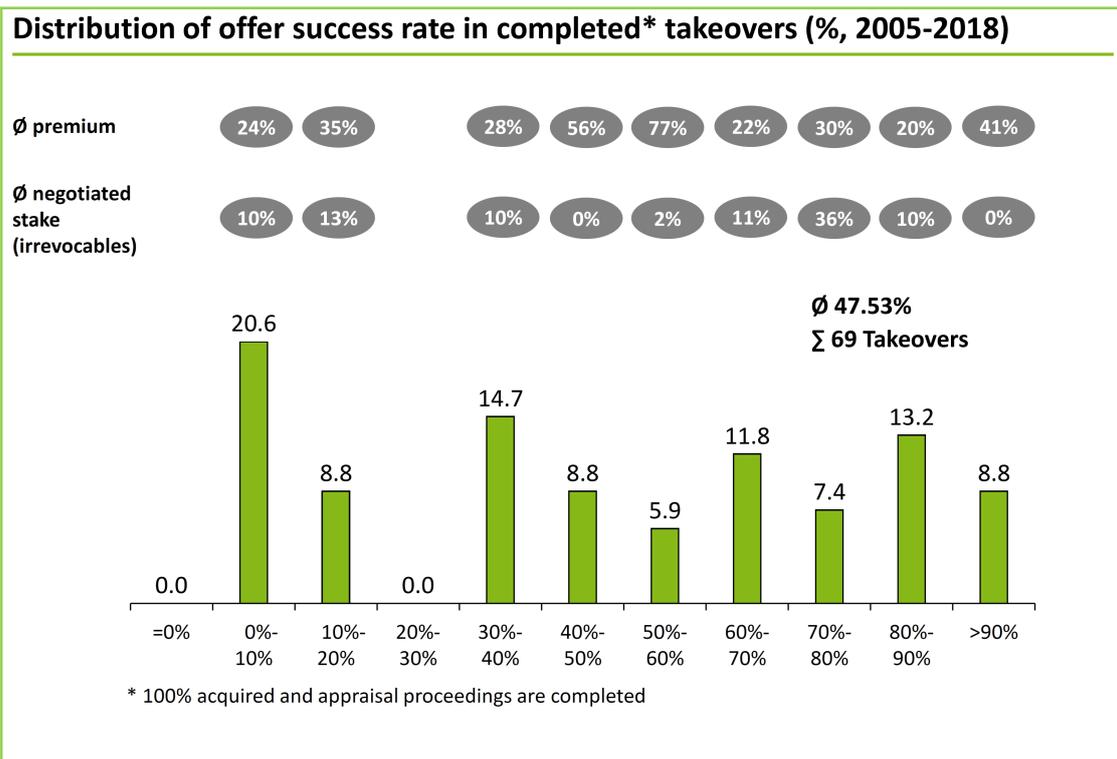


Figure 21: Distribution of offer success rate in completed takeovers (% , 2005-2018)

Total Cost of Ownership

We further look at the total duration of a complete taking-private process from the takeover offer announcement until the final decision in appraisal proceeding related to the squeeze-out (if applicable). Figure 22 illustrates that the duration for most takeovers was between 3 to 7 years, and 5.5 years on average. In some rare cases, the complete acquisition process lasted more than 10 years. The initial toehold of the acquirer at the beginning of the process does not have a noticeable impact on the total duration of the takeover: there are no high deviations from the total average toehold (47.8%, see Figure 19) over the different duration clusters.

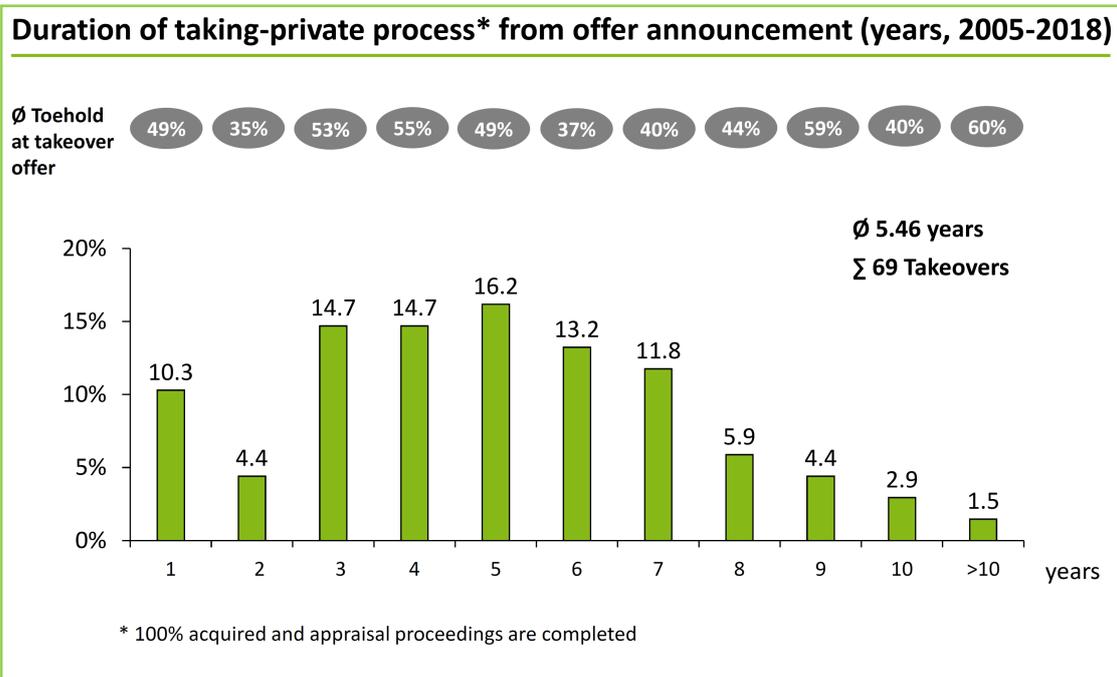


Figure 20: Duration of taking-private process from offer announcement (years, 2005-2018)

Total Cost of Ownership

We define the total cost of ownership (TCO) as the volume-weighted average premium that an acquirer has to pay on top of the VWAP at the takeover offer during the course of the complete takeover process until 100% ownership. A simple example shall highlight the calculation and interpretation:

We look at a bidder owning already a stake of 20% at the target company as a toehold; the VWAP of the stock price at the offer date is 10 € per share. The process of the takeover in the example consists of three successive steps: the takeover offer, the acquisition of shares on the marketplace in order to reach the threshold for the squeeze-out and finally the squeeze-out itself. The success rate, the premium paid in the different steps and finally the calculation of the TCO is highlighted in the following table:

Toehold	20%			
VWAP prior offer announcement	10.00 €			
	Takeover Offer	Stock Market	Squeeze-Out (AktG or UmwG)	Total
Acquired stake	60.00%	15.00%	5.00%	80.00%
Relative stake acquired (success rate)	75.00%	18.75%	6.25%	100.00%
Price paid (compensation)	13.00 €	11.00 €	16.00 € ⁸	
Premium to VWAP prior offer announcement	30.0%	10.0%	60.0%	
Average total price per share				12.81 €
TCO				28.13%
TCO in components	22.50%	1.88%	3.75%	28.13%

The volume-weighted average price per share finally acquired is 12.81 €; at a VWAP of 10 € per share that translates into TCO of 28.1%. Of course, you get the same TCO value by calculating the volume-weighted average over the three different premia paid (30%, 10% and 60%). Note that due to the lower average purchase price of the stocks acquired on the market place combined with its relatively high volume, the TCO are lower than the premium of the takeover bid in step 1.

⁸ Final compensation price (as ruled by court in appraisal proceeding)

Total Cost of Ownership

For the cases in our sample, we start by estimating an average price paid for all acquired shares during the offer phase of the takeover bid and then relate it to the corresponding VWAP for the 3 months prior takeover offer. In order to calculate all related costs, we split the takeover process into 3 cost-related Phases: (1) acquisition via the takeover offer; (2) acquisition via the DPLA compensation/acquisition on the marketplace; (3) acquisition of outstanding shares by Squeeze-Out compensation.

We obtain the information of the number of acquired shares in Phase 1 from the German Federal Gazette announcements thus allowing us to calculate the ownership stake after offer period. If the ownership stake of the acquirer after the takeover offer is below its stake at the point of DPLA⁹ (or in case no DPLA is signed, its stake at Squeeze-Out¹⁰) announcement, we assume that the additional shares were acquired on the stock exchange. As the precise purchase sequence and price for the acquired shares is not observable, we assume the shares to be purchased daily in equal parts over the period between the end of the offer period and the date of the announcement of the DPLA (or Squeeze-Out resp.).

If the takeover strategy contains the signing of a DPLA, we assume two possible scenarios for acquirer to reach the necessary ownership stake for the squeeze-out in the Phase 3: either the acquirer gets the necessary shares in exchange to the compensation offer related to the DPLA, or the necessary shares are purchased again on the stock exchange for given prices. In the first option a potential increase of the DPLA compensation in the appraisal proceeding and the additional respective interest payments contribute to this part of the TCO. For the second option again the average price over the respective time is used for the acquisition cost.

The calculation of the costs related to the last stage of the takeover in the Phase 3 is quite straightforward: the still outstanding minority shareholders receive a Squeeze-Out compensation for their shares plus an increase to it (if ruled/agreed) with an accumulated interest at the end of appraisal proceeding. Thus, finally we can split the TCO into up to six factors potentially contributing to it: (1) takeover offer costs; (2) acquisition via stock exchange; (3) offered DPLA compensation; (4) increase of DPLA compensation by appraisal proceeding; (5) offered Squeeze-Out settlement; (6) increase of Squeeze-Out compensation by appraisal proceeding.

⁹ Signing of a DPLA requires a 75% vote on the shareholder meeting.

¹⁰ Depending on the squeeze-out version chosen by the acquirer, it requires a shareholder vote of 90% or 95% in a shareholder meeting.

Total Cost of Ownership

Due to missing data of necessary share prices, we have to exclude 10 completed takeovers and thus calculate TCO for 59 acquisitions in total.

There are 15 taking-private cases that include the signing of a DPLA prior to the squeeze-out. As outlined above, we use two different options to measure the acquisition cost of the shares acquired up to the threshold stake necessary for a squeeze-out: First, we assume that neither of the minority shareholders accepted the DPLA offer, and the shares were acquired on stock exchange and calculate the TCO under this assumption. We compare the calculated TCO between the acquirers that held at least 50% stake at the takeover bid (control-holding bidders) and those that had a toehold below 50% (control-taking bidders). Figure 23 presents the overview of TCO for these two groups of bidders. On average, the TCO for control-holding bidders are significantly lower than for control-taking bidders (33.57% vs. 51.18% over VWAP). The majority of control-taking bidders have on average TCO between 30% and 40% of the VWAP. A number of control-taking acquirers paid on average more than 100% premium over VWAP prior offer announcement.

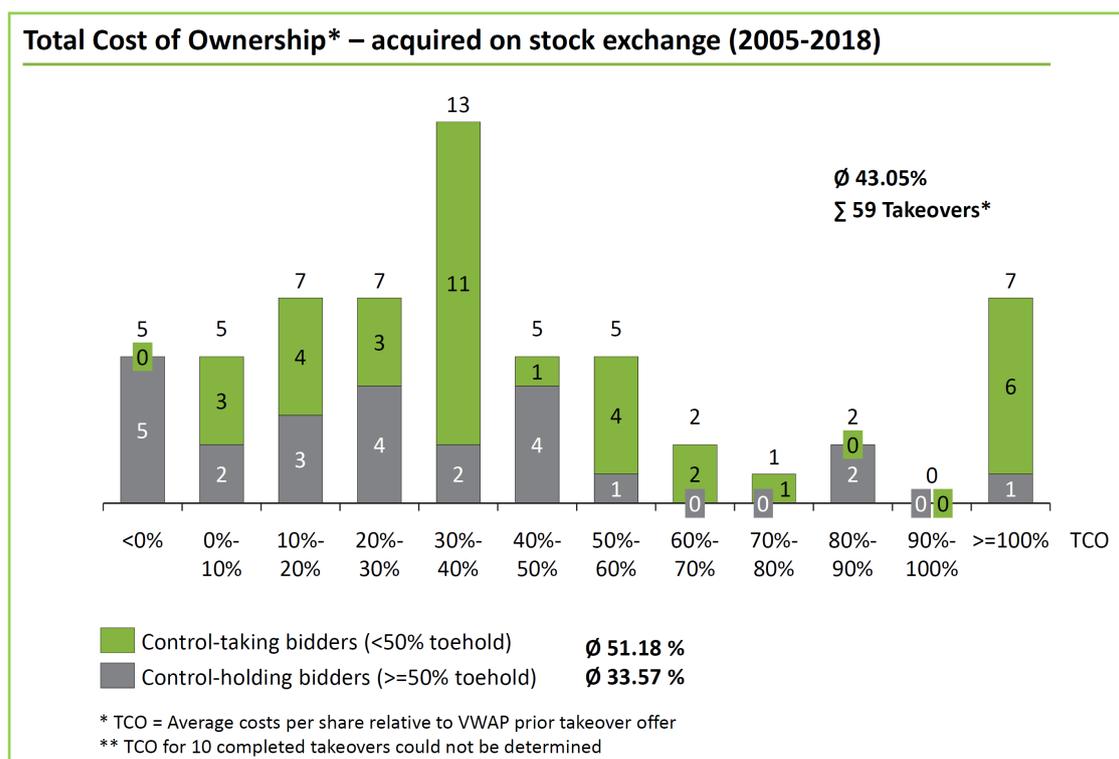


Figure 23: Total Cost of Ownership – acquired on stock exchange (2005-2018)

Total Cost of Ownership

Figure 24 presents scatter plot comparison of TCO for the two different options calculating the costs of acquired share related to a signed DPLA for the cases involving the signing of such a contract. Under option 1 the acquirer buys all shares on stock exchange until reaching the ownership stake necessary for a squeeze-out; in this case the TCO are higher than under option 2, assuming all shares are acquired by the minority shareholders accepting the compensation offer related to the DPLA. This even holds when taking the empirical increase of the compensation by an appraisal proceeding into account.

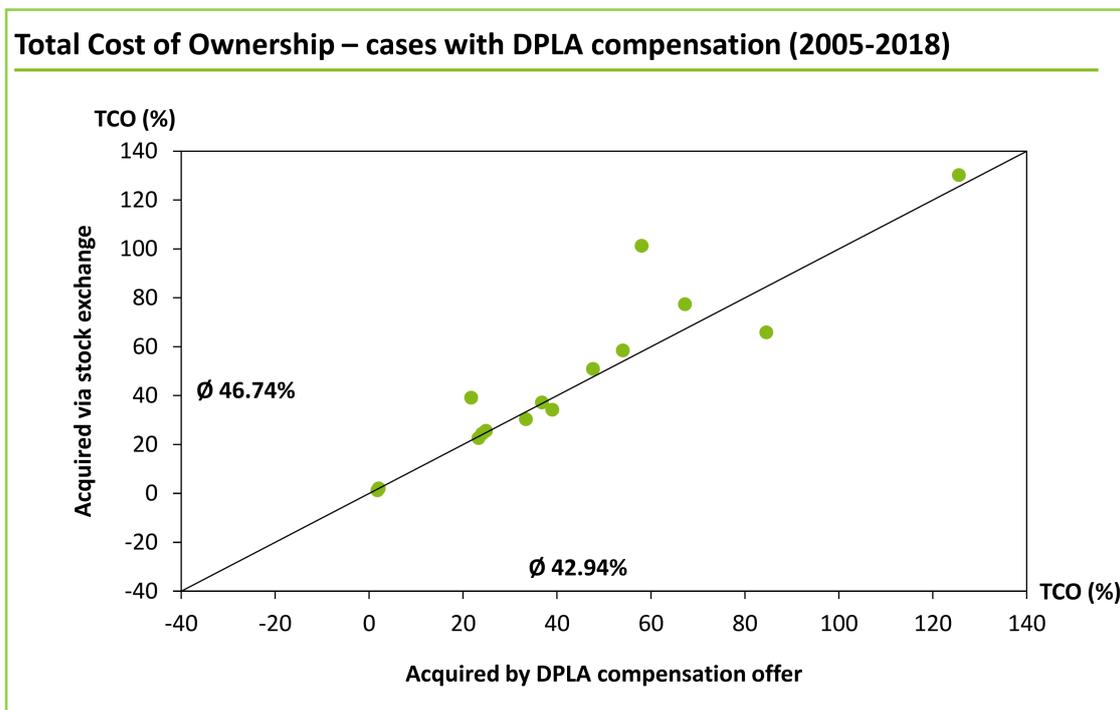


Figure 24: Total Cost of Ownership – cases with DPLA compensation (2005-2018)

Total Cost of Ownership

In a further step, we compare the TCO against the average cost of the takeover offer (offer premium). Figure 25 illustrates the difference between TCO and the offer premium. In the majority of cases the offer premium is lower than the TCO: average difference is 6.88 percentage points. That means that the per share acquisition cost in the “endgame” exceed the initial offer premium. However, there are also some (17) acquisitions where the acquirer paid on average for all acquired shares lower TCO than the original takeover offer. The reason for this is that the acquirer bought some shares on the stock market at a price lower than the original takeover bid. The TCO of control-taking bidders exceeded the original premium by a significantly higher amount, than of control-holding bidders (10.38 vs. 4.15 percentage points).

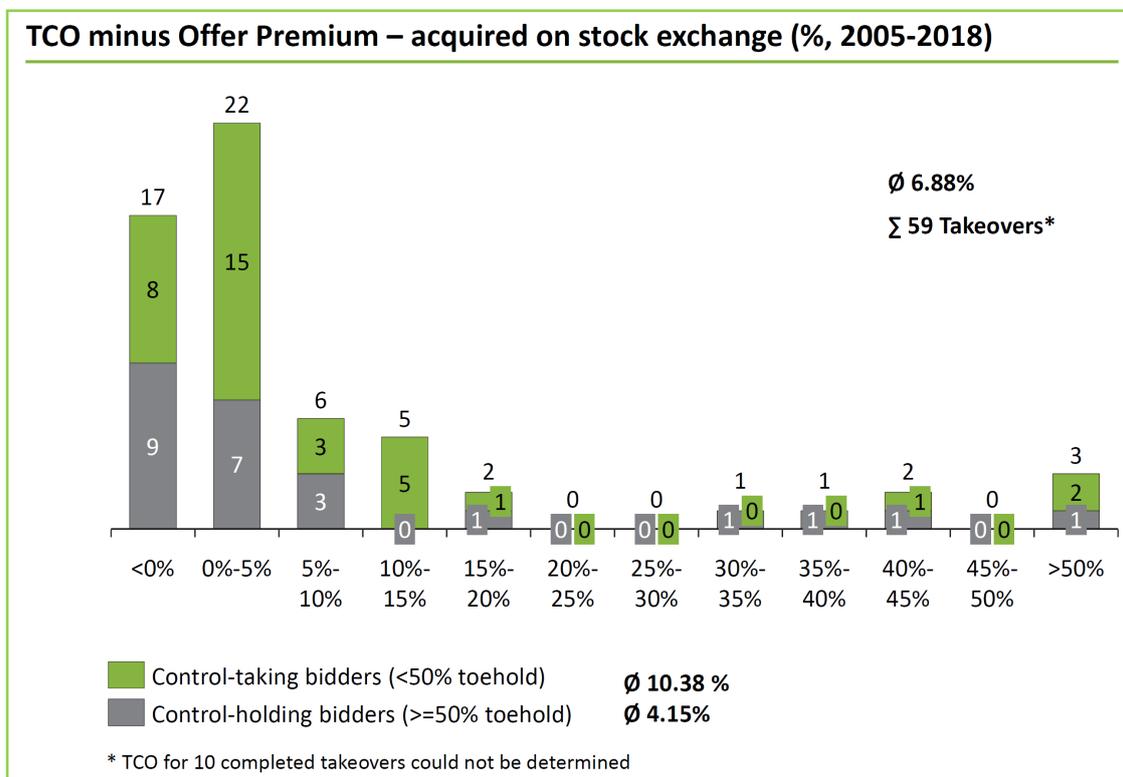


Figure 25: TCO minus Offer Premium – acquired on stock exchange (% , 2005-2018)

Total Cost of Ownership

We decompose the TCO into 6 contributing factors as stated above through weighting the respective costs by the acquired stake. In case DPLA was concluded, we use option 2 and assume that all additional shares required for a Squeeze-Out were obtained by minority shareholders accepting the DPLA/related compensation offer. Since some of the shares could be purchased at a discount (relative to VWAP prior the offer) on stock exchange, we also observe some factors contributing with a “negative” premium in our calculations. In other words, due to a relatively low price on stock exchange, the TCO were in some cases reduced below the offer premium.

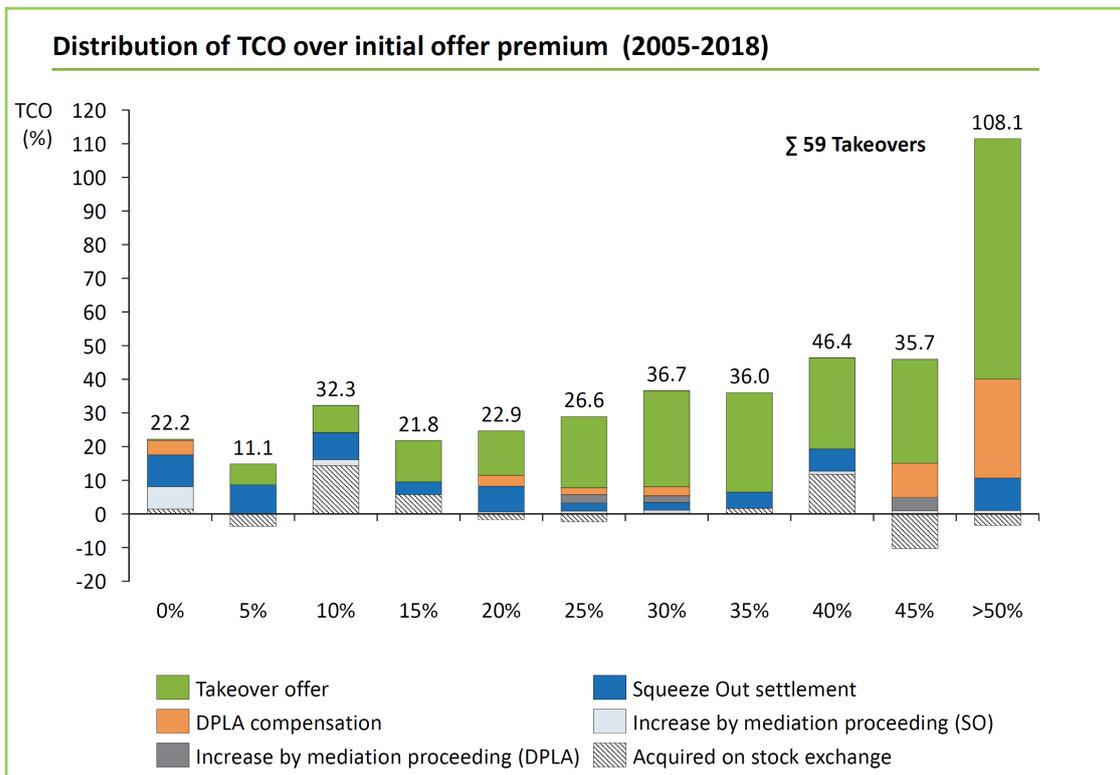


Figure 26: Distribution of TCO over initial offer premium (2005-2018)

Figure 26 illustrates the distribution of TCO and its components over the different premium clusters for the original offer. In the majority of cases, the costs associated to the takeover offer are the largest contribution to the TCO. However, for the takeovers in which the bidders offered a premium below 5% in the initial takeover offer, the TCO still are 22.2% above the VWAP prior takeover. The average TCO in these cases is almost equally composed of payments for DPLA compensation, Squeeze-Out compensation and an increase of Squeeze-Out compensation in the appraisal procedure. In general,

Total Cost of Ownership

the costs related to the DPLA have their highest contribution to TCO in the acquisitions with an offer premium above 45%. In contrast, the shares acquired related to a Squeeze-Out settlement count for a maximum 5% or 10% of the shares; due to the low volume, the contribution of the squeeze-out related compensation to the TCO is relatively small.

Figure 27 shows the TCO's distribution the bidder's initial toehold clusters. As observed earlier, the TCO of the control-taking acquirers is higher than for takeovers where the acquirer already has the majority of shares at the first offer. Furthermore, the relative contribution of takeover offer premium to the TCO is also significantly higher for the control-taking acquirers. Costs related to the takeover offer have the highest fraction of TCO when the acquirer has a toehold between 10% and 30%. This once again highlights the complexity and high costs of offers that are aimed at gaining controlling stake. The DPLA-related costs arise mostly for the bidders that start with toehold below 50%, and those bidders that launched an offer holding a little above 70% of shares intending to reach 75% threshold allowing for the signing of a DPLA.

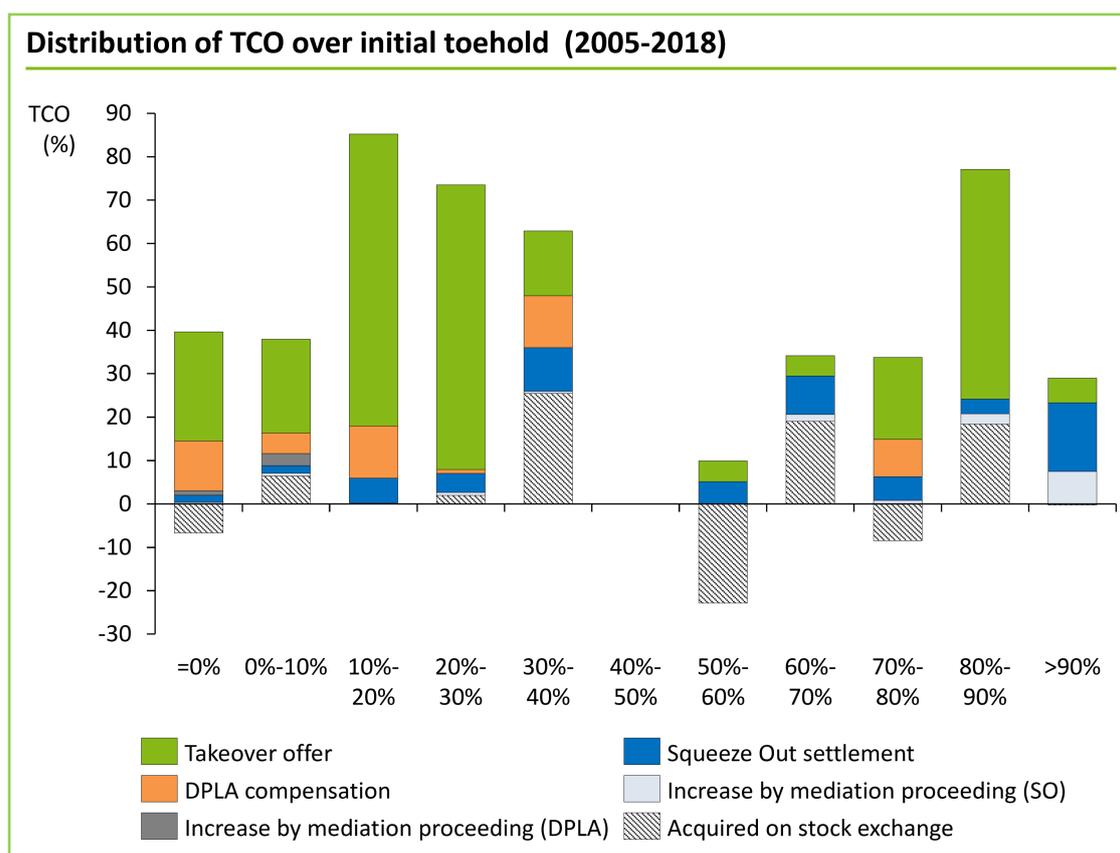


Figure 27: Distribution of TCO over initial toehold (2005-2018)

Total Cost of Ownership

Finally, we compare the TCO over the most common taking-private strategies in Figure 28. Acquirers that proceed with the Stock Corporation Squeeze-Out directly after the takeover offer without other structural measures in the majority of cases already have a majority position when launching the bid: the average toehold in this case is 55.3%. Figure 29 shows that, surprisingly, the average TCO for the according takeover strategy is the highest compared to the other strategies (48.8%).

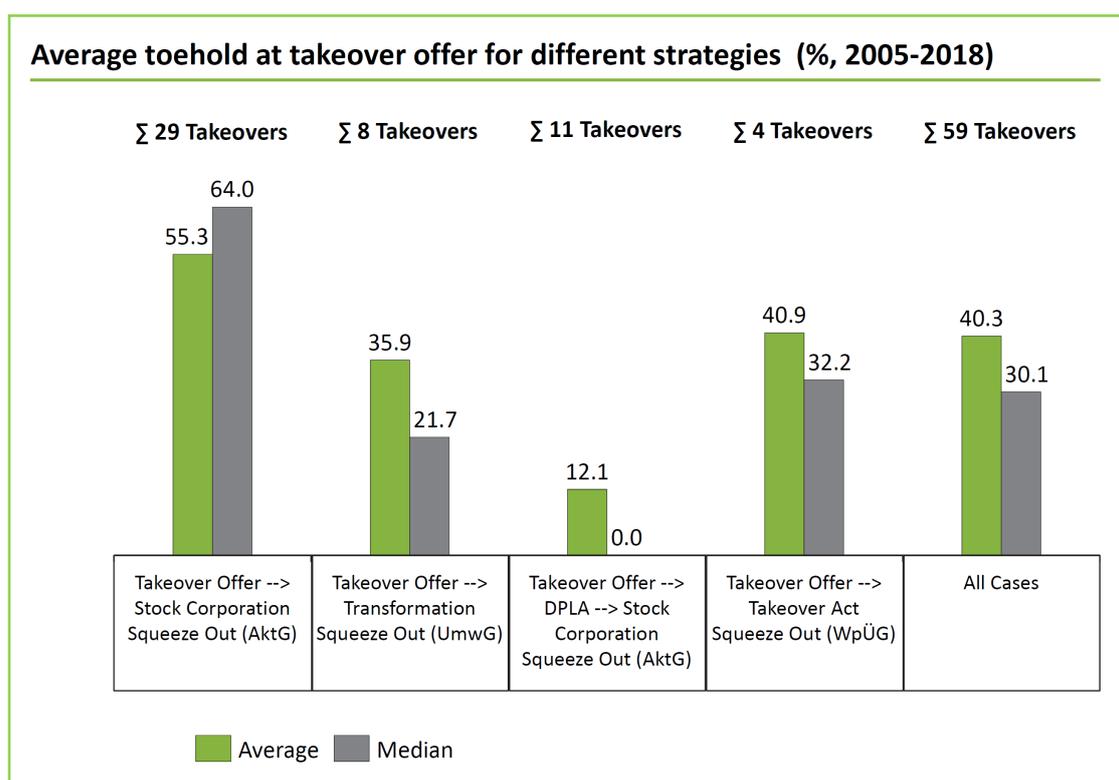


Figure 28: Average toehold at takeover offer for different strategies (% , 2005-2018)

In comparison, TCO for those acquirers who signed a DPLA before proceeding with the same type of Squeeze-Out are very similar (48.8% vs. 47.4%). Even though the acquirers using a strategy including a signing of DPLA have much lower initial toehold (12.1% on average), in both strategies the takeover offer costs contribute to approximately half of the TCO. For the cases including a DPLA, the two options for the acquisition of the DPLA-related shares do not yield significantly different TCO. The takeover offers with a subsequent Takeover Act Squeeze-Outs have the lowest acquisition costs: on average the acquirer pays 18.8% premium on top of the offer VWAP. The average toehold in these takeovers was 40.9%. The TCO of takeovers using the Transformation Squeeze-Outs is 40.5% on top of the offer VWAP and

Total Cost of Ownership

and on average lower than the TCO of takeovers by Stock Corporation Squeeze-Out. The average bidder's toehold in the strategies with a Transformation Squeeze-Out is also relatively low: 35.9%. Besides takeover offer premium, a large portion of TCO in this strategy arises from the Squeeze-Out itself. Over all different strategies of completed takeovers, the acquirer paid on average TCO of 43.1% on top of the offer VWAP¹¹; this average TCO is mostly (60%) driven by the initial premium offered in the takeover bid.

On average, the duration of a complete takeover process with a Stock Corporation Squeeze-Out is higher than the duration of a strategy with a Transformation Squeeze-Out (5.6 years vs. 4.7 years). A takeover strategy that involves DPLA signing takes even longer (6.6 years), which is not surprising given a relatively low average toehold of such bidders.

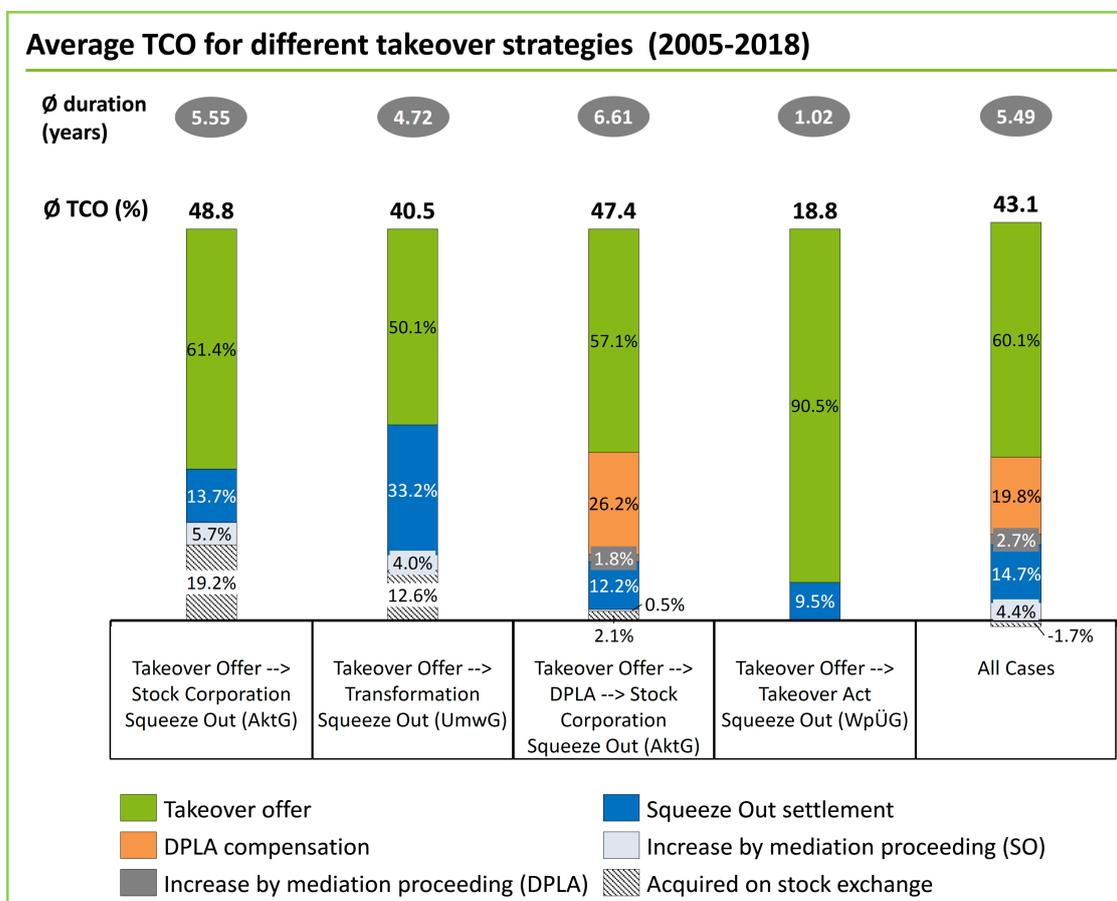


Figure 29: Average TCO for different takeover strategies (% , 2005-2018)

¹¹ VWAP for 3 months prior the takeover offer announcement

Total Cost of Ownership

Conclusion

Our TCO analysis allows for some important conclusions. We find a significant number of different takeover/endgame strategies of bidders to finally reach the 100% ownership. Our analysis identified four strategies frequently taken by bidders:

#1: Takeover offer + Squeeze-Out AktG

#2: Takeover offer + DPLA + Squeeze-Out AktG

#3: Takeover offer + Squeeze-Out UmwG

#4: Takeover offer + Squeeze-Out WpÜG.

Over all 59 cases, the average TCO are 43.08% of the offer VWAP; hereof 6.88% are related to “endgame” measures such as DPLA and Squeeze-Out compensations (incl. increases during the appraisal proceedings) and 36.2% are related to the offer premium. We find a high number of offers being made by a bidder already having the majority in the target company, thus making takeover offers also part of the endgame strategy itself. Not surprising, we find the TCO for control-taking bidders (i.e. with a toehold below 50%) to be significantly higher than for the bidders with a majority position: TCO of the former are in total 51.18% of offer VWAP (hereof 10.38% are endgame related), whereas the TCO of the latter are 33.57% in total (hereof 4.15% in the endgame). We find the four different strategies from above to have significantly different TCO: while strategy #4 reports a TCO of just around 19% of offer VWAP, the other three strategies have TCO of above 40%. However, there is also evidence that the choice of the takeover/endgame strategy is significantly influenced by the circumstances of the bid, e.g. the bidder’s toehold. Strategy #2 has the highest number of endgame measures and is of the highest legal effort for the bidder; it is the strategy finally chosen by the bidders with the lowest toehold.

Despite the uniqueness of our takeover/endgame database these results should be taken with some care: with 59 final observations meeting all data requirements our sample is still rather small and just allows for limited statistical analyses. As our sample is annually updated and thus grows over time, further and deeper analyses will be available in the future.

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