Valuation of family business

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Agenda

I. Introduction

II. Characteristics of family business and leverage

III. DCF models and market multiples

1. Overview
2. DCF models
3. Market multiples

IV. Objections with respect to family business, especially in form of a SME

1. Overview
2. Missing marketability or liquidity
3. Small size
4. Missing diversification of owner

Introduction (1)

- **Generally, there are no particuliarities in valuation of family business**
- DCF and multiples are dominating, as elsewhere
- **Peculiarities result from valuation frequency and determination of valuation components**
- When suitable valuation methods are demanded, then this is normally done with respect to taxation or donation and / or SME, i.e. only one valuation purpose or one size of valuation object

Introduction (2)

- **Often mentioned characteristics of family business**
  - **Strong owner dependency** (e.g., founder dominance, special abilities)
  - **Long-term strategies and planning horizonts** (business preservation over generations; capital transfer restrictions)
  - **Specific risk attitudes** (strong risk aversion)
  - **Specific financing** (pecking order: first retained earnings, then equity contribution by family or issuing debt, as last resort external equity contribution, high equity ratio)
  - **Considerable tax optimization** (strong tax aversion)

Introduction (3)

- **Whether this kind of differentiation really works is hard to prove, since family businesses form a very heterogeneous group with respect to**
  - Legal form
  - Stock market listing
  - Industry
  - Size
  - Structure of co-ownership
  - Age

Introduction (4)

Company*	Founded	Legal Form	Revenue (Euro)	Employees	Equity ratio
Bahlsen	1889	GmbH & Co. KG***	***552 m***	***2 704***	44.6 % (2015)
Bertelsmann	1835	SE & Co. KGaA**	1.14 b	***116 434***	41.6 %
Merck	**1668**	KGaA**	***15.024 b***	50 414	36.7 %
Miele	1899	KG***	3.93 b (as of 6/17)	19 465 (6/17)	42.0 %
Schüco	1951	KG***	1.460 b	4 750	***62.5 %*** (2015)
Sennheiser	**1945**	GmbH & Co. KG***	658 m	2 830	***24.0 %***
Werhahn	1841	KG***	3.32 b	9 832	27.7 %

* Data of 2016 if not shown otherwise ** Joint-stock company *** Limited partnership

Introduction (5)

- **The thesis that DCF would have been designed primarily for listed companies and would lead to wrong valuations of SME is faulty**
- The objection against CAPM, the discounts because of special legal form, missing marketability or liquidity, small size and missing diversification of owner is popular but cannot be founded convincingly
- **But, there may be difficulties in the determination of substantial valuation components for family business in form of a SME**
- Independent of size, it is often necessary to consider restrictions for dividend and financing policy which affect the forecasts of future cash flows

Characteristics of family business and equity ratio (1)

- Many definitions of family business exist; helpful might be a distinction of **family controlled and family managed firms**
- A **German Panel** provides data of about 9 million firms, of which three million still exist*
- **About 2.7 million firms residing in Germany are active, of which about 2.4 million are family controlled and 2.3 million family managed****
- **Both groups add to roughly 50% of total employment and 50% of total revenues**

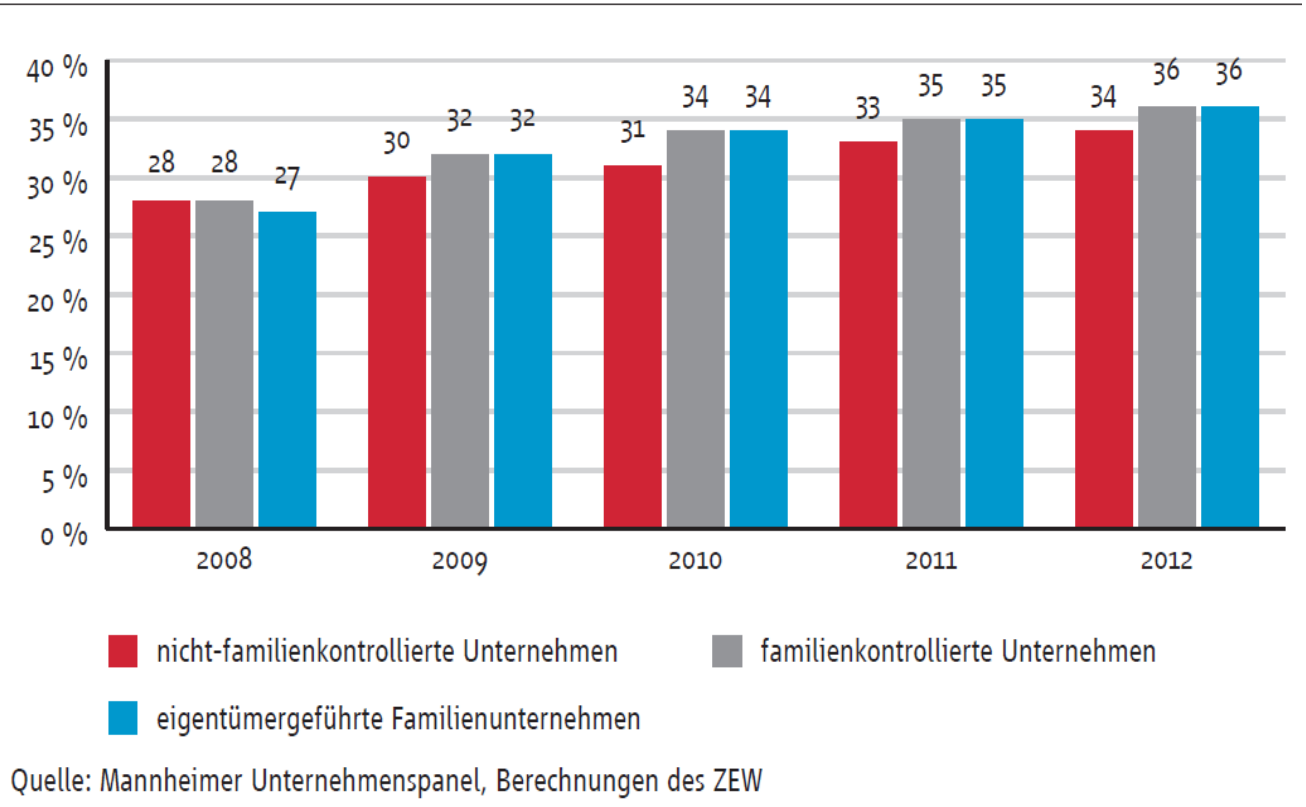
** Mannheimer Unternehmenspanel (MUP) of ZEW*

*** Stiftung Familienunternehmen 2016, p. 1, fn. 3*

Characteristics of family business and equity ratio (2)

- **Family controlled or managed firms,** MUP data based on financial reports of about **3 200 firms per year**, capital companies with 5 employees at least

Abb. 3-9: Durchschnittliche Eigenkapitalquoten von Kapitalgesellschaften, in Prozent



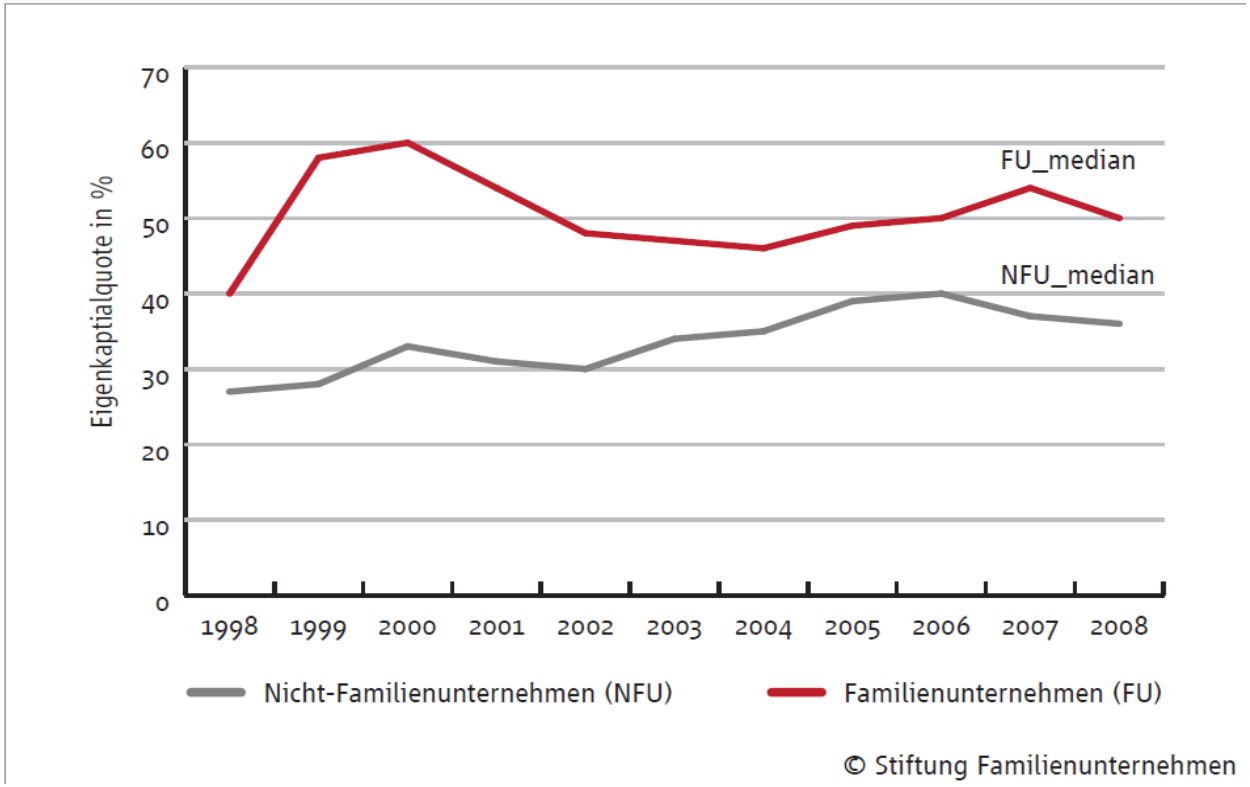
Quelle: Mannheimer Unternehmenspanel, Berechnungen des ZEW

High variance, equity ratio < 10 % for firms in lower 10 % percentile, > 60 % in upper 10 % percentile

Characteristics of family business and equity ratio (3)

- **Listed companies** (w/o financial & real estate), **founder definition** (founder ≥ 25% of capital a/o founder is in executive a/o supervisory board)

Abb. 7: Median Eigenkapitalquote von Familienunternehmen und Nicht-Familienunternehmen im Vergleich (CDAX, 1998-2008)



Characteristics of family business and equity ratio (4)

- **General statements are impossible, all studies differ with respect to**
  - **Sample period** (up to 2008, 2008 and after)
  - **Definition of family business** (founder definition vs. majority of voting rights)
  - **Sample size** (between 294 and 555 firms per year vs. about 3 200 per year)
  - **Sample structure** (listed companies vs. listed and non-listed firms)
  - **Sample components** (big vs. small firms)

DCF (Flow-to-Equity) (1)

- **Two-Phase-Model**

$$DCF_0 = \sum_{t=1}^{T} \frac{\mu(D_t)}{(1+r)^t} + \sum_{t=T+1}^{\infty} \frac{\mu(D_{T+1}) \cdot (1+g)^{t-(T+1)}}{(1+r)^t}$$

$$= \sum_{t=1}^{T} \frac{\mu(D_t)}{(1+r)^t} + \frac{\mu(D_{T+1})}{(r-g) \cdot (1+r)^T} \qquad r > g$$

- t = Time index
- $\mu(D)$ = Expectation value of dividends
- r = Risk-adjusted rate of return,
- g = Growth rate of expectation value

DCF (Flow-to-Equity) (2)

- **Problems of dividend forecasts of family business in form of a SME**
  - Assets and liabilities are often used for business and private purpose, business valuation needs business purpose
  - SME have less duties for financial reporting and auditing than big companies and have often no managerial accounting
  - SME spare frequently institutional planning
  - Owner-managers do not always pay themselves a salary, transactions with them may deviate from market conditions
  - Past financial results are frequently driven by specific skills of owner-managers, that makes forecasting of dividends for potential buyers difficult

DCF (Flow-to-Equity) (3)

- **Estimation of risk-adjusted rate of return by means of CAPM**
- Expected rate of return equals risk-free rate plus risk premium
- Risk premium = Beta β x Equity Risk Premium ERP

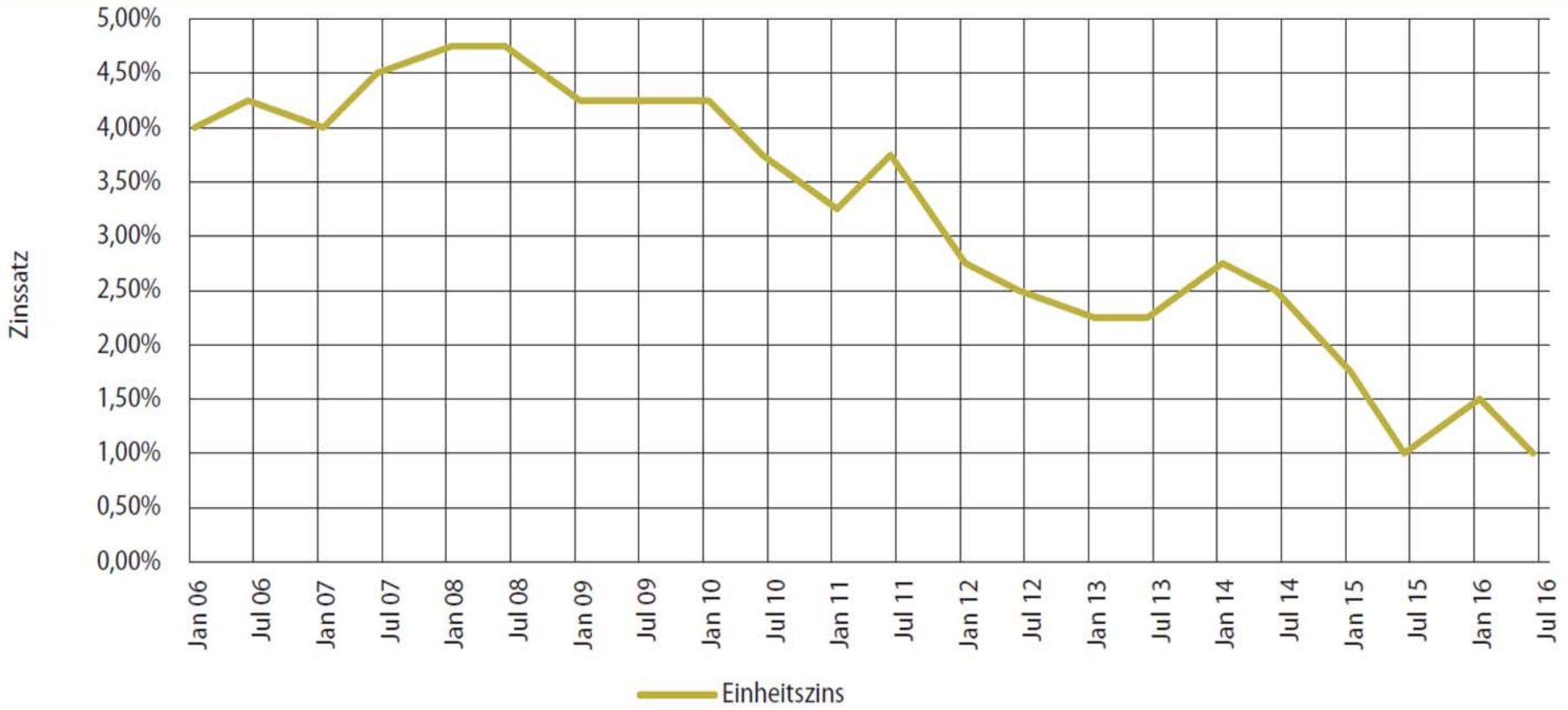
$$\mu\left(r_j\right) = r_f + \beta_j \left[\mu\left(r_M\right) - r_f\right]$$

$$\beta_j = \frac{\sigma_{jM}}{\sigma_M^2}$$

- **Risk-free rate is estimated in Germany from German government bonds or from AAA rated Euro-Bonds with Svensson method**

DCF (Flow-to-Equity) (4)

Abb. 2: Entwicklung des barwertäquivalenten Einheitszinses im Zeitverlauf



Source: Wiesner/Wobbe, Das Zinsniveau sowie weitere Parameter der Unternehmensbewertung im aktuellen Niedrigzinsumfeld, Der Betrieb 2017, p. 1727

DCF (Flow-to-Equity) (5)

- Beta is estimated from peer group with OLS regressions
- **ERP** is estimated from historical data, IDW (Institute of Public Auditors in Germany) recommends **5.5 % to 7.0 %**
- Example: r_f = 1.25%, ERP = 6.5%, β = 0.9
- **μ(r) = 1.25% + 5.85% = 7.1%**

Multiples method

- **Multiples support estimation of prices, not of values**
- **Prices reflect values, but it is impossible to derive decision values from prices**
- **Nonetheless, multiples are often used for different valuation purposes**
- Estimated price = Reference base x Multiple
- Common financial bases, actual oder expected, e.g.
  - Revenues
  - EBITDA
  - EBIT
  - Net profit
- **Multiples date from real or fictive transaction prices of peers**

Objections with respect to family business, especially in form of a SME

- **Proposed additions to CAPM risk-adjusted rate of return because of**
  - **Low marketability of business or liquidity of equity participation (DLOM, DLL)**
  - **Small size of business (SSRP, SCP)**
  - **Missing diversification of owner (Total beta)**
- Discounts from calculated value substitute increases of rate of return
- Empirical evidence for discounts in literature

DLOM / DLL (1)

- **Empirical research of DLOM with**
  - **(Pre-)IPO studies**
  - **Restricted stock studies**
  - **Comparable company studies**
- IPO studies compare transaction prices before IPO with IPO prices
- Restricted stock studies compare a public company‘s share price with the price of a share of the same company which is not traded or whose trading is restricted
- Comparable company studies compare real or fictive prices (MarketCap) of listed companies with prices of non-listed peers

DLOM / DLL (2)

- **US-IPO studies for DLOM show a**
  - Mean of 46% (median 47%) for periods between 1980 and 2000 (Emory studies)
  - Median between 28% (1999) and 76% (2002) for years between 1975 and 2002 (Willamette studies)
- **Restricted stock studies** deliver according to Hitchner 2017, p. 438 often an average of 30% to 35%
- Pratt 2009 makes a synopsis of 11 studies and sums up:
  - „The many independent restricted stock studies, encompassing hundreds of transactions, are remarkably consistent over time. They indicate discounts in the 33 to 35 percent range, up until the SEC started loosening the restrictions in 1990. After that, discounts dropped, reflecting greater liquidity, especially after the holding period was reduced from two years to one year in 1997.“ (p. 111 f.)

DLOM / DLL (3)

- Following Bajaj et al. 2001 and Damodaran 2005 one cannot understand why an investor should accept such a discount of value when an **IPO** is planned, its existence would offer a chance to benefit systematically
- They suspect that the discount reflects other factors, e.g. management compensation and change of macro-economic data, and that it results from biased samples (successful IPOs only)
- Even when one accepts the discounts of the Emory and Willamette studies he/she cannot win, since the averages are very volatile over time and are meaningless for a specific valuation object

DLOM / DLL (4)

- Damodaran 2005 to **restricted stock studies**
  - "These studies of restricted stock have been used by practitioners to justify large marketability discounts but there are **reasons to be sceptical**. **First**, these studies are based upon small sample sizes, spread out over long time periods, and the standard errors in the estimates are substantial. **Second**, most firms do not make restricted stock issues and the firms that do make these issues tend to be smaller, riskier and less healthy than the typical firm. This selection bias may be skewing the observed discount. **Third**, the investors with whom equity is privately placed may be providing other services to the firm, for which the discount is compensation." (p. 38 f.)
- There are arguments against Damodaran, but even if they are accepted, one problem remains: **Small sample sizes, spread out over long time periods with substantial standard errors do not allow to consider the data as reliable**

DLOM / DLL (5)

- **Dodel 2014 explores data of Germany, North America, Western Europe and UK from the start of 1997 to June 2011**
- She distinguishes transactions which complete majority ownership interests or not and separates private firms with respect to owner structure as independent or dependent
- She compares transactions which complete majority ownership interests of independent firms with such of listed peers, e.g. by means of Enterprise Value (EV) to Sales, EBITDA or EBIT multiple
- Her results for Germany are based on 827 private and 232 listed companies

DLOM / DLL (6)

- She finds discounts of about 21% for independent companies and of about 15% for dependent companies using the EV/EBITDA multiple
- **Larger companies have a lower discount and differences exist with respect to industries and leverage, the discount increases when cash payments are made, all independent of the dependency factor**
- **She recommends against a lump-sum discount and the use of the results of US-Studies in all cases**

DLOM / DLL (7)

- **„So is it possible to compute a ‚pure' DLL* for majority ownership interests in private companies? Not so far with the available data.** For now the only possibility is to try to analyze/examine how certain factors influence the value differences (the discount) and then gauge the size of the discount that is attributable to liquidity differences stripped from other influence factors." (Dodel 2014, p. 144)
- **When calculating the „objectified business value", members of the Institute of Public Auditors in Germany (IDW) are not allowed to make a DLOM or DLL**

* DLL = Discount for Lack of Liquidity

SSRP (1)

Figure 28: Exhibit B-1 (abbreviated)

Companies Ranked by Market Value of Equity
Historical Equity Risk Premium: Average Since 1963
Data for Year Ending December 31, 2010

Portfolio Rank by Size	Average Mkt Value ($mils.)	Log of Size	Beta (SumBeta) Since '63	Arithmetic Average Return	Arithmetic Average Risk Premium	Indicated CAPM Premium	Premium over CAPM	*Smoothed Premium over CAPM*
1	109,765	5.04	0.84	11.70%	4.80%	3.67%	1.13%	-1.22%
2	32,309	4.51	0.95	10.57%	3.67%	4.18%	-0.51%	0.31%
3	22,008	4.34	0.93	11.26%	4.35%	4.09%	0.27%	0.79%
←				///				→
24	232	2.36	1.25	19.26%	12.36%	5.50%	6.86%	6.48%
25	68	1.83	1.29	23.28%	16.37%	5.67%	10.71%	8.02%

Source: Duff & Phelps, Risk Premium Report 2011, Selected Pages and Examples, p. 30

SSRP (2)

- **The results of SSRP studies are**
  - gained from listed companies
  - dependent on periods analyzed
  - dependent on countries analyzed
  - ambiguous, i.e. sometimes large companies have higher returns than small companies
- Duff & Phelps uses **8 measures of size** (Market value of common equity, Book value of common equity, 5-year average net income, Market value of invested capital, Total assets, 5-year average EBITDA, Sales, Number of employees) **which are somewhat arbitrary** and may lead to different results
- **When calculating the „objectified business value“, members of the Institute of Public Auditors in Germany (IDW) are not allowed to add a SSRP**

Total Beta (1)

- **The argument is**: CAPM needs the assumption of diversified investors, owners of SMU have not enough wealth to diversify, therefore Beta needs to measure systematic **and** unsystematic risk
- **Total Beta**

$$\beta_j^{total} = \frac{\beta_j}{\rho_{jM}} = \frac{\sigma_{jM}}{\sigma_M^2 \cdot \rho_{jM}} = \frac{\sigma_j \cdot \sigma_M \cdot \rho_{jM}}{\sigma_M^2 \cdot \rho_{jM}} = \frac{\sigma_j}{\sigma_M}$$

- **Total Beta exceeds Beta for a correlation coefficient < 1**, this is almost always the case, since the correlation coefficient is restricted to the range from -1 to +1 by definition

Total Beta (2)

- **Illogicality**: Someone who changes the assumptions of the CAPM cannot use their implications, of which Beta is (a prominent) one. Based on other assumptions, Beta does not exist and it is impossible to divide Beta by the correlation coefficient. The use of Beta and its division to form another than the implied one is contradictionary.
- **Misunderstanding of discount rate**: An owner of a SME needs not to be diversified in order to value a business. The question of the DCF calculus is: What amount of money is necessary to reconstruct the financial benefits of the valuation object in the capital markets? This amount can be calculated, **as long as sufficient many investors are diversified and as long as the CAPM has not to be quit as a description of expected stock returns**. Then it does not matter what some investors do.

Total Beta (3)

- **When calculating the „objectified business value“, members of the Institute of Public Auditors in Germany (IDW) are not allowed to take Total Beta**

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Thank you very much! Questions welcome!

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