

# PAY-PERFORMANCE RELATIONSHIP IN GERMAN STATE-OWNED ENTERPRISES: EVIDENCE AND REFLECTION FOR ORGANIZATIONAL SUCCESS RESEARCH WITH UNDISTORTED AND “RIGHT” DATA

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## Abstract

Empirical studies show that state-owned enterprises (SOEs) are very important for society. The compensation of executive directors is crucial in the debate on effective, efficient and sustainable public service provision. Nevertheless, there are very few empirical studies in the international literature for SOEs - in contrast to the private sector.

This paper examines the pay-performance relationship of executive directors from 176 SOEs in eleven sectors by assessing 498 annual statements. As a methodological contribution, the paper illustrates the necessity of the adjustment of balance sheet data to obtain meaningful, undistorted performance ratios.

The findings show no significant link between financial performance ratios and the executive director compensation. There are no differences between the association with the compensation for ROE and ROA, although ROA would be a more meaningful indicator. A bonus-malus system is often required but not structurally practiced by a majority of SOEs. New insights show the need for additional research activities as well as the necessity for policy makers for clear rules for the compensation of executive directors in SOEs.

**Keywords:** Pay-Performance Relationship, Executive Director Compensation, Public Corporate Governance, State-Owned Enterprises

**JEL Classification:** G3, G38, L32, M4

## 1. MOTIVATION

In an effort to reform public service provision by the state and to consolidate public sector budgets there has been a trend in many countries to outsource public sector services away from the core administration. In the run of this development the sociopolitical and economic importance of state-owned enterprises (SOE)<sup>34</sup> has strongly increased with regard to the effectiveness, efficiency and quality of public service provision as well as for public finances (Grossi, Papenfuß, and Tremblay 2015, Florio and Fecher 2011, Grossi, Marcou, and Reichard 2010, OECD 2011 and 2005).

Newer and older studies for different countries demonstrate the significant role of SOEs (Aharoni 1981, Avsar, Karayalcin, and Ulubasoglu 2013, Bruton, Peng, Ahlstrom, Stan, and Xu 2015, OECD 2011 and 2005). Worldwide SOEs represent approximately 10% of global gross domestic product, 20% of global equity market value (Economist 2010 and 2012) and joint sales of \$ 3.6 trillion in 2011 (Kowalski, Büge, Sztajerowska, and Egeland 2013). The proportion of SOEs among the

Fortune Global 500 has grown from 9% in 2005 to 23% in 2014 (PWC 2015).

In Germany there are more than 16.000 SOEs with total sales of above EUR 358 billion (Federal Statistical Office 2012 and 2013b, p. 107f.). These companies employ 6.4 million employees, which represent approx. 20% of all employees in German enterprises (Federal Statistical Office 2013a and 2014). Further empirical studies for the local/municipal level in Germany show that the number of employees in SOEs and comparable independent organizational forms are as high as in the core administration or often even higher. Over 54% of public investments are not made by the core administration. Debts located in SOEs often exceed the debts of the core administration (Bertelsmann Foundation 2013 and 2008). Consequently, the separation of ownership and control have caused new requirements for the effective and efficient service provision by public authorities as well as for responsible public corporate governance (Florio and Fecher 2011, Whincop 2005, Verhoest, van Thiel, Bouckaert, and Læg Reid 2012, Grossi, Papenfuß, and Tremblay 2015, OECD 2015, 2011, and 2005).

<sup>34</sup> In accordance with the OECD SOEs are defined as enterprises where the state, regional governments or cities have significant control, through full, majority, or significant minority ownership (OECD 2005).

The compensation of executive directors<sup>35</sup> of SOEs is of special importance to sustainable public service provision (Whincop 2005, Farmer, Brown, Reilly, and Bevan 2013, Khumalo and Ngwenya 2012, OECD 2015 and 2005). The design of compensation schemes is a key factor that affects the behavior and awareness for acting in accordance with the overriding aims of the public authority. Moreover pay seems central to attract, recruit and retain managers for the public management field in the competition for talents with the private sector (Burgess and Ratto 2003, Swiss 2005, Weibel, Rost, and Osterloh 2010, Perry, Engbers, and Jun 2009, Khumalo and Ngwenya 2012, Jerry, Pan, and Tian 2011). Compensation also features central functional and/or dysfunctional incentives (Frey and Osterloh 2005, Carson, Lanier, Carson and Guidry 2000, Conyon 2006, Zhou 1999).

For the private sector there are numerous studies in scientific journals on the level, design and determinants of executive directors' compensation (i.a. van Essen, Otten and Carberry 2012, Hurst and Vos 2009, Fong, Misangyi, and Tosi 2010, Rost and Osterloh 2009, Clarkson, van Bueren, and Walker 2006, Elston and Goldberg 2003, Chen, Jeter, and Yang 2015). For SOEs, the literature only provides very few empirical studies. There are disproportionately more studies regarding private sector companies on the one hand or the core public administration on the other hand neglecting the important research object "SOEs" in the middle between the private and the public sphere (Bruton, Peng, Ahlstrom, Stan, and Xu 2015). Literature about the corporate governance of SOEs is in constant demand for more empirical studies (i.a. Bruton, Peng, Ahlstrom, Stan, and Xu 2015, Florio and Fecher 2011, Whincop 2005).

Moreover some studies in international journals for private companies and SOEs seem to use distorted raw data from annual financial statements or databases as dependent performance variable. Without adjustment the statistical results might be distorted and findings and conclusions erroneous.

Overall there is a relevant research gap this study intends to address.

The aim of this paper is to analyze the pay-performance relationship of executive director compensation in German SOEs. As a new methodological contribution, the paper strives to show the relevance for adjusting raw data from financial statements to obtain meaningful performance ratios in order to represent the company's real financial situation. This should provide perspectives for research on organizational success in several disciplines of the private, public and nonprofit sector around the world and in different accounting regimes.

Chapter 2 illustrates the German public corporate governance system, legal requirements and theoretical frameworks, and outlines existing empirical studies. Chapter 3 derives the hypotheses. The empirical design and the conceptual reflection of independent variables are presented in Chapter 4. Chapter 5 offers a conceptual contribution by outlining the necessity of raw data adjustment from annual statements. The results of the statistical

analysis are outlined and discussed in Chapter 6. Chapter 7 concludes with policy implications and research perspectives.

## 2. BASIC FACTS AND LEGAL REQUIREMENTS

### 2.1 German political system and public (corporate) governance system

The Federal Republic of Germany is a country in which the principles of subsidiarity and local autonomy play an important role. Each of the federal states has its own rules regarding the organization of local government. No general statement on the governance structure of local governments or local corporations can be given. Local autonomy in Germany is guaranteed in Article 28 of the constitution. Within their own area of responsibility a distinction must be made between voluntary and mandatory self-government tasks. The manner in which the municipality fulfils this task is on its own responsibility. In Germany, the largest numbers of SOEs are found at the local level (Bertelsmann Foundation 2013, Grossi and Reichard 2008). SOEs are often prevalent in public services of general interest and services of general economic interest. In some cities a special unit within the administration is in charging of managing local companies, while others outsource this task to a local corporation (holding management company).

In Germany, the corporate governance system is organized on the basis of a two-tier board system. The management board with the executive directors is responsible for the day-to-day management of the enterprise. The supervisory board with the non-executive directors supervises and advises the members of the management board and is involved in decisions of fundamental importance. Because of greater competencies and more operational influence in German two-tier system, the management board is of special importance (Von Werder and Talaulicar 2011). In SOEs, the supervisory board is appointed by the public authority. Its members are politicians, members of the administration, external experts from the economy and representatives of trade unions (German Federation 2009).

### 2.2 Legal requirements on compensation design

The level and design of the executive director compensation is frequently the focus of public and political debates. In the case of Germany, the debate led to the adoption of the Act on the Appropriateness of Management Compensation (VorstAG) in 2009. In particular, detailed design criteria were codified for listed companies. Accordingly, the total compensation of each executive director should depend on the performance of individual tasks as well as the financial situation and/or performance of the company. The German Corporate Governance Code (GCGC) for listed companies of the Government Commission emphasizes the importance of appropriateness criteria for the compensation as well (numeral 4.2.2).

However, most SOEs are unlisted companies incorporated as Limited, which accounts for why regulations in the German Stock Corporations Act

<sup>35</sup>The term executive director corresponds to the members of the first management level.

and recommendations of the GCGC do not apply to most SOEs. Thus, specific laws would be important, but do not yet exist in this way.

On a sub-legal level, the Public Corporate Governance Codes (PCGC) of the Federation, as well as different PCGC of cities, define criteria for the appropriateness of executive director compensation in SOEs. Central appropriateness criteria are the executive director's tasks, responsibility and performance, the success and the future prospects of the company as well as the customary practice regarding compensation within peer companies. Performance figures are of special relevance to measure the company's annual success and financial situation.

An analysis of PCGC in other countries illustrates that compensation also is a neuralgic field in different countries. Interestingly, the rules diverge strongly in important details, but the company's financial situation is frequently a standard determination criterion for the level and design of compensation (PCGC Austrian Federation numeral 9.3.6.4, Salzburg 4.11, Aargau 26.1).

### 2.3 Theoretical perspectives on the compensation of executive directors

Consideration of the literature shows that agency theory and managerial power theory are the dominant theoretical perspectives for assessing and explaining the level and design of executive director compensation (Chan and Gao 2014, Adut, Holder, and Ashok 2013, Mengistae and Xu 2004, Cahan, Chua, and Nyamori 2005, Shaoul, Stafford, and Stapleton 2012, Lambert, Larcker, and Weigelt 1993, Bruce, Buck, and Main 2005, Schmidt and Schwalbach 2007, Bebchuk and Fried 2003). Agency theory argues that there is frequently no target congruency between the involved actors as a result from separation of ownership and control (Shleifer and Vishny 1997).

Political decisions for the outsourcing of public services to SOEs have led to greater information asymmetries such as hidden characteristics, hidden information and hidden actions between numerous principals and agents including the general public, politicians, administration, supervisory and management boards (Hodges, Wright and Keasy 1996). Hence, there is a complex constellation of actors with multiple principal-agent-relationships and overlapping responsibilities in public corporate governance.

Information asymmetries enable agents to pursue their own interests, allowing for the possibility of opportunistic action. Institutional arrangements have to ensure that the agents act according to first principal interests, and that their performance is observable and evaluable.

From an agency theoretical point of view, the level and design of executive director compensation are an important monetary incentive for the agents to act in accordance with the interests of the principal, and therefore suggests a link between pay and performance.

Managerial power theory assumes, that in contrast to the "arm's length contracting model" of the agency theory, the supervisory board or shareholder meeting hardly engages in arm's-length transaction due to structural and socio-

psychological power mechanism of executive directors (Döscher and Friedl 2011, Bebchuk and Fried 2006 and 2003). The management by the executive director board without extensive control options available to the market or the shareholders (managerial control). If executive directors have more power over the supervisory board or shareholder meeting, they are better positioned to negotiate their level and design of compensation according to their own interests. This position provides incentives for executive directors to create compensation arrangements that support their interests, i.e. a higher level of compensation and a lower sensitivity to performance (Bebchuk and Fried 2006 and 2003, van Essen, Otten, and Carberry 2012), which leads to divergences in the pay for performance relation (i.e. pay without performance).

### 2.4 Existing empirical studies and research gaps

In the private sector, many German empirical studies (i.a. Sommer, Lachmann, and Judith 2013, Rapp and Wolff 2010, Schmid 1997) and international empirical studies (i.a. Chen, Jeter, and Yang 2015, Hüttenbrink, Oehmichen, Rapp, and Wolff 2014, Rost and Osterloh 2009, van Essen, Otten, and Carberry 2012, Bishop and Veliyath 1995, Core, Holthausen, and Larcker 1999, Bebchuk and Grinstein 2005) have already investigated the pay-performance relationship of executive director compensation. The majority of these scientific studies do not provide evidence of a concrete pay-performance relationship for private sector (Prinz and Schwalbach 2011, Tosi, Werner, Katz, and Gomez-Mejia 2000).

Furthermore several studies examine the effects of performance-based pay for public administrations (i.a. Perry, Engbers, and Jun 2009, Weibel, Rost, and Osterloh 2010, Atkinson, Fulton, and Kim 2014, Wood 1995, Ingraham 1993).

In contrast, there are very few empirical studies for SOEs in the literature regarding the effect of company's performance on executive director compensation. This review focused on the databases EBSCO Business Source Premier, WiSo-Net and ECONBIZ. The criterion for considering studies was an statistical analysis of the pay-performance relation for SOEs. Further studies were identified by "Source Search" (i.e. the references of identified survey articles/publications were systematically reviewed for additional empirical studies). Table 1 illustrates pay for performance studies for SOEs.

Most of these studies consider listed SOEs from the national government level of Asian countries (i.a. Minhat and Abdullah 2014, Cordeiro, He, Conyon, and Shaw 2013, Jerry, Pan, and Tian 2011, Kato and Long 2006). However, SOEs have the largest relevance on local level and most SOEs are not listed on stock exchanges (Bernier 2015 and 2014, Bertelsmann Foundation 2013 and 2008, Grossi and Reichard 2008). This study focuses SOEs on the local level to contribute to closing this important research gap.

Nine out of the eleven outlined studies on SOEs use financial performance ratios (measured by accounting and/or stock returns) to examine the pay-performance relation. The findings on a positive or negative pay-performance relationship and sensitivity differ. Whereas Minhat and Abdullah

(2014) find no evidence for a pay-performance relationship in listed Chinese SOEs, Cordeiro, He, Conyon, and Shaw (2013) show a significant positive association between ROA and the level of compensation in SOEs. Kato and Long (2006) identify statistically significant sensitivities and elasticities of annual cash compensation with respect to shareholder value in China's listed SOEs. The findings of Khumalo and Ngwenya (2012) show no positive relationship between executive director

compensation and SOEs performance in South Africa (measured with ROA).

Bhattacharyya (2013) and Zhuang and Xu (1996) examine compensation sensitivities dependent on non-financial performance figures, e.g. workforce, labor productivity and/or labor capital ratio.

The following chapter derives hypotheses for the pay-performance relationship for SOEs.

**Table 1.** Empirical studies examining pay-performance relationship in SOEs

<i>Author</i>	<i>Year Journal</i>	<i>Sample, Focus and Findings</i>
<i>Minhat/ Abdullah</i>	2014 Applied Economics	- 179 government-linked firms listed on Bursa Malaysia - Executive pay characteristics, equity ownership incentives and pay-performance relationship - No significant link between pay and performance
<i>Cordeiro/He/ Conyon/Shaw</i>	2013 Asia Pacific Journal of Management	- 1.378 Chinese SOEs and non-SOEs for 2001-2007 - Use of performance measures as determinants of executive pay in SOEs and non-SOEs - Accounting returns determining executive pay more than stock returns in SOEs; SOEs in high marketization regions and with better internal governance quality rely more on stock returns
<i>Fang/Weiqiang</i>	2013 China Economic Review	- Listed Chinese SOEs from 2000-2007; number of examined firms not available - Effects of market forces and market-oriented reforms on the pay-performance sensitivity - Executive pay increase with the progress of market reforms and pay-performance relation becomes more sensitive
<i>Bhattacharyya</i>	2013 Compensation & Benefits Review	- Two largest SOEs of India - Effects of performance-related pay on financial performance/productivity - No significant effect of performance-related pay on performance
<i>Ke/Rui/Yu</i>	2012 Review of Accounting Studies	- Sample of three different types of listed state-controlled Chinese firms; number of examined firms not available - Sensitivity of managerial cash compensation and executive turnover to firm performance - No pay-performance sensitivity differences between firm types; significant sensitivity of executive turnover to firm performance for all firm types
<i>Khumalo/ Ngwenya</i>	2012 Corporate Ownership and Control	- Ten SOEs of South Africa for 2009-2011 - Relationship between executive pay, financial performance and firm size - No link between compensation and financial performance; significant link between compensation and firm size variables
<i>Kato/Long</i>	2006 Economic Development & Cultural Change	- 937 listed SOEs (Shanghai and Shenzhen Stock Exchange) for 1998-2002 - Relationship between executive pay, corporate performance and the impact of ownership structure - Significant sensitivities and elasticities of annual cash compensation with respect to shareholder value
<i>Cahan/Chua/ Nyamori</i>	2005 Financial Accountability & Management	- 80 SOEs from New Zealand - Effect of supervisory board size/-composition and financial performance on executive compensation - Significant effect of board size/structure and director quality on executive pay
<i>Mengistae/Xu</i>	2004 Journal of Labor Economics	- 400 Chinese SOEs mainly held by municipalities over 10 years - Determinants of executive compensation - Executive pay sensitivity decreases with the variance of performance; performance sensitivity of executive pay increases with marginal return
<i>Craag/Dyck</i>	2003 Journal of Law, Economics and Organization	- 41 state-owned, 38 privatized and 33 listed firms from the UK - Relationship between compensation and financial performance - No relationship between compensation and financial performance, both before and after corporate governance reform
<i>Zhuang/Xu</i>	1996 Economic Change & Restructuring	- 800 Chinese SOEs for 1986-1991 - Effect of profit sharing on the company's financial performance - Significant positive effect of bonus payments on the total factor productivity and profitability

### 3. DERIVATION OF HYPOTHESES

For SOEs, financial and profitability goals play (apart from public service provision goals) a prominent role in the management and are of major interest to the municipality. The Municipality Laws of Brandenburg, Lower Saxony, Schleswig-Holstein, Rhineland-Palatinate, Hessen and North Rhine-Westphalia require at least a market-related return on equity from SOEs. Therefore, it is worthwhile to

investigate a potential link between financial performance and compensation (see chapter 4.3).

However, in an agency theoretical point of view, the ways to fulfill defined goals are not (or with limitations) observable by the decision-making bodies before conclusion of the compensation contract (i.a. Döscher and Friedl 2011, Bebchuk and Friedl 2003, Shleifer and Vishny 1997, Kahn and Sherer 1990, Abowd 1990). For a greater congruency between the executive director's actions and owners' interests, the level of compensation should be

sensitive to the performance and the future goal achievements of the executive director. To attract, recruit and retain talented managers the level of compensation should additionally consider the current abilities (Anderson, Banker, and Ravindran 2000). Therefore the company could offer a compensation contract consisting of a relatively constant fixed component over years (measured by current observable abilities) and a variable (performance-based) component calculated per year (dependent on further effort and achieved goals). Total compensation would ascend (descend) with an increase (decrease) in performance.

In corporate governance practice (i.a. PCGC German Federal numeral 4.3.1, Hamburg 4.2.5, Mainz 3.3.3/3.4.1), target agreement systems with incentive components and components with risk character in the compensation scheme (bonus-malus system) are widely mentioned with the aim to foster incentive-compatible behavior of executive directors in congruency with the firm's interests and to recompense executive directors for (un-) achieved (financial) goals. If executive directors profit from improving their company's revenue with a higher compensation, the compensation should accordingly decrease in case of lower revenue.

In some companies, there could be associations between (financial) performance and compensation. However, overall it can be assumed that there is no link between the performance and the level of compensation because of the problems described by agency and managerial power theory as well as often non-existent rules for a bonus-malus system and insufficient bonding power of existing sub-legal recommendations. There is a high likelihood to suspect that bonus-malus systems are not structurally implemented, which lead to the following two hypotheses:

**H1:** *There is no relationship between financial performance and the level of compensation.*

**H2:** *A bonus-malus system is often required but not structurally practiced by a majority of SOEs.*

From an agency theory perspective, the economic results have to be measured by figures, which are incentive-compatible with the owners' interests. Therefore, the figures must be meaningful and decision-useful in presenting the real economic situation of the SOE and achieved financial goals of executive directors. Neither one hit/extraordinary effects nor managerial financial/accounting policy should distort or influence the achievement of (financial) goals. Value- and market-based performance ratios are negligible indicators for the performance measurement of unlisted local/municipal SOEs. In this context and in the discussion of a possible link between pay and financial performance for SOEs, it is in particular very rewarding to investigate traditional performance ratios. Fundamental and widely-used accounting performance ratios are the ROE and ROA, which demonstrate (in)efficient management with disposable capital on different levels of aggregation. By focusing on ROE, the company's strategy and the executive director's goals are more concentrated on the return for ownerships, while ROA is oriented on the profitable input of company's total assets/capital.

If companies use relatively more debt financing to equity financing (financial leverage) – to a certain extent – the ROE is higher (see chapter 4.3 and 5). With regard to personal advantages and opportunistic behavior, executive directors have certain scope to manipulate capital structure to influence the ROE according to their interests. This potential (balance sheet) manipulation risk illustrates, that the ROA would be a more preferable indicator to measure the economic situation and profitability of SOEs in the context of compensation decisions due to the restricted level of possible interference.

However, in municipal laws, the ROE, measuring the 'market-related return on equity', is commonly used as financial goal/criteria for SOEs as well as in day-to-day operations. This leads to the assumption H3:

**H3:** *There is no difference between the link to the executive director's compensation for ROE and ROA, although ROA would be a more meaningful indicator.*

The following section outlines the methodology and empirical design.

## 4. METHODOLOGY, EMPIRICAL DESIGN AND CONCEPTUAL REFLECTION OF INDEPENDENT VARIABLES

### 4.1 Empirical setting and methodological design

At the municipal level, SOEs have a special relevance to the services for the public and are frequently in the political and public focus (see chapter 2.1).

The analysis includes 176 SOEs controlled by the thirteen capital cities of the German federal states and the three city-states. In comparison to the private sector data collection for SOEs is very much more complicated, because neither databases nor indices such as the DAX for listed companies exist and scholars need clear conceptual approaches to develop a sample.

Our hypothesis testing based on a cross-sector data sample. Aim of this empirical setting is to identify patterns and overriding insights for SOEs beyond single factors. For the formulated research questions and hypothesis this approach provides the most and best insights.

For enabling a cross sector analysis we identify one SOE per city in each of the following eleven sectors: energy, drink water provision/water disposal (abbr. water), municipal utilities, waste, public transport, housing, fairs and events, hospitals, health care and social services (abbr. social), culture, urban development.

1) Firstly based on an intensive and comprehensive internet research of the city websites all relevant and available aggregate holding reports were manually collected. An aggregate holding report is a report to the citizens and policy makers on the SOEs, investments, institutions governed by public law, and municipal companies, which are assumed to be a very reliable information base. According to the OECD the ownership entity should publish an annual aggregate holdings report on SOEs (OECD 2005, numeral V).

2) Secondly based on the aggregate holding reports and therein described corporate object, the enterprise enquiry and sector classification was realized. The sector classification based on a detailed examination of holding reports and companies' websites. Crucial for classification was the described corporate object.

3) The evaluation concluded all direct (1st degree) and indirect majority (at least 50%) SOEs (2nd/3rd degree). Some cities/countries administrate and control their SOEs by a unit in the core administration and hold the share of the companies directly. Other cities outsource this task to another SOE (holding management company). SOEs were also categorized as directly, if they are direct subsidiaries of a holding management company, which is specifically responsible for the control and management. So the best possible comparability is achieved for creating the sample, regardless of different institutional approaches. The participation rate for indirect subsidiaries was always calculated in the usual way, taking direct and indirect shares of parent, subsidiary or sub-subsidiary companies into account. Due to the lack of transparency of ownership structures and investment portfolios, the evaluation of indirect SOEs on the third level often requires complex internet research and/or analysis of the consolidated financial statements of the parent company.

4) If a city has several SOEs in a sector, the company with the highest total assets (business year 2012) was identified and included in the study sample. If the city had no company in a sector, the next two largest cities (according to number of inhabitants) in the respective federal state were analyzed for identifying a SOE. In some sectors, such as energy, drinking water provision/water disposal and waste, a sample of 16 companies could also not be generated by this approach due to privatization or the public service provision in other organizational forms than corporate enterprises.

5) In addition, the sectors were filled by SOEs of the cities of North Rhine-Westphalia to get as much data for the remuneration as possible. The reason for this is that North Rhine-Westphalia has a transparency law which demands the disclosure of the remuneration of the SOEs since 2009. Relevant SOEs of North Rhine-Westphalia's cities were identified and included in the sample according to the procedure mentioned in number 4). In addition not only the two largest but numerous cities (according to number of inhabitants descending) must be examined for identification and completion the sample of 16 SOEs per sector.

6) Then the available 498 annual financial statements of the 176 SOEs for the business years 2010, 2011 and 2012, were collected manually in the company register. According to Sec. 325 Para. 2 German Commercial Law SOEs are obliged to disclose their annual financial statement in the company register not later than twelve month after the end of the business year. Sometimes the companies need much longer for the disclosure; therefore this study can only consider the years until 2012. In addition to the annual financial statements we also collected all available aggregate holding reports of the cities for all years.

7) In a next step, all relevant variables and data were manually collected in the financial

statements and the aggregate holding reports. With this approach it was possible to get the remuneration data of 70, 77 and 86 companies (in total 233) for the three business years 2010-2012.

8) The final step concludes with the data screening. In public sector frequently one executive director is sometimes responsible for the management of two or more SOEs (dual-/multi-positioned executive director). In some cases the executive director is full-time manager of one and extra-official manager of another SOE. Most annual reports and aggregate holding reports do not inform about the full-time or extra-official function of these managers. To integrate only substantial compensations, SOEs with very small compensations below 30.000 EUR are not integrated in the statistical analysis. (This was the case for 23 SOEs). We made robustness tests for different barriers for instance with 20.000 and 60.000 EUR - the statistical results do not change and the general results/conclusions are the same.

Due to missing profit/loss statements the calculation of financial performance figures was not possible for additional 27 companies. Overall the study could include remuneration data from 183 firm years.

The following section outlines the empirical findings.

#### 4.2 Pay as dependent variable

For the statistical analysis we defined two dependent variables: the average total compensation and the development of average total compensation. The average total compensation per executive director is calculated by dividing the total executive board compensation by the numbers of executive directors. Total board compensation is defined by the sum of fixed and performance bases components as well as functional allowances, non-cash and fringe benefits. The fact that this approach does not differentiate between different board members and board functions could introduce a bias into the compensation data. Due to legal requirements most SOEs publish the compensation of their executive directors not in an individual form but in an aggregated sum of all individual salaries. Consequently, in most cases the average total compensation is the only available and reliable source for the statistical measurement. Because an increase of performance-based compensation leads to an increase of total compensation, it does not matter in this case if performance-based compensation is disclosed separately; the average total compensation is an appropriate proxy. Beyond that, this approach is in line with the approaches of other studies in leading journals (i.a. Andreas, Rapp and Wolff 2012, Elston and Goldberg 2003, Knoll, Knoesel, and Probst 1997, Schmid 1997).

The development of average total compensation represents the percentage change of the level of compensation from 2010 to 2011 and 2011 to 2012. A positive value shows an increase, a negative value a decrease in the compensation level. This calculation was executed only for those SOEs, which published compensation data for consecutive business years and had no changes in their executive board composition over time.

Executive directors of SOE in the sample earn on average EUR 214.139 per year (measured by mean, standard deviation 113.810)

#### 4.3 Performance as independent variable

SOEs are characterized by their dual goal system with public service provision goals and financial goals. In accordance with public laws, the provision of public services is constitutive to SOEs. However, regardless whether a focus on financial ratios is desirable and/or (legally) necessary it cannot be denied that financial ratios play a very important role in daily life for the management and control of and in SOEs. Municipality laws often formulate specific financial objectives, such as a market-related return of equity<sup>36</sup>, a distribution of profit to the budget of the core administration<sup>37</sup> or/and a reduction of the municipal grants to compensate losses<sup>38</sup>. Cut back discussions and scarce resources force all decision-making bodies in all sectors of SOEs to consider financial ratios, the reduction of received subsidies/grants, respective the minimization of (operating) cost reimbursements, and a more efficient use of disposable capital.

As outlined nearly all studies for SOEs use financial figures to examine associations between performance and the level of compensation (Minhat and Abdullah 2014, Cordeiro, He, Conyon, and Shaw 2013, Khumalo and Ngwenya 2012, Jerry, Xiaofei and Gary 2011, Kato and Long 2006, Cahan, Chua, and Nyamori 2005, Mengistae and Xu 2004, Cragg and Dyck 2003).

For assessing the pay-for-performance relationship in private companies (i.a. Rapp and Wolff 2010, Core, Holthausen, and Larcker 1999) and SOEs (i.a. Jerry, Xiaofei, and Gary 2010, Kato and Long 2006) several studies use value- and market-based performance indicators, such as Tobin's Q, total shareholder value, stock market return. For the unlisted local/municipal SOE value- and market-based indicators are frequently unimportant and negligible in contrast to traditional financial (accounting) performance ratios. This study examines financial performance ratios, which are assigned special relevance for SOEs both in research and in practice.

Return on Equity (ROE): The return on equity is measured by the division of ordinary annual profit and the adjusted financial equity (for calculation of single components see chapter 5 and appendix, annex 2 and 3). The ratio is frequently used as a performance indicator to quantify entrepreneur's returns (Gräfer 2012). It is considered as an efficiency indicator to measure how the company managed with (public) shareholders' deposits (Baetge, Kirsch, and Thiele 2004). The Municipality Laws of Brandenburg, Lower Saxony, Schleswig-

Holstein, Rhineland-Palatinate, Hessen and North Rhine-Westphalia require at least a market-related return on equity from SOEs. The ROE depends largely on the capital structure (leverage effect) and the expenses for interests (Coenenberg 2014).

Return on (Total) Assets (ROA): The ROA is measured by the division of ordinary annual profit plus interest expense and the adjusted financial total assets (for calculation of single components see chapter 5 and appendix, annex 2 and 3). In comparison to the ROE, the ROA is a more suitable indicator to interpret the performance of enterprises because it is independent of the capital structure (Baetge, Kirsch, and Thiele 2004, Gräfer 2012, Coenenberg 2014). If companies use relatively more debt financing to equity financing the ROE is higher (financial leverage), because the interest payments to outside creditors are tax deductible and dividend payments are not. However, an excessive indebtedness leads to higher cost of debt (risk premium) and the ROE decreases (Coenenberg 2014). Especially for loss-making SOE, which frequently require subsidies, but also for profitable SOEs the efficient input of company's total assets/capital are of special interest beside the the realization of maximum (shareholder) return. With regard to frequently cash transfers, in particular shareholder (public authority) debts, cost reimbursements and equity compensation due to long-time shortfalls, it is additional reasonable and important to measure the SOE's success with regard to total invested capital.

#### 4.4 Firm characteristics as control variables

Organizational Complexity: We define the organizational complexity of the firm as the natural logarithm of total assets. This approach follows the proxy used in other studies (i.a. Khumalo and Ngwenya 2012, Andreas, Rapp and Wolff 2012, Rapp and Wolff 2010). As in other studies, the firm size variable was logarithmically transformed for the statistical operations to smooth the exponential gradient into a linear function (i.a. Grusky 1961, James and Soref 1981, Core, Holthausen, and Larcker 1999, Rapp and Wolff 2010). Thus, the partially high scattering variables fulfill the requirements regarding content and statistical methods.

Economic situation: SOEs can be split into two groups with profitable and loss-making SOEs. While profitable companies regularly make profit, loss-making companies are in urgent need of subsidies, grants, contributions and/or cost reimbursements to fulfil their public service provision. A binary coded variable indicates whether the SOE belongs to a loss-making or profitable sector. The classification as profitable or loss-making was made on the mainly positive or negative distinctness of ROA in the business years 2010, 2011 and 2012.

### 5. ADJUSTMENT OF RAW DATA FROM ANNUAL STATEMENTS: A METHODOLOGICAL CONTRIBUTION

Various disciplines in both the private and the public/nonprofit sectors use indicators from financial statements and annual reports for empirical analysis of organizational success. For these purposes, accounting literature emphasizes

<sup>36</sup> See Sec. 107 Municipality Law of Brandenburg, Sec. 121 Para. 8 Municipality Law of Hesse, Sec. 75 Para. 2 Municipality Law of Mecklenburg-Vorpommern, Sec. 85 Para. 3 Municipality Law of Rhineland-Palatinate, Sec. 107 Municipality Law of Schleswig Holstein, Sec. 75 Para. 2 Municipality Law of Thuringia, Sec. 107 Para. 1 No. 1 Municipality Law of North Rhine-Westphalia, Municipality Law of Baden-Württemberg.

<sup>37</sup> See Sec. 121 Para. 8 Municipality Law of Hesse, Sec. 149 Para. 1 Municipality Law of Lower Saxony, Sec. 97 Para. 3 Municipality Law of Saxony, Sec. 116 Municipality Law of Saarland, Sec. 102 Para. 3 Municipality Law of Baden-Württemberg.

<sup>38</sup> See Sec. 87 Para. 4 Municipality Law of Rhineland-Palatinate, Sec. 102 Para. 3 Municipality Law of Baden-Württemberg.

the necessity of an adjustment of the annual balance sheet figures to get meaningful parameters (Baetge, Kirsch, and Thiele 2004, Coenberg 2014, Gräfer 2012, Lachnit 2004, Küting and Weber 2012). The objective of financial statement analysis is the generation of decision-relevant information about the financial situation of the enterprise. For appropriate estimates, the economic situation must not be distorted due to different exercises of legal accounting options. Though comparability is sought by the uniform adjustment of creation, disclosure and valuation options during the creation of the so-called standardized balance sheet (for adjustment steps see appendix, annex 2), there are no legal requirements for this purpose and no absolute uniformity of approaches in the literature. The adjustment steps in this study are based on the fundamental works of Baetge, Kirsch, and Thiele (2004), Coenberg (2014), Gräfer (2012), Lachnit (2004), Küting and Weber (2012) for German Commercial Law. Also for other international accounting standards and systems (IFRS, US-GAAP) a uniform adjustment of legal options is frequently demanded (Wahlen, Baginski, and Bradshaw 2014, Wild and Subramanyam 2015).

The income statement corresponding to German Commercial Law is inadequate for the analysis of income/loss sources and profitability analysis because numerous values are distorted by items belonging to a further or past period (period relatedness), to an associated company (company affiliation) or/and results of unique and extraordinary effects (sustainability). In addition, the income statement is determined by accounting and valuation measures and neither shows the actual profit nor management success. As part of the balance sheet analysis, the commercial income statement is subdivided in four components to meet the described criteria: extraordinary results, valuation results, ordinary operating results and financial results (for calculation of single components see appendix, annex 3). The ordinary annual result is the sum of the ordinary operating and financial results and is a decision-useful, sustainable performance indicator apart from accounting policy differences and one-hit effects.

Especially for the executive directors of loss-making companies the achievement of an annual result close to zero is an often demanded financial target. The consequence of failing this target is in almost every case the subsidization of the SOEs with public resources.

To generate an indicator without any structural distortion due to financial connections/flows between core administration and SOEs subsidies, grants, contributions and/or cost reimbursements are ignored by calculating the annual ordinary (operative) result. To illustrate the relevance, appendix, annex 1 shows the big differences of distorted and undistorted performance for SOEs by outlining representative examples. For instance the 'WISTA Management GmbH' publishes an annual profit of EUR 2.616.142. The adjusted annual result turns down to -4.426.689 EUR at about -270%. The ROE turns from 5.7% to -3.7%; the ROA from 1.0% to -1.4%.

The examples illustrate, that the data adjustment is of great importance in all studies using raw data from annual financial statements.

However, there is no trend towards a predominantly better or worse annual result after the adjustment neither for the performance ratios. Furthermore, some positive results turn into a negative vice versa after adjustment. These effects on organizational success and profitability prove the necessity of uniform adjustment of creation, disclosure and valuation options. In public sector the raw data adjustment is also crucial for all economical independent units publishing financial statements, i.e. certain agencies. The financial statements of nonprofit organizations and core administrations require an extensive adjustment as well. Especially SOEs and other public agencies, which are in urgent need of subsidies, grants, contributions and/or cost reimbursements to fulfil their public service provision show considerably deviations between undistorted and distorted financial ratios. Furthermore unlisted SOEs on the local level have relatively more opportunities for accounting policy as listed private companies because the focus of financial analysts is much lower. Additionally, SOE are less effected of market pressure, competition and wide control options of various private for-profit shareholders.

However, several studies in various research fields and of different sub-disciplines seem not to adjust financial figures in a sufficient manner, what could influence the results/findings/conclusions (Gorton and Schmid 2000, Bassen, Kleinschmidt, Prigge, and Zöllner 2006, Bauer, Guenster, and Otten 2003). Pay-performance studies for the private sector (Bishop and Veliyath 1995, Clarkson, van Bueren, and Walker 2006, Core, Holthausen, and Larcker 1999) and SOEs (Khumalo and Ngwenya 2012, Jerry/Pan/Tian 2011, Cahan, Cahan, and Nyamori 2005) mention performance ratios, but the calculation and necessary adjustment is not described in detail. Some studies on SOEs (Kato and Long 2006, Mengistae and Xu 2004) use figures from databases, which might be adjusted by the institutional data provider; however it is not clear and adequate communicated. All studies should at least provide brief references if and how the used raw data from financial statement were adjusted before statistical analysis.

As methodological contribution, this subsection shows the relevance for adjusting raw data from financial statements to provide perspectives for organizational success research.

## 6. EMPIRICAL RESULTS

At first, we examine the relationship between the level of performance and the level of compensation using multivariate regression analysis. The requirements of a regression analysis were checked and are fulfilled.

The annual financial statement contains both the financial performance and the compensation for preceding business year. The business year matches the year of compensation because the supervisory board or the shareholder meeting should decide the performance-based compensation with regard to the preceding business year. Table 3 presents the results. We divided the statistical analysis into two models because ROI and ROA can not be calculated in one model. It is striking that both the ROE as well



as the ROA have no significant effect on the level compensation.

Additionally the table shows that the level of executive director compensation is systematically associated with the control variables organizational complexity and economic situation. The organizational complexity has a highly significant positive effect on the compensation level. SOE from profitable sectors show significantly higher executive pay. These results are robust for both models.

Based on the regression analysis, it can be shown that the suspected incoherence of performance ratios and level of compensation can be confirmed within H1.

In a second step we examined the development of performance and compensation. For this we analyze the compensation sensitivity, i.e. the percentage change in total compensation per percentage increase/decrease in performance ratio. Looking at the data for the development of executive director compensation without any distortion due to changes in executive board compositions or non-consecutive publication of compensation data we can use data for 76 SOEs for this sub-question.

The performance effects on the level of compensation are not significant and very weak (Table 4). Neither the development of ROA nor of ROE affects the compensation development on a statistically significant level (Table 4).

**Table 3.** Relationship between the level of performance and compensation

<i>Financial Performance</i>	<i>Compensation</i>	
	<i>A</i>	<i>B</i>
<i>Return on Equity</i>	-0.0836 (-1.20)	---
<i>Return on Assets</i>	---	-0.0789 (-1.13)
<b><i>Control Variables</i></b>		
<i>Organizational Complexity</i>	0.5959*** (8.83)	0.6015*** (8.87)
<i>Economic Situation</i>	0.1857** (1.31)	0.1815** (1.28)
<i>Adjusted R<sup>2</sup></i>	0.349	0.338

Significance level: \*\*\* (1%), \*\* (5%) and \* (10). (N = 183)

**Table 4.** Regression analysis of the development of performance and development of compensation

<i>Financial Performance</i>	<i>Compensation Development</i>	
	<i>A</i>	<i>B</i>
<b><i>Development</i></b>		
Development ROE	-0.077 (-0.66)	---
Development ROA	---	-0.169 (-1.48)
<i>Adjusted R<sup>2</sup></i>	0.008	0.016

Significance level: \*\*\* (1%), \*\* (5%) and \* (10). (N = 76)

With regard to the outlined requirements for a bonus-malus system, the analysis of compensation sensitivity illustrates, that neither the development of ROE nor ROA has a statistically significant effect on the development of average total compensation. Focusing on the data, there were 54 increases and 14 decreases in compensation; 31 increases and 43 decreases in performance (measured by ROA) across periods. In some cases, the total compensation increased, although the financial performance has decreased vice versa. In 30 cases (40.5%), there was a compensation increase although there was a performance decrease between 2010 to 2011 and 2011 to 2012. There were only 9 cases (12.2%) for a parallel total compensation and performance decrease; in two cases (2.7%), total compensation remained constant and performance decreased.

Because the data give some reasons to assume that bonus-malus approaches are structurally not (or with limitations) used in SOEs, H2 can be confirmed.

## 7. DISCUSSION

The findings of this study show no significant relationship between the level and development of financial performance and compensation, in contrast to the other few compensation studies for SOEs (Cordeiro, He, Conyon, and Shaw 2013, Jerry, Pan, and Tian 2011, Cahán, Chua, and Nyamori 2005, Kato and Long 2006). The notably non-relationship between financial performance ratios in our study is comparable to the findings of Khumalo and Ngwenya (2012). The very weak impact of financial

performance on the level of compensation could result from a certain power or special influence of executive directors and/or insufficient target agreements. Better positioned executive directors may create compensation arrangements with a higher level of compensation and a lower sensitivity to performance. According to the findings, managerial power theory could be relevant to some of the examined SOEs and sectors.

Regarding the requirements in municipal laws, the focus on ROE as a management ratio and a parameter for the level of compensation is understandable. However, as explained the ROE is very sensitive to modifications in capital structure due to the leverage effect. In this context, the ROA should be a more focused indicator of financial performance. Especially with regard to frequent cash transfers between SOEs and the public authority, it is both reasonable and important to measure the annual success more in consideration of total invested capital. This would help to assess the sustainable performance of the SOE and to support adequate decisions on the level and design of executive director compensation.

With the outlined approach and results the study provides insightful and relevant findings. As with all studies, however, this study has its limitations. The number of companies and financial statements evaluated are significantly greater in comparison with some other published studies for the field. Though some findings are meaningful, some statistical results must be interpreted with caution because of the relatively low number of disclosed data.

The relationship between the independent and dependent variables could be affected/biased by unconsidered endogenous variables. Additionally, the independent variables represent only financial performance figures. Besides, company properties or personal characteristics may affect the level of compensation.

SOEs are characterized by their dual goal system with public service goals and financial goals. Although the analysis of financial ratios is relevant (see chapter 4.3) and provides meaningful insights, non-financial performance ratios for public service provision are particularly important. An exclusive control focus on financial figures can lead to dysfunctional effects on the public service provision. However, very often SOEs and public authorities do not report performance ratios for the public service provision goal for the general public. Gathering data for the public service goal is a big challenge for all large-scale scientific studies covering many different sectors in this field at the moment. Nevertheless, for upcoming research it would be beneficial to identify meaningful – and in the future perhaps publicly available – performance data for the public service goal and integrate them into forthcoming studies.

## 8. CONCLUSION, POLICY IMPLICATIONS AND RESEARCH PERSPECTIVES

The findings show no significant link between financial performance ratios and the executive director compensation. There are no differences between the association with the compensation for ROE and ROA, although ROA would be a more meaningful indicator. A bonus-malus system is often

required but not structurally practiced by a majority of SOEs.

Overall, the results indicate that policy initiatives in this field should integrate SOEs in a more specific way. Many of the previously mentioned laws and policies only apply to private sector companies – especially listed companies – and do not include or mention SOEs. Through the Act on the Appropriateness of Management Compensation, the German Policy Maker established a standard for listed companies with principles for governing compensation of the executive director board (§ 87 German Corporation Act/GCA).

There are very good reasons to use exactly the wording of § 87 and only change some terms with regard to the context of SOEs. Instead of “supervisory board”, it should for instance be written that the “responsible company body” shall ensure that such aggregate compensation bears a reasonable relationship to the duties of such member and as well as the condition and performance of the company. This is necessary because in SOEs, in the form of a limited company, the shareholder meeting with the mayor is often responsible for determining the compensation. However, most of the standards/formulations developed in approved law-making processes also can and should be used in laws which pertain to SOEs.

Moreover, the requirements of § 87 GCA should be written in all public corporate governance codes in order that SOEs can already begin using a self-regulation approach.

In addition, the rules of § 87 GCA should be written in the statutes of each SOE to make them binding, effectual and justiciable for SOEs. As a first step, the shareholder meeting of every SOE could also make a recorded decision to apply this paragraph, which would also generate binding power.

A PCGC can additionally inform which actors have which property rights. In the compensation decision processes for SOEs, it is often not clear enough between the total supervisory board committee, supervisory board chairman and the shareholder meeting who is exactly responsible for the level and structure of the executive director's salary. A PCGC can define these responsibilities very clearly because this self-regulation approach offers more flexibility than laws.

For the prevailing discussion the study provides new and valuable knowledge to numerous actors such as politicians, administration, supervisory/management boards, auditors, consultants and stakeholders.

As shown in this study, all actors should adjust the raw data from annual statements, especially when considering SOEs.

With regard to future research, gaining comparative insights about more countries would be a particularly fruitful objective. There are multitudinous studies for the contents of this paper for private sector enterprises, yet in comparison, there is still very little empirical research about SOEs. Strengthening comparative approaches in this field seems especially valuable as a means of gathering new ideas, sharing knowledge and of benefiting from the insights of other countries and regions for improving the effectiveness and

efficiency of public service provision. Besides a fixed salary, a testing of theoretical pay for performance assumptions in the specific context of SOEs would be especially rewarding. There is nearly no evidence, whether pay for performance, which is recommended by agency theory, really supports a more effective, efficient and sustainable fulfillment of public services in SOEs, or if empirical findings show such strong dysfunctional effects that this would give reasons to only work with fixed salaries and to move away from performance-based pay.

In the intense debate on agency theory and stewardship theory, it would be rewarding to better understand with empirical support if/under which circumstances responsible actors should obey the remuneration recommendations of agency theory or if/under which circumstances the different recommendations of stewardship theory. In contrast to research on private companies, there are nearly no empirical tests of the explanatory power of the theories for SOEs operating in a specific public service provision context. Empirically, it is an open question which level of salary is necessary to attract and retain talented executive directors for SOEs and how it affects effectiveness, efficiency and sustainability of public service provision.

The empirical data about the relevance of SOEs prove that a sustainable public service provision and budget consolidation in many areas cannot be appropriately realized without a powerful governance and management of SOEs. This substantiates a need for future research to generate more empirical insights for SOEs.

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## APPENDIX

## Annex 1. Deviations of adjusted (undistorted) and unadjusted (distorted) ratios (exemplary)

SOE	Unadj. .ROE	adj. ROE in%	Diff. abs.	Diff. in %	Unadj. .ROA	adj. ROA in %	Diff. abs	Diff. in %	unadj. AP	adj AP	Diff. in %
Werkstatt für angepasste Arbeit Düsseldorf GmbH	6,2	-284,7	-290,8	-4704,8	2,5	-138,7	-141,2	-5559,6	537.422	-29.505.832	-5590,3
WISTA-Management GmbH	5,7	-3,7	-9,4	-165,2	1,0	-1,4	-2,4	-238,0	2.616.142	-4.426.698	-269,2
Klinikum Bremen Mitte gGmbH	-127,5	-28,4	99,1	-77,7	-8,0	-5,5	2,5	-31,5	-25.556.179	-21.741.064	-14,9
Stadtentwässerungsbetriebe Köln AöR	3,0	0,9	-2,1	-69,5	1,0	2,6	1,5	146,9	21.195.486	8.070.710	-61,9
Messe Berlin GmbH	9,0	5,0	-4,0	-44,1	3,1	2,0	-1,1	-34,7	4.602.000	2.701.000	-41,3
Städtische Bühnen Frankfurt am Main GmbH	-418,4	-280,2	138,2	-33,0	-121,4	-118,5	2,9	-2,4	-63.772.428	-62.921.428	-1,3
Städtische Werke Magdeburg GmbH & Co. KG	25,9	25,6	-0,3	-1,2	11,1	13,5	2,4	21,8	50.364.000	56.886.000	12,9
AVA Abfallverwertung Augsburg GmbH	13,7	16,1	2,4	17,5	3,6	7,6	4,0	111,4	3.299.000	3.875.000	17,5
Stuttgarter Straßenbahnen AG	-12,2	-15,2	-3,1	25,1	-3,0	-3,0	0,1	-2,0	-18.490.000	-23.136.000	25,1
Stadtwerke Erkrath GmbH	10,3	15,6	5,4	52,3	5,5	9,5	4,0	72,5	3.158.002	5.147.911	63,0
GWG Städtische Wohnungsgesellschaft München mbH	0,6	1,1	0,4	64,2	0,5	1,9	1,4	297,7	4.939.921	3.611.825	-26,9

"Adj." or "unadj." plus ratio shortcut describes the adjusted and unadjusted ratios; "Diff. abs." and "Diff in %" means absolute and percentage deviation/difference, AP stand for annual profit. Sorting is based on the "Diff in %" of ROE, in descending order.

## Annex 2. Adjustment Steps of Balance Sheet Data

Balance Sheet Equity
+ 60% Special Items with an Equity Portion
+ 60% Special Items for Investment and Income Subsidies
+ Investment Grants
+ Accruals for Expenditure (Sec. 249 Para. 2 German Commercial Law)
- Business Start-Up and Expansion Expenses
- Derivative Goodwill
- Outstanding Contributions (Sec. 272 Para. 1 German Commercial Law)
- Deferred Taxes on Assets Side
+ Deferred Taxes on the Liabilities Side
- Discount
- Assets Arising from the Overfunding of Pension Obligations
= <b>Adjusted Equity</b>
Balance Sheet Liabilities
+ 40% Special Items with an Equity Portion
+ 40% Special Items for Investment and Income Subsidies
+ Accruals for Expenditure (Sec. 249 Para. 2 German Commercial Law)
+ Received Down-Payments within the Current Assets
+ Deferred Income Items
= <b>Adjusted Liabilities</b>
Adjusted Equity
+ Adjusted Liabilities
= <b>Adjusted Total Assets</b>

## Annex 3. Adjustment Steps of Income Statement Data

Sales
+/- Change in Inventory
+ Company-Produced Additions to Plant and Equipment
- Grants/Contributions/Cost Reimbursements/Donation
- Material Expenditure
- Personelle Expenditure
- Depreciations
+/- Other Operating Income/Expenditure
-/+ Income/Expenditure from the Reversal/Addition of Accruals and Special Items
-/+ Income/ Expenditure from Allowances and Write-Offs
-/+ Non-Periodic Income/Expenditure
- Appreciations
- Other Taxes
= <b>Ordinary Operating Profit</b>
Profits from Transferred Income
- Expenditure from Transferred Losses
+/- Income/Expenditure from Participations
+ Income from Financial Asset Securities and Loans
+/- Interest and similar Income/ Expenditures
+ Depreciations on Financial Assets and Securities classed as Operating Assets
= <b>Ordinary Financial Profit</b>
Extraordinary Income
- Extraordinary Expenditure
+ Income from the Reversal of Accruals
- Expenditures from the Additions to Accruals
- Extraordinary Depreciations
+/- Non-Periodic Income/ Expenditure
= <b>Extraordinary Result</b>
Income from the Reversal of Special Items
- Expenditures from the Additions to Special Items
+/- Income/Expenditure from Allowances and Write-Offs
+ Appreciations
- Unusual Depreciations on Current Assets
= <b>Valuation Result</b>