2008

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Deriving a holistic Performance Measurement System for the European Clearing Industry

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ABSTRACT

European clearing houses are facing competition on their home markets for the first time. In order to meet this new challenge, the management of a clearing house needs to identify its stakeholders and their interests and must define a strategy including financial and non-financial aims. We introduce the Balanced Scorecard as a funded and holistic approach for the management of a clearing house. To meet the specifics of the clearing industry, we present an adjustment and extension of Kaplan and Norton’s original concept. Particularly risk management requires detailed consideration. We therefore add risk management as a separate perspective and integrate competition and IT into the modified Balanced Scorecard. Furthermore, we outline our research model for the validation of the modifications.

Keywords
Network Industries; Financial Infrastructures; Management Information Systems; Balanced Scorecard; Stakeholder Value Theory; Clearing and Settlement

INTRODUCTION

European clearing houses for equities are facing enormous challenges nowadays with the Markets in Financial Instruments Directive (MiFID) and the European Code of Conduct for Clearing and Settlement gone live and with new forms of competition arising. Until now, clearing houses in Europe used to operate their business facing almost no competition. Today, they are facing new market participants, such as for instance the European Multilateral Clearing Facility (EMCF), which provides clearing services for Chi-X. Furthermore, the Code of Conduct for Clearing and Settlement has led to a number of requests for access and interoperability between providers of trading, clearing, and settlement and in consequence to a competitive European clearing environment. The need therefore arises for the established clearing houses to adapt to the new market situation. In order to meet the new challenges, the management of a clearing house needs to identify its stakeholders and their interests and must define a strategy that includes financial and non-financial aims.

Kaplan and Norton’s (1996) Balanced Scorecard (BSC) represents a holistic instrument of corporate management as it integrates a variety of perspectives. The BSC can help the management of a clearing house implement a strategy and communicate this strategy within the organisation. Only little attention has yet been given to the theoretical and conceptual valuation of the BSC, which has thus far only been treated rudimentarily in academic literature (Körnert and Wolf 2006). While Kaplan and Norton merely propagate their concept without in-depth discussion or critical assessment (Ahn 2005), Norreklit (2000) is among the first to examine the extent to which there is a cause-and-effect relationship among the four areas of measurement within the BSC. Blumenberg and Hinz (2006) present an approach to model corporate causality relationships within the BSC by means of Bayesian Belief Networks in order to support organisations in introducing a BSC.

The contribution of this paper is to derive a performance measurement system for the European clearing industry and to develop a model for its validation. We base our system on the shareholder and the stakeholder value theories and adapt the original BSC to fit the requirements of a clearing house. These modifications can serve as a basis for a re-design of current Management Information Systems in this industry.

The paper is organised as follows. First, an introduction into the functional definitions of clearing and settlement is given and recent trends that shape and transform the European market are presented. Then, performance measurement with the BSC is introduced, followed by a description of how the shareholder and the stakeholder value theories correspond with the concept of the BSC. The next section identifies the relevant stakeholders of a clearing house and derives a holistic BSC for the
clearing industry. Subsequently, the research model for the evaluation of the modified BSC is presented, and an outlook concludes.

**CLEARING AND SETTLEMENT OF SECURITIES TRANSACTIONS**

**Clearing and Settlement**

Clearing and settlement covers all processes that occur after a trade has been executed to finalise the transaction. The actions involve the post-trade transfer of money and securities (Schwartz and Francioni 2004).

The purpose of clearing is the efficient handling of risks inherent to concluded, but still unfulfilled contracts. Clearing of a securities transaction confirms the legal obligation from the trade. It involves the calculation of the mutual obligations of market participants and determines what each counterpart receives. Clearing houses, central securities depositories (CSDs), or international central securities depositories (ICSDs) are the providers of clearance (de Carvalho 2005; Koeppl and Monnet 2004). Central counterparty (clearing) is not included in the definition of clearing. A central counterparty is an entity that interposes itself between the transactions of the counterparties in order to assume their rights and obligations, acting as a buyer to every seller and as a seller to every buyer. The original legal relationship between the buyer and the seller is thus replaced by two new legal relationships: between the central counterparty (CCP) and the buyer and between the CCP and the seller respectively. The CCP thus absorbs the counterparty risk and guarantees clearing and settlement of the trade (Wendt 2006). A CCP is a service offered by a clearing house. CCPs have first been introduced in derivative markets and, at least in the EU, only recently in equities markets. Today, CCPs have established in nearly all major securities markets (Kroszner 2006). An important driver for the increased use of CCP services in cash markets is the increased use of electronic order books to match trades. The anonymity of the electronic order books complicates the risk management of market participants, as counterparty risk cannot be managed through their choice of counterparty. A CCP is a useful service to clear and settle anonymous trades, since the market participant can manage its counterparty risk towards the CCP. It is important to notice that a CCP takes principal risks and therefore separates itself from the classical post-trade providers, which usually only act as agents. Thus it is essential that the CCP has a functioning risk management system (CPSS 2001). Besides performing the CCP clearing function, most clearing houses perform other functions as well, like collateral management and netting. They enhance the efficiency of securities clearing and settlement and redistribute the risk between market participants (Wendt 2006).

Subsequent to the clearing stage the second operation to settle a trade. Settlement is the exchange of cash or assets in return for other assets or cash and transference of ownership of those assets and cash. A CSD is the organisation that performs these functions (Loader 2002).

**Current Trends in European Equities Clearing**

The European clearing industry used to operate its business facing almost no competition. Recently, clearing houses are exposed to an increasingly competitive environment. In the following, the main drivers of this development are described.

**Consolidation**

Between 1999 and 2004, a consolidation of clearing houses in Europe has taken place: the number of clearing houses declined from 13 to 7. Two main clearing houses for securities have emerged in Europe, LCH.Clearnet and Eurex Clearing (de Carvalho 2005). In addition to these larger institutions there are a number of smaller clearing houses providing CCP services for securities. Reasons for the consolidation of clearing houses are mainly economies of scale and economies of scope.

**Markets in Financial Instruments Directive**

MiFID is a European Union law which provides a homogeneous regulatory regime for investment services across the European Economic Area. The main objective of the directive is to increase competition and consumer protection in investment services. MiFID replaces the earlier Investment Services Directive and is effective since November 2007. By abolishing the “concentration rule”, in which member states could require investment firms to route client orders through regulated markets only, MiFID allows new execution venues alongside established exchanges (European Union 2004). Chi-X and Turquoise are examples of new trading platforms designed to rival incumbent exchanges. These new platforms bring competition into the European clearing industry, as they establish two new clearing houses: EuroCCP, the institution that will
provide clearing services for Turquoise, and EMCF, the clearing house for Chi-X. These developments represent a threat to the established clearing houses while at the same time opening up new opportunities in the clearing market.

The European Code of Conduct for Clearing and Settlement

The intention of the European Code of Conduct for Clearing and Settlement is to establish a strong European capital market and to allow investors the choice to trade any European security within a consistent, coherent, and efficient European framework. The aim of the Code of Conduct is to offer market participants the freedom to choose their preferred provider of services separately at each layer of the securities trading value chain and to make the concept of cross-border redundant for transactions between EU member states. The Code is a voluntary self-commitment and will adhere to a number of principles on the provision of post-trading services for cash equities. It includes clearing and CCP, settlement and custody services, and some of its elements also apply to trading activities. The implementation consists of three phases and was finalised by the end of 2007 (FESE, EACH, and ECSDA 2006).

Especially the recently finalised second phase of the Code of Conduct is currently affecting the clearing industry. The guidelines defined for access and interoperability provide the basis for the development of links between respective service providers. In total, 69 requests for access and interoperability were addressed in 2007 (Schaper 2008). The majority of these requests affect clearing houses.

So far, the European Commission rates the results of the Code positive. Main concerns are seen in the area of access and interoperability. Here, the Commission pushes the post-trade industry to increase its efforts to fully implement the Code (McCreevy 2008).

THEORETICAL FOUNDATIONS OF PERFORMANCE MEASUREMENT

Performance measurement is a way to track performance over time to assess whether goals are being met. The management of an organisation thus involves two key areas: planning and control. Every organisation requires plans and a mechanism by which execution against the plan can be controlled (Hahn 1996; Nørreklit 2000). A variety of performance measurement systems exist. The earliest system is the DuPont-System of Financial Control. It is based on an accounting measure, the Return on Investment (ROI), which serves both as an indicator of the efficiency of the firm’s operating departments and as the measure of financial performance of the company as a whole (Kaplan 1984). Another method frequently used by organisations to support strategic decisions and to identify process improvement capabilities is Activity-Based Costing (ABC), firstly defined by Kaplan and Cooper in 1987. Both approaches are predominantly finance-focused: while ROI focuses on the fact that returns on assets can be expressed in terms of the profit margin and asset turnover, ABC is likewise lopsided as it only provides information on product and customer cost and profitability to management. In order to obtain a holistic view on corporate performance, which incorporates information on customer satisfaction, employee motivation or IT issues, the ability of an institution to mobilise and exploit its intangible or invisible assets has become more decisive than investing and managing tangible assets only (Kaplan and Norton 1996). An approach that accommodates these needs is the BSC.

The Balanced Scorecard

The BSC translates the vision of an organisation into a comprehensive set of measures and provides the framework for strategic measurement and management. The measures represent a balance between external measures for shareholders and customers, and internal measures of critical business processes, innovation, and learning. These measures are balanced between the outcome measures and the measures that drive future performance. The scorecard is balanced between objectives, outcomes, measures, and subjective performance drivers (Kaplan and Norton 1996). It has emerged as a popular framework for combining financial and non-financial performance measures. By providing explicit links between strategy, goals, performance measures, and outcomes, the BSC helps to achieve high-level performance. The BSC (see Fig. 1) is said to provide a powerful tool for communicating strategic intent and motivating performance towards strategic goals (Ittner and Larcker 1998).
The success of the implementation of a strategy is assessed by four perspectives (Kaplan and Norton 1992, 1996):

**Financial Perspective:**

The importance of financial considerations is paramount in most situations and in most organisations. The financial perspective examines whether an organisation succeeds financially by delivering value to its shareholders. It represents the long-term strategic objectives of the organisation and thus incorporates the tangible outcomes of the strategy in traditional financial terms. Common measures in the financial perspective are figures on revenues, costs, and profits.

**Customer Perspective:**

This area focuses on what has to be done and what is most important, from the customer's perspective, to achieve the company’s mission. The importance of customer focus and customer satisfaction has gained considerable weight in recent management philosophy. The increased competition in the markets means that it is easier than ever for the dissatisfied customers to change suppliers. The objectives, measures, targets and, eventually, activities are therefore planned to implement strategy regarding the customer satisfaction.

**Internal Business Perspective:**

This component focuses on what an organisation has to do well to meet the customer needs defined in the customer perspective. It also lets managers know how well their business is running and how well the internal processes are designed to meet the objectives. The internal processes may be divided into mission-oriented and support processes.

**Innovation and Learning Perspective:**

This perspective – frequently also named Staff Perspective – focuses on how an organisation is enhancing its ability to innovate, improve, and learn in order to support success with the critical operations and processes defined in the internal process perspective. This may include employee training and corporate culture attitudes. In the modern management philosophy, it is increasingly becoming important for the organisations to develop a culture of learning where the employees constantly learn and share the knowledge to facilitate growth. On-the-job training and mentoring is also an essential component of the perspective.
Each of these four perspectives has a set of objectives, measures, targets, and initiatives to achieve the defined strategic goals (Kaplan and Norton 1996). Within each perspective, objectives identify what needs to be done in order to achieve the overall mission. The measures provide a way to determine how an organisation is doing in achieving the objectives within the perspectives and in turn the overall mission. They are the most actionable component in the scorecard. The targets are set for each measure to monitor and evaluate the progress towards the objective. The initiatives are the set of activities that are planned within each perspective in order to achieve the targets set for each measure.

Cause-and-effect relationships are an essential part of the BSC, because they differentiate performance measurement systems like the BSC from simple key performance indicator lists (Kaplan and Norton 1996). Key performance indicator lists present an ad-hoc collection of measures to managers but do not allow for a comprehensive view on corporate performance. Instead, performance measurement systems like the BSC try to model the relations of the underlying value chain in cause-and-effect relationships to allow prediction of value chain performance measures, communication and realisation of the corporate strategy, and incentive controlled actions (Blumenberg and Hinz 2006). Fig. 2 visualises the relationship of the perspectives from Kaplan and Norton (1992).

The theoretical and conceptual assessment of the BSC has thus far only been treated rudimentarily in academic literature. We therefore intend to position the BSC within the concepts of academic theories on corporate governance. Depending on the value system prevailing in the context of different cultures and legal families, corporate governance is seen either as a system aimed at only serving the shareholders by protecting their rights, or as a system dealing with the protection of the rights of all, or at least a part of, the stakeholders (Wentges 2002). Based on the purpose of the corporation, the current perspectives on corporate governance are categorised into two contrasting paradigms, namely a shareholder perspective and a stakeholder perspective. In the following, we illustrate how the shareholder and the stakeholder value theories correspond with the concept of the BSC (Körnert and Wolf 2006).

**Shareholder Value Theory**

The concept of shareholder value maximisation is a value-based management principle stating that a company’s management should foremost consider the interests of shareholders in its business decisions. Thereby, the returns to shareholders should outperform certain benchmarks such as the cost of capital (Rappaport 1986). In essence, the idea is that shareholders’ money should be used to earn a higher return than they could earn themselves by investing in other assets having the same amount of risk.

Performance figures in value-based management according to Janssen and Scheren (1999) ideally meet the following criteria:

- Suitability for defining and measuring business success;
- Incorporation of future cash-flows and their timing;
- Consideration of capital employed, cost of capital, and risk associated;
- Suitability for internal and external usage;
- Transparency and comprehensibility.

Examples of such performance figures can be found within the concepts of Rappaport (1986), the Cash-flow Return on Investment (CFROI) (Lewis 1995), or Stewart’s (1991) Economic Value Added (EVA).

The basic principle of the BSC by Kaplan and Norton (1996) is the fact that while all perspectives should be balanced, they need not necessarily all be of equal importance. As the financial perspective covers the long-run targets, it should according to Kaplan and Norton (1996) outrank the others. Encompassing the value-based objectives, figures and measures that
contribute to answer the question how to act vis-à-vis the stakeholders, the financial perspective of the BSC is undoubtedly closely connected with the shareholder value theory.

**Stakeholder Value Theory**

While the shareholder perspective regards disciplining managers in order to maximise shareholder value as the fundamental goal of the corporation (Copeland, Koller, and Murrin 1994), the stakeholder perspective extends the purpose of the firm to include the stakeholders’ welfare, such as employee, consumer, supplier, and the local community welfare rather than concentrating on the shareholder welfare alone (Prabhaker 1998).

The stakeholder perspective is actually an extension of the shareholder perspective. It further extends the purpose of the corporation from maximising shareholders’ wealth to serving wider interests of stakeholders fairly, emphasising corporate efficiency in a social context. A stakeholder is any group or individual who can affect or is affected by the achievement of the organisation’s objectives. To affect the firm means to have the power to influence the company. To be affected by the firm results in the fact that these groups or individuals have an interest in or claim on the company, because they are involved in the operation of the firm. Thus, two attributes can be defined to identify stakeholders: power to influence the firm and the legitimate claim or interest in the firm (Freeman 1984). Dominant stakeholders are both powerful and have a legitimate claim or interest in the firm. These stakeholders are the key stakeholders that actually draw the attention of the management. They are important for managers, because their claims or interest in the firm are justified by the legitimacy of their relationship with the firm. In addition, they have the capacity to force the firm to take account of their claims (Mitchell, Agle, and Wood 1997). Prominent stakeholders are shareholders (having voting power), customers, suppliers, employees, creditors (having economic power), and the community and governance (having political power) (Freeman and Reed 1983).

Considering the usefulness of a sound stakeholder analysis for successful corporate governance (Göbel 1995), it is advisable and valuable to design the perspectives of a BSC in consideration of the relevant stakeholders. However, the lack of cause-and-effect relationships among the various groups of stakeholders as well as their limited – if not inexistent – effect and foundation on the corporate strategy do not allow for a purely stakeholder-oriented scorecard (Körnert and Wolf 2006).

**DERIVING A BALANCED SCORECARD FOR A CLEARING HOUSE**

A clearing house is facing different stakeholders and is, as shown, confronted with a changing environment. To fit the needs of a clearing house, we adapt the traditional perspectives of the BSC to the specifics of this industry. For the identification of the appropriate perspectives we first did an extensive review of BSC standard literature. We further analysed corporate websites, annual reports, and organisational charts of clearing houses. Using these insights, we had advance talks with selected industry experts and academics. As an outcome, we were able to observe that a number of clearing houses are currently overhauling their internal performance measurement and management systems. The recent trends and developments on the European clearing arena and their impact on competition were mentioned as reasons for these initiatives.

**Stakeholders of a Clearing House**

A comprehensive understanding of a clearing house and its stakeholders is needed to develop a BSC for a clearing house. The main stakeholders of a clearing house are visualised in figure 3 and described in detail in the following.

![Fig. 3: The different stakeholders of a clearing house](image-url)
Shareholders have the power to influence the clearing house as they provide the company with capital and have a legitimate interest in the clearing house based on their ownership. As owner of the clearing house, they expect the maximisation of their return on investment.

Suppliers provide the clearing house with necessary infrastructure and services and earn revenues from the clearing house. Users can be classified into direct and indirect users. Direct users contribute to the risk capital of the clearing house and pay fees for the services. Thus, they have economic influence over the clearing house and a legitimate claim on the clearing house to apply sound risk management and to provide them with secure and efficient clearing services at a low price.

Employees provide the clearing house with human resources and expect to receive adequate compensation and desirable working conditions.

Community / public authorities provide the regulatory and supervisory framework in which a clearing house conducts its business. In return, they have an interest in the risk management, free and fair competition, and cost-efficiency of the clearing house. Examples for such institutions are the national banks or the European Central Bank, public authorities at national level, public authorities at EU level (e.g. European Commission), and other institutions (e.g. the Bank for International Settlement).

Regulated Markets and Multilateral Trading Facilities (MTFs) have the capacity to operate a clearing house on their own or to appoint a clearing house to offer clearing services for the securities traded on their platform. Hence, regulated markets and MTFs have a legitimate interest in the fees as lower clearing fees contribute to the attractiveness of the trading platform because of lower total transaction costs. Netting services and risk management are also important for the safety and efficiency of the regulated market or MTF.

Company Visions of Clearing Houses

The BSC is an appropriate steering tool, allowing the management to set up objectives and to communicate these objectives and the performance of these objectives to the staff. The scorecard translates an organisation’s vision into a comprehensive set of measures and provides the framework for strategic measurement and management (Kaplan and Norton 1992). A corporate vision is a short, concise, and inspiring statement from top management of what the organisation intends to become. Moreover, further strategic perspectives from Kaplan and Norton’s BSC are reflected:

<table>
<thead>
<tr>
<th>EMCF</th>
<th>In an increasingly complex, yet ever more convergent world, innovation, speed and agility will be as crucial as scale, track record and reach. We will stand out as a professional international financial services brand, recognised for our ability to deliver superior and sustainable stakeholder value by constantly anticipating and surpassing the needs of customers, investors, employees, partners and communities wherever we do business.</th>
</tr>
</thead>
<tbody>
<tr>
<td>KELER</td>
<td>KELER shall be an acknowledged clearing house and depository with a leading position in the Central Eastern Europe region that operates in an innovative way, in the form of a specialised credit institution. It shall be a dominant, active participant of the clearing house systems infrastructure of the region. KELER shall be successful, because its customers are satisfied with its services, shall manage to increase its shareholder’s value, and appreciate and retain its ambitious team of employees.</td>
</tr>
</tbody>
</table>

Fig. 4: Corporate visions of selected European clearing houses

A detailed analysis shows that both clearing houses apparently apply the stakeholder value theory. Elements of the stakeholder theory such as shareholders, customers, and employees are incorporated in both corporate visions emphasising their importance for the top management. Moreover, further strategic perspectives from Kaplan and Norton’s BSC are reflected:
• “needs of investors” / “increase its shareholder’s value” represents the financial perspective;
• “needs of customers” / “customers are satisfied” represents the customer perspective;
• “needs of employees” / “retain its ambitious team of employees” represents the innovation and learning perspective;
• “innovation, speed and agility” / “operates in an innovative way” partially represents the internal business and the innovation and learning perspectives.

However, certain aspects of the corporate visions cannot be mapped to the stakeholder value theory or the traditional perspectives of the BSC:

• “more convergent world” / “leading position in the Central Eastern Europe region” We interpret this as an indicator for the company’s reaction towards the changing competitive European environment.
• “innovation, speed and agility” / “operates in an innovative way” We interpret this as extension of the internal business and the innovation and learning perspectives by the aspect of IT.

In effect, these extending elements of the corporate visions require a modification of the original BSC to fit the clearing industry.

The modified Balanced Scorecard for a Clearing House in a changing Environment

As a result of our analyses, we extend the “Customer” perspective to “Competition and Customer” as Tate (2000) argues that competitors should be included. Additionally, we suggest emphasising the importance of IT. Although not included in the corporate visions, we introduce “Risk Management” as a new perspective as it is explicitly considered in the organisational structure of most clearing houses. This extension follows Ahn (2005) who demands that each fundamental goal should be represented by a perspective. Extensive discussions with academics and industry representatives indicate support of these modifications. Fig. 5 shows the perspectives of the modified BSC for a clearing house in a competitive environment.

Fig. 5: Five perspectives of the modified BSC for a clearing house

Financial Perspective:

The financial perspective does not differ from the BSC from Kaplan and Norton (1996). This component of the BSC therefore looks at the projects from a financial perspective and discusses financial considerations. We propose to align the financial objectives to the shareholder value theory by introducing value-based measures such as EVA. In case the clearing house operates on a not-for-profit basis, we recommend focussing on cost-related figures and alignment to the stakeholder value theory.
**Competition and Customers Perspective:**

As stated by Kaplan and Norton (1996), customer focus and customer satisfaction are of paramount importance to the success of a company. Due to the newly arising competition, we propose to extend the “Customer” perspective to “Competition and Customer” in order to integrate the monitoring of the strategic actions triggered by the competitive dynamics into the company’s BSC. These may include strategies of expansion into new markets or the defence of the established markets.

**Process Perspective:**

We propose to rename the “Internal Business” perspective as introduced by Kaplan and Norton (1996) as “Process” perspective. As the original “Internal Business” perspective includes support processes, we suggest focusing on the mission-oriented core processes. Those supporting processes that are essential for a clearing house (such as risk management and IT) are addressed in individual perspectives. The focus of this perspective emphasises what the clearing house has to do well to meet the customer needs. An appropriate measure could be the rate of straight-through processing.

**Risk Management Perspective:**

Due to the risk management function of a clearing house this function needs to be considered properly. As the clearing house absorbs the counterparty risk and guarantees clearing and settlement of a trade (Wendt 2006), the management of the counterparty risks is essential for the clearing house. Through the integration of a risk management perspective the awareness for risk is increased and the process of risk management is likely to be improved. As measures for this perspective we propose, for instance, the time between margin cycles, the accuracy of margining, the financial rating, and the number of incidents of default funds usage.

**Staff and IT Perspective:**

As stated by Kaplan and Norton (1996), “Innovation and Learning” are essential in order to support the critical operations of a clearing house. While the original perspective focuses on staff mainly, we recommend extending this perspective by IT and renaming it as “Staff and IT”. The most prominent driver of technological efficiency was the almost complete automation of the post-trade processes by the implementation of innovative IT systems. Continental European markets adopted paperless processes earlier than other markets and are currently marking significant IT investments (Deutsche Börse 2005). As measures for this perspective we propose for instance system availability and timeliness of strategic IT projects.

The basic cause-and-effect relationships of the perspectives from Kaplan and Norton (1996) remain constant. Adding the risk management perspective requires an adaptation of these relationships. As a clearing house absorbs the counterparty risk of all trades processed by taking the principal risks, risk management affects mainly the financial perspective (see Fig. 6).

![Fig. 6: Cause-and-effect relationships of the BSC for a clearing house](image-url)

**RESEARCH MODEL**

In order to show that the BSC is a suitable steering and monitoring tool for clearing houses in the discussed changing European competitive environment an empirical research needs to be done.

Beside the suitability of the BSC in general, a validation of the presented traditional perspectives from Kaplan and Norton (1996) for clearing houses has to be done. To show that the modified BSC for clearing houses is suited to achieve the strategic goals of a clearing house, the presented perspectives should be evaluated.
In the following, we present our hypotheses for the evaluation and introduce our methodology of empirical research, the case study.

Hypotheses

The following figure lists our main hypotheses. The stated literature shows their origin.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: The Balanced Scorecard is a suitable tool for performance measurement of a clearing house in the changing environment.</td>
<td>Kaplan and Norton 1996</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Literature</th>
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<tr>
<td>H2a: The Financial Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1992</td>
</tr>
<tr>
<td>H3a: The Customer Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996; Tate 2000</td>
</tr>
<tr>
<td>H4a: The Internal Business Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996</td>
</tr>
<tr>
<td>H5a: The Staff and IT Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996; Deutsche Börse 2005</td>
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<tr>
<th>Hypotheses</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2b: The Financial Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1992</td>
</tr>
<tr>
<td>H3b: The Competition and Customer Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996</td>
</tr>
<tr>
<td>H4b: The Process Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996</td>
</tr>
<tr>
<td>H5b: The Staff and IT Perspective is important for performance measurement of a clearing house.</td>
<td>Kaplan and Norton 1996; Deutsche Börse 2005</td>
</tr>
<tr>
<td>H6: The Risk Management Perspective is important for performance measurement of a clearing house.</td>
<td>Wolf 2000</td>
</tr>
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</table>

H7: The perspectives of the modified BSC are suited for the European clearing industry.

These hypotheses represent the findings of this paper and need evaluation. Furthermore, the cause-and-effect relationships of the BSC presented in figure 2 and figure 6 require validation.

Methodology for Testing the Hypotheses

In order to test the hypotheses, an adequate and accepted method would be to conduct a survey among the focus group of market participants. However, the case of clearing houses is very distinctive as their quantity – and hence the viable population for a survey – is very limited. The number of equity clearing houses in Europe currently amounts to nine only. We therefore instead decided in favour of the case study as a research strategy, factoring in that such research relies on theoretical, not statistical sampling (Eisenhardt 1989).

The case study method is preferred when ‘how’ and ‘why’ questions, or ‘what’ questions with an explanatory character, are being asked (Yin 2003). It is not limited to obtain a static snapshot, but allows to understand developments, process sequences, and cause-and-effect chains as well as to draw data-based conclusions that are practically relevant (Yin 2003).

Furthermore, as defined by Yin (2003), case study research is appropriate when the investigator has little or no control over the events, meaning that relevant behaviours cannot be manipulated. In addition, case study research is appropriate when the focus is on a contemporary phenomenon with some real-life context (Yin 2003). To achieve the necessary rigor, it is essential to explicitly and properly define the research question and the unit of analysis in the design and preparatory phase.

Like field studies, case studies typically utilise questionnaires, coded interviews, or systematic observation as their preferred techniques for data gathering (Yin 2003). The methods for collecting the data for a case study are not limited to specific methods and are often combined. It is worth mentioning that the expert interview as an applied research methodology differs from qualitative interviews and also allows questioning experts according to their experience and interpretation of relevant research topics (Borchardt and Göthlich 2007).
CONCLUSION

Clearing houses are facing enormous challenges with the MiFID and the Code of Conduct gone live and with new forms of competition arising. Some of the clearing houses are facing competition on their home markets for the first time. In order to meet these new challenges, the management of a clearing house needs to identify its stakeholders and their interests and must define a strategy including financial and non-financial aims, which have to be clearly communicated internally.

The BSC is a well-established steering and controlling tool, allowing the management to set up objectives and to communicate these objectives and their performance towards the employees. We introduce the BSC as a funded approach for the management of a clearing house and illustrate how the shareholder and the stakeholder value theories correspond with the concept of the BSC.

To meet the specifics of the clearing industry, we present an adjustment and extension of the original BSC by Kaplan and Norton. Particularly risk management, as one of the core functions of a clearing house, requires detailed consideration. We therefore add risk management as a separate perspective. Moreover, against the background of increasing competition and accounting for the industry’s level of automation, we integrate competition and IT into the modified BSC. These findings, backed by statements from industry experts that a number of clearing houses are currently overhauling their internal performance measurement and reporting systems, can serve as a basis for the re-design of current Management Information Systems in this industry.

This paper represents research in progress: We intend to evaluate the acceptance and the level of utilisation of the BSC in the European clearing industry. Furthermore, we want to validate the suitability of the perspectives of the original and the modified BSC based on our research model by means of an empirical case study.

Acknowledgments. The authors gratefully acknowledge the support of the E-Finance Lab, Frankfurt, for this work.
REFERENCES


i In the last years consolidation was weak. Most of the mergers only considered the legal aspects while the CCPs kept operating different systems.
ii Consisting of the implementation of price transparency, the definition of access and interoperability, and the implementation of service unbundling and account separation.
iii EMCF: Clearing house for Chi-X; KELER, clearing house and depository of Hungary. Visions were found on the institutions’ corporate websites; emphasis added.