

Risk Reporting and Risks Reported

„A Study on German HDAX-listed Companies 2000 to 2005“

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Risk Reporting and Risks Reported:

A Study on German HDAX-listed Companies 2000 to 2005

by

Thomas B. Berger and Dr. Werner Gleißner*

Abstract

In recent years new reporting standards and laws have been issued. For German companies, the KonTraG (Corporate Sector Supervision and Transparency Act) was introduced in 1998 and the German Accounting Standard (GAS 5 Risk Reporting) is in place since 2001. This study analyses the disclosure of risks within the annual reports from 2000 to 2005, based on the requirements of the GAS 5. In the study, the annual reports of all non-financial companies listed in the HDAX (DAX, MDAX and TecDAX) are analysed. The current sample includes 92 companies enlisted in the above standards at the Frankfurt Stock Exchange as of 31 December 2005. The risk disclosures and the information quality are analysed in the three categories information content, reported risk management system and reported risks. The results show that there is some improvement in the quality of risk disclosure since 2000 but at a low level and depending on the standard. The quality of the reported risk management system as also improved, but at a very low level. Especially the aggregation of risk and the quality of derivation of risk exposure is highly questionable. The number and proportion of risks reported have also changed, although some risks have always been reported frequently.

Key words

Risk disclosure, Risk reporting, Risk Management HDAX, GAS 5

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1 Risk Reporting

1.1 German Framework for the Disclosure of Risks

In Germany, risk reports are a mandatory part of the progress report since 1998 with the introduction of the KonTraG (Corporate Sector Supervision and Transparency Act)¹. According to § 289, 1 HGB, it was made mandatory to disclose information concerning the business activity and the associated risks². Although this was a legal requirement, it was not exactly clear what kind of risk information and to what extent companies had to disclose. This led to the development of the German Accounting Standards Board standard on risk reporting (GAS 5). GAS 5 applies to risk disclosure in the group annual report, but its application is recommended for risk disclosure in the annual report, too. (Dobler 2003: 3) In short, the GAS 5 requires company-groups to disclose information about

- ▶ the risk management system,
- ▶ qualitative and quantitative data on relevant risks, classified into risk categories,
- ▶ the risk policy, as well as
- ▶ risk treatment measures.

In addition, GAS 5.15 states that risks which may lead to an insolvency must explicitly be labelled accordingly with the German expression “bestandsgefährdend” (risk of insolvency). Although that it seems clear what should be disclosed, the GAS 5 leaves some open doors for the non-discloser of quantitative information. Companies are only required to disclose hard data if the underlying techniques for assessing the impact of these risks are well-sounded and the processes of quantification can be economically undertaken (GAS 5.20). Based on these requirements, this study on risk reporting of German companies was carried out.

1.2 Current Literature and Empirical Findings for Germany

There is a growing body on studies concerning risk reporting of German companies³. Kajüter (2001) analysed the progress reports of 82 non-financial German DAX30 and MDAX-listed companies in 1999 shortly before the introduction of GAS 5. The information quality was not sufficient and the disclosure of relevant information was questionable. After the introduction of GAS 5, Kajüter and Winkler (2003) in a study covering all German HDAX-listed companies for the financial years 1999 to 2001, analysed the risk reports again and came to a similar conclusion. Especially the requirements of the GAS 5 were not seen as being met yet.

¹ For all financial years following the 31/12/2004, the new requirements of the Bilanzrechtsreformgesetz must be met. Two of the requirements are the disclosure of chances and their underlying assumptions for the planning within the progress report. See Kaiser (2005)

² For international studies see Hossaini/Perera/Rahman (1995) for New Zealand; Linsley/Shrives (2000) for the UK, Denk/Exner-Merkelt/Ruthner (2005) for Austria; Beretta/Bozzolan (2004) for Italy. For an overview of this field see Linsley/Shrives (2006); Berger (2006); Duch (2006) or Gleißner et al (2005)

³ There is also a growing number of literature on the theoretical background of risk reports, analysing the incentives and role in disclosing risk information. See e.g. Bungartz (2003), Dobler (2004) and Duch (2006)

Küting and Heiden (2002) in their study of German companies listed in the DAX, MDAX, NEMAX and SMAX for 2000 and 2001 saw an improvement of the information quality as can be taken from the following figure.

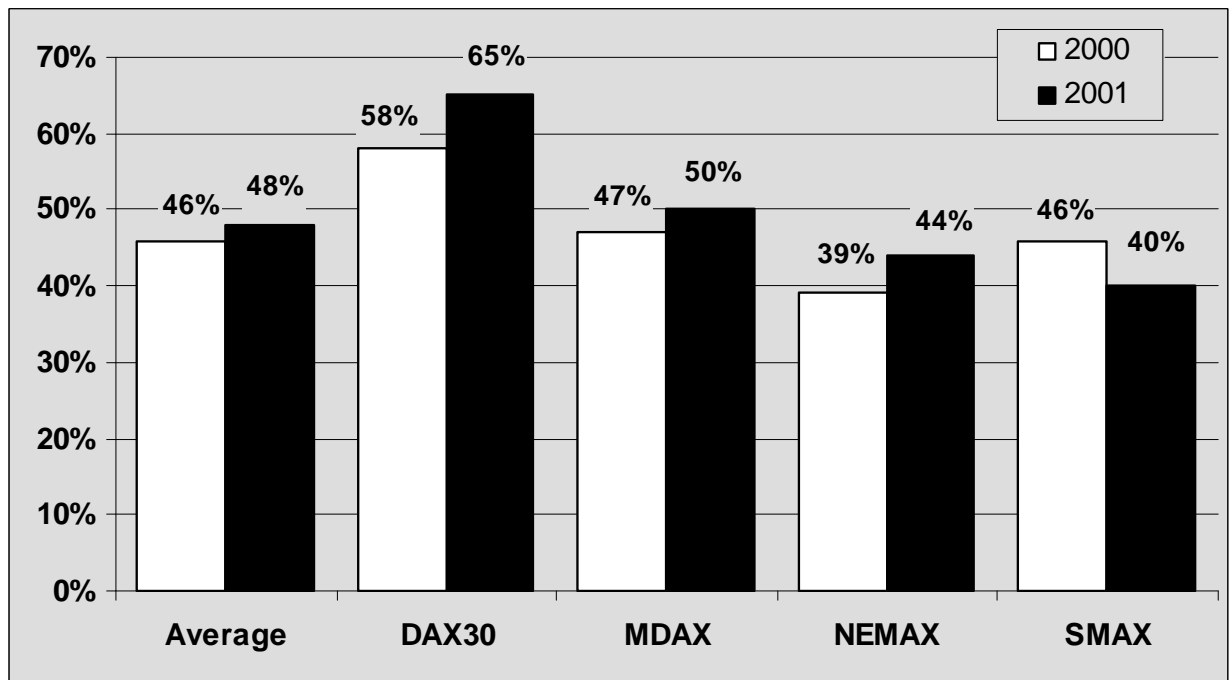


Figure 1: Information quality for 2000 and 2001 (Küting/Heiden 2002: 936)

Nevertheless, the overall quality was only seen as satisfying and far from being good, with an average of 48% of the maximum possible score. The range of fulfilment in 2001 was between 40% for the SMAX and 65% for the DAX30, showing that bigger companies had a higher information quality. Interestingly, only a few companies like e.on or DaimlerChrysler disclosed quantified information regarding risks.

Hoitsch/Winter/Baumann (2006), in a 2005 questionnaire-based study by the University of Mannheim⁴ aimed at assessing the state and role of risk controlling of 250 randomly chosen German incorporated firms with more than 500 employees and more than €50m in turnover. The methods and techniques used are generally simple ones, methods like value at risk/cash flow at risk or simulation techniques are not widespread. Additionally, risk controlling is not integrated into other processes but seen as a stand-alone process. Asked for the reason, companies implemented risk management, the vast majority stated legal requirements. This could explain why these companies in general do not take advantage of their early warning system.

⁴ They also give an overview of existing studies in this field. See Hoitsch/Winter/Baumann (2006), p. 70

2 Study Design

2.1 Background and Aim of Study

The following study, carried out by RMCE RiskCon, builds up on the above mentioned studies on the quality of risk reporting after the introduction of GAS 5. It extends the period of analysis to six years and covers all HDAX listed non-financial companies since 2000, with a current sample size of 92 companies. It further extends the analysis to the assessment of the reported risk management systems. Besides this, the study is the first one to analyse the disclosed risks of German companies over time.

2.2 Research Methods

The risk reports are analysed in three different ways: Firstly by assessing the information content, secondly by analysing the reported risk management system and finally by systematically analysing the reported risks. In addition, a statistical analysis is carried out to look for possible correlations between the variables. Details of the method can be taken from the appendix.

2.2.1 Information Content

The information content is assessed by assigning a maximum of three points per category in five different categories, derived from the GAS 5:

- ▶ KR1: Definition of risk categories (GAS 5.16)
- ▶ KR2: Description of risks and supporting information (GAS 5.18)
- ▶ KR3: Risk quantification (GAS 5.20)
- ▶ KR4: Description of risk treatment measures (GAS 5.21)
- ▶ KR5: Risk Exposure (GAS 5.15)

2.2.2 Risk Management System

The state of the (reported) risk management system is analysed by breaking down the requirements of the GAS 5 into five categories and assigning a maximum of three points in every category⁵:

- ▶ KS1: Risk Policy (GAS 5.29)
- ▶ KS2: Risk Analysis methods and techniques (GAS 5.29)
- ▶ KS3: Risk Aggregation method (GAS 5.13/25)
- ▶ KS4: Organizational framework (GAS 5.28)
- ▶ KS5: Risk Controlling, documentation (GAS 5.28/29)

⁵ Note that the GAS does require disclosures of risk management processes but does not specify these requirements. Therefore, based on the existing literature on risk management, the current state of risk management was taken at the basis for the assessment. See e.g. Culp (2002) or Gleißner (2005)

2.2.3 Risk Analysis

Risk Categories

All risk reports were analysed and the stated risks were grouped into the following six risk categories:

- ▶ Strategic Risks
- ▶ Market Risks
- ▶ Financial Risks
- ▶ Political/Legal and socio-economic Risks
- ▶ Risks from Corporate Governance
- ▶ Operational Risks, Risks from value-chain and supporting processes, other risks

These risk categories consist of several risk fields, as can be taken from the appendix.

Risk Relevance

All analysed risks are also grouped according to the respective relevance into the five relevance groups 1 (“not significant risk”), 2 (“medium risk”), 3 (“relevant risk”), 4 (“serious risk”) 5 (“risk of insolvency”). According to the GAS 5, risk reports must include all risks that are relevant to the investor’s decision-making (GAS 5.10). Therefore it can be assumed that if not otherwise stated a risk can be seen as being relevant and can be grouped into category three. If companies plausibly state that they can handle a risk, it is grouped into category two. Risks that are described as insignificant, are grouped into category one. Risks that could lead to an insolvency have to be named so and can be grouped into category five. Risks that are described as serious, but are not seen as endangering the company, are grouped into category four.

2.2.4 Statistical Analysis

Besides the qualitative analysis of risk reporting, the following data were also taken into account and the stochastic dependencies analysed:

- ▶ Market capitalization as of 31/12/2005 in €m
- ▶ Number of pages of risk report
- ▶ Assessment of information quality (points achieved)
- ▶ Assessment of risk management system (points achieved)
- ▶ Overall assessed quality of risk reports (% of points achieved in both categories)
- ▶ Equity ratio (taken from the study carried out by the IWP (2006))
- ▶ Profitability (taken from the study carried out by the IWP (2006))
- ▶ Number of risk fields reported

3 Results

3.1 Information Content

The information content has improved over time, with a total of 8.3 points in all five categories in 2005, from just 5.2 in 2000. But as can be seen from the comparison with the average of 11.5 of best 25% and the maximum assessment of 15 points, this is far from being good.

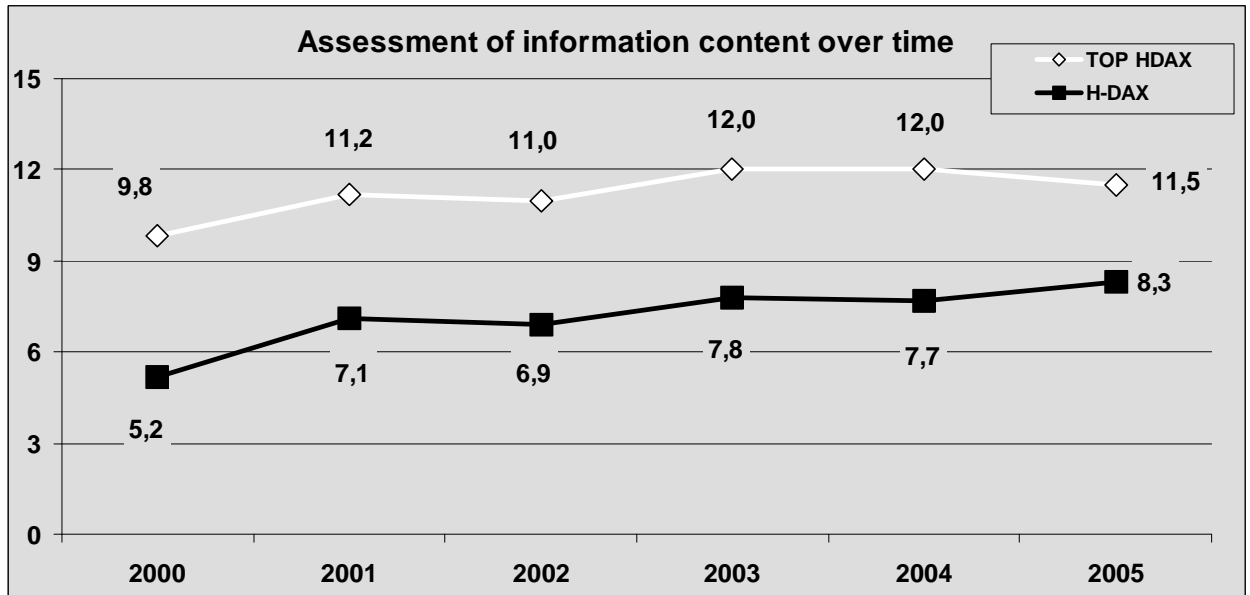


Figure 2: Information content over time

Looking at the details in the three categories and the different segments of the HDAX, one can find some differences across the segments.

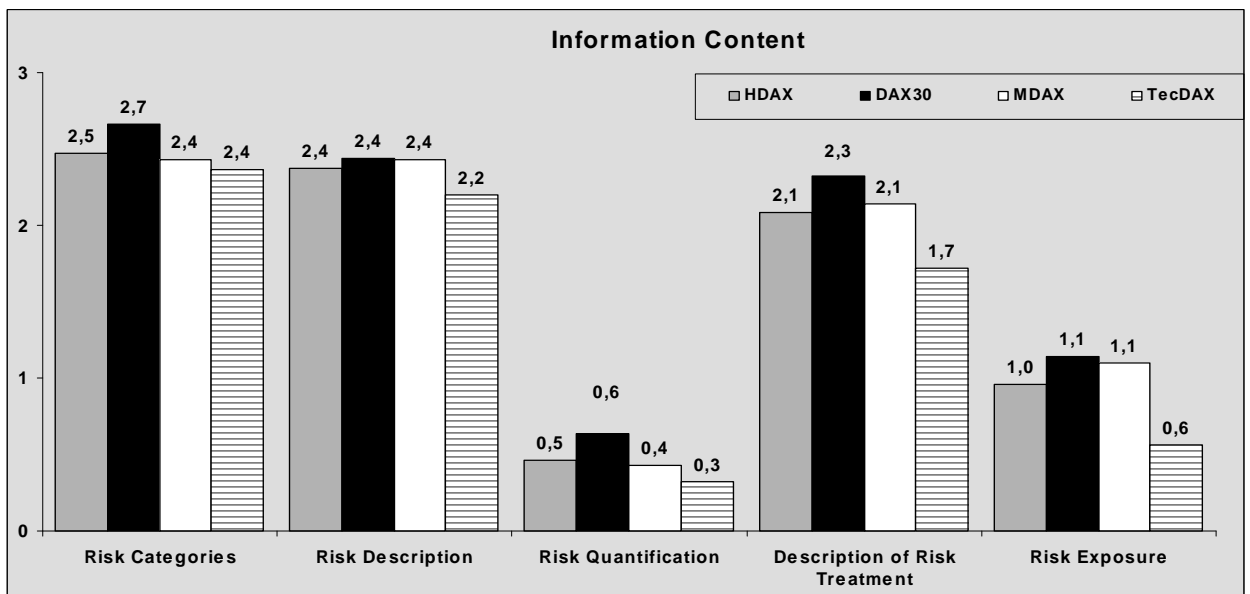


Figure 3: Information content across the segments

In general, companies describe risks and the risk treatment in detail and also use risk categories to group the different risks in the risk report. Unfortunately, they do not provide much quantitative information. Only one company, Jenoptik AG, discloses more than one number in more than one category. The same is true for the risk exposure. Although more than half the sample receive at least one point, only two companies disclose the size of the risk exposure quantitatively: Deutsche Börse AG and Hochtief AG⁶. Some companies like SAP do also state the impact of single risks in comparison with the risk exposure.

3.2 Risk Management Systems

A similar picture can be yielded with the results for the reported risk management system. But in contrast to the information content, there can not be seen a clear improvement⁷ and the average score is just above one third of the maximum score. Even for the best 25% of the sample, the total score is just at 8.8 points, meaning 59% of the requirements met of what is seen as state of the art in risk management.

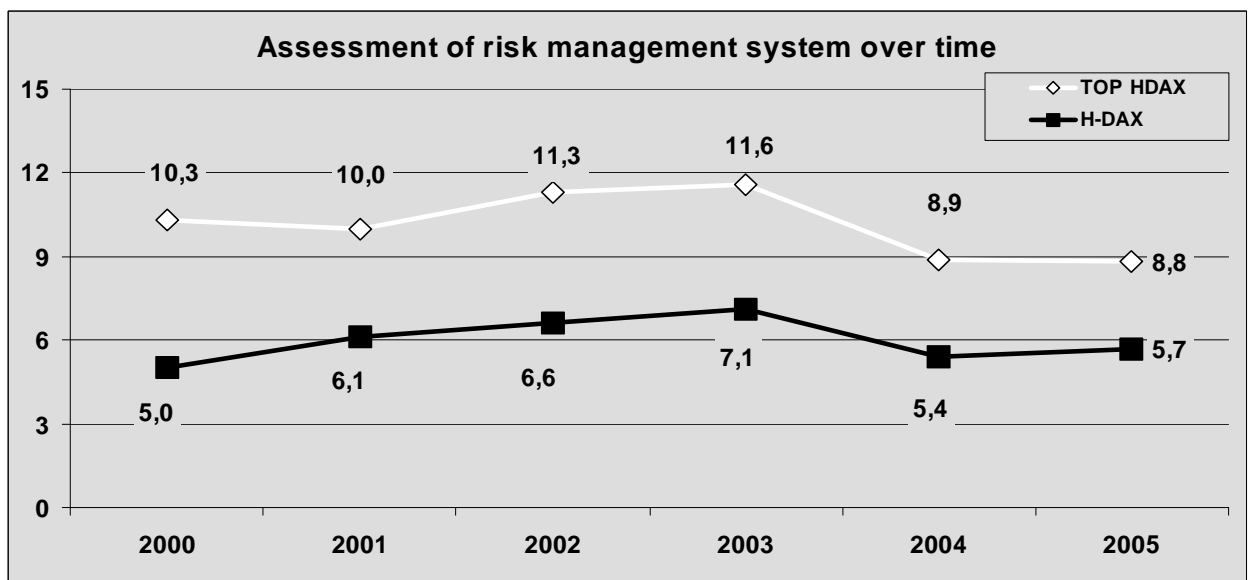


Figure 4: Risk management system assessment over time

The detailed results yield to a similar tendency as for information content: companies listed in the DAX30 achieve better results as companies in the other sectors, with an average of 7.2 compared to the MDAX with 5.6 and the TecDAX with 4.2 points⁸.

⁶ See annual report 2005, Deutsche Börse AG, p. 100; Hochtief AG, p. 74.

⁷ It has to be noted, that for the years after 2003, the criteria have been re-adjusted to measure the effects of the Bilanzrechtsreformgesetz which affects all annual reports after 31/12/2004 and to measure if the requirements of this law are being met.

⁸ This tendency can also be taken from the statistical analysis. See chapter 3.4.

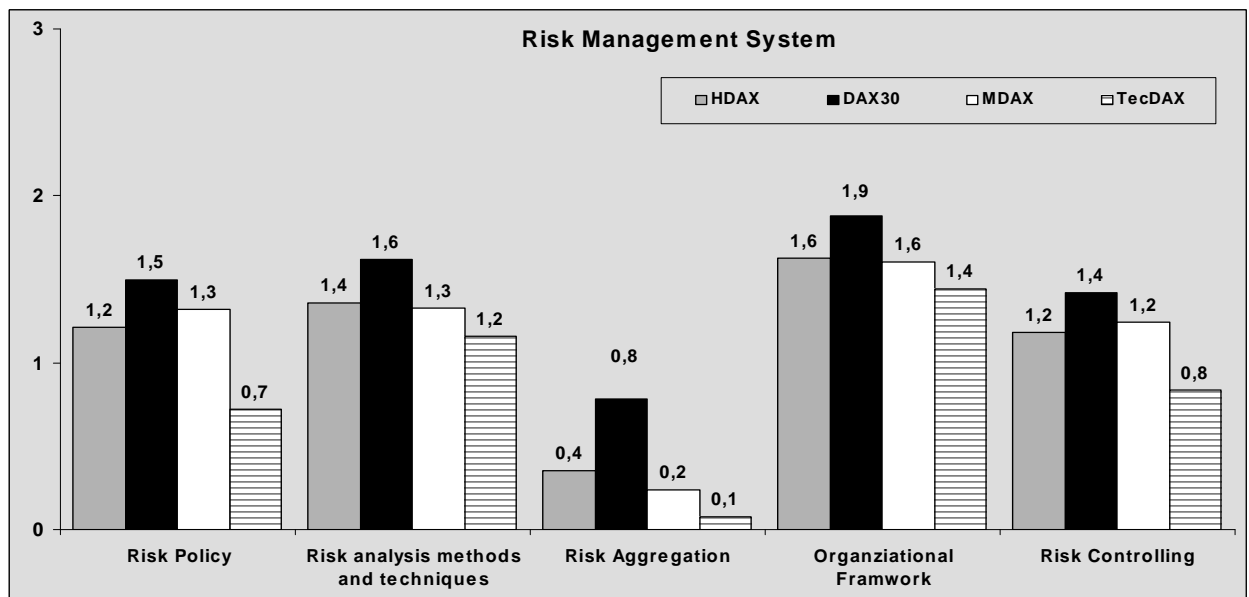


Figure 5: Assessment of risk management systems across the segments

Companies provide investors with sufficient information about the organizational framework and to a lesser extend with information about risk analysis methods and techniques and risk controlling. The disclosure of the risk policy almost reaches 50% of the possible maximum. Here, Metro as well as ThyssenKrupp can be seen as good examples. All three distinguish between core risks and peripheral risks and state that peripheral risks are transferred if possible and cheaper than bearing the risk⁹.

The most obvious weakness lies in the area of risk aggregation: Only three companies state a risk aggregation using simulation techniques – Deutsche Börse, Deutsche Telekom and SAP – all listed in the DAX30. Whether this is the actual picture or not can not be said. The findings from Hoitsch/Winter/Baumann (2006) would support that this is the actual picture. If this would be true, it must be heavily doubted that information regarding the risk exposure is accurate, as the dependencies between the different risks would have not been taken into account.

This can be shown for the DIS AG¹⁰. DIS discloses all relevant single risks on-line and also states the risk exposure in €m. The risk exposure is determined by simply adding up the net impact – size x probability – of all risks¹¹. Of course, this was certified by the auditors as being compliant with the requirements, which must be heavily doubted¹².

⁹ See annual reports 2005 Metro AG, p. 63 and ThyssenKrupp, p. 98

¹⁰ DIS AG is listed in the SDAX and was not part of the current study, but in previous years has fulfilled all requirements and gained the maximum score for their information content.

¹¹ A method that is widely used as we can tell from our own experience as risk management consultants. A recent study of German companies came to the result that only 20% of all companies use mathematically sounded simulation techniques like Monte-Carlo-Simulation. See also Ernst&Young (2006).

¹² The relevant requirements for the auditing of the risk management system can be found in the IDW Auditing standard 340 of the German Institute of Certified Public Accountants (Institut der Wirtschaftsprüfer, IDW)

3.3 Risk Analysis

As described above, all mentioned risks are grouped into several risk fields and six broader risk categories. The results for 2005 yield the following distribution:

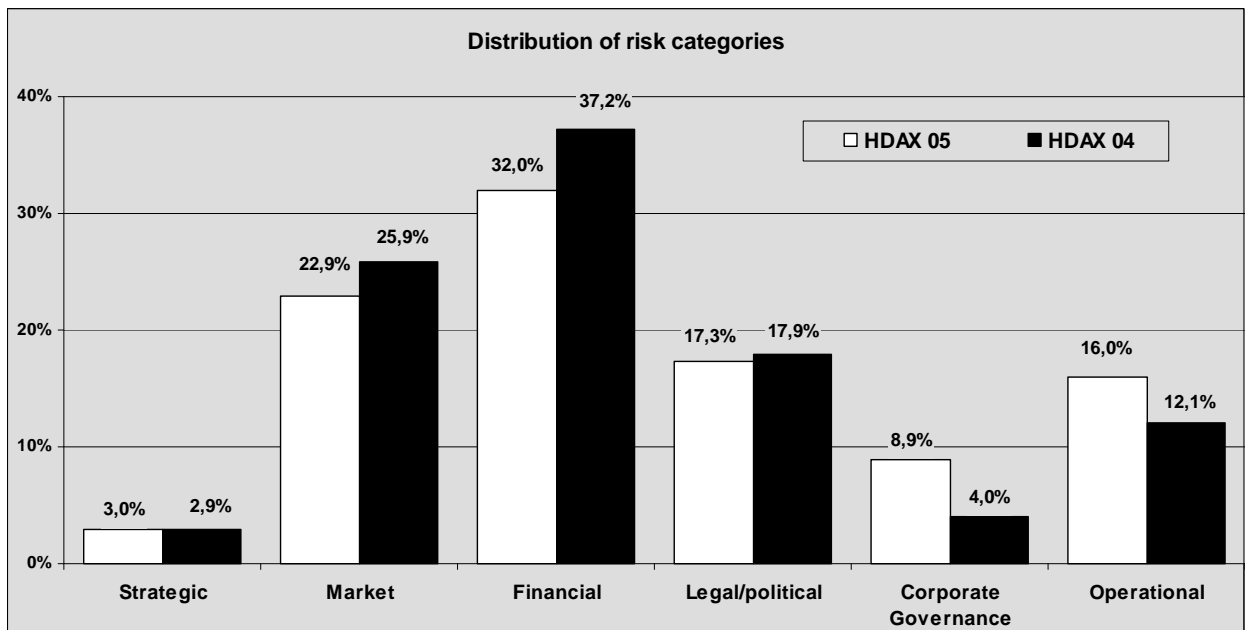


Figure 6: Distribution of risk categories for 2005 and 2004

As in the years before, financial risks dominate, but to a far lesser extend. Changes can be seen in the field of market and operational risks. Minor changes can be seen in the field of legal/political risks and strategic risks.

Especially in the case of strategic risk, it can be argued that despite the importance of these kind of risks, companies will not voluntarily disclose information about strategic risks due to their commercial sensitivity (Dobler 2005: 2). Although this may be true, some companies do report strategic risks. Loewe, a TV screen manufacturer, has disclosed several statements about the improper strategy in the past, focusing on standard TV screens instead of focusing on flat screen TVs and the problems of adjusting to the market demand¹³.

The most obvious change occurred in the field of corporate governance. The proportion of risks reported in this field have doubled since 2004, to the highest proportion since 2000. This could be due to the corruption scandals in Germany like the one at Volkswagen which could have lead to a more sensitive analysis of possible risks in this field and more openly disclosure.

Although there are some differences across the segments, these are not major ones, as can be taken from the below figure.

¹³ See the Loewe annual reports 2002, 2003 and 2004. Another example would be Cargolifter, an airship producer which went out of business in 2002 and has always stated that its business model is highly questionable. Cargolifter went out of business in 2002.

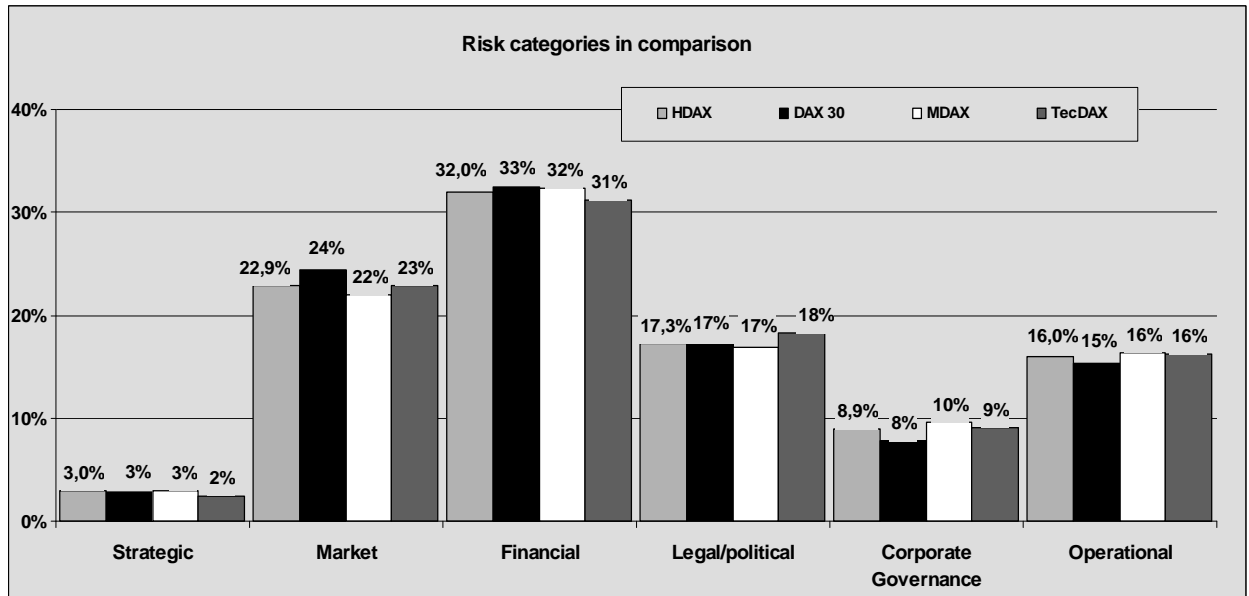


Figure 7: Distribution of risk categories across the segments

In total, 978 risks (risk fields) were taken from the risk reports, with an average of 10.6 risks per company. The vast majority was seen as being relevant (81%) and grouped into relevance three. 11.6 % of all risks were grouped under relevance two, 1% under relevance one.

Serious risks

From the sample of 978 risks identified, 33 were seen as being serious, belonging to the relevance four (“serious risk”) or five (“risk of insolvency”)¹⁴. In the following figure, the distribution of these risks is shown against the distribution of all risks reported.

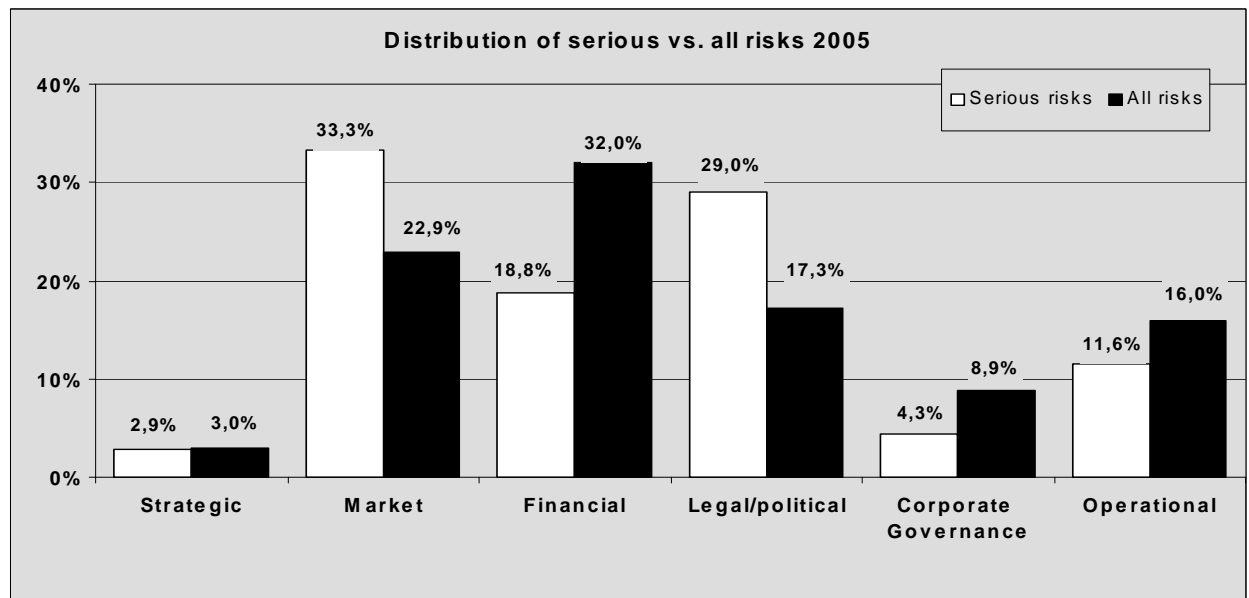


Figure 8: Distribution of serious and all risks in comparison

¹⁴ For 2005, no company reported risks that could lead to an insolvency.

When looking at the distribution of serious risks, the biggest threads according to the sample, derive from the market, followed by legal and political risks. One may argue that it is easier for managers to disclose risk that are outside his or her sphere of influence, i.e. external risks. This can be supported when looking at the frequently mentioned serious risks: legal and political framework (19%), economic risks (9%) and procurement risks (8%).

Most Frequently Mentioned Risks

Finally, the frequently mentioned risk fields were analysed, covering all reported risks. Risks from changes of interest rates or exchange rates, risks from derivatives, legal and political risks, procurement risks and economic risks are always under the first ten most frequently mentioned risks. The results for 2005 are compared with the results for 2004, as in the following table.

| No. 2005 | Proportion of total number of risks 2005 | Total number of quotes 2005 | Proportion of total number of companies 2005 | Risk category | No. 2004 | Proportion of total number of companies 2004 |
|----------|--|-----------------------------|--|--|----------|--|
| 1 | 8,4% | 82 | 89% | Interest rates and currency risks | 1 | 85% |
| 2 | 8,2% | 80 | 87% | Legal and political risks | 4 | 63% |
| 3 | 6,6% | 65 | 71% | Derivates | 3 | 67% |
| 4 | 6,3% | 62 | 67% | Procurement risks | 4 | 63% |
| 5 | 5,6% | 55 | 60% | Economic risks | 2 | 76% |
| 6 | 4,7% | 46 | 50% | Personnel risks | - | 15% |
| 7 | 4,4% | 43 | 47% | Market attractiveness and competitive forces | - | 35% |
| 8 | 4,3% | 42 | 46% | Risks from value chain | - | 6% |
| 8 | 4,3% | 42 | 46% | Risks from insolvency of customers | 7 | 42% |
| 8 | 4,3% | 42 | 46% | Product liability | 8 | 39% |

Table 1: Most frequently mentioned risks 2005 in comparison with 2004

As can be taken from the table, the first five most frequently mentioned risks have not changed significantly compared to 2004. The same is true for the last two risks in the table. Two risks have changed significantly: Risks from value chain and personnel risks.

Risks from value chain have been mentioned by 6% of the companies in 2004, compared to 46% in 2005. Personnel risks have been mentioned by 15% of the companies in 2004, but by 50% in 2005¹⁵.

¹⁵ It must be noted here, the risk field "personnel risks" has been newly introduced in 2005. It was made up of two risk fields in the past. The numbers for 2004 are the sum of these two risk fields.

3.4 Statistical Analysis

Below are the results for the statistical analysis, carried-out with SPSS

| Descriptive Statistics | | | | | |
|------------------------|----|---------|----------|---------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Cap | 92 | 107,50 | 60579,00 | 5520,38 | 11709,49 |
| no_pag | 92 | ,00 | 11,00 | 4,39 | 2,21 |
| info | 92 | 3,00 | 13,50 | 8,34 | 2,24 |
| rms | 92 | 1,00 | 12,50 | 5,71 | 2,31 |
| overall | 92 | ,13 | ,83 | ,47 | ,13 |
| equ_r | 86 | 3,20 | 90,70 | 42,27 | 18,94 |
| profit | 83 | 25,00 | 1000,00 | 502,50 | 235,59 |
| no_risks | 92 | 4,00 | 17,00 | 10,49 | 2,81 |
| Valid N (listwise) | 83 | | | | |

Table 2: Descriptive statistics for the variables

The following table shows the correlations for all the variables.

| | | Correlations | | | | | | | |
|----------------------|---------------------|--------------|--------|--------|---------|---------|---------|----------------------|---------|
| | | cap | no_pag | info | rms | overall | equ_r | Ertragsstärke_Profit | no_risk |
| cap | Pearson Correlation | 1 | ,153 | ,249* | ,232* | ,280** | -,230* | ,062 | ,358** |
| | Sig. (2-tailed) | | ,146 | ,017 | ,026 | ,007 | ,033 | ,579 | ,000 |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |
| no_pag | Pearson Correlation | ,153 | 1 | ,471** | ,253* | ,418** | -,028 | ,128 | ,291** |
| | Sig. (2-tailed) | ,146 | | ,000 | ,015 | ,000 | ,797 | ,250 | ,005 |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |
| info | Pearson Correlation | ,249* | ,471** | 1 | ,437** | ,844** | -,155 | ,089 | ,374** |
| | Sig. (2-tailed) | ,017 | ,000 | | ,000 | ,000 | ,153 | ,421 | ,000 |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |
| rms | Pearson Correlation | ,232* | ,253* | ,437** | 1 | ,849** | -,371** | ,016 | ,220* |
| | Sig. (2-tailed) | ,026 | ,015 | ,000 | | ,000 | ,000 | ,883 | ,035 |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |
| overall | Pearson Correlation | ,280** | ,418** | ,844** | ,849** | 1 | -,304** | ,062 | ,347** |
| | Sig. (2-tailed) | ,007 | ,000 | ,000 | ,000 | | ,004 | ,576 | ,001 |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |
| equ_r | Pearson Correlation | -,230* | -,028 | -,155 | -,371** | -,304** | 1 | ,471** | -,206 |
| | Sig. (2-tailed) | ,033 | ,797 | ,153 | ,000 | ,004 | | ,000 | ,057 |
| | N | 86 | 86 | 86 | 86 | 86 | 86 | 83 | 86 |
| Ertragsstärke_Profit | Pearson Correlation | ,062 | ,128 | ,089 | ,016 | ,062 | ,471** | 1 | ,035 |
| | Sig. (2-tailed) | ,579 | ,250 | ,421 | ,883 | ,576 | ,000 | | ,752 |
| | N | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| no_risk | Pearson Correlation | ,358** | ,291** | ,374** | ,220* | ,347** | -,206 | ,035 | 1 |
| | Sig. (2-tailed) | ,000 | ,005 | ,000 | ,035 | ,001 | ,057 | ,752 | |
| | N | 92 | 92 | 92 | 92 | 92 | 86 | 83 | 92 |

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

Table 3: Pearson correlation

4 Conclusion

The **information quality** of risk reports in Germany has improved since 2000, although at a low level. This is especially true for the disclosure of quantitative data. Why companies do not disclose more risk information may have two reasons: Firstly, the managers have no more and bet-

ter information about risks, secondly, they may have reasons not to disclose more information (Dobler 2005: 2). The risk management systems and the early warning systems can not provide managers with a perfect foresight. They should be good enough to be aware of the most important risks and their development. But as has been shown with the example of the DIS AG in chapter 3.2, some companies simply have no sound risk management system, that is they “collect” all kind of risks and simply add them up to get the risk exposure. Some even assess risks solely qualitatively.

Beside this, managers could have no incentives for the disclosure of more information. Especially when it comes to the disclosure of strategic risks, these could be withheld as they are very sensitive. Indeed, providing information about these risks, e.g. inconsistency of strategy or false forecasts of business opportunities, would be very important for companies and investors. But again, for managers to state that their strategy might not be suitable or inconsistent would simply not be advisable and is not incentive to them. Although it must be said that some companies have done so in the past.¹⁶ Another point could be that managers will not be willing to disclose quantitative information on the size of the risk exposure. This could lead to a situation where investors call for a distribution of capital as the risk adjusted capital needed could be much lower than the actual company's equity capital. This can be illustrated with the example of Hochtief. This company states a risk exposure of not more than 10% of the current EBT (€33m). This would mean it has an equity coverage ratio of more than 6.900% (€ 33m compared to € 2'200m of equity capital). If this would be the accurate picture, many investors could call for a distribution of equity capital and a substitution with loan capital as credits would be much cheaper¹⁷.

Looking at the results of this and other studies into the state of **risk management systems**, investors may ask if the companies risk exposure is assessed well-sounded as only three companies state a simulation technique. But this is at the heart of risk management. The aggregation of risks must be undertaken with a simulation technique as the correlation of risks – which can be modelled by risk simulation procedures– have explicitly to be taken into account to get the “real picture”. In particular, the capital requirements of a company's divisions (“risk-adjusted capital”, RAC) necessary for the calculation of the costs of capital can be determined: Capital (shareholders equity) in this sense is a “potential risk-cover“ and is thus required to cover at least the possible losses of the aggregated risk effects. Risk aggregation therefore creates the foundation for calculating the individual contribution of value for each company's division and of each investment. This is necessary for a value-based corporate management (Gleißner 2005: 484pp.), based on the company's risk exposure.

In conclusion, the results clearly show even under a mandatory reporting regime like the one in Germany, there may well be an information asymmetry when it comes to risk information due to e.g. Agency problems. To quote Dobler, “the comprehensive risk reporting is rather vague providing dissatisfying information content.” (Dobler 2005: 2)

¹⁶ See chapter 3.3 for an example.

¹⁷ Hochtief estimates the cost of equity capital at 9.1% and the cost of loan capital at 4.0%, both after taxes.

5 Appendix

5.1 Methodological Details

5.1.1 Information Quality

| P. | Risk categories | Risk Description | Risk Quantification | Description of Risk Treatment | Risk Exposure |
|-----|--------------------------------------|--|---|--|---|
| Aim | Higher Readability | Readers should be able to fully understand the risk. | Readers should be able to assess the dimension of a risk according to the company size. | Readers should be able to fully assess the quality of risk treatment measures. | Readers should be able to weight the risk exposure against the profits, e.g. Return on RAC. |
| 1 | max. three categories | Based on length of description | One concrete number or more than one number as an orientation. | Based on length of description | Qualitative description of risk exposure like "Overall no risks found that could lead to insolvency" |
| 2 | more than three categories | | More than one number within one category | | Above with a statement like ", accumulated risks with interactions of single risks taken into account." |
| 3 | well-structured, e.g. based on GAS 5 | Not if references to other sections not within the risk report are made. | More than one number in more than one category | Not if references to other sections not within the risk report are made. | Quantification of risk exposure, e.g. risk exposure as % of EBIT |

Table 4: Scheme for the assessment of information quality

5.1.2 Risk Management Systems

| P | Risk Policy | Risk analysis methods and techniques | Risk Aggregation method | Organizational Framework | Risk Controlling |
|-----|---|---|---|---|---|
| Aim | Readers should be able to fully understand the organization's risk policy | Readers should be able to assess the quality of risk analysis. | Readers should be able to assess the quality of the determination of the risk exposure. | Efficiency and effectiveness of risk management. | Readers should be able to assess the quality (of methods and techniques used in the process) of risk controlling. |
| 1 | Standards, limits, uniform, systematic approach, with some more details, Weighting of profit against risks in general | Key expressions like identification, assessment and documentation and some details with different methods and techniques. | Expressions like: Summarizing; aggregation; cumulation; aggregated; taken into account interactions; usage of scenario techniques AND more details OR combination of two of the expressions | Something like "integral part" | Subject to regular internal auditing. |
| 2 | "hurdle rate", weighting of risks vs. profits with some more information concerning risk management like targeted rating. 2,5 if value-based-management in the context of risk management is mentioned, e.g. derivation of cost of capital based on risk exposure. | Probability and size of risk taken into account OR one method from level three OR "simulation" | Probability and size of risk AND interactions of risks mentioned OR Simulation technique mentioned | Risk committees, risk owners, organisation chart inclosed | Risk maps, early recognition systems, definition of threshold values and related measures. |
| 3 | Distinction of core risks and peripheral risks. | Two from Value at Risk; planning derivation analysis; usage of different distributions | Aggregation method must be named, e.g. Monte-Carlo Simulation | Mention of risk management software | Like level two with concrete examples |

Table 5: Scheme for the analysis of risk management systems

5.2 Risk Categories and Risk Fields

Strategic risks

- ▶ Core statements, assumptions, consistency of corporate strategy
- ▶ Structure of business fields
- ▶ Thread of critical success factors and strategic goals

Financial Risks

- ▶ Financial stability and liquidity
- ▶ Interest rates and exchange rates
- ▶ Security and portfolio risks
- ▶ Derivative risks
- ▶ Risk of insolvency of customers
- ▶ Risks from shareholding
- ▶ Investment and financing risks
- ▶ Pension risks

Market risks

- ▶ Market trends: chances and threads
- ▶ Market attractiveness and competitive forces
- ▶ Thread of market position and competitive advantages
- ▶ Economic risks
- ▶ Procurement risks

Legal/Political and Socio-Economic Risks

- ▶ Legal and political environment
- ▶ Socio-economic trends
- ▶ Legal liabilities
- ▶ Product liabilities
- ▶ Risks from General Standard Terms and Conditions and contractual relationships

Corporate Governance

- ▶ Risks from organization structure and processes, competencies
- ▶ Risks from lack of motivation, organization climate, management style
- ▶ Personnel risks in general
- ▶ Risk culture and risk communication
- ▶ Incentive structure and payments system

Operational Risks, Risks from Value-Chain and Supporting Processes, Other Risks

- ▶ Risks from value chain
- ▶ Risks from supporting processes and other related risks
- ▶ Technical risks (availability)
- ▶ Damages to plant and equipment (exogenously influenced)
- ▶ Calculation risks
- ▶ Other risks (e.g. project risks)

5.3 Company Sample for 2005

| | | |
|---------------------------|---------------------------|--------------------------|
| ADIDAS AG | GEA Group AG | Pfleiderer AG |
| Aixtron AG | GPC Biotech AG | Premiere AG |
| ALTANA AG | Heidelberger Druckm. AG | ProSiebenSAT.1 Media AG |
| AWD HOLDING AG | Heidelberger Cement AG | PUMA AG |
| BASF AG | Henkel KGaA | Q-CELLS AG |
| BMW AG | Hochtief AG | QSC AG |
| BAYER AG | Hugo Boss AG | Rheinmetall AG |
| Bechtle AG | IDS Scheer AG | Rhoen-Klinikum AG |
| Beiersdorf AG | Infineon Technologies AG | RWE AG |
| Bilfinger Berger AG | IVG Immobilien AG | Salzgitter AG |
| CELESIO AG | IWKA AG | SAP AG |
| ComBOTS AG | Jenoptik AG | Schering AG |
| Conergy AG | K+S AG | Schwarz Pharma AG |
| Continental AG | Karstadt-Quelle AG | SGL Carbon AG |
| DaimlerChrysler AG | Kontron AG | Siemens AG |
| Degussa AG | Krones AG | Singulus Technologies AG |
| Deutsche Börse AG | Lanxess AG | Software AG |
| Deutsche EuroShop AG | Leoni AG | SolarWorld AG |
| Deutsche Post AG | Linde AG | Stada AG |
| Douglas Holding AG | Lufthansa AG | Südzucker AG |
| Drägerwerk AG Vz | MAN AG | T-Online AG |
| Deutsche Telekom AG | MediGene AG | Techem AG |
| E.ON AG | Medion AG | ThyssenKrupp AG |
| EPCOS AG | Merck KGaA | TUI AG |
| ErSol Solar Energy AG | Metro AG | United Internet AG |
| Evotec AG | MLP AG | Volkswagen AG |
| Fielmann AG | mobilcom AG | Vossloh AG |
| Fraport AG | MorphoSys | WINCOR NIXDORF AG |
| freenet.de AG | MPC AG | |
| Fresenius Medical Care AG | MTU Aero Engines Hold. AG | |
| Fresenius AG | Norddeutsche Affinerie AG | |
| Funkwerk AG | Pfeiffer Vacuum AG | |

5.4 Best Practise Companies 2005

The following companies belong to the best 25% of the sample in the respective segment information quality and risk management system. Names in *italic* indicate companies which belong to the best 25% in both segments information content and risk management system.

| | | |
|----------------------------|------------------------|---------------------------|
| Adidas AG | Heidelberger Cement AG | Norddeutsche Affinerie AG |
| DaimlerChrysler AG | <i>Hochtief AG</i> | <i>RWE AG</i> |
| <i>Degussa AG</i> | IWKA AG | Salzgitter AG |
| Deutsche Börse AG | Jenoptik AG | SAP AG |
| Deutsche EuroShop AG | Linde AG | Schering AG |
| <i>Deutsche Telekom AG</i> | Lufthansa AG | Siemens AG |
| Douglas Holding AG | MAN AG | ThyssenKrupp AG |
| <i>Fraport AG</i> | Metro AG | Vossloh AG |
| Fresenius AG | MLP AG | |
| Heidelberger Druckm. AG | Mobilcom AG | |

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