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Squeeze-Out and Business Valuation in Germany – A Law and Economics Analysis of Judicial Decision-Making

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Abstract: As an outcome of the scientific conflict within business valuation theory in the German-speaking area, *New Political Economy of Business Valuation* has developed a possible approach to explain the dissemination of neoclassical valuation concepts in theory and practice. This explanatory model, designed by Quill (2016), is extended by Follert (2020a) to include the share valuation in squeeze-out cases for the compensation of minority shareholders. For this purpose, the different actors in the legal mediation procedure (“Spruchverfahren”)—the judge, the auditor as expert, and the conflicting parties—are modeled based on their stereotypical interests. The aim of the present paper is to introduce international scientific community to the scientific conflict between the proponents of investment-theoretical and those of the finance-theoretical conception, and to discuss the role of judicial decision-making from a legal-economic perspective. We would like to illustrate why a judge could benefit from the use of finance-theoretical valuation methods based on the neoclassical capital asset pricing model recommended by the relevant standard (so-called standard 1) of the “Institut der Wirtschaftsprüfer in Deutschland IDW” (Institute of Public Auditors in Germany) (“IDW S 1”). The analysis takes a socioeconomic perspective and argues that judicial valuation is primarily influenced by the judges’ tendency to promote their own reputation and by social pressure from their professional environment and different interest groups. This paper adds a further perspective to *New Political Economy of Business Valuation*. Moreover, the close link between jurisprudence, economics and business economics theory is pointed out. Although the approach presented deals with the squeeze-out under German law, it may be applicable to squeeze-out arrangements in other countries as well, as long as the basic assumptions apply in their legal systems.

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Table of Contents

- 1 Introduction
 - 2 Business Valuation at the Interface between Law and Economics
 - 2.1 Schools of Thought in Business Valuation Theory
 - 2.2 Previous Literature on Judicial Valuation
 - 3 Judicial Valuation Method Selection from a Socioeconomic Perspective
 - 4 Discussion: Information Asymmetry and Lobbying
 - 5 Concluding Remarks
- References

1 Introduction

The context of a squeeze-out of minority shareholders under German corporate law¹ reveals a tension between law and business economics as well as a conflict within valuation theory. A squeeze-out occurs when a shareholder holds 95% of the shares of a company and decides to exclude the minorities. The core issue is then the appropriateness of the valuation methods used to determine compensation of the minority stockholders (e.g., Follert, 2020a; Karami, 2014; Matschke, 2013). Within the German-speaking scientific community of *Betriebswirtschaftslehre* (business economics), two main schools of thought argue with each other on this matter. On the one hand, the *German School* (Hering, 2004; Olbrich, 2016) builds on the *Wiener Grenznutzenschule* and its marginal analysis of *investment theory* (e.g., Olbrich, Quill, & Rapp, 2015; Olbrich, Rapp, & Follert, 2020) to propose individualistic valuation calculations applicable in imperfect capital markets (see Section 2.1;

¹ Section 327a et seq. of the German Stock Corporation Act provide that a “main stockholder” who holds 95% of the shares of a stock corporation may compulsorily exclude the remaining 5% of stockholders (“minority stockholders”) and transfer the property rights to himself (section 327a (1) German Stock Corporation Act). Since the minority stockholders cannot defend themselves against the transfer of ownership, they are entitled to a claim for a “adequate” compensation under section 327a (1) sentence 1, what obviously requires a valuation of the shares. The original translation of that squeeze-out rule is: “The general meeting of a stock corporation or of public partly limited partnership may adopt a resolution, upon a corresponding demand being made by a stockholder owning shares of stock in the company in the amount of ninety-five (95) percent of the share capital (principal stockholder), to transfer the shares of stock of the other stockholders (minority stockholders) to the principal stockholder against appropriate cash settlement being granted“ (section 327a (1) German Stock Corporation Act).”

Matschke, Brösel, & Matschke, 2010; Rapp, Haßlinger, & Olbrich, 2018; Toll & Hering, 2017; for a historical overview of both concepts see Behringer, 2020; Quill, 2016). On the other, the *Anglo-Saxon* or finance-theoretical *School* (Hering, 2004), which has been gaining in importance since the 1980s in Germany, focuses on an aggregated, perfect, and complete capital market and the calculation of a theoretical market value under the idealized conditions of neoclassic economics (see Section 2.1).

This increasing influence of the finance-theoretical concept can also be empirically recognized for the valuation of company shares in a legal context (e.g., Follert, 2020a). In Germany, the concept of the relevant standard (standard 1) of the “Institut der Wirtschaftsprüfer in Deutschland IDW” (Institute of Public Auditors in Germany) (“IDW S 1”), which includes the guidelines concerning company valuation, is dominating the judicial valuation practice. The IDW suggests a valuation model for squeeze-out cases (“objektiviertes Ertragswertverfahren”, objectified income approach)² that is comparable to the “equity approach”³ of discounted cash flow methods (e.g., Hering, 2014), in particular the finance-theoretical based equilibrium capital asset pricing model (CAPM) that is regularly used to determine the risk premium within the present value calculus. Numerous studies have shown the incompatibility of the concept of objectified cash flow calculation suggested by IDW S 1 (on the impairment tendency of IDW S 1 see e.g., Knoll, 2017; Matschke, 2013, 2016) and the finance-theoretical CAPM (e.g., Gleißner, 2015; Matschke, 2013; Olbrich & Rapp, 2012; Schildbach, 2017) with the protection of shareholding minorities⁴ and the requirements of the Federal Constitutional Court (“Bundesverfassungsgericht,” BVerfG). The main issue concerns the determination of a “full value” (BVerfG 08/07/1962) under the assumption of a “free decision to disinvest” (BVerfG 04/27/1999). This incompatibility notwithstanding, those models have been gaining increasing popularity within the practice of the courts in Germany. The opposite position is just as persistently defended by doctrine (e.g., Schwetzler, Aders, & Adolff, 2012; Schwetzler, 2020).

² The method discounts “objectified” cash flows that do not take into account for example positive synergy effects of the buyer. The costs of capital are regularly derived from the CAPM as the risk-adjusted discount rate.

³ The basic formula of this flow-to-equity method discounts cash flows on the corporate level with costs of equity that are usually calculated by using the neoclassical CAPM (e.g., Matschke & Brösel, 2013, 725).

⁴ Lausterer (1997: 179, translated by the author, with reference to Ballwieser’s criticism of the CAPM) also considers the use of the CAPM unsuitable: “Under the narrow premises and actual conditions in Germany, the CAPM is not suitable for right-wing company valuations. [...] The narrow premises of the CAPM, especially the perfection of the capital market, are not fulfilled in reality. For this reason alone, the application of the CAPM for right-handed company valuations is likely to be contestable.”

From the point of view of the *German School*, the methods of finance theory are deemed to be suitable at best for determining argumentation values, that is, baseline theoretical values for negotiation (e.g., Hering, 2000, 2014; Matschke et al., 2010). In fact, within the framework of modern *Functional Valuation Theory* (see e.g., Follert, Herbener, Olbrich, & Rapp, 2018; Matschke & Brösel, 2013; Matschke et al., 2010) these values are already integrated in the *argumentation function* which provides values that are useful within the final negotiation. Obviously, these models that abstract away from reality are not able to include subjective and local conditions, a critical peculiarity of the valuation methods based on neoclassical finance theory. Because of their abstraction from a shareholder's real circumstances and individual conditions, discounted cash flow methods are not able to calculate subjective values from the perspective of a non-hypothetical shareholder (e.g., Hering, 2000; Olbrich et al., 2015; Rapp et al., 2018).

Ballwieser (2020) criticizes particularly the lack of practicability in court proceedings as a weakness of the German investment-theoretical approach; a justified accusation (see also Follert, 2020b). However, this criticism should not obscure the fundamental problems of combining the Objectified Income Approach with CAPM, since the legal conformity of the procedure must comply with the generally recognized quality criterion (on legal conformity as primacy Karami, 2014; Ruthardt, 2014). The lack of practicability can therefore hardly be used as an argument against investment theory. If one agrees with the general economic considerations on legal valuation, as developed in particular by Matschke (1979, 1981, also Karami, 2014),⁵ and with the criticism of the finance-theoretical concept for the valuation in imperfect markets (e.g., Schildbach, 2017), where values are obviously subjective,⁶ the lack of practicability is an insufficient argument for failing to discuss a pragmatic application of the investment-theoretical valuation school. However, the courts do not generally consider this alternative method (Follert, 2020a).

The present paper is therefore based on the assumption that although the finance-theoretical approach is superior in terms of practicability, the investment-theoretical concept is capable of determining an arbitration value which provides a compensation benchmark that stands in between the marginal price of the main shareholder and that of the minority shareholders, so that no party draws an economic disadvantage from the transaction.

⁵ What the representatives of the finance-theoretical concept think about this is left open, since almost no comments are made on these works (see e.g., Ballwieser, 2020).

⁶ Already Ludwig von Mises (1949 [1998]: 96) emphasizes: "Value is not intrinsic, it is not in things [objective, the author]. It is within us [subjective, the author]; it is the way in which man reacts to the conditions of his environment."

At first glance, one might think that the topic would have little significance for international readers, as the analysis focuses on the squeeze-out under German law. However, there are two crucial arguments against this position:

1. The phenomenon of squeeze-outs is not a German peculiarity (e.g., Pratt & Grabowski, 2011; Yee, 2005). In fact, it was introduced in the German Stock Corporation Act in 2002. The modelling of judicial valuation should therefore be of international interest.
2. Stockholders are acting internationally in the course of globalization.⁷ Obviously, stockholders whose headquarters are in other countries are also interested in German Stock Corporation Act.

The aim of the paper is to present an approach to explain why, despite the well-known problems of neoclassical decision-models, finance-theoretical methods continue to be used in squeeze-out cases. The approach presented here wants to discuss especially the role of judicial decision-making within the “Spruchverfahren” (legal mediation procedure), building a bridge between law and (business) economics. Although Follert (2020a), for example, assumes that the judge acts as a utility maximizer, this is already apparent from consistency considerations within the explanatory model, because all other players involved, the expert, the main stockholder and the minority stockholder are modeled as *homines oeconomici* as well. Within the present essay, the judge is to be examined in detail now, as his role in the conciliation proceedings could probably be underestimated. The paper would like to emphasize that judges possibly follow precedents, consensus, and respond to organizational pressure and that their decisions are more influenced by socioeconomic determinants than expected in prior literature.

The paper follows the structure below: First, in Section 2, we introduce international readers to the conflict in German business economics concerning valuation theory. Then, a brief overview of recent literature in the field emphasizes that judicial business valuation is an interesting topic located at the interface between law and economics. Section 3 analyzes the role of the judge from a socioeconomic perspective. Section 4 discusses the central implications of the approach concerning the interaction of the players who act in the environment of judicial business valuation. Finally, Section 5 summarizes the results of the analysis and gives a brief outlook.

Overall, the paper attempts to further develop the *New Political Economy of Business Valuation* and to enrich the discussion of the social and economic role of business valuation within our society. The economic analysis of the judicial

⁷ On the internationalization of business valuation see e.g., Merdian (2018).

process can thereby clarify problems and provide perspectives for the reconciliation of interests.

For the behavior of judges, especially their decision-making, several empirical works within international literature (e.g., Englich, Mussweiler, & Strack, 2006; Epstein, Landes, & Posner, 2013) in particular, groundbreaking findings have been generated in experimental study design in recent years (e.g., Hornuf & Klöhn, 2019; Liu, Klöhn, & Spamann, 2019; Spamann & Klöhn, 2016). However, the dominated conflict situation of the squeeze-out under stock corporation law, which is discussed here, has some peculiarities that first require a theoretical foundation before empirical studies can be useful in the future. Due to the special nature of the compensation of minority stockholders, the topic is interdisciplinary with regard to valuation theory and corporate law. Therefore, the degree of information asymmetry between the judge and the expert is particularly high and must be considered in a theoretical analysis; a situation not prejudiced by the fact that in the future, the results of the socioeconomic analysis of business valuation (Follert, 2020a, 2020b; Quill, 2016, 2020) will also be examined empirically.

2 Business Valuation at the Interface between Law and Economics

2.1 Schools of Thought in Business Valuation Theory

Valuation theory, especially in the German-speaking world, can be differentiated into two competing schools of thought (as an overview Behringer, 2020; Follert, 2020a; Hering, 2004; Quill, 2016). The investment-theoretical approach (or *German School*, Hering, 2004, Olbrich, 2016) is based on the fundamental insights of Austrian economics in general and the *Wiener Grenznutzenschule* in particular (Follert et al., 2018; Herbener & Rapp, 2016; Olbrich et al., 2015, 2020; Rapp, Olbrich, & Venitz, 2018). In German business economics⁸ the investment

⁸ On developments in accounting and business economics see the work edited by Biondi & Zambon (2013); for German business economics tradition especially Busse von Colbe & Fülbiel (2013).

theoretical approach was introduced for example by Schmalenbach (1917)⁹, Busse von Colbe (1957), Jaensch (1966), or Münstermann (1966a), and extended for example by Matschke (1972, 1975), Hering (1999), Klingelhöfer (2006), or Olbrich (2014).

The investment-theoretical approach calculates the value of a business enterprise as a (subjective) marginal price that reveals the critical price (or decision value, see Matschke, 1972, 1975; further e.g., Hering, 2000; Klingelhöfer, 2003; Matschke et al., 2010; Olbrich et al., 2015) where the investor can complete a transaction without suffering an economic disadvantage (Matschke, 1972, 1975; Olbrich et al., 2015; Toll & Hering, 2017; Toll & Kintzel, 2019). From a financial mathematical perspective, such a decision value is the price at which the net present value of the transaction is zero and the investor is indifferent to the action (e.g., Hering, 2014). The starting point of company or company share valuation based on investment theory is the consideration of the investor's subjective decision field and his or her individual target function¹⁰. From that consideration, the decision value is calculated as the present value of future net payment streams the investor would receive from the investment, discounted by the rate of return provided by the best alternative use (as an overview, e.g., Matschke et al., 2010; Olbrich et al., 2015).

Today, the investment-theoretical valuation approach is defended by the *Cologne Functional School*, which was founded especially by Manfred J. Matschke, Günter Sieben, and Thomas Schilbach. This school distinguishes three valuation functions depending on the respective purpose (on the dependence the purpose see also Moxter, 1983; further Matschke & Brösel, 2013): Additionally to the “decision function” which provides the marginal price based on investment-theoretical models, there is also an “argumentation function” with an argumentation value (Follert et al., 2018; Matschke, 1976; Wagenhofer, 1988), which is used in negotiations to influence the final price. Moreover, Matschke (1979) develops the “mediation function” with an arbitration value, which is determined by an expert between the marginal prices of buyer and seller. Based on this differentiation, the main principle of functional business valuation school is the dependence on the purpose. In general, the investment theory needed to calculate marginal prices provides an approach to support investment and disinvestment decisions,

⁹ On Schmalenbach's importance for business economics in general and business valuation in particular as well as his connection to the *Austrian School* see Olbrich et al. (2020). On Schmalenbach's impulses for the development of the *German School* of business valuation see also Sieben (1998).

¹⁰ On those crucial decision-making parameters see e.g., Münstermann (1966b: 20), Bamberg, Coenenberg, and Krapp (2019: 15–32).

especially for the valuation of business enterprises and company shares under the realistic conditions of imperfect capital markets. Its approach therefore considers the individual circumstances of the investor (e.g., Klingelhöfer, 2009; Matschke & Brösel, 2013; Olbrich et al., 2015; Toll & Hering, 2017; Toll & Kintzel, 2019).

A completely different approach to the valuation of business enterprises and company shares is represented by the finance-theoretical approach (or *Anglo-Saxon School*, Hering, 2004), which assumes an objective value in the sense of a hypothetical equilibrium price on a perfect and complete capital market (Hering, 2014; Matschke & Brösel, 2013). To this end, it builds on the well-known neo-classical assumptions. In particular, the different discounted cash flow methods (e.g., Brealey, Myers, & Allen, 2020) combine the findings of Modigliani and Miller (1958, 1963) and CAPM (Hering, 2000; Lintner, 1965; Mossin, 1966; Sharpe, 1964). However, the CAPM's purpose was to *explain* prices under the restrictive assumptions of a perfect capital market and various additional premises (homogeneous market participants, risk aversion, single period). However, in the context of the finance-theoretical business valuation, these approaches are used for *decision-making* purposes. At least since Rappaport's (1986) work, and the book by Copeland, Koller, and Murrin (1990), finance theory enjoy great popularity in valuation practice (Quill, 2016). In a recent study, Follert (2020a) analyzes 372 papers concerning business valuation in 10 recognized scientific journals from Germany, Austria, and Switzerland. He finds evidence that until the 1990s the investment theoretical valuation school dominated in the literature, whereas now the Anglo-Saxon school enjoys numerical dominance. Overall, Follert (2020a) finds that 63.98% of the papers apply the finance-theoretical approach.

When two individuals voluntarily decide on a good, let it be a company share, to be exchanged, an external observer can assume that generally, regardless of whether they used an investment-theoretical or a finance-theoretical valuation approach, the negotiating partners will only agree to the transaction if they expect a positive net benefit. However, the situation is completely different in “dominated conflict situations”¹¹ (Matschke, 1979, 1981; further Matschke et al., 2010: 7), like we can observe in a squeeze-out case under stock corporation law in accordance with sections 327a et seq. of the German Stock Corporation Act (on this topic see Karami, 2014). Based on this rule, a main stockholder could squeeze-out minority stockholders if they hold 95% of the shares. But the stockholder must compensate the shareholding minorities, which makes a share valuation necessary (e.g., Quill, 2020). In case that a minority stockholder believes that they have not received the

¹¹ In a dominated conflict situation, one party cannot defend itself against the transfer of the property rights, due to a legal legitimization, as in the case of squeeze-out (e.g., Matschke, 1979, 1981; Matschke et al., 2010; Matschke & Brösel, 2013).

“full” value of their shares, the compensation can be challenged in court (“Spruchverfahren”).

In this case, we cannot simply assume that the transaction is beneficial for both the main stockholder and the minorities because the forced transfer of the shares of 5% does not provide any information on the willingness of the dominated party to transfer the shares. Rather, the mere fact that a minority stockholder does not agree with the compensation offered by the main stockholder and has it examined by a court in appraisal rights proceedings is a strong indication that the stockholder has not received the desired minimum price (e.g., Follert, 2020a). The economic efficiency criterion can only be met by a mediating judge who determines the settlement price between the value boundaries of the parties (Matschke, 1981) as required by the Germany’s Constitutional Court. Those who are *prima facie* irritated by this economic interpretation should note that the protection of minorities required by the German Constitution does also require consideration of the value boundary of the minority stockholder (Follert, 2020a; Matschke, 1981, 2013).

2.2 Previous Literature on Judicial Valuation

Previous research in the area of business valuation for minority-compensation purposes can basically be divided into two areas: (i) studies on the material design of valuation models in a legal context (e.g., Brösel & Karami, 2011; Drukarczyk, 1973; Karami, 2014; Lausterer 1997; Matschke, 1979, 1981, 2013; Neumeier, 2015; Olbrich & Rapp, 2011; Ruthardt, 2014; Spindler & Klöhn, 2003); and (ii) analyses that empirically investigate the applied valuation methods (e.g., Ballwieser & Hachmeister, 2016; Drukarczyk and Schüler 2016; Follert, 2020a; Saastamoinen & Savolainen, 2019; Yee, 2008).

Following Matschke (1979, 1981, 2013) an adequate compensation of minority stockholders must consider the marginal price (i.e., the decision value, see an overview by Matschke et al., 2010) of a (typified) marginal minority stockholder (V_{Min}). Therefore, it is essential that the judicial valuation estimates both the marginal price of that minority stockholder and the decision value of the main stockholder (V_{Main}). If there is no agreement interval because $V_{\text{Min}} > V_{\text{Main}}$ (e.g., Follert et al., 2018), the judge must fix the compensation at V_{Min} to protect the minority (as an overview Follert, 2020a). So, it should be clear that investment-theoretical approaches are necessary to calculate these (subjective) marginal prices and finally set the compensation at $\{V_{\text{Min}}; V_{\text{Main}}\}$ or at V_{Min} if there is no agreement interval. To calculate the decision values of the main stockholder and the minorities an investment-theoretical approach is needed since only the latter has the

necessary subject-relatedness, whereas discounted cash flow methods base upon a hypothetical market participant. In particular, the situation of squeeze-out would be unthinkable in the CAPM-world, since all market participants hold equal shares of the market portfolio, and sole ownership of a company is therefore contrary to the basic idea of the CAPM (Follert, 2020a; Olbrich et al., 2015). Nevertheless, different studies show that the finance-theoretical based valuation approach is used in most squeeze-out cases in Germany (e.g., Ballwieser & Hachmeister, 2016; Drukarczyk and Schüler 2016; Follert, 2020a; Quill, 2020). Follert (2020a) analyzes 136 court decisions on squeeze-out cases in Germany between 01/01/2005 and 12/31/2016 showing an increasing use of finance-theoretical valuation methods, in particular concerning the calculation of a risk premium, for which more than 75% of those courts that decide based on a present value-calculus use the neoclassical equilibrium (tax)-capital asset pricing model (Figure 1).

Other works on German judicial valuations that draw a similar picture are e.g., Ballwieser and Hachmeister (2016), Drukarczyk and Schüler (2016) or the yearly report on judicial valuation presented by Wüstemann and Brauchle (2019). In their evaluation of judicial valuations between 2002 and 2014, Drukarczyk and Schüler (2016: 463–471) find out that 70% of the decisions used the CAPM or the Tax-CAPM at least for plausibility check. Furthermore, Quill (2020) analyzes different squeeze-out decisions in Germany between 1995 and 2018 and shows the dissemination of the neoclassical risk premium calculation. The timeline of the selection of court decisions ($n = 38$) provided by Quill (2020) can be divided into three epochs: Before 2002 courts use the traditional (subjective) method to calculate the risk premium. Between 2002 and 2011, they build their decisions on the CAPM and in the third period, most judges calculate the risk premium with the help of the Tax-CAPM.

In many books (e.g., Karami, 2014; Matschke 1979; Matschke & Brösel, 2013; Quill, 2016) and papers (e.g., Matschke, 1981, 2013, 2016; Olbrich & Rapp, 2012; Quill, 2020) the investment-theoretical school has shown the need for the calculation of a marginal price to protect minority stockholders and has demonstrated the unsuitability of neoclassical methods for company valuation in dominated conflict situations. Therefore, the aim of this paper is not to extend the already extensive literature in this area. Rather, we want to present an approach to explain *why*, despite the obvious problems, finance-theoretical methods continue to be used in squeeze-out cases.

Recent research on the topic is based on approaches from the social sciences. For example, Quill (2020) provides a powerful approach to explain the dissemination of CAPM in squeeze-out cases in Germany that is based on the social network-theory in general and the *actor-network-theory* in particular.

Figure 1: Development of risk premium calculation in Germany (modified from Follert, 2020a: 143 and 353–361; see also Appendix).¹²

Another socioeconomic approach that tries to explain certain phenomena in the context of the contested field of business valuation is the *New Political Economy of Business Valuation*. The political-economic view was firstly introduced into business economics in the context of accounting (e.g., Sutton, 1984; Tinker, 1980). In the German-speaking area, e.g., Homfeldt, 2013; Olbrich & Homfeldt, 2014; Ordelheide, 1997; Zülch, Gebhardt, & Hoffmann, 2009; Homfeldt, 2013; Olbrich & Homfeldt, 2014; Ordelheide, 1997; Zülch, Gebhardt, & Hoffmann, 2009 apply the lobbying approach to (international) accounting and explain, for example, the current dominance of fair value accounting through the influence of various interest groups.

The approach to analyze business valuation from a political-economic perspective was founded by Quill (2016) and further developed by Follert (2020a). In his book review of Quill (2016), Schildbach (2018: 768) acknowledged the *New Political Economy of Business Valuation* as convincing approach to explain the dissemination of neoclassical valuation methods.¹³ Its positive theoretical model is based on Public Choice theory, which was originally developed for the analysis of the democratic process (Downs, 1957) and later extended to other areas, such as interest groups (Olson, 1965), or collective decision-making (Buchanan & Tullock, 1962) in different organizations (recently e.g., Follert, Richau, Emrich, & Pierdzioch, 2020).

Following Quill (2016), the benefit a player can take from the application of a certain valuation method is thus derived from the model's characteristics, with particularly emphasis on *credibility*, *practicability*, and *appropriateness for the purpose*. Starting from the common lobbying approach, the interest groups behind the individual actors are also analyzed. Noticeably, both the IDW as representative

¹² Today, most courts calculate the risk premium as a part of the discount rate by the use of neoclassical CAPM or modified Tax-CAPM. "Subjective risk premium" means an estimation by the court.

¹³ For a critique on this approach see Rapp (2020).

of the expert and the “Deutsches Aktieninstitut” (DAI), the “Deutsche Vereinigung für Finanzanalyse und Assetmanagement” (DVFA), and the “Handelsrechtsausschuss of the Deutscher Anwaltsverein” (DAV), lobby on behalf of the main stockholder and thus influence the material design of the company valuation to the advantage of the latter (for detailed analyses concerning the players within the environment of business valuation (see e.g., Follert, 2020a: especially 191–219; Knoll, 2017; Matschke, 2013, 2016; Quill, 2016, 2020).

According to Posner (1993), Kirstein (1999a), and Follert (2020a), the judge must consequently also be modeled as a self-interested utility maximizer since otherwise the model would show inconsistency. Landes and Posner (1980: 369) recognized this at an early stage:

We assume that judges, like other people, are rational maximizers of their satisfactions, which include not only pecuniary income but other things which people value, such as leisure, prestige, and power.

From a broader perspective, utility maximization must not be equated with either perfect information or opportunism. Moreover, the players are not exclusively concerned with financial interests, and individuals act under uncertainty (e.g., Emrich & Follert, 2019, Follert, 2020a, Kirchgässner, 2013, Opp, 1985, Quill, 2016).

At this point, we are faced with the quite justified question: *What purpose should such a positive model of business valuation serve?* The importance of a comprehensive socioeconomic consideration of the actors around the judicial valuation arises already from the protection of property, which is central to a legal system which is oriented towards the market economy. While the law and economic approach to squeeze-out cases and judicial valuation is new in German valuation theory, international literature has already recognized the relationship between the different players within the court proceedings (e.g., Yee, 2008). Furthermore, the compensation of minority stockholders is not only of importance for those interested in business economics but also highly significant for the political discussion, since the assessment of the compensation may provide insights to the significance of the minority stockholder protection in a society (e.g., Wenger, Hecker, & Knoesel, 1997; Wenger & Knoll, 2018).

3 Judicial Valuation Method Selection from a Socioeconomic Perspective

The core characteristic of the judge is the independence of the judiciary in both factual and personal respects, which is directly derived from the German

Constitution (*Grundgesetz, GG*) (Article 97.1 GG and Article 20.3 GG or Article 97.2 GG). In legal literature, the judge's *internal independence* is also assumed (Mayer, 1999), but not subject to external control (Mayer, 1999). Due to its independence, the judge has a stabilizing effect on the entire judicial system and is an integral part of the creation of rules within a social system (Hayek, 1980: 133 and 137). The freedom of the judge is also reflected in the legal regulations on appointment, the tenured lifetime position, and the reference to professional ethics (Rennert, 2015). With regard to possible threats to the independence of judges, one can cite “politicization” (Rennert, 2015: 538) as well as strong influence and negative media reporting (Rennert, 2015: 538). These points should be supplemented by the influence both by science, and also of course be subsumed under the point “politicization” by certain interest groups (towards this problem see e.g., Quill, 2016).

The judge—like every human—is obviously integrated into a broad network of actors (concerning the case of judicial valuation see e.g., Quill, 2020) that represent the judge's social and often professional environment which can influence the judge's decision-making behavior through specific norms and moral concepts. Berndt (2010) emphasizes, among others, lawyers, public prosecutors, and other judges as central actors in the judge's environment. With regard to business valuation discussed in the present essay, the expert seems to play an important role.

Within this paper, we would like to focus on an economic approach to answer why German judges tend to use neoclassical models in their judicial business valuation. We follow a socioeconomic view that assumes a self-interested judge, who acts under uncertainty and incomplete information (see e.g., Emrich & Follert, 2019; Kirchgässner, 2013; Lindenberg, 1985; Opp, 1985)¹⁴ It is obviously not necessary to share the strict assumptions of neoclassical economics in order to consider different approaches as useful. Posner (1993), for example, already in the title of his publication asks: “**What Do Judges and Justice Maximize?** (The Same Thing Everybody Else Does).” In contrast to other approaches, economic analysis understands the judge not as a “saint” (Posner, 1993: 1), but whose behavior can be explained with Posner's, (1998: 1551) simple statement: “[C]hoosing the best means to the chooser's ends.” Notably, legal scholar Richard A. Posner, one of the pioneers of the economic analysis of law, is himself a judge.

From an economic point of view this is anything but absurd: Adam Smith in his work *The Wealth of Nations* (1799 [1776]) assumes that even clergymen are also

¹⁴ Scientific literature within the social sciences differentiates between several types of rationality. On *Zweckrationalität* (instrumental rationality) see Weber (1922 [1978]); on collective rationality see e.g., DiMaggio and Powell (1983); on the differentiation between ecological and constructivist see Smith (2003) and its application to accounting theory Braun (2016).

motivated by their individual self-interest, which for example kept the Roman Church alive (Smith, 1776 [1979]). Kirstein (1999b) also, additionally to intrinsic motivational factors, emphasizes the determinants of *income*, *workload*, *reputation*, *standing*, and *prestige* among the factors influencing judicial decisions.

In the following, we will attempt to explain the judge's decision-making behavior on the basis of the economic analysis. The method of analysis is understood as *economics* (e.g., Erlei, 1995). To extend the perspective we use a behavioral approach that is based on a socioeconomic view. The aim is explicitly not to explain the behavior of a single judge; rather, the model attempts to describe a theoretical judge. With regard to judicial behavior, the economic perspective does not attempt to derive a judge's image from the particular activity or position, nor does it aim to explain current decision-making with past experience. Moreover, it does not assume a particular professional ethos of judges, as it is described often (e.g., Luhmann, 1972). Rather, the economic approach consistently assumes self-interested behavior for the typical individual so that heterogeneous function models between different players do not apply.

Within the our analysis, the judge is supposed to be a layman within valuation theory and is looking for an expert (e.g., Follert, 2020a; Quill, 2016). The offered service by the expert is the valuation of the company stocks. The judge asks for this service (demand side), the expert offers it (supply side). At this point, it should be re-emphasized that at least the norm-purpose appropriateness of the method must be regarded as a legal question, which must be located within the judge's area of responsibility (see, e.g., Großfeld, 1981; Lutter, 1979; Schulze-Osterloh, 1986). "The court determines the appropriate enterprise value – not the expert" (Großfeld, 2002: 11, translated by the author).

In this context, from the judge's point of view (as an individual, not as an institution), the award procedure can be understood as a low-cost situation. Economic research has mostly analyzed this approach in relation to the behavior of voters (e.g., Buchanan, 1954; Harsanyi, 1969; Kliemt, 1986). With regard to court decisions, Kirchgässner (1992: 306) differentiates between two types of so-called low-cost decisions:

Type I: "[D]ecisions where the individual decision is irrelevant for the individual himself/herself and for all other individuals, but the collective decision is relevant for all individuals." (i.e., Public Interest)

Type II: "[D]ecisions where the individual decision is irrelevant for the individual himself/herself, but is highly relevant for other individuals." (i.e., Private Interest)

It can be seen that the determination of the *appropriate* compensation in the "Spruchverfahren" represents a *type II* low-cost situation because the judge's

decision thus has at least no direct influence on his (personal) monetary welfare, while the main stockholder and the minority stockholders depend to a large extent on the judge's decision with regard to their financial situation (Quill, 2016).

Quill (2016) describes that the judge in the “Spruchverfahren” is particularly interested in a credible and practicable and therefore very abstract valuation methods. These interests are justified, on the one hand, by the goal of minimizing the own workload and public resources spending; on the other, by the desire for a decision that is as revision-proof as possible by means of a credible valuation method (Follert, 2020a). Already, Landes and Posner (1980) describe the essential interests of the judge with *leisure*, *prestige*, and *power*. In particular, the human desire for leisure regularly leads the typical individual to have a strong interest in minimizing, or at least reducing, his or her own workload. To close a case, the judge thus tries to pronounce a judgment that is as revision-proof as possible to minimize their future workload (Landes & Posner, 1980). That judges try to minimize their individual workload could be assumed already by focusing on the high volume of proceedings at the regional courts (“Landgerichte”), which are the first instance (Bungert & Mennicke, 2003).

The judicial interest in power, prominently emphasized by Landes and Posner (1980), can be assumed to be particularly relevant for judges who work in lower courts but wish to promote up. These judges have an interest in a high number of judgments and also revision-proof judgments. For the career perspective of a young judge at the regional court it would be counterproductive not to follow the opinion of higher instances and the widespread opinion in business management theory and practice. This argues in favor of possibly establishing the higher regional courts (“Oberlandesgerichte”) as the initial instance for squeeze-out cases, since a judge at the higher regional court tends to be *de facto* more independent than a judge at the Regional Court; a situation supported by the high workload of judges at regional courts (Bungert & Mennicke, 2003).

According to Kirchgässner (1992), the prestige factor can be regarded as most relevant. The connection between science and practice is particularly pronounced in jurisprudence¹⁵ so that the desire for recognition is not limited to the group of colleagues: a judge would also like to enjoy a high standing within the scientific community. In such a case, it is counterproductive if academics criticize a judge's judgements, especially when judgments in higher instances are overturned, a judge's own reputation suffers. This means that a judge, and this applies in particular to the level of regional courts, will tend to be guided by the so-called “prevailing opinion.” If a judge based their judgement on a less widespread

¹⁵ On the preference of the judge to convince (public) audience, see Baum (2006) and Black et al. (2016).

conception, the judge would run a higher risk of being criticized by a larger number of authors. Further, it can be argued that appealing to a view held in only a few works means a higher level of effort in the form of literature selection for the judge, which would lead to a change in their time allocation from leisure time to working time. A first and cautiously interpreted indication of this is also the ruling of the Frankenthal Regional Court of 08/13/2013, in which the court refers to “Wikipedia” with regard to the CAPM (in detail Follert, 2020a: 155).

The question now arises of which drivers determine the judicial selection of a valuation method. Based on the literature on judicial behavior, it can be assumed that the judge’s familiarization costs, the probability of a criticism of the judgement by the scientific community, and the probability of an appeal by higher instances, which can be summarized as criticism by other judges, are crucial parameters for decision-making.

Furthermore, the link between judges and scholars within the relevant field of research seems to be important. Reputation is a central currency in the scientific world (e.g., Emrich & Pitsch, 2014). A researcher can generate reputation within the scientific community or through external players. In the case of valuation-theoretical research, judicial decision-making plays an important role. If a researcher is frequently cited in the reasons for a judgment, this is beneficial to his or her reputation and vice versa (on this mechanism see Quill, 2020). If a judgement contradicts the researcher’s own position, conceivably a researcher will express a critical opinion; for example, in an essay concerning the decision published in an academic law journal. Thus, we also assume a connection between the dissemination of a concept and the probability of criticism from doctrine. A similar consideration can also be seen for potential criticism from the judges’ guild: what matters here is the dissemination in the practice of case law. We therefore assume a negative correlation between the level of familiarization costs and the dissemination of a valuation theory concept in the literature.

The same applies to the probability of criticism by doctrine. The probability of an appeal by higher courts depends in particular on the jurisdictional practice of these courts. If a judge at a regional court is thus primarily guided by the decisions of their higher regional court, the probability of criticism from the legal side is rather low. How the judge weights the individual cases depend on the individual situation and the opportunity costs.

With a view to the empirical evidence, the socioeconomic analysis of the judicial decision on minority compensation could be an approach to explain the empirical finding that most judges are guided by the numerically prevailing opinion of the valuation theory and rely on the practical recognition of the IDW on the one hand and on the findings of finance theory on the other, although the legal purpose adequacy of the methods is questionable (Follert, 2020a).

4 Discussion: Information Asymmetry and Lobbying

The arising question is which implications can be drawn from the economic analysis for the judicial stock valuation. For this purpose, we want to look at the socioeconomic context of the “Spruchverfahren.” Business valuation, as well as accounting (e.g., Homfeldt, 2013; Olbrich & Homfeldt, 2014; Ordelheide, 1997; Sutton, 1984; Tinker, 1980; Zülch et al., 2009), is understandably a relevant field from a political-economic perspective, influenced by several interest groups, such as auditors, consultants, researchers, and capital market investors. In particular, judicial valuation in squeeze-out cases could be interpreted from a political-economic perspective as a social process influenced by different lobbying groups, since it deals with the allocation of private property rights within a polity. As already shown in section 2 of this essay, Follert (2020a) systematizes the judge, the expert, the main stockholder as well as the minority stockholders as central actors within the judicial process. With respect to the analysis conducted here, the judge is faced with two influencing factors: He or she has to make a decision under a high degree of uncertainty and he or she has to deal with information regarding the adequate valuation method that is distributed asymmetrically between the him or herself and the lobbyists. Furthermore, he or she decides under pressure from public opinion and tending to find a consensus in order not to be criticized. This argument is underlined with empirical evidence that emphasizes judges’ preference to convince the public audience (e.g., Baum, 2006; Black, Owens, Wedeking, & Wohlfahrt, 2016). This situation opens up discretionary potential for lobbyists who try to promote neoclassical valuation methods.

In particular, the IDW as representative of the expert, as well as the “Deutsches Aktieninstitut” (DAI), the “Deutsche Vereinigung für Finanzanalyse und Assetmanagement” (DVFA), and the “Handelsrechtsausschuss of the Deutscher Anwaltsverein” (DAV) as interest groups that support the main stockholder, try to influence the methodological development concerning valuation techniques (Follert, 2020a). It is not surprising that they favor finance-theoretical valuation methods (Follert, 2020a; Matschke, 2013; Olbrich & Rapp, 2012, especially on DVFA, Quill, 2016) because: first, the neoclassical valuation methods are particularly credible to the public, since the CAPM is based on Nobel Prize-winning papers (e.g., Quill, 2016); and second, the procedure of valuation is standardized, which reduces the costs of the expert (e.g., Follert, 2020a; Quill, 2016). Overall, these methods tend to reduce the value of the property, thus going to the detriment of minority stockholders (e.g., Matschke, 2013, 2016; Olbrich & Rapp, 2012).

In general, lobbying is not a problematic issue in a market economy. Regarding the topic discussed here, however, it should be noted that a special situation arises from the fact that information is distributed very asymmetrically with respect to business valuation. Therefore, one crucial problem already pointed out by Quill (2016) and Follert (2020a) seems to be asymmetric knowledge concerning valuation between the judge, who is obviously an expert in legal topics but neither in business economics in general nor in stock valuation in particular, and the interest groups which are professionals concerning business valuation.

Overall, the judge cannot be an expert in business management issues, as the knowledge is too specific here. However, the knowledge disadvantage in connection with the image of the judge assumed here leads to a vacuum which lobbyists can exploit to their advantage on the side of the main stockholder. With respect to the assumed preference structure of the judge, lobbyists who support the main stockholder try to satisfy those preferences by providing neoclassical valuation methods to the advantage of the main stockholder. In a democracy, the only legally permissible way of directly influencing a court is by transmitting information (Kirchgässner, 1992). In the case of a court ruling, this is particularly economic information, which by its very nature eludes the field of experience of the legally trained judge who has been prepared to answer legal questions so that with regard to economic expertise there is an information gap between the lobbyists (experts, see Quill, 2016) and the group of judges (laymen, see Quill, 2016). The judge is faced with the task of assessing this information on the basis of the purpose of the valuation (i.e., the protection of minority stockholders). It is up to the judge to put the right questions to the expert and the parties (Follert, 2020a). The judge is in no way bound to trends of economic practice; the judge's mandate is determined solely by the law. To put it emphatically, Luhmann (1972: 238, translated by the author) suggests:

When normative legal expectations are violated, the judge must stick to those expectations and not adjust them to the facts.

The asymmetric distribution of information described above cannot be prevented in a world based on the division of labor, with the advantage of not having to be an expert in every area. However, suitable mechanisms are needed to reduce the discretionary potential for certain actors. When the expert acts as a better informed *agent* on behalf of the judge as the *principal*, agency theory teaches us that there is obviously a moral hazard problem. To minimize this discretionary potential, it seems to be necessary to create some control mechanisms. Therefore, given the great economic importance of the squeeze-out of minority stockholders in public limited companies, it can be supported that economic and business management courses, especially in the area of

business valuation, should be integrated into legal education (Eidenmüller, 2015: 427–428; Follert, 2020a: 230–231). This does not mean that the judge has to become an expert in valuation theory; but the he or she should know the crucial parameters, question the assumptions made by models, and be aware of the dominance of the conflict situation (Follert, 2020a), in order to be able to ask the auditor the decisive questions that the latter as an expert must then provide to the judge.

In particular, the obvious lobbying around the expert auditors and the main stockholder requires that the judge, as principal, controls its agent (i.e., the expert) in the best possible way. It is well known, this results in control costs (e.g., Jensen & Meckling, 1976). In the present case of legal proceedings, these costs should be borne by the State, since the State must ensure that the property of the minority shareholders is protected in accordance with the Constitution. As a proposal, the introduction of a court-appointed “objector” in the sense of an *advocatus diaboli* could be discussed. This objector should be required to critically question the expert’s statements and could serve as a kind of support for the judge. Of course, this actor would not be without interests of his own either, but such a player could specifically work towards compromises. It neither serves the legal system nor the minorities to invoke a supposed state of the art and to stylize the IDW as a quasi-norm-setter (e.g., Schülke, 2014; Quill, 2020). From the presented analysis, the implication for legal and political actors can be derived that the image of the “economic expert” may need to be questioned. Even an auditor, a financial analyst, or a lawyer involved in M&A transactions usually pursues his or her own interests and tries to maximize his or her utility on an individual level (Follert, 2020a, 2020b; Quill, 2016). On a collective level, the actors pool their interests in lobbying groups and seek to influence the judicial valuation in their favor (Follert, 2020a, 2020b). Nevertheless, a large number of German courts follow the recommendations of those professional associations, in particular Standard 1 of the IDW. It seems urgent and necessary that the interested public is also made aware of this problem.

5 Concluding Remarks

With respect to the appropriateness of the valuation method for determining the *appropriate* compensation in the case of the squeeze-out of minorities under German stock corporation law, two competing concepts are opposed. Empirical evidence (Ballwieser & Hachmeister, 2016; Drukarczyk and Schüler 2016; Follert, 2020a; Quill, 2020) shows that the *Anglo-Saxon School* based on the neoclassical

finance theory determines the practice of the courts in Germany. Specifically, in most cases a combination of the Objectified Income Approach according to IDW S 1 with the equilibrium-oriented CAPM to determine the risk premium takes place, although the adequacy of this approach remains questionable in the light of minority protection (e.g., Matschke, 2013, 2016; Olbrich & Rapp, 2012; Quill, 2020). Within the framework of the *New Political Economy of Business Valuation*, different explanatory models for the widespread use of the concept of finance theory are already presented in the literature. Based on the axiom of self-interest, these approaches discuss how the methods used in judicial practice tend to be oriented more towards the particular interests of the main stockholder than their adequacy of purpose with regard to the valuation approach (Follert, 2020a; Quill, 2016, 2020).

The present paper analyzes the judge's valuation method selection based on a law and economics approach. We argue that judges respond to institutional pressure and social consensus within their community, in view to avoid conflicts and enhance reputation to improve career perspectives. While it is evident that this framework does not apply to every judge, these assumptions are not necessary either. Rather, the focus should be directed to the important decision parameters to further advance the discussion of the topic. The paper aims to sensitize the international scientific community to the problem of neoclassical valuation models in squeeze-out cases and to broaden the discussion, which has so far mostly taken place in the German-speaking area. To open the discussion, it seems essential that legal experts and economists work together to find solutions that are both adequate for the purpose of minority protection in practice.

Future research efforts could focus on law and economics models that reflect findings from behavioral economics (e.g., Jolls, Sunstein, & Thaler, 1998) which influence the decision of the court. An interesting research project could be the empirical test of judicial decision-making behavior using randomized interview techniques from the social sciences. Overall, we need more interdisciplinary research that analyzes the political-economic perspective of judicial valuation. The hope is that future research in the field of *New Political Economy of Business Valuation* will focus on the empirical testing of model-theoretical considerations in particular.

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Appendix

Date	Court [§]	Number	Risk Premium [*]
02/18/2005	HRC Stuttgart	20 U 19/04	CAPM
06/22/2005	RC Frankfurt/Main	3/8 O 172/02	CAPM
10/28/2005	HRC Munich	32 Wx 110/05	Subjective
03/08/2006	HRC Stuttgart	20 W 5/05	n/a
03/10/2006	RC Köln	82 O 126/05	CAPM
03/31/2006	HRC Düsseldorf	I-26 W 5/06	CAPM
05/02/2006	RC Frankfurt/Main	3-5 O 153/04	Subjective
05/02/2006	RC Frankfurt/Main	3-5 O 160/04	Subjective
05/02/2006	RC Frankfurt/Main	3/5 O 110/04	CAPM
07/11/2006	HRC Munich	31 Wx 41/05	Subjective
08/04/2006	RC Stuttgart	32 AktE 3/99	CAPM
09/20/2006	HRC Düsseldorf	I-26 W 8/06 AktE	CAPM
10/19/2006	HRC Munich	31 Wx 92/05	Subjective
10/20/2006	HRC Düsseldorf	I-19 W 11/04 AktE	CAPM
10/26/2006	HRC Munich	31 Wx 12/06	Subjective
10/26/2006	HRC Stuttgart	20 W 14/05	CAPM
11/30/2006	HRC Munich	31 Wx 59/06	Subjective
02/16/2007	HRC Stuttgart	20 W 6/06	CAPM
03/19/2007	RC Dortmund	18 AktE 5/03	Subjective
04/03/2007	RC Hamburg	414 O 26/97	Subjective
04/05/2007	HRC Koblenz	6 U 342/04	Subjective
04/19/2007	HRC Celle	9 W 53/06	CAPM
05/10/2007	HRC Munich	31 Wx 119/06	Subjective
07/06/2007	HRC Stuttgart	20 W 5/06	CAPM
07/17/2007	HRC Munich	31 Wx 60/06	Subjective
07/26/2007	HRC Munich	31 Wx 99/06	Subjective
01/17/2008	RC Köln	82 O 77/03	CAPM
01/23/2008	HRC Düsseldorf	I-26 W 6/06 AktE	Subjective
01/31/2008	RC Munich	5 HK O 15082/07	Tax-CAPM
02/14/2008	HRC Stuttgart	20 W 9/06	CAPM
03/19/2008	HRC Stuttgart	20 W 3/06	CAPM
03/31/2008	HRC Munich	31 Wx 88/06	Subjective
04/02/2008	HRC Munich	31 Wx 85/06	CAPM
05/07/2008	HRC Düsseldorf	I-26 W 16/06 AktE	CAPM
08/05/2008	RC Frankfurt	3-5 O 15/08	Tax-CAPM
01/14/2009	HRC Berlin	2 W 68/07	CAPM
03/30/2009	HRC Frankfurt/Main	20 W 101/04	CAPM
05/27/2009	HRC Düsseldorf	I-26 W 5/07	CAPM
07/14/2009	HRC Munich	31 Wx 121/06	Subjective
08/26/2009	HRC Frankfurt/Main	5 W 49/09	Tax-CAPM
08/26/2009	HRC Frankfurt/Main	5 W 35/09	CAPM

(continued)

Date	Court ^s	Number	Risk Premium*
09/22/2009	HRC Stuttgart	20 W 20/06	Subjective
12/18/2009	HRC Stuttgart	20 W 2/08	Tax-CAPM
12/30/2009	RC Munich	5 HK O 15746/02	CAPM
02/09/2010	HRC Frankfurt/Main	5 W 33/09	CAPM
02/15/2010	HRC Frankfurt/Main	5 W 52/09	Tax-CAPM
01/17/2010	RC Dortmund	20 O 20/05 AktE	CAPM
03/17/2010	HRC Stuttgart	20 W 9/08	CAPM
06/17/2010	HRC Frankfurt/Main	5 W 39/09	Tax-CAPM
07/16/2010	HRC Frankfurt/Main	5 W 53/09	Tax-CAPM
09/21/2010	HRC Frankfurt/Main	5 W 40/09	CAPM
10/14/2010	HRC Stuttgart	20 W 16/06	CAPM
12/20/2010	HRC Frankfurt/Main	5 W 51/09	Tax-CAPM
12/21/2010	HRC Frankfurt/Main	5 W 15/10	CAPM
01/19/2011	HRC Stuttgart	20 W 2/07	Tax-CAPM
01/19/2011	HRC Stuttgart	20 W 3/09	Tax-CAPM
03/29/2011	HRC Frankfurt/Main	21 W 12/11	Tax-CAPM
04/06/2011	HRC Düsseldorf	I-26 W 2/06 (AktE)	Subjective
04/29/2011	HRC Frankfurt/Main	21 W 13/11	Tax-CAPM
05/02/2011	HRC Frankfurt/Main	21 W 3/11	CAPM
05/04/2011	HRC Stuttgart	20 W 11/08	Tax-CAPM
05/05/2011	HRC Düsseldorf	I-6 U 70/10	Subjective
06/07/2011	HRC Frankfurt/Main	21 W 2/11	CAPM
06/29/2011	RC Stuttgart	31 O 179/08 KfH AktG	Tax-CAPM
07/08/2011	HRC Stuttgart	20 W 14/08	Tax-CAPM
07/13/2011	RC Dortmund	20 O 14/06 AktG	n/a
09/14/2011	HRC Stuttgart	20 W 7/08	CAPM
10/17/2011	HRC Stuttgart	20 W 7/11	Tax-CAPM
11/24/2011	HRC Frankfurt/Main	21 W 7/11	CAPM
12/07/2011	HRC Düsseldorf	I-26 W 7/09 (AktE)	CAPM
12/20/2011	HRC Frankfurt/Main	21 W 8/11	CAPM
12/21/2011	HRC Düsseldorf	I-26 W 2/11 (AktE)	CAPM
12/21/2011	HRC Düsseldorf	I-26 W 3/11 (AktE)	CAPM
02/20/2012	HRC Frankfurt/Main	21 W 17/11	Tax-CAPM
02/29/2012	HRC Düsseldorf	I-26 W 2/10 (AktE)	CAPM
03/05/2012	HRC Frankfurt/Main	21 W 11/11	CAPM
04/03/2012	HRC Stuttgart	20 W 6/09	Tax-CAPM
07/04/2012	HRC Düsseldorf	I-26 W 8/10	CAPM
08/30/2012	RC Düsseldorf	31 O 4/06 (AktE)	CAPM
08/30/2012	HRC Frankfurt/Main	21 W 14/11	Tax-CAPM
11/05/2012	RC Stuttgart	31 O 55/08 KfH AktG	Tax-CAPM
11/05/2012	RC Stuttgart	31 O 173/09 KfH AktG	Tax-CAPM
11/15/2012	HRC Karlsruhe	12 W 66/06	Tax-CAPM
03/20/2013	HRC Düsseldorf	I-26 W 6/09 (AktE)	CAPM

(continued)

Date	Court ^s	Number	Risk Premium [*]
04/30/2013	HRC Karlsruhe	12 W 5/12	Tax-CAPM
06/21/2013	RC Munich	5 HK O 19183/09	Subjective
07/24/2013	HRC Stuttgart	20 W 2/12	Tax-CAPM
08/13/2013	RC Frankenthal	2 HK O 120/10 AktG	CAPM
10/15/2013	HRC Stuttgart	20 W 3/13	Tax-CAPM
11/05/2013	HRC Stuttgart	20 W 4/12	Tax-CAPM
12/05/2013	HRC Frankfurt/Main	21 W 36/12	CAPM
12/20/2013	HRC Frankfurt/Main	21 W 40/11	CAPM
02/18/2014	HRC Munich	31 Wx 211/13	Tax-CAPM
03/21/2014	RC Hamburg	417 HKO 205/12	CAPM
03/21/2014	RC Hamburg	404 HKO 72/10	n/a
03/28/2014	HRC Frankfurt/Main	21 W 15/11	Tax-CAPM
04/01/2014	HRC Stuttgart	20 W 4/13	CAPM
04/23/2014	RC Hamburg	417 HKO 111/12	CAPM
05/21/2014	HRC Frankfurt/Main	21 W 63/13	CAPM
05/27/2014	RC Frankfurt/Main	3-05 O 34/13	CAPM
05/28/2014	RC Munich	5 HKO 22657/12	Subjective
06/11/2014	HRC Saarbrücken	1 W 18/13	CAPM
07/17/2014	HRC Stuttgart	20 W 3/12	CAPM
08/25/2014	HRC Düsseldorf	I-26 W 24/12 (AktE)	Subjective
08/28/2014	HRC Düsseldorf	I-26 W 9/12 (AktE)	CAPM
09/03/2014	RC Düsseldorf	33 O 55/07 (AktE)	Subjective
09/26/2014	RC Hamburg	403 HKO 19/13	Tax-CAPM
10/15/2014	HRC Frankfurt/Main	21 W 64/13	Tax-CAPM
12/16/2014	RC Frankfurt/Main	3-5 O 164/13	n/a
12/18/2014	HRC Frankfurt/Main	21 W 34/12	Tax-CAPM
01/26/2015	HRC Frankfurt/Main	21 W 26/13	CAPM
04/21/2015	RC Kiel	16 O 75/12	Tax-CAPM
05/05/2015	HRC Munich	31 Wx 366/13	CAPM
05/11/2015	HRC Düsseldorf	I-26 W 2/13 (AktE)	CAPM
06/29/2015	RC Hamburg	412 HKO 178/12	Tax-CAPM
07/22/2015	RC Dortmund	20 O 115/05 AktE	CAPM
07/23/2015	HRC Karlsruhe	12a W 4/15	Tax-CAPM
07/27/2015	HRC Stuttgart	20 W 5/14	Tax-CAPM
07/31/2015	RC Munich	5 HKO 16371/13	Subjective
10/15/2015	RC Hamburg	403 HKO 42/14	Tax-CAPM
11/04/2015	RC Dortmund	18 O 52/13 (AktE)	CAPM
12/17/2015	HRC Düsseldorf	I-26 W 22/14 (AktE)	Tax-CAPM
01/29/2016	HRC Frankfurt/Main	21 W 70/15	CAPM
02/23/2016	RC Hamburg	403 HKO 152/14	Tax-CAPM
04/25/2016	RC Munich	5HK 9122/14	Subjective
05/18/2016	HRC Karlsruhe	12a W 2/15	CAPM
05/25/2016	HRC Düsseldorf	I-26 W 2/15 (AktE)	Tax-CAPM

(continued)

Date	Court [§]	Number	Risk Premium [*]
06/06/2016	HRC Düsseldorf	I-26 W 4/12 (AktE)	n/a
06/24/2016	RC Düsseldorf	39 O 129/06 AktE	Tax-CAPM
07/20/2016	HRC Frankfurt/Main	21 W 21/14	Tax-CAPM
08/15/2016	HRC Düsseldorf	I-26 W 17/13 (AktE)	CAPM
08/18/2016	HRC Düsseldorf	I-26 W 12/15 (AktE)	Tax-CAPM
09/08/2016	HRC Frankfurt/Main	21 W 36/15	n/a
11/15/2016	HRC Düsseldorf	I-26 W 2/16 (AktE)	n/a
12/02/2016	RC Munich	5HK 5781/15	Subjective
12/15/2016	HRC Düsseldorf	I-26 W 25/12 (AktE)	Tax-CAPM

[§]HRC=Higher Regional Court, RC=Regional Court^{*}CAPM=Capital Asset Pricing Model; Tax-CAPM=Basic CAPM including taxation; Subjective=Estimation by the court

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