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**AUDIT COMMITTEE AND COMMITTEE SUBDIVISIONS' CHARACTERISTICS  
VERSUS OPERATIONAL RISK OVERSIGHT IN TURKISH BANKING SECTOR**

**PhD DISSERTATION**

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## ABSTRACT

The main reason for financial scandals and crises experienced during the 2000s has always been addressed as lack of corporate governance; and accordingly, countless theories and suggestions have been asserted in order to develop appropriate corporate governance mechanisms. Nevertheless, because of missing data and abstractness of concepts, it has not been possible to measure completely whether these mechanisms were really effective, or whether they served their designated purpose. The present thesis analyzes, by means of the dynamic-panel data method based on unique data, the effect of important characteristics of internal audit, internal control, risk management, and audit committee mechanisms on operational risk, whose significance has substantially increased after the re-structuring developed in the Turkish Banking industry parallel to the international regulations that arose after the 2001 financial crisis. Also analyzed in terms of their comprehension capability regarding local economic environments are staff size, competence, reporting level, and explanation level of financial resource, as well as gender, auditing background of audit committee, and nationality. According to the study results, it was revealed that while there is almost no effect of the characteristics of the risk management department on operational loss, some characteristics of internal audits and internal control can mitigate operational risk. On the other hand, it was concluded that having female members and experienced members on an audit committee, and leaving off foreign-originated members, have significant positive impact on minimizing operational risk.

## ÖZET

Kurumsal yönetim eksikliği, 2000'li yıllar boyunca yaşanan finansal skandalların ve krizlerin en önemli nedenlerinden biri olarak gösterildi ve kurumsal yönetim mekanizmalarının geliştirilmesi için aradan geçen yıllarda sayısız tez ve öneri ortaya atıldı. Ancak bu mekanizmaların gerçekten etkin olup olmadığı, amaca matuf olup olmadığı veri eksikliğinden ve kavramların soyutluğundan dolayı tam olarak ölçülememiştir. Bu tezde, uluslar arası düzenlemelere paralel olarak 2001 krizinden sonra Türk bankacılık sektörünün yeniden yapılanması neticesinde sektörde önemi ciddi düzeyde artan yönetim mekanizmalarının önemli niteliklerinin operasyon riski üzerindeki etkisi özgün bir veri ve dinamik panel datası yöntemi kullanmak suretiyle analiz edilmiştir. İç denetim, iç kontrol ve risk yönetim için personel sayısı, mesleki yeterlik, raporlama düzeyi ve finansal kaynaklarının operasyonel kayıpları açıklama düzeyi irdelenirken, denetim komitesi üyelerinin cinsiyeti, yerel ekonomik ortamı anlayabilme yeteneğinden bahisle milliyeti ve denetim kökenli olup olmamasının etkisi analiz edilmiştir. Sonuçlar göstermiştir ki, risk yönetimi departmanı özelliklerinin operasyonel zarar üzerinde etkisi neredeyse yokken, bazı iç denetim ve iç kontrol birimi karakteristik özelliklerinin operasyonel riski azaltabildiği görülmüştür. Diğer yandan denetim komitesinde bir bayan üye olması, denetim tecrübesine haiz üye olması ve yabancı uyruklu üye olmaması operasyonel riski azaltmada olumlu bir etken olduğu sonucuna ulaşılmıştır.

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## LIST OF ABBREVIATIONS

BASEL COMMITTEE	Basel Committee of Bank for International Settlements
BDDK	Banking Regulation and Supervision Agency of Turkey
COSO	The Committee of Sponsoring Organizations of the Treadway Commission
EBA	European Banking Association
EU	European Union
FDIC	The Federal Deposit Insurance Corporation
FSAP	Financial Services Action Plan
GMM	Generalized Methods of Moment
IIA	The Institute of Internal Auditors
LSDVC	Least-Squares Dummy Variable (Bias) Corrected Method
NASDAQ	National Association of Securities Dealers Automated Quotations
NYSE	Newyork Stock Exchange
OCC	The Office of the Comptroller of the Currency
OLS	Ordinary Least Squares
SOX	Sarbaney Oxley Act of 2002



## CHAPTER 1: INTRODUCTION

### 1.1. Theoretical Background

Separation of control and ownership has been a prominent issue since the late 1960s, since potential conflict between stakeholders and managers (principal–agent problem) began to be discussed within the scope of agency theory. Numerous corporate governance mechanisms have been developed in order to moderate this principal–agent problem. Corporate governance mechanisms serve to align the interests of both managers and stakeholders and to mitigate the conflict of interest and any opportunistic behavior resulting from this conflict. Aside from agency theory, corporate governance mechanisms can be associated with various theories. These theories are exhibited in a table above:

**Table 1.1 Major theories**

<b>THEORY</b>	<b>MAJOR CONTRIBUTORS</b>	<b>RELATION WITH CORPORATE GOVERNANCE</b>
<b>Agency Theory</b>	(Jensen and Meckling, 1976), (Pratt and Richard, 1985)	The principal wants to ensure that agents use their decision rights in a way that contributes to the firm's objectives efficiently and does not impair the integrity of the firm. A principal may use several agents. These agents are called corporate governance mechanisms. As a result of information asymmetry, hidden information, and conflict of interests, the management may need corporate governance mechanisms in order to operate the firm in the most efficient way.
<b>Transaction Cost Economics</b>	(Williamson, 1981), (Williamson, 1996)	Transactional Cost Economics propounds the study of corporate governance which provides a robust framework to investigate contracting problems between the management of the firm and its stakeholders. Governance structure has three primary properties. First, as with agency theory, stakeholders claim a status in the firm. Second, the lifetime of the firms is equal to the duration of partnership contract. And third, stakeholders need safeguard mechanisms.
<b>Property Rights Theory</b>	(Grossman and Hart, 1986)	Contracts between shareholders and managers are incomplete because they include gaps and missing provisions (Hart, 1989). The basic concept of the property-rights theory is related to the control of the firm regarding the allocation of company's tangible assets and intangible assets. The property-rights theory provides an implicit basis for management control and the right of management to issue instructions to employees. The issue of the control of alienation rights

		implies that corporate governance is required in order to assess operational-loss incidents so that the alienation rights would not be violated.
<b>Resource and knowledge-based view</b>	(Penrose, 1959), (Wernerfelt, 1995) Charreaux and Desbrières, 2001)	Company-specific information investments are required for a sustainable competitive advantage; therefore the company board relies heavily on insiders with a proper self-control system. All corporate governance mechanisms for value creation through learning and innovation are useful tools for the firm.

## 1.2. Research Motivation

Aside from theory, corporate governance has come to the forefront of the finance world because of scandals, such as Barings Bank (Derivatives trading), Worldcom, Enron, and Parmalat. This evolution brought out or revived new minor mechanisms such as internal control and audit committees. The governance role of these mechanisms has come into prominence within the last two decades. A great deal of interest has come from regulators who consider internal control & auditing, risk management, and audit committees as essential corporate governance organs that reveal the potential to enhance corporate financial reporting quality and to reduce operational risks so as to expand transparency for financial markets and individual shareholders. The academic interest in corporate governance mechanisms has developed in parallel with regulatory developments. Academic studies have considered regulations regarding the use and benefits of audit committees and their position in governance models (Cohen et al., 2004).

Preliminary studies in this area were largely based on theory and the researcher's view of audit committees' benefit in reducing agency issues between stakeholders and administration. The results of the early researches were important since they provided an insight regarding the voluntary audit committee's influence, determinants, and governing effects in a relatively unregulated administration.

Corporate governance in the banking sector has become more of an issue because of the significance of banks in the economic system and the nature of banking operations. The

complexity of banking operations increases the asymmetry of information and therefore, in terms of the agency problem, stakeholders require more capacity to monitor bank managers. On the other hand, banks are significant elements of the economic system and are highly leveraged firms by depositors (Andres and Vallelado, 2008). Consequently, corporate governance in the banking sector is more fundamental compared to the other sectors for maintain the stability of the economic environment and for decrease systemic risk.

The recent financial crisis in the world once again demonstrated that markets are gradually being globalized; thus, the issues that arise in those markets also needed to be considered in a global corporate governance context. The report of the High-Level Group on Financial Supervision in the EU (2009) concluded that corporate governance arrangements constituted “one of the most important failures of the present crises.” However, corporate governance had been put on the regulatory agenda with the FSAP only ten years earlier. The literature also supports this idea. Berger et al. (2012) and Peni and Vahamaa (2012) claim that powerful corporate governance mechanisms in banks enable them to reach higher profitability; negative examples could not prevent low profits or defaults in the 2008 financial crisis. On the other hand, corporate governance was not able to prevent the financial crisis; at the same time it encouraged institutions to take excessive risks in exchange for short-term profit. It is seen that corporate governance is not only an implementation or technical issue (Sun et al., 2011), but also systemic and fundamental. As Stiglitz (2008) said that “financial institutions have not managed risk; they have created it.”

Corporate governance mechanisms have been crucial to strengthening the governance of organizations, and therefore the global financial infrastructure helps to prevent future crises. It is indisputable that corporate governance factors affect the internal-power structure (boardroom, etc.) and therefore the quality of corporate governance structure and its effectiveness protect stakeholders’ interests in the long run.

Corporate mechanisms can be investigated under two titles: external and internal corporate mechanisms. External corporate mechanisms are competition, regulation, debt covenants, and media pressure, etc. Internal corporate mechanisms are audit committees, internal

control, internal auditors, risk management, remuneration, etc. All of these mechanisms have been strengthened throughout the past few decades with the SOX in the USA, the Blue Ribbon Committee of 1999 in the UK, the EU 8th Directive on Company Law of 2006 in the EU, and the Banking Law Act of 2005 in Turkey.

After the 2008 crisis, the Basel Committee redesigned the framework of the new global financial architecture. Although the Basel Committee is known as a regulator of the international capital framework; they publish very different guidance related to financial institutions. Operational risk is one of the important tasks of this committee. According to the Basel Committee (2011), the recent financial crisis not only unveiled inadequacies in risk management, it also presented the control and governance processes at banks as a fundamental cause of the banking crisis and indicated human risk and behaviors as the core element of operational risks. Regarding the operational risk, it determined that the guidance that underlines reliable operational-risk management is an expression of the effectiveness of the board members and senior management in administering their portfolio — including products, operations, systems, and processes (Basel Committee, 2011). Robust corporate governance structure helps to control operational risk (Basel Committee, 2011).

As for Turkey, the 2001 crisis has already shown that some corporate issues are substantially important for the financial stability of a country. Although there were various factors underlying the 2001 crisis, corporate governance was one of the essential issues for the financial institutions. Policy makers are of the opinion that some dominant stakeholders of several banks managed their banks in an illegal or non-ethical way because of a lack of good corporate governance. As a result of the 2001 crisis experiment by Turkish policy makers, the advanced corporate governance of banks is thought to have decreased the illegal and non-ethical attitudes in the banking system. As Wu (2005) said, there is a strong dual relation between corruption and corporate governance. For the purpose of improving corporate governance, Turkish policy makers issued a new Banking Act with serial number 5411 in 2005 providing for the regulation and supervision of Turkish banking system. They were also focused on audit committees and the internal systems<sup>1</sup> of the banks.

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<sup>1</sup> Internal systems refer internal audit, internal control and risk management etc. in banks.

In general, competent corporate governance decreases operational risk. According to the Institute of Operational Risk (2010), optimum risk appetite, risk management, and governance frameworks are indicators of low operational risk. Cherneboi et al. (2011) studied the determinants of operational loss and they found that some corporate governance mechanisms are related to operational-loss events.

There are numerous studies in the literature about the relationship between corporate governance mechanisms and earnings management. However, there is not sufficient research about the relationship between the characteristics of corporate governance mechanisms and operational risk/loss/events because of lack of data. This dissertation provides empirical evidence on whether and how corporate governance mechanisms are related to operational loss in the Turkish banking system with a unique data set. The analysis is based on a unique data set concerning characteristics of corporate governance mechanisms and the operational losses of banks in Turkey between 2006 and 2012. Particularly, the role of the characteristics of major corporate governance mechanisms was examined - e.g. internal audit, internal control, risk management, and audit committees. Advanced dynamic panel data was used in the method.

The objective of this study is fourfold: to investigate (1) whether the characteristics of internal audits, (2) whether the characteristics of internal control, (3) whether the characteristics of risk management are associated with operational loss in Turkish banks, and (4) how the structure of audit committees affects the operational losses in Turkish banks.

To our knowledge, this is the first study examining the relationship between operational risk and various committee parameters and committee member characteristics such as nationality and audit experience. The study contributes to the literature by assessing gender, nationality, and audit-experience effects of the audit committee members. The study also attempts to understand the effects of the characteristics of internal audits, internal control, and risk management on operational risk.

From the policymakers' perspective, the study is going to shed light on the issue of the nationality of audit committee members. The question is whether a foreign member who is not familiar with local conditions could be successful. Should a statutory regulation for members have a requirement similar to "at least one audit committee member of each bank should be Turkish or the entire committee should consist of member directors who reside in Turkey continuously and know local conditions sufficiently?" In Norway, there should be at least one female member among audit committee members (Adams and Ferreira, 2009) because males can be overconfident and risk aggressive. The European Union discusses in their green papers that audit experience as a pre-requisite for being an audit committee member (European Commission, 2011). The study attempts to examine these issues of gender and audit experience, as well. Besides the audit committee, the study investigates a relatively poorly investigated area of governance: the relationship between the internal-control department and operational loss by focusing on the structural parameters of the internal-control mechanism. Finally, an examination of the results of internal audits and risk management components is presented. It is considered that the study result could assist policymakers in determining the characteristics of audit committees and whether financial institutions invest with a prudential perspective.

The rest of study is organized as follows: Chapter 2 reviews the literature on regulation of corporate governance mechanisms and operational risk. Chapter 3 develops the hypothesis and Chapter 4 sets out the research design and research methodology. Empirical results are reported and discussed in Chapter 5. Finally, Chapter 6 draws the conclusion the study.

## **CHAPTER 2: LITERATURE REVIEW AND REGULATORY FRAMEWORK**

As mentioned above, four different corporate governance mechanisms on operational loss are under consideration. Although all mechanisms have similar characteristics, their regulatory sphere and theoretical background are completely different. In this chapter, while basic information is presented for each mechanism, prior literature relevant to the study is reviewed and compared with main legislations and regulatory requirements around the world.

### **2.1 Audit Committee**

An audit committee is one of the most effective tools that separates corporate management from ownership. An audit committee is formed by the management board with the objective of making contributions to executing corporate governance effectively; this is specifically based on the obligation of the management board for ensuring reliable and holistic financial reporting, of supervising the effectiveness of internal control, risk management, and auditing (Haron et al., 2005). Over the last two decades, audit committees' governance role has received a great deal of interest. The majority of this interest was from the regulators who see audit committees as an essential mechanism of the governing system that carries significant potential to enhance the corporate financial reporting activities; accordingly, bringing superior transparency to both financial markets and independent stakeholders. The trend of the academic interest concerning audit committees exhibited similar behavior along with developments in regulations and the relevant academic studies has been under influence of regulator bodies' statements about applicability and benefits of the audit committees, their position, and role in corporate governance (Haron et al., 2005).

As audit committees assists management boards in fulfilling their obligations in financial and non-financial aspects, these bodies provide reliable financial information to shareholders and investors through the regular financial reporting system; this system enables the financial system to gain efficiency and global scale (Louis and Zhou, 2008).

Generally, audit committees provide two important advantages to the firms, namely independence and efficiency (Menon and Deahl, 1994).

The most important characteristic of an audit committee is its independence. Klein (2002) claims that since audit committee members are elected among the senior executive officers, the committee can be considered as biased toward management; companies which deployed more competent governing mechanisms assign directors with superior independence to their audit committees. An audit committee is expected to be free from any relationship that would intervene in the committee's independent judgment (Aggarwal et al., 2010).

Traditional controls and reporting activities are essential tasks of audit committees. However, their roles and workload are expanding due to the requirements of overseeing risk management, complex financial regulation, and new business risks. Macroeconomic risks, political risks, and cyber security require stronger audit committees.

Audit committee composition and its several characteristics were taken into consideration in the periods of corporate governance reforms. The effects of turnover, number of meetings, expertise, and size of audit committee have been studied.

### **2.1.1 Literature Review on Audit Committee**

In order to execute the tasks of the management board effectively, the board assigns the duty of monitoring financial reporting to an audit committee. As a company establishes an audit committee in its corporate structure, this raises the credibility of the company from the investors' perspective and highlights internal monitoring activity with higher quality; this reduces the possibility of inappropriate actions (Lin and Hwang, 2010).

Early research on audit committee effectiveness focused on the effects of the presence of audit committees on financial reporting quality. However, recent studies shift their focus more to the characteristics of audit committees.



Some studies suggest that independence of audit committees is not capable of improving corporate governance in firms. Romano (2005) stated that 100% independence of an audit committee is not associated with positive governance outcomes, although an independence rate lower than 100% is found to be correlated with them.

Yet, accounting and financial expertise are essential characteristics of an audit committee. The study of Chtourou et al. (2001) implies that the existence of at least one audit committee member with financial competency is adversely correlated with the earnings management level. Consequently, a highly qualified audit committee is expected to affect the perceptions of shareholders regarding earnings. Better monitoring is also expected to improve the integrity of financial reporting and to provide assurance to shareholders regarding the reliability of reported earnings (Habbash, 2010). Bedard et al. (2004) point out that there is negative correlation between aggressive earnings management and the financial and governance competencies of members of an audit committee. Likewise, Agrawal and Chadha (2005) discuss that financial restatements are lower in companies with audit committee member who have accounting or finance background. The study of DeFond et al. (2005) reveals a significant correlation between abnormal returns rates and assigned accounting finance experts in the audit committee; this result address that audit committees with accounting–finance professionals enhance corporate governance. Bedard et al. also (2004) argue that internal auditors recognize audit committees to be more powerful than management in decisions related to financial reporting matters when a majority of audit committee members have an accounting background. Abbott et al. (2002) indicate that the absence of a financial expert in an audit committee is markedly positively correlated with financial misstatement and fraud. Larry and Taylor (2012) exhibit that there is significant correlation between independence of audit committees and financial expertise with low return rate and severity of financial restatements. Xie et al. (2003) also show that the presence of investment bankers in audit committees is related to lower discretionary accruals.

Studies investigating the nationality of audit committee members are very limited. In Malaysia, researches have focused on ethnicity. Johl et al. (2012) point out that there is a remarkable and positive linkage between audit fees and firms employing bumiputra-origin

(an ethnicity in Malaysia) CEOs; but, they could not find such an association for bumiputra-dominant audit committees. According to Ruigrok et al. (2007), while foreign managers exhibit more independence, they hold considerably lower positions at other management boards in Switzerland.

Another member characteristic of audit committees is gender. Many empirical studies provide strong support for gender difference especially in behavioral finance models. According to Barber and Odean (2001), men trade more than women and, therefore, men reduce their returns more so than do women because of overconfidence. Some studies found evidence supporting this psychological effect for audit committees. Srinivasan (2005) points at the phenomenon that managers of audit committees could experience major reputation penalties, if problems regarding financial reporting are consequently exposed. He argues that if audit committees have a female director, this can reduce overconfidence and increase the likelihood of compliance because females are likely to avoid from risk (risk averse) and less overconfidence. Based on the study of Thiruvadi (Basel Committee, 2012), audit committees employing at least one female manager perform meetings more frequently. The researcher also points out that there is a relationship between earnings management and the existence of a female manager in an audit committee (Thiruvadi, 2012).

Adams et al. (2010) point out that female members of audit committees think more independently and enhance the supervising process. Furthermore, researchers reveal that the assignment of female managers to the management board is important for investors because this implies better monitoring and lower information asymmetry which brings better financial performance results.

Krishnan and Parsons (2008) report that quality of earnings of companies with higher gender distribution in its management board is higher compared to the companies with less diversity. The conclusions of Gul et al. (2008) indicate that companies with female managers or companies whose management board is dominated by females have less management effort for earnings management and have higher earnings quality. The researchers also report that companies with at least one female manager in the audit

committee exhibit higher earnings quality. According to Gul et al. (2008), greater risk aversion and ethical behavior are the main reasons for this result; female representation on audit committees could be even higher than reported because it is difficult to obtain voluntary information that is indicative of a reduction in asymmetry between women directors and managers.

Most of the studies on the subject cover periods of economic stability when audit committee control activities were less important. Therefore, the literature is in need of studies covering the pre- and post-crisis periods. This study and a few others summarized given below attempt to fulfill this need.

Kirkpatrick (2009) reports that an audit committee's independent members increase market value of the relevant company. The researcher explains that independent members comprehend risk appetite of companies better and that shareholders appreciate concrete measures against risk and reward for companies gaining market value.

Yeh et al. (2011) study the relationship between independence of committees and financial performance of companies for the period between 2007 and 2008 during the financial crisis. He applied data from the 20 largest companies in the financial industry. The researchers reveal that the performance of companies with independent managers employed in auditing and risk committees was higher during the crisis period.

### **2.1.2 Review of Regulation on Audit Committee**

When examining the regulation history of audit committees, the SOX, corporate governance reform in the US, and the 8<sup>th</sup> Directive on Company Law in the EU are the major legislations regarding obligatory audit committees for public companies and statutory audits and corporate governance. However, when we trace back audit committee history, it is possible to see the regulation concerning audit committees was first introduced by the NYSE in 1938. Major financial scandals have increased the pace of the regulations concerning audit committees; it was already known that regulations and codes in the pre-SOX period were insufficient to prevent the WorldCom and Enron scandals (Mo et al.,

2013). With SOX regulation in 2002, the definition, responsibilities, composition, and member qualifications requirements of audit committees were re-determined. On the other hand, the Cadbury Committee (1992) discussed that eligibly structured audit committees could improve the qualities of financial reporting and independence of statutory audits in the UK (Ghafran and O'Sullivan, 2012). The establishment of the Smith Review (Smith Committee, 2003) takes this report into consideration and exhibited several recommendations in detail to enhance the governance role of audit committees (Ghafran and O'Sullivan, 2012). Subsequent governance reports in the UK helped to build audit committees by considering their composition, independence, and expertise (Combined Code 1999 and updated 2003; 2006; 2008).

Among the Anglo-Saxon countries, two frontier countries underline the significance of board members' independence and their regulations address independent members' major role in audit committees concerning the financial reporting activities. It is compulsory in these countries that a greater portion of audit committee members consisted of independent members; companies are required to expose information in detail regarding members. Moreover, a minimum of one members of the audit committee is required to have financial competency recognized in the UK concerning these two countries. Audit committees carry out major responsibilities regarding the relationship of the company with the external auditors, reporting annual financial statements to shareholders, and making an explanation that how the auditor's objectivity and independence are ensured (Ghafran and O'Sullivan, 2012).

According to the new regulation of the Financial Reporting Council (2010), an audit committee is expected to inform the main board of directors concerning the following three specific areas:

- (i) any significant issues considered in regard to the financial statements and how these were addressed;*
- (ii) whether the annual report is fair, balanced and understandable and provides the information necessary for users to assess the company's performance, business model and strategy; and*

*(iii) assessment of the effectiveness of the external audit process and its recommendation on the appointment or reappointment of the external auditor, including the steps taken in deciding whether or not to recommend that the audit be put out to tender.*

Although administration of audit committees is different for all member states of European Union, they are required to obey many general rules about audit committees determined with the EU 8<sup>th</sup> Directive on Company Law. Firstly, all audit committees in public interest entities should have at least one independent member who has a background in accounting or auditing. The main role of audit committees set by European Commission is summarized below:

*“(a) monitoring the financial reporting process;  
 (b) monitoring the effectiveness of the company’s internal control, internal audit where applicable, and risk management systems;  
 (c) monitoring the statutory audit of the annual and consolidated accounts;  
 (d) reviewing and monitoring the independence of the statutory auditor or audit firm, and in particular the provision of additional services to the audited entity.”*

A practice which was considered best for one country may not fit another country. Therefore, many member countries could have different practices. For example, whereas two-thirds of the members of an audit committee should be independent in France, only the chair of an audit committee should be independent in Germany (Ghosh et al., 2010). Whereas Germany gives importance to accounting expertise, the United Kingdom gives importance to financial expertise. As mentioned, local regulations recommend or require a greater portion of independent members and comprise only non-executive duties. In detail, the definition of independence and execution can bring tight or flexible function to audit committees.

It has been discussed in the European Union whether compulsory specific experience on audit committees increases the effectiveness of audit committees or not (European Commission, 2011). Even though public-interest entities have an audit committee, “their

role has been limited due to the lack of audit expertise.” The European Union is planning to limit audit committees to having at least one member with audit expertise. According to this proposal, in order to reinforce the independence and capacity of the audit committee, *it should be composed of non-executive members, at least one member should have experience and knowledge in auditing and another one in accounting and/or auditing* (European Commission, 2011).

In Norway, there should be at least one female member on an audit committee (Adams and Ferreira, 2009). Although this rule is formally based on gender equality, it is also related to overconfidence and risk-aggressive matters. Actually, participation of female members into management boards has been under regulation in many countries, such as France, Italy, and the Netherlands.

In Turkey, establishment of audit committees has become common practice in the banking sector as a result of globalization and financial crises in the banking sector. After the severe economic and banking crisis in 2001, the regulation and rules for financial institutions were tightened in order to provide financial stability and constituted audit committees for sound corporate governance. The legal fundamentals of audit committees were established by the Banking Law with serial number 5411 despite the fact that it was not compulsory for banks to constitute audit committees in Turkey before this law. According to the Banking Law (2005), management boards of banks are required to establish audit committees for the execution of the audit and for supervising functions on behalf of board of directors. At least two members of the board of directors should be assigned as members of the audit committee; they would not have executive duties. While the things that require executive responsibilities such as granting loans and deciding issues of bonds count as executive duties in the regulation, the things that require monitoring or duties decided under committee do not count. According to the Banking Law, fundamental duties of audit committees are given below:

- *Supervision of the efficiency and adequacy of the bank’s internal control, risk management and internal audit systems,*

- *Functioning of these systems and the accounting and reporting systems within the framework of Banking Law and the relevant legislation, and the integrity of the information produced; conducting the necessary preliminary evaluations for the selection of independent audit firms by the board of directors,*
- *Regular monitoring of the activities of independent audit firms selected by the board of directors; and in case of parent undertakings covered by this Law,*
- *Ensuring that the internal audit functions of the institutions that are subject to consolidated supervision are performed in a consolidated and coordinated manner.*

Audit committees have various other duties relevant to outsourcing, external audits, and other reporting facilities. All of these duties serve to improve corporate governance in banks. Therefore, the present research tries to exhibit how audit committees affect corporate governance in banks.

Finally, audit committee members in Turkey should have at least ten years of financial experience. It is seen that only the European Parliament drafted a regulation including an auditing-experience requirement in order to be assigned as a member of audit committee.

## **2.2. Internal Audit**

An internal audit, either in-house or outsourced, evaluates and improves the effectiveness of control, risk management, and governance processes (IIA, 2008). Internal auditing is expected to provide independent and objective opinions concerning an organization's operations, functions, processes, systems, or any other subject matter important to client management (Norman et al., 2011). Internal-audit function is generally structured in corporations as a department.

While achieving its functions, internal audit is charged with ensuring independent and objective opinions (or advices) which relate to a corporation's operations, functions, processes, systems, or any other subject matter important to client management. While the board of directors is responsible for setting up an internal-control system that assesses risk exposures, takes actions in response to those risks, and updates the internal control

framework as risk exposures change, the internal audit executes these duties on behalf of management. Other than its integral role to management, an internal audit also helps the audit committee in overseeing organization's audit and control functions (Sarens and De Beelde, 2006).

According to the Basel Committee (2012), the function of an effective internal-audit department is to give "independent assurance to the management board and upper management concerning the quality and effectiveness of internal-control, risk management, and governance systems and processes of a bank;" thus; it assists the management board in safeguarding their reputation and organization. An internal audit undertakes two functions in the banks. First, it performs activities along with an objective and independent assessment with regards to effectiveness of corporate governance. Second, it is a kind of catalyst providing suggestions in order to optimize the corporate governance structure of banks (Mihailescu and Ducu, 2011). In this section, internal audit is discussed within the context of prior literature and regulation.

### **2.2.1 Literature Review on Internal Audit**

The internal-audit mechanism is related mostly to Principal Agent Theory. The economic requirement to establish an internal-audit function is consistently endorsed by means of principal-agent theory (Sarens and Abdolmohammadi, 2011)

As the value of a company is determined by its return on investment, the firm's future cash flows are very important for management and all stakeholders (Strikwerda, 2012, as cited in Swinkel, 2012). As a consequence of information asymmetry and conflict of interest, the management is prone to losing control of the firm. It is to be expected that the internal-audit function is to reduce this informational asymmetry between stakeholders and the management.

The literature on internal audit is divided into four parts. These researches deal with the necessity of internal audit, their relevance to the audit committee, effect on earnings performance, and other subjects. But, there is limited empirical research concerning its



advantages and significance, although there is growing attention to internal audit. Internal audit has been globalized because of changes in regulation after the financial crisis and corporate governance scandals. According to research, regulatory changes increased awareness of the value of internal audit improving corporate governance structure in firms (Soh and Martinov-Bennie, 2011).

Today, an internal audit is indispensable for public interest entities and financial institutions. The importance of internal audit has been widely studied. Jensen and Payne (2003) suggest that internal audit serve to help management review and monitor company operations and supports their effectiveness to increase the efficiency of the internal-control system. Arena and Azzone (2007) claim that establishing an internal-audit function increases the effectiveness of the business processes, safeguards company assets, identifies and assess company risks, and draws attention to the reliability of financial reporting.

Carcello et al. (2005) provide one of the rare studies of the relationship between the adoption of internal-audit systems and some firm-specific variables, such as size of firm, leverage, and cash flows. Researchers reported that the existence of an internal-audit department can be monitored based on an organization's risk and auditing characteristics. However, Sarens and Abdolmohammadi (2011) reveal contrary results compared to Carcello et al. (2005); they are presenting that management ownership directly relates with the size of the internal audit and that a proportion of independent board members is negatively associated with internal audit.

There are some studies that measure the relationship between audit committees and internal audit. Cohen et al. (2004) state that the strong linkage between the internal-auditing functions and the audit committee enhance the internal governance capabilities of companies. Allegrini et al. (2006) also find that internal auditing is a source of comfort to audit committees, especially in the domains of risk management and internal control. Researchers illustrate that internal audit can provide comfort by involving the audit committee in the audit plan and by providing reports and presentations through interpersonal and behavioral skills of the internal audit department.

The literature concerning the relation between earnings management and internal-audit quality is limited because of a lack of relevant data. The study of Prawitt and his colleague (2009) shows that there is a negative linkage between internal-audit quality and earnings management. Researchers measure internal-audit quality by means of a survey study. Garcia et al. (2012) report that the association between the internal-audit function performance and the audit committee determines earnings performance level. Coram et al. (2008) indicate that having an internal-audit department in companies increases the probability of detecting and reporting fraud, therefore this decreases operational loss.

### **2.2.2. Review of Regulation**

In order to best examine banking regulation around the world, we should start from the Basel Committee. The aim of the Basel Committee is to develop understanding regarding the key monitoring issues and to enhance banking-supervision quality around the world. The committee strives to ensure that established accounting and auditing standards promote well-established risk management, thus maintaining safety and reliability of the banking system. The Basel Committee published a guidance called “The Internal Audit Function in Banks” and almost all countries strive to comply with this regulation. The committee established an internal-audit guidance which applies to all banks, *“including those within a banking group, and to holding companies whose subsidiaries are predominantly banks and to those holding companies subject to prudential supervision whose subsidiaries are operating predominantly in banking sector”* (Basel Committee, 2012). There are 15 principles in this guidance. In brief:

- Management boards and upper management need independent safeguard regarding the effectiveness of internal control, risk management, and corporate governance of a bank. The mechanism for internal auditing enables realization of this safeguard and to protect banks’ reputations.
- The internal-audit function of a bank is required to be independent of its regular auditing activities so as to maintain duties of the internal auditor with objectivity.

- Internal auditors are required to be competent and experienced in an effective internal-auditing function. (Certifications and education are indicators of individual competency).
- Banks must organize an internal-auditing division with clear objectives, standing point, and authority to carry on effective internal-audit functions within the organization.
- All activities (including outsourced activities) and all departments in a bank are required to be subject to the internal-auditing function scope (scope of internal auditing is proportional to the relevant size of the bank).
- Activities in the internal-audit function are needed to cover regulatory matters in the interest of the auditing plan adequately. (This objective can be acquired by means of effective reporting activities by the auditors.)
- The audit committee, or an equivalent division, is required to monitor the internal-auditing function of a bank (which means that an audit committee is directly connected with the internal-auditing function).
- The ultimate liability of the management board of a bank is to ensure that upper-management structure can carry out an appropriate and effective internal control system; thus, the management board supports the internal-audit function by performing assigned tasks in an effective manner (internal auditing requires necessary resources which enables it to carry out the duties).

Regulation of internal-audit mechanisms is generally similar around the world, although there is a small difference in approach. Regulations in the USA, UK, Europe, and Turkey are taken into consideration, respectively, in this section.

The SOX in the US has a significant role on internal audit as well as other corporate governance mechanisms. Although internal audit is not included in the SOX, the law has evolved in time and internal audit has played a significant role in compliance with the SOX regulations, such as COSO (Rittenberg and Patricia, 2005). In the US, the NYSE requires companies to have effective internal-auditing functions. The NASDAQ is planning to organize and to maintain an internal-audit function for the listed firms. In terms of the banking sector, the Fed, the OCC, and the FDIC supervise banks regarding asset size and

set different internal-audit rules. The Fed has just implemented an enhanced internal-audit function to address lessons learned from the recent financial crisis (The Fed, 2013). The Fed enhancements improve attributes of internal-audit function, such as professional competence and staffing, the adequacy of internal audit function's processes, and internal audit performance processes. The banks under supervision of the Fed must comply with these regulations. The FDIC (2005) also declared that all institutions are required to establish an internal-auditing function proportional to their size and the nature and scope of their operations. If a bank exhibits major weakness in an internal audit, any enforcement by the FDIC is brought to the agenda.

In the UK, corporate governance has come to the forefront with a report issued by the Cadbury Committee in 1992. Although internal auditing is only a recommendation for the listed firms based on this regulation, the internal auditing function is indeed an enforced condition (Smith, 2003). After the 2008 economic crisis, the new Financial Services Act was published in 2012 and this act tightened corporate governance in the UK. Although there was no extensive criticism for the potential role of internal auditing in the financial crisis, the role of internal audit would be brought forward for criticism, and the relevant sub-regulation was drafted by 2013 (Bank of England, 2013).

On the other hand, in Turkey, internal-audit departments and their function were first established in February 2001 according to the regulation of Internal Systems in Banks. It was reorganized with the Banking Law Act in 2005 and the internal-audit mechanism has taken its final form. After the Turkish Banking Law was issued in 2005, a new regulation came into effect by considering the new developments in corporate governance. Since then, internal audit, internal control, risk management, and the responsibilities of audit committees, the board of directors, and senior management have been regulated under Regulation on Internal Systems of Banks, 2006. This regulation was updated in 2012 and 2014. The regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks has been in effect since 11 July 2014.

The Regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks<sup>2</sup> has been prepared on the basis of the Banking Law Act, (2005). According to this regulation, all banking activities “*without any limitation and all its units, including the units in the domestic and overseas branches and the head office, are required to be audited periodically and on a risk basis*” by the internal-audit department. The conformity of operational activities needs to be tested by considering the functionality of internal-control implementations and internal or external regulation. In the implementation of an internal-auditing function, all banks are required to have an internal-audit department and a sufficient number of staff, depending on the bank size and on the sophistication, intensity, range, and risk level of the bank’s activities (Banking Act, 2005). Inspectors in internal-audit departments must complete their tasks with professional diligence and care which entails inspectors to have enough educational background, experience, knowledge, and skills. Inspectors are required to prepare an internal-audit report; this report needs to be submitted to the attention of the senior management to provide information concerning the concurrency of a given department or activity with the Law and other applicable legislation and the internal policies, implementation procedures, and the effectiveness of the operated processes of the bank (Banking Act, 2005). Inspectors need to report corrective actions as well, if they are required.

According to the Regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks (BDDK, 2014), there are the computer-based audit techniques and data-processing and analyzing techniques to be facilitated in internal-audit activities. Therefore, information technologies are common in Turkish banks in order to increase the efficiency of internal audit.

### **2.3. Internal Control**

According to the COSO (1994), internal control is generally defined as “*a process affected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories*”:

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<sup>2</sup> It also regulates internal control, risk management, and audit committees in banks.

1. Effectiveness and efficiency of operations.
2. Reliability of financial reporting.
3. Compliance with applicable laws and regulations.

The main concepts of internal control address that a company's control is required to be established and maintained by the management so that the risk management efficiency provides qualified compliance including all employees through internal communication and adequately effective continuous monitoring (COSO, 1994). Understanding internal control in restatement studies is especially important because quality financial statements depend on the soundness of the internal control. Therefore, ineffective internal control may lead to severe risk of restatement and damaged credibility.

While internal control is a continuous process in financial institutions, internal audit is conducted within a certain period. Internal control and bank operations are executed simultaneously. However, in some countries, such as Turkey and France, internal control is organized as a department as well as it is a process for financial institutions. It resembles an internal audit in this aspect. There are similar characteristics regarding internal-control and internal-audit departments since both have competent and qualified managers; and there are similarities in terms of their location in an organization, and their relationship with audit committee. However, the internal audit tries to find out deficiencies of the internal-control environment and to improve internal-control efficiency.

Accounting and operational scandals which broke out at the end of the 20th century resulted in the SOX of the USA, The Combined Code on Corporate Governance of the UK, the 1991 AKG in Germany, and the Enforcement Regulation for the Commercial Code of Japan. In spite of these new regulations in the world, these countries have failed to prevent major losses such as \$50 billion in the Madoff Case and fraudulent internal control and \$7.2 billion in the Societe Generale Case including unauthorized trading. One of the main reasons of unauthorized trading at Societe Generale is a good example for the shortcomings of internal control in the banking industry (Arnold et al., 2008).

Most regulations aim to decrease bankruptcy of a corporation due to internal-control weakness. On the other hand, internal-control activities help to improve corporation's earnings performance and decrease operational loss. The literature tries to prove this argument based on several dimensions.

### **2.3.1 Literature Review on Internal Control**

The literature mainly focuses on the relation between internal-control problems and earnings management or financial performance. Although many different dependent variables, particularly financial indicators, have been utilized in studies, employment of explanatory variables is very limited. When the literature is reviewed, it can be seen that there is a lack of data on internal-control mechanisms. The literature is rich in reports of internal-control weaknesses for the relevant regulatory bodies. Generally researchers employ data concerning disclosure of material weaknesses in internal control as required by SOX in the US. This data is a binary variable which is limited to the information regarding the existence of an internal-control problem.

The internal-control literature could be divided into two sections: the studies related to earnings performance and others. According to Skaife et al. (2007), internal control does not only strengthen corporate governance in a company, but also it increases profitability. Ashbaugh-Skaife et al. (2009) report a case including both SOX-302 and SOX-404 disclosures, in which companies reporting internal-control deficiencies present weaker earnings quality. The researchers state that it is confirmed by the external auditors that if companies correct their internal-control deficiencies reported previously, they experience an elevation in their earnings quality. However, the study of Zhang (2008) on non-financial listed companies in 2007 indicates that there is no link between internal-control quality and earning quality, but rather a company's characteristics and corporate governance factors may affect internal-control quality and earning quality systematically. Finally, Wu et al. (2011) suggest that there is a positive correlation between internal-control weakness betterment and firm value, but the betterment does not have an important effect on earnings management.

Altamuro and Beatty's (2010) study examines the relationship between financial reporting and the internal-control regulation of the FDIC in the US. Their results reveal that better internal control, reporting, and monitoring result in better financial-reporting quality in the banking sector.

Wittayapoom and Limsuwan (2012) argue that reaching efficiency in internal control enhances the reliability of financial reporting and increase the credibility in the eyes of stakeholders and other investors. Internal-control effectiveness enables administrations to reach a reasonable assurance for financial information, reliable assets and bookkeeping. This is an incentive for companies to adhere to the mandatory policies and to comply with regulations.

The studies on internal control are not limited to earning performance. Ashbaugh-Skaife et al. (2007) find that firms that have internal-control weakness and more complex organization are exposed to accounting risks. Hammersley et al. (2008) address an adverse market reaction to the firms which declare material weaknesses in their internal control as a circumstance of SOX Section 302. Tseng (2007) reports the negative correlation between companies' market value and their internal control; this correlation is higher while problems of internal control are relevant to "more-than-reporting" internal control versus "reporting-only" internal control.

It is possible that poor internal-control quality may lead to obligation to submit subsequent financial restatements. Plumlee and Teri (2010) show that there is a linkage between internal-control quality and the possibility of subsequent financial restatements.

Johnstone and Rupley (2011) examine the relation between corporate governance and internal-control weakness. Their study suggests that improvement in the qualifications of boards of directors, audit committees, and senior management affect internal control positively. Doyle et al. (2007) argue that firms experiencing internal weakness can be characterized with qualities of small, young, financially weak, complex, rapid-growing, or undergoing a restructuring process.



### 2.3.2. Review of Regulation on Internal Control

The regulation of internal control was initiated in the US and the UK. Today, more complex and casuistic rules are implemented around the world, particularly for financial institutions.

In the US, the COSO was established by the private sector in 1985 to determine basic reasons for financial scandals in the financial-reporting domain. The COSO has improved the internal-control principles. The US Congress started to strengthen internal control in the banking sector and the Federal Deposit Insurance Corporation Improvement Act mandates that banks comply with internal-control monitoring and reporting rules. As it was directly built on the Federal Deposit Insurance Corporation Improvement Act implementation of the COSO infrastructure, the Congress passed the SOX act in July 2002. The SOX regulations not only consider US companies, but also they consider companies in developing and developed countries. After the regulation, company administrations are required to make annual reporting concerning their internal-control system adequateness; and independent auditors are required to confirm assessments of administrations (Altamuro and Beatty, 2010).

The internal-control regulation implemented in SOX was designed to enhance only financial reporting. However, internal-control regulation in Europe<sup>3</sup> tries to improve all banking/firm operations.

As a consequence of the modernization of corporate governance regulation in the UK, the Corporate Governance Code was published in June 2010. The main principle of the Code regarding internal control states that: *‘The board is responsible for determining the nature and extent of the significant risks; it is willing to take in achieving its strategic objectives. The board should maintain sound risk management and internal control systems’* (Financial Reporting Council, 2010).

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<sup>3</sup>The European Commission issued the EU Action Plan and they recommend member states to develop best corporate governance practices. Today, almost all EU countries has an internal-control regulation and it can be seen sufficient internal control in the annual report

The primary difference between the US and a majority of other countries in the world (for instance, Australia, Europe, and the UK) in terms of the internal-control approach is the fact that whereas the US system is largely prescriptive and rule-based, the other internal-control codes often adopt the comply-or-explain principle regarding the application of the code (Van de Poel and Vanstraelen, 2011). However, “comply-or-explain” principles have been changing since the 2008 financial crisis. Today, many countries in the world design their regulation according to the Basel Committee principles.

In the 1990’s, The Basel Committee recognized the significance of operational risk, and perceived this in terms of deficiencies in the information-system infrastructures or in internal control which caused unexpected losses before the Barings scandal (Power, 2005). Over the last twenty years, while the Basel Committee published some documents concerning internal control and operational risk, special interest has also been directed toward the importance of internal control in terms of the Basel Pillars<sup>4</sup>. Internal-control practices are an inseparable part of the Second Pillar.

The Basel Committee published “Principles for Enhancing Corporate Governance” in 2010, and this document regulates internal control in banks. According to this document, an internal-control system is obliged to be designed effectively and companies’ internal-control infrastructures are required to keep pace with any changes which may arise in the risk profile of banks (including its growth) and in their external risk landscape. The main principles are presented below:

*Internal control are designed to ensure that each key risk has a policy, process or other measure, as well as a control to ensure that such policy, process or other measure are being applied and works as intended. As such, internal control help ensure process integrity, compliance and effectiveness. Internal control help provide comfort that financial and management information is reliable, timely and complete and that the bank is in compliance with its various obligations, including applicable laws and regulations. In order to avoid actions beyond the authority of the individual or even fraud, internal control also place reasonable checks on managerial and*

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<sup>4</sup>Basel Guidelines are based upon three pillars: Minimum Capital Requirement, Internal and Supervisory Review Process, and Market Discipline.

*employee discretion. Even in very small banks, for example, key management decisions should be made by more than one person (“four eyes principle”). Internal control reviews should also determine the extent of an institution’s compliance with company policies and procedures, as well as with legal and regulatory policies.*

The Basel Committee (2010) states that the board of directors in banks is obliged to recognize and allow those independent, qualified, and competent internal controllers, as well as other internal-control functions (including compliance functions); these are essential to the corporate governance process to reach their important objectives.

After the financial crisis, the EBA especially addresses risk management and internal control. It has developed a three-lines-of-defense model and the second line is related to internal control. This mentioned function is required to be independent from any department and have superior authority within the organization (Hopt, 2013). The internal-control structure is required to consist of three control functions: risk control, compliance function, and internal-auditing functions (EBA, 2011). These mentioned control functions report directly to the audit committee and the other relevant independent bodies. A bank’s internal-control infrastructure is mandated to ensure that operations are performed effectively, there is appropriate risk control, operations are conducted prudently, financial and non-financial information reporting is reliable both internally and externally, and that the organization conforms to regulations, laws, supervisory bodies’ directives, and internal codes and corporate decisions (EBA, 2011). The whole organization — including the activities of all business, support, and control units — is required to be covered by the internal-control framework.

In Turkey, the internal-control mechanism was first established in 2001, just after a great financial crisis. Although internal-control weakness was not one of the reasons for this crisis, the efforts of adaptation to the European Union regulations and global norms accelerated the implementation of internal-control rules. Regulation on Internal Control and Risk Management Systems of Banks was issued in 2001. According to new developments in corporate governance, Regulation on Internal Systems of Banks was published in 2006; then, updated in 2012 and 2014, and it is still enforced on banks.

Internal-control mechanisms in banks are needed to ensure the protection of bank assets, conducting activities efficiently in accordance with regulation, and maintaining the reliability and comprehensiveness of the accounting and financial-reporting system (BDDK, 2006). In Turkey, internal-control activities are mandated to cover “*control of actions to execute activities, control of the communication channels, information systems and the financial reporting system, and compliance controls*” (BDDK, 2006). An internal-control system consists of not only control facilities, but also an internal-control unit. This structure differentiates internal control in Turkey from other countries. An internal-control unit should be staffed with one manager and with professionally qualified personnel in sufficient numbers according to the scale of the bank and the nature and complexity of its activities as determined by the regulation. Control reports are required to be submitted on regular bases; to that end, necessary measures should be taken by the Turkish banks. Internal-control staffs are required to possess adequate educational background, experience, competency, and skills (BDDK, 2006).

#### **2.4. Risk Management**

The aim of risk management is to establish a reference structure that allows companies to deal with risk and uncertainty (Dionne and Chun, 2013). It is essential to employ effective risk management so as to control, assess, and oversee all risks, uncertainties, and companies' level of exposure to them. Although the risk management concept has been common for many years, its significance has been gradually increased for financial corporations in recent decades. However, financial risks, such as credit and market risk management activities intensified during 1980s; non-financial risks, such as reputational risk, have been common since the 1990s. After international risk regulation gained importance, integrated risk management was introduced in 1990s; governance of risk management has been widely adopted since major operational-loss events caused banks and regulators to pay increasing attention to the development and improvement of risk management practices that could prevent or mitigate emerging operational risks (Wang and Hsu, 2013). However, banks do not invest resources and allocate staff sufficiently to the operational-risk area.

Procter & Gamble's \$175M loss in 1994, Chase Drysdale's loss due to misreporting the present value of government bonds in 1982, Bankers Trust' derivative loss in 1995 due to misconduct of staff, Barings, Allied Irish, and Societe Generale's operational loss (Jerome Kerviel) due to not controlling people's behavior have exposed the increasing significance of risk management. These incidents and international crises increased regulatory awareness regarding risk management; but SOX, Basel I and II Accords, and the UK's Cadbury and Greenbury Reports did not suffice to prevent financial crises or to decrease operational-risk events to a reasonable level. It was understood that the regulation of risk management was not solely sufficient; instead they are required to be applied and enforced.

In the last financial crisis, financial companies also were deficient in effective internal control, timely and accurate reporting to boards of directors and senior management, and corporation-wide views on risk management problems (Lang and Jagtiani, 2010). Therefore, understanding of risk and risk management — particularly to board members and senior managers — must be improved in order to prevent a new crisis (De Jongh et al., 2013).

On the other hand, a series of costly, huge operational-risk incidents have been common among financial institutions in spite of qualified risk management departments; this has caused a discussion of whether adequate risk management frameworks are provided by an effective risk management department. It is Hoffmann's (2002) view that effective operational-risk management is the responsibility of all employees firm-wide and not solely that of a risk management department itself. At this point, we should understand the concept of enterprise risk management. Enterprise risk management is a bank-wide approach taken in identifying, assessing, and managing risk. For instance, Kleffner (2003) revealed that companies with a risk management division exhibited a disadvantage compared to ones employing enterprise risk management.

Today, boards of directors or audit committees determine risk management policies and processes; moreover special risk management committees are common in some large financial institutions. A risk management department is a significant piece of the risk

management process and is not only a regulatory necessity for financial institutions today, but is also common for ordinary companies.

#### **2.4.1 Literature Review on Risk Management**

An efficient risk management is believed to increase firm value and accordingly shareholders' wealth. Under the circumstance of no risk management in a company, increasing instability in a company's cash flow will cause the need for external funds. Hence, efficient risk management enables companies to adjust their cash flow (Mcneil et al., 2010).

The 2008 financial crisis doubtlessly increased the importance of risk management. Senior supervisors from five developed countries (the US, the UK, Germany, France, and Switzerland) issued a report called "Observations on Risk Management Practices during the Recent Market Turbulence" (Senior Supervisory Group 2008). Their observation is basically related to governance, incentives, and the effectiveness of risk controls. Increasingly aggressive attitudes of risk takers impair the independence of risk managers and prevent their efforts to control the personnel; thus, this hinders effective risk identification and measurement. The report proves that these common mistakes of banks prevent effective corporate governance. The report also outlines that incorporating finance into the risk management processes, increasing board and senior management engagement in risk management, and improving risk reporting to the senior management are required to be priorities for further improvements.

According to the Institute of International Finance Report (2008), there are obligatory policies to be adopted by the authorities in order to avoid new crises. Such as:

- *Strengthening risk management organization structures, ensuring independence of the chief risk officer and its influence over the firm's risk level,*
- *Strengthening risk management tools and framework by using multiple methodologies, understanding the limitation of single risk measurement approach.*

Sabato (2010) examines the points where risk management fails and concludes that the lack of an appropriate risk-governance structure dissolves any benefit generated even by a first-class risk management team. Andersen (2008) claims that the existence of effective risk management enables investors to make investments in company assets, which develops a company's business opportunities and enables a company to sustain its position in a competitive environment.

On the other hand, *operational risk is inherent in all banking products, activities, processes and systems, and effective management of operational risk has always been a fundamental element of a bank's risk management* (Basel Committee, 2011). Since reliable internal governance constitutes the foundation for corporate risk management operated efficiently, risk management can be accepted as an important mechanism of corporate governance. Chernobai et al. (2011) report that firms experiencing operational-loss incidents have higher G-index<sup>5</sup> scores; this suggests that these firms are more isolated from the market regarding corporate control. Cope et al. (2012) determined the magnitude of operational losses incurred by banks within their economic, legal, and regulatory infrastructure; they revealed a direct relationship between the scale of operational losses and the legal & regulation conditions of banks.

#### **2.4.2 Review of Regulation on Risk Management**

Much of the risk management regulation is originated from the Basel Committee of BIS. Although the Basel Committee is not authorized for any formal supranational supervising, its formulation of broad supervision standards, guidelines, and recommendations about risk management are common codes for all countries that want to integrate globally. Risk management regulations could be classified into two categories. One of them is regulation of the calculated capital-adequacy ratio and its components. The other is regulation of processes, structures, and other principles of risk management within bank organizations. Since the present thesis focuses on the second regulation, regulations are reviewed from the angle of the impact of the existence of the procedure instead of its operational tools and methods, such as using value at risk in market risks, credit risks, etc.

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<sup>5</sup> G-index is a corporate governance index that is developed by Gompers, Ishii, and Metrick (2003) and a higher G-score means lower corporate governance quality.

Risk management is regulated by the Basel Accords and the first Basel Accord of 1988 brought a minimum capital-adequacy standard. Its main focus was on credit risk. Although credit risk is the most important risk for banks, the Basel I was criticized because of a lack of measurement of market risks. After the birth of Value at Risk, risk management was recognized as a quantitative science. The Basel I updates continued in a more quantitative fashion until the initialization of the Basel II between 2001 and 2004. Although its main theme was credit risk,<sup>6</sup> its real contribution to risk management<sup>6</sup> was the concept of Pillars. On June 26<sup>th</sup>, 2004 the G-10 central-bank governors released the following statement:

*The Basel II Framework sets out the details for adopting more risk sensitive minimum capital requirements [Pillar 1] for banking organizations. The new framework reinforces these risk-sensitive requirements by laying out principles for banks to assess the adequacy of their capital and for supervisors to review such assessments to ensure banks have adequate capital to support their risks [Pillar 2]. It also seeks to strengthen market discipline by enhancing transparency in banks' financial reporting [Pillar 3]. The text that has been released today reflects the results of extensive consultations with supervisors and bankers worldwide.*

*It will serve as the basis for national rule-making and approval processes to continue and for banking organizations to complete their preparations for the new Framework's implementation.*

Capital charges for operational risk were first introduced with Basel II. In response to the 2008 financial crisis, Basel III was created in order to develop the consistency, transparency, and quality of the capital base, enhance risk coverage and emphasizing pro-cyclicality. Basel III requires banks to conduct superior risk management and increases bank audits. For example, Chief Risk Officers of banks are required to be more independent from the CEOs (Basel Committee, 2012). The accord also advances some rules (Basel Committee, 2010):

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<sup>6</sup>especially risk-sensitive approach assessing the risk of credit portfolios with internal-ratings based approach



- Total Tier 1 minimum capital: equity portion was increased from 2% to 4.5% and the total for Tier 1 is planned to be increased from 4% to 6% in 2019;
- Minimum total capital remains at 8% by 2013, but an additional safety measure (conservation buffer) is going to be added and set at 10.5% for 2019 (to protect banks from recessions or financial crises).

The concept of risk management and the application of risk management in an organization has evolved with the Basel Principles. The latest regulation, Core Banking for Effective Banking Supervision, was published in September 2012 by the Basel Committee considering vulnerabilities highlighted in the last crises. According to the Basel Committee (2012), monitoring bodies around the world are required to detect whether banks are structured an extensive-risk management system (covering Management Board and upper management monitoring) suitable to detect, measure, assess, oversee, control, and report or reduce material risks right-on-time and to evaluate their capital adequacy and company liquidity concerning their individual risk profile, market circumstances, and current macroeconomic conditions. The risk management process of banks is required to be proportionate with the risk profile and the systemic importance of the bank.

While various regulations of risk management forms the business practice around the world, operational risk remains on the agenda because of major cases such as Jerome Kerviel in Societe Generale or JP Morgan's misconduct in 2013.<sup>7</sup> Regarding these cases, the risk management departments were not sufficiently competent to prevent these scandals; more integrative approaches — such as inclusion of directors from the core departments, high level of interaction among risk management division head and managers, and intensive application of available technology — are needed for a competent risk management infrastructure (Arena et al., 2010).

Today, many countries require banks to have a comprehensive risk management system in order to maintain their banking license. This system is mandated to include relevant and competent staff and good reporting facilities. A sound risk management culture,

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<sup>7</sup> <http://www.bloomberg.com/news/2013-09-19/jpmorgan-chase-agrees-to-pay-920-million-for-london-whale-loss.html>

implementing policies and procedures which are consistent with risk management strategy, controlling material risks, and taking measures are needed by banks to have a competent risk management department (Basel, 2012).

Financial institutions in the US, the UK, and other EU member states generally comply with the risk management principles of the Basel Committee. The SOX regulation was introduced in the United States in 2002 not only for banks. The New York Stock Exchange introduced regulations concerning the risk management for listed companies because of experienced financial scandals and bankruptcies due to poor risk management (NYSE, 2003).

In Turkey, risk management function is obliged to be set up in order to define, measure, monitor, and control risks. Banks are not only required to determine policies and procedures related to risk management but also they need to conduct risk management activities by the risk management department and staff (BDDK, 2006). The reasons for Turkish banks to possess competent and sufficient risk management are enumerated below:

- *Design and implementation of the risk management system;*
- *Determination of the risk management policies and implementation procedures on the basis of the risk management strategies;*
- *To ensure that the risk management policies and implementation procedures are followed and complied with;*
- *To participate in the design, selection and commencement of the risk assessment models and to give preliminary approval, reviewing the models regularly and to make the necessary amendments.*

In practice, risk management departments in Turkish banks generally deal with quantifiable risks, such as risks concerning credit, market, and interest rates. Their business plans and organizational frameworks are structured based on these risks. Only large banks in the Turkish system employ expert and competent staff for assessment of operational risk. Some of them have also an operational-risk sub-department and allocate a budget to this unit. However, a majority of Turkish banks do not have a particular unit to evaluate

this risk. The function of a risk management department in these banks is only to report to a superior level and not to take preventative measures.

## 2.5 Operational Loss

The Basel Committee defines “operational risk” as the risk of loss as a result of inadequate or erroneous internal processes caused by organization members and systems or external events (Jameson, 2011). If the definition is broadened so that it can encompass more potential sources of loss, operational-risk management should also involve all organizations in a company or a bank (Jameson, 2001).

Operational loss can either be the result of internal or external factors. While process, technology failures, human errors, internal fraud, unauthorized trading, injuries, computer failures, or telecommunication problems are the most significant internal factors, man-made incidents such as external fraud, theft, computer hacking, terrorist activities, and natural disasters are the important external sources of operational loss (Chernobai et al., 2008). It is possible to prevent a majority of the internal operational failures through well-structured corporate governance practices, it is quite difficult to eliminate the losses caused by external factors.

Operational risk was first proposed into the agenda in 1998 with the Basel II accord. With that document, the significance of operational risk as a substantial financial risk factor has begun to be discussed. The Basel II Capital Accord was finalized in June 2006 and operational risk has started to be subject to a regulatory capital charge (Basel Committee 2006). Actually, the organization of the Basel Capital Accord uses a three-pillar mutually reinforcing structure and addresses three types of risk: credit risk, market risk, and operational risk.<sup>8</sup> These pillars and calculation methods of operational risk are given in the figure below (Chernobai et al., 2008).

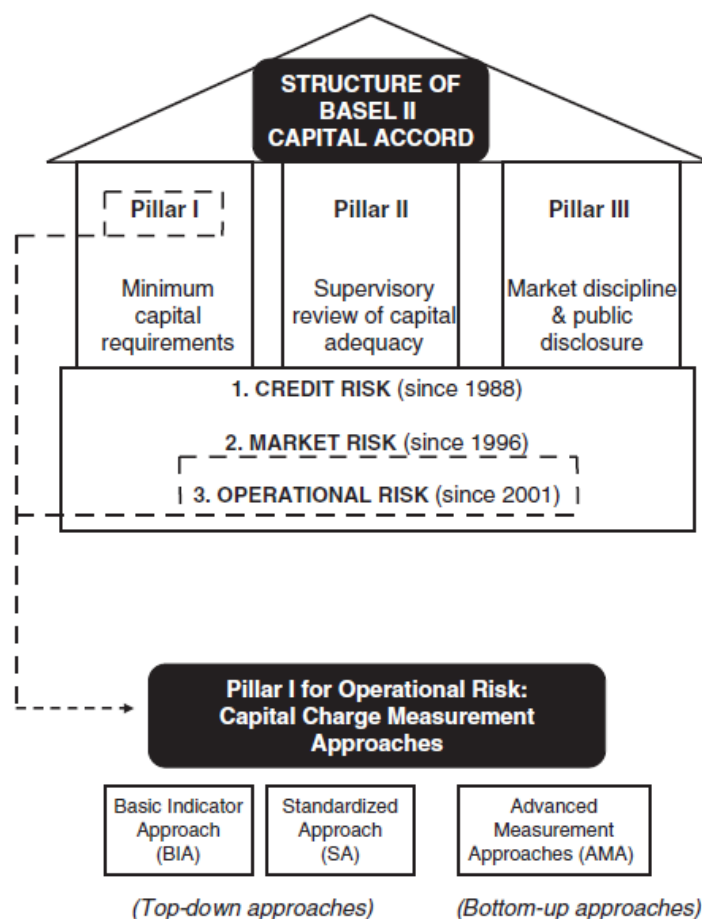
Calculation of operational risk is not an easy task and relies on data availability. Because of the potential of significant losses in operational risk, Basel Committee requires/suggests

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<sup>8</sup> Other risks, such as liquidity and counterparty credit risk are added with Basel III. However, operational risk has not changed with this accord.

large-sized banks to implement advanced measurement approaches. Basic indicators and standardized approaches are not based on data collection, but the capital charge is assigned regarding a fixed proportion of earnings (Rippel and Teply, 2012). Even though a bank uses the most advanced techniques, its success depends on data-collection methodology (actual internal loss data). Banks are required to use both internal and external data to manage their operational-risk exposures according to the Basel rules. It is possible to use basic or standard approaches for calculating operational risk if a bank does not want to implement the advanced or internal method. However, banks (particularly in Turkey) prepare their methodology and collect historical data in order to use advanced methods in the future (Moosa, 2007).

**Figure 2.1 Structure of Basel II Capital Accord**



Apart from a calculation of operational risk, the Basel Committee categorized operational risk into several units according to regulatory-specified business lines or functional units as is given below (Moosa, 2007). The committee has also determined results on the frequency and severity of each type of risk event for a typical bank with investment, commercial, and retail operations. These are reported as low-frequency, high-severity risk events.

- i. **Internal Fraud (ET1):** Events intended to defraud, misappropriate property, or circumvent regulations or company policy, involving at least one internal party, categorized into unauthorized activity and internal theft and fraud.
- ii. **External Fraud (ET2):** Events intended to defraud, misappropriate property, or circumvent the law, by a 3<sup>rd</sup> party, categorized into theft, fraud, and breach of
- iii. **Employment Practices and Workplace Safety (ET3):** Acts inconsistent with employment, health, or safety laws or agreements, categorized into employee relations, safety of the environment, and diversity and discrimination.
- iv. **Clients, Products, and Business Practices (ET4):** Events due to failures to comply with a professional obligations toward clients, or arising from the nature or design of a product, including disclosure and fiduciary, improper business and market practices, product flaws, and advisory activities.
- v. **Damage to Physical Assets (ET5):** Events leading to loss or damage to physical assets from natural disasters or other events, such as terrorism.
- vi. **Business Disruption and System Failures (ET6):** Events causing disruption of business or system failures.
- vii. **Execution, Delivery, and Process Management (ET7):** Events due to failed transaction processing or process management that occur from relations with trade counterparties and vendors, classified into categories such as transaction execution and maintenance, customer intake and documentation, and account management.

Managing of operational risk is totally different than calculation of this risk. The Basel Committee published “Principles for the Sound Management of Operational Risk” and this document provides banks and supervisory boards a certain infrastructure to manage and monitor operational risk in an effective way while assessing operational risk management policies and practices.

According to the Basel Committee (2011), all products, activities, processes, and systems of banks are prone to operational risks; efficient management is a core element of the risk management program of a bank, which requires sound internal corporate governance. In banks, audit committees are required to ensure that an operational risk management culture exists within the whole organization (Basel Committee 2011). Therefore, we understand that relevant committees and boards of directors are responsible for sound operational-risk management.

It is important to answer why operational risk is important for financial institutions. Actually, operational risk was not as common as credit or market risk twenty years ago, however scandals like Societe Generale and Madoff, have helped this concept to gain attention. Halperin (2001) argues that (as cited in Moosa, 2007) “operational risk has traditionally occupied a netherworld below market and credit risk” but “headline-grabbing financial fiascos, decentralized control, the surge in e-commerce and the emergence of new products and business lines have raised its profile.” While credit or market risk has traditionally been followed by the banks, operational risk is being taken more seriously into consideration, and possibly is even regarded as more detrimental compared to market risk (Moosa, 2007). Cummins et al. (2006) indicate that a bank can experience a market value decrease in the days surrounding the announcement of a large operational loss that is considerably much more than the loss itself.

Operational losses have been parts of serious financial crises or scandals. When the recent financial crisis is considered, operational risk was not the main risk type which caused the crisis. However, Andersen et al. (2012) reveal that poor management of the operational risk in financial corporations has resulted in the issuance of loans with inappropriate documents which cause them to assess erroneously the credibility of borrowers. Esterhuysen et al. (2010) show that the year 2008 was the most severe year regarding size and impact of operational losses experienced by financial institutions; the amount of the operational risk-driven losses observed in 2008 was almost four times greater than those observed in 2007. Hess (2011) analyses how operational risk in trading and sales and retail-brokerage business lines affected the financial environment during the financial crisis.

Ordinary operational risk is the risk of less-frequent but larger losses, it can even be viewed life-threatening for banks (Moosa, 2007). Dowd (2003) claims that operational risk can increase in banks because of:

- Merging, demerging, and consolidations in substantial scale.
- The use of automated technology, which creates a high-impact system failure risk.
- The inclined application of outsourcing and integrating in settlement and clearing-house systems.
- The growing trend among banks to act as large-volume service providers in terms of outsourcing back- and middle-office functions.

Literature on the impact of corporate governance on the severity of operational losses is limited (Cope et al., 2012). A majority of the studies analyze the linkage between the institutional size and operational losses (Dahen and Dionne, 2010), or corporate governance inefficiencies and accounting, or market and credit risk. Chernobai et al. (2011) suggest that firms with more internal-control inefficiencies can experience higher operational-loss events. They also conclude that firms with higher G-index (means weaker external governance) could face more operational-risk events.

The Basel Committee (2001) explained that the most significant types of operational risk include breakdowns in internal control and lack of corporate governance. Operational-risk management is recognized as a corporate governance issue (Moosa, 2007). Herring (2002) claims that destructive operational losses are common and their primary reason is the failure of internal control instead of inadequate capital. The regulation of the Basel Committee (2012) states that the internal audit function develops the quality of the internal-control system, which provides vital assurance to bank stakeholders. Jobst (2010) argues that regulatory boards are needed to function as a guide in strengthening risk management practices of financial corporations, in encouraging them to upgrade in terms of internal control, and implementing well-structured policies regarding operational-risk management.

## CHAPTER 3: HYPOTHESIS DEVELOPMENT

In the present dissertation, it is proposed that the operational losses of a bank are influenced by major corporate governance mechanisms, such as internal audit, internal control, risk management, and the gender, financial expertise, and nationality of audit committee members. First, these relationships<sup>9</sup> are examined under four distinct sections, then main characteristics of these mechanisms are discussed together, and accordingly the individual hypotheses are tested.

### 3.1. Audit Committee vs. Operational Loss

Evaluation of the bank's risk-assessment system and the management actions aimed to control company risks is an important step on overseeing the operational performance of a bank and on ensuring the reliability of banks' facilities. Dionne and Triki (2005) assert that each characteristic of an audit committee that improves risk management activity is beneficial for stakeholders. Therefore, it is possible that some audit committee characteristics could influence the reduction of operational risk (loss), which would result as a benefit to the shareholders as suggested.

Psychologists reported that men are more overconfident while making financial decisions, and Barber and Odean (2001) suggest that men make more frequent trades than women, and the performance of men is lower because of excessive trading compared to the performance of women. Srinivasan (2005) illustrates that female directors are more risk averse, less overconfident, and they present more compliance with existing accounting regulations. Srinidhi et al. (2011) report that earnings management is poorer and earnings quality is higher for the companies with management boards dominated by female directors.

When the risk of losing reputation is considered together with risk aversion, reduced overconfidence, and greater likelihood of compliance characteristics, it is suggested that

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<sup>9</sup> While major studies about each mechanism are summarized in the literature-review section, the literature of the relation between operational loss and corporate governance mechanisms shall be summarized in this section.



audit committees with female dominance are beneficent due to their diligence and tendency to hold more frequent board meetings (Thiruvadi, 2012). Watson and McNaughton (2007) examined female directors employed in a retirement fund; they reported that women can be more cautious in their financial decisions than men.

Because women directors or managers are more risk averse, the relevant hypothesis is suggested as below:

**H1: Operational loss decreases with the presence of female members in an audit committee.**

With the reforms in Turkish the banking system, high profitability and growth opportunities in Turkish markets have motivated the entrance of foreign banks into the Turkish banking sector. In spite of globalization, the market conditions, young population, and social culture in Turkey are unique. On the other hand, bolder cultural differences among people and a stronger need for controlling businesses and companies require Turkey to ensure a more extensive level of corporate control so as to completely utilize the knowledge and experience on its products (Lee et al., 2011). Deep knowledge regarding international markets, skills, and informal network contacts are some of the benefits of a multicultural work environment to the decision-making process (Paula and Victoria, 2001). Also, because of cultural differences, foreign managers who make culturally complex decisions generally fail because of varying objectives, business methods, management styles, and development of strategy (Joann, 2005; Delios and Beamish, 2001). Besides, foreign directors have a tendency for deliberate financial misreporting and poor financial performance (Masulis et al., 2012), because these directors do not have a considerable business presence in the home country and so they miss meetings of the management board more frequently than do domestic directors. Foreign audit committee members cannot be successful because they do not work full-time in their home countries. As a matter of fact, foreign managers attend meetings less frequently since most of them live outside their business country (Hyong 2007 as cited in Masulis et al., 2012).

**H2: Operational loss increases with foreigner representation in an audit committee.**

One of the major roles of an audit committee is to monitor the effectiveness of the internal-control, internal-audit, and risk management systems of a bank (Lenz and Sarens, 2012). Dezoort (1999) reveals that members of an audit committee, who have sufficient experience, are able to make decisions regarding internal control similar to auditors rather than like a regular member with no experience. He also reports that audit-evaluation experience impacts the audit committee-member performance on corporate governance tasks. Dezoort et al. (2001) claim that experience and knowledge level of an audit committee member has an impact on their considerations about disagreement between an auditor and upper management. According to the Regulation of the European Parliament and of the Council on particular requirements regarding statutory audit of public-interest entities, it is proposed that an audit committee is required to be composed of at least one member with sufficient experience and knowledge in auditing and one in accounting and/or auditing in order to reinforce the capacity of the audit committee and fulfill its role. Audit committee members are mandated to have at least ten years of experience in the banking or financial sectors.

**H3: Operational loss decreases with the presence of member with auditing background.**

### **3.2. Internal Audit vs. Operational Loss**

According to the Basel Committee (2012), an internal audit function assures bank stakeholders regarding the quality of internal-control system, which helps to decrease the risk of loss and reputational loss of the bank. The goal of internal auditing is to enhance organizational efficiency and effectiveness through constructive criticism (Cohen and Sayag, 2010). Therefore, analysis of the organizational drivers that influence the effectiveness of internal audit enables us to understand how to increase the quality of internal audit and to decrease the risk of loss.<sup>10</sup> Internal audit require the capacity to acquire human capital with suitable competencies, skills, and qualifications to maintain the effective auditing function mandated by monitoring boards (Basel Committee, 2012).

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<sup>10</sup> These organizational drivers are valid for internal control and risk management.

A primary condition for internal audit to be able to perform expected tasks is the availability of a sufficiently large number of competent staff (Arena and Azzone, 2009). Zain et al. (2006) report a direct linkage between internal auditors' evaluation of their contribution to the financial-statement audit and the characteristics of internal-audit function, such as size.

Consequently, the relevant hypothesis is given below:

**H4: Larger internal audit departments lead to decrease in operational loss.**

It is expected that an internal-auditing function will be required to report all important information to the upper management, which enables the administration to take relevant corrective measures (Basel Committee, 2012). Internal-audit reports which contain discussions regarding significant figures, suggestions, management measures, and relevant action plans are recognized as vital results of internal auditing activities; these minimize asymmetry of information concerning matters such as risk management and internal control, and thereby relieve inconsistencies (Sarens et al., 2009). Gendron et al. (2004) highlight that internal-audit reports help to locate deficiencies in firms and to take appropriate measures. Therefore, internal auditing is an important instrument for decreasing operational loss by warning senior management. The numbers of reports can be a signal of internal-audit effectiveness. Therefore, the present hypothesis is suggested as below:

**H5: Higher number of reports leads to lower operational loss.**

Professional certification affects the level of competence of an internal-audit departments (Arena and Azzone, 2009). According to the Basel Committee (2012), professional competence which covers individual and collective knowledge and experience of each internal auditing board member constitutes the foundation of an effective internal-audit function of a financial institution.

In particular, CIA issued by the Institutes of Internal Audit and CPA<sup>11</sup> certifications are commonly required certificates for internal auditors. Ziegenfuss et al. (2006) examine the relationships between key internal-auditing function performance measures (audit-report timeliness and perceptions of internal-audit performance), relative size, resources, and staff quality of internal-audit quality. The researchers suggest that some audit certification affects internal-audit performance.

However, Fadzil et al. (2005) suggest that professional proficiency such as sufficient knowledge, professional membership, and certification can be harmful in terms of the objectivity of internal auditors.

The relevant hypothesis is suggested as below:

**H6: Greater number of certified internal audit department member leads to lower operational loss.**

The Basel Committee (2012) advises banks to provide an appropriate budget to support the internal-audit function's operations. In fact, 2001 (Enron), and subsequent 2002 (WorldCom, Qwest Communications, Adelphia, Global Crossing, Nortel, Parmalat) cases have resulted in budget increases for internal-audit departments (Carcello et al., 2005). This could well be considered as an overreaction. There is not sufficient research covering the effect of budget on performance of the firm, although Carcello et al. (2005) reported that the budget of internal-audit mechanisms is positively correlated with the firm size and debt leverage.

Regarding Turkish banks, an audit committee influences internal audit quality by means of resource-allocation decisions. As a matter of fact, Ho and Hutchinson (2010) claim that as long as there are more available resources available to the internal-audit division, there is greater competence and chance for detecting errors and omissions.

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<sup>11</sup> Refers to Accounting competency.

**H7: Higher percentage of total budget allocated to internal audit department lead to lower operational loss.**

### **3.3 Internal Control vs. Operational Loss**

In addition to empirical research, the \$7.2 billion loss due to unauthorized trading at Societe Generale in January 2008 and claims about Bernard Madoff showed that deficiencies of internal control cause operational loss in the banking sector (Arnold et al., 2008). Chernobai et al. (2011) suggest that there is strong linkage between companies' internal control and their operational risk. In this chapter, the association between the characteristics of internal control and operational loss is examined. Although internal control is recognized as a function or process by many countries, only few countries, such as France, Pakistan, and Nigeria, recognize internal control not only as a function or a process but also a department. An internal-control department is charged with the overall responsibility for controlling operations, capacity, and effectiveness of internal-control systems in a bank. According to the Regulation of Internal Systems and Internal Capital Adequacy Assessment Process of Banks in Turkey (2014), while internal auditors examine *“all activities in a bank without any limitation across all its units, including the domestic and overseas branches and the head office”* and report findings in detail, internal controllers only report control points and deficiencies. Hayali et al. (2011) report that a sustainable and healthy economic environment needs to have an effective internal-control process and a department.

Even though there are structural differences between internal control and internal audit as summarized in chapter 2, their effectiveness will be evaluated in the same framework. In the Turkish banking system, internal-audit and internal-control departments depend on audit committees and their main aim is to decrease operational loss. Two departments are designed under the internal system, depend on the audit committee, and are not established for profit and to decrease operational loss in a bank.

**H8: Larger internal control department leads to lower operational loss.**

Control activities make certain that required actions are taken to address risk in order to achieve the bank's objective. Examining control points is the major part of control activities in the Turkish banking system. Internal-control staff report the outcome of the examination of control points. Control points are effective tools that facilitate internal-control staffs' duties. According to the study of Agbejule and Jokipii (2009), as internal-control activities increase, the effectiveness of the internal-control system develops (Ratcliffe, 2009). Danescu et al. (2012) assert that the lack of internal-control activities is a kind of risk that affects all corporations.

Accordingly, the relevant hypotheses are suggested as below:

**H9: More control activities in an internal control department lead to lower operational loss.**

**H10: Higher number of certificated staff in an internal control department lead to lower operational loss.**

**H11: Higher budget allocated to an internal control department leads to lower operational loss.**

### **3.4 Risk Management vs. Operational Loss**

Risk management systems, including risk management departments, generally deal with financial risks, such as credit risk, interest-rate risk, foreign-exchange risk, etc. However, there are numerous incidents in the history of the financial industry that can be traced back to operational risk (Chernobai, 2011). According to the survey conducted by the Basel Committee, including operational-risk management practices of 30 major banks (Basel Committee, 1998),

*“Overall the interview process uncovered a strong and consistent emphasis on the importance of management oversight and business line accountability for operational risk. Senior management commitment was deemed to be critical for successful corporate-wide risk management.”*

The BIS published well-structured principles on internal management and supervision of operational risk. One of them was “board of directors should ensure that bank’s operational risk framework is subject to an appropriate independent review and to an assessment carried out by independent and competent staff.” Today, almost all banks have a risk management department or risk management systems; there is at least one staff responsible for operational risk in order to decrease operational loss. In Turkey, the majority portion of the risk management activities is performed by the risk management department. In the present chapter, the relationship between characteristics of risk management departments and operational loss is discussed.

Andersen (2008) claims that the size of the risk management department represents the performance of a firm and may represent current organizational weakness that might affect risk management capabilities and performance results. The Regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks (2014) implies that risk management departments are required to have enough skilled personnel with educational background, experience, and competent knowledge regarding the subject area.

Hakkarainen et al. (1997) suggest that an effective risk management process is the result of effective board and senior-management oversight of the bank’s activities and appropriate staffing. When performing risk management responsibilities, management should establish a risk management program that includes involvement of competent staff (Marchetti, 2005).

The number of staff is generally parallel to the efficiency of the organization. Nevertheless, overcrowded staff can decrease effectiveness of an organization because managers are overburdened. Therefore, it is possible that an optimal number of staff in internal-audit, -control, and risk management departments can decrease operational loss.

### **H12: Larger risk management audit department leads to lower operational loss.**

One of the major functions of risk management is to prepare comprehensive, accurate, consistent, and actionable reports that are relevant to risk exposure and operational events

(Basel Committee, 2009). Lam (2003) states that one of the most important functions of risk management is to produce timely and relevant risk reporting to the board of directors and senior management. Frequency and number of internal and external reports on risk management performance reporting significant risks contribute substantially to effective governance within an organization (Fraser and Simkins, 2009). An effective reporting process may contribute to the detection and amendment of arising operational risk issues in advance. It provides a foundation for evaluation of operational risk and relevant strategies as well as incentives to enhance operational risk management (Institute of Operational Risk, 2010).

**H13: Higher number of reports prepared by a risk management audit department leads to lower operational loss.**

One of the major reasons for scandals in Kidder Peabody (U.S) and Barings Bank (UK) was risk management incompetence. Dickinson (2001) suggests that more knowledge and a greater core competence in risk management usually mean lower risk.

**H14: Higher number of certificated staff in a risk management audit department leads to lower operational loss.**

Fraser and Betty (2009) argue that conducting a risk management process requires sufficient resources, including funds and expertise. A risk map, containing information for administration concerning major potential risks, provides critical insight about the budget-monitoring process. If a bank has a high risk profile, it needs competent staff and advanced IT systems that support the complexity of bank operations.

**H15: Higher proportion of total budget allocated to a risk management department leads to lower operational loss.**



### **3.5. Internal Audit, Internal Control, Risk Management vs. Operational Loss**

So far, each mechanism is discussed by itself in terms of the developed hypotheses. However, these mechanisms are in cooperation with themselves and this collaboration can add value by sharing information and fostering innovation and synergy (Lowndes Skelcher, 1998). The dynamic complexity of corporate governance can only be understood by bringing together a range of mechanisms and at the same time determining their impact on a bank's business strategy (Naciri 2013). In this context, managing operational risk and decreasing it to an acceptable level requires some actions (Fraser and Simkins 2009):

- Everyone should understand the firm's goals and objectives clearly and know how they contribute and how that fits into the bigger picture
- Resources should allocate efficiently to departments. This means that the right resources (people, business processes, and systems) and the designation and application of process should configure optimally
- Performance of departments should be monitored using indicators and know which factors need to be adjusted in order to achieve the desired performance results
- Audit committees and boards of directors should develop capabilities to handle unexpected or uncontrollable factors building relationships intra-firm.

Most operational environments are characterized by change. This dynamic environment affects how to assess operational risk. Some changes occur in the internal environment (new systems, new people that bring relationships, new managers). For example, risk managers cannot decrease operational loss, but they help to encourage the risk culture in organizations. They can constitute good risk management behavior and cause it to become widespread through communication. This process first influences other corporate governance mechanisms.

Because these mechanisms serve a common purpose, they should be taken into consideration together and the characteristics of all three departments should be dealt with in the same model. In this way, the total effect on operational loss of these characteristics can be evaluated and analyzed together.

**H16: Higher proportion of total staff in internal audit, internal control and risk management departments combined to total staff leads to lower operational loss.**

**H17: Higher proportion of number of report prepared by internal audit and risk management departments and number of control point examined by internal control department to total staff leads to lower operational loss.**

**H18: Higher proportion of the number of certificated staff in internal audit, risk management and internal control departments combined to total staff leads to lower operational loss.**

**H19: Higher proportion of total budget allocated to internal audit, risk management and internal control departments combined leads to lower operational loss.**

## CHAPTER 4: RESEARCH DESIGN

This chapter discusses the research methodology employed in this study for investigate the hypotheses developed in Section 3. Section 4.1 discusses data sources and data selection methods; Section 4.2 presents empirical models.

### 4.1. Data and Variables

#### 4.1.1 Sample Selection

All Turkish banks licensed by the Banking Regulation and Supervision Agency have to have an internal-control, an internal-audit, and a risk management department and at least two audit committee members. This is a mandatory regulation and has been enforced since 2006. The Turkish banking sector has an oligopolistic market structure and the asset size of the seven largest banks constitutes 71 percent of the total asset in Turkish banking sector.<sup>12</sup> The present sampling group is only comprised of deposit banks with a valid license to collect deposits from its investors because of their importance in the economy.<sup>13</sup> Effective corporate governance is substantially crucial for deposit banks. During financial trouble they are prone to bank runs and their failures have the potential to trigger macro-economic crisis. It is generally argued that non-deposit banks have no or very little systemic risk in the Turkish banking system. The total assets of banks included in the sampling group is equal to **91.36%** of the total asset value of the Turkish banking sector.<sup>14</sup> The considered time period starts from the year 2006, because major corporate governance mechanisms started to be enforced on Turkish banks in 2005 after issuance of the Banking Law with serial number 5411 and with an issue date of October 19<sup>th</sup>, 2005; the concerned period ends in year 2012. This represents the seven-year period after the corporate governance reform in Turkey when exacting corporate governance mechanism information first became available.

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<sup>12</sup> According to financial results in 31.12.2013. [www.tbb.org.tr](http://www.tbb.org.tr)

<sup>13</sup> Deposit banks help to efficiently channel savings into investment, thus supporting economic growth. Problems in financial intermediation not only disturb the financial system, but also undermine the effectiveness of monetary policy, under financial intermediation, but they can also weaken the effectiveness of monetary policy, aggravate economic downturns, trigger capital flight and exchange rate pressures, and create large fiscal costs related to rescuing troubled financial institutions (IMF, 2014)

<sup>14</sup> The names of the nineteen Banks will be given in Annex.

The collected data covers 19 deposit banks from the Turkish banking industry. The panel data is unbalanced because of some minor missing data from the 19 deposit banks.

#### **4.1.2 Variables**

While the main dependent variable is operational risk, explanatory variables are several characteristics of internal audit, internal control, risk management, and audit committee.

##### **4.1.2.1 Explanatory Variables**

This section presents detailed information about the measurement of each explanatory variable. The explanatory variables are set into four broad categories: Internal Audit, Internal Control, Risk Management, and Audit Committee.

First of all, the relevant literature was reviewed concerning the data that we plan to use; then, some of the data were selected according to their availability. Table 4.1 exhibits the sources of the variables used in previous major studies as well as additional variables that were utilized in the present model within the limits of data availability.

Although the Turkish banking sector has an oligopolistic market, each bank has different characteristics — small to large, domestic to multi-national, retail focused to corporate-banking focused. In order to decrease this heterogeneity, variables are used as ratios with denominators of explanatory variables — except for dummy and control variables — will be total staff. The total staff indicates the number of staff in the bank. This denominator enables us to clean the noise in the data sourced from banks' structures.

**Table 4.1 Explanatory variables**

Main Subjects	Variables	Abb.	Author	Measurement
Audit Committee Members	Gender	acgender	Thiruvadi (2012)	Dummy variable that equals one if female representation on audit committee
	Nationality	acforeign	Paula and Victoria (2001)	Dummy variable that equals one if foreigner representation on audit committee
	Audit Experience	acaudit	European Commission (2011)	Dummy variable that equals one if auditor representation on audit committee
Internal Audit	Staff Size	iastaff	Zain et al. (2006)	Proportion of number of staff in internal audit department on total Staff
	Reporting	iareport	Gendron et al. (2004)	Proportion of Number of Report prepared by Internal Audit Department on Total Staff
	Competent	iacert	Fadzil et al. (2005)	Proportion of Number of Certificated Staff in Internal Audit Department on Total Staff
	Resource	iabudget	Carcello et al. (2005)	Percentages of total budget allocated to Internal Audit Department
Internal Control	Staff Size	contstaff	As determined Internal Audit	Proportion of Number of Staff in Internal Control Department on Total Staff
	Control Point	contcont	Agbejule, A Jokipii (2009)	Proportion of Number of Control point controlled by Internal Control Department on Total Staff
	Competent	contcert	As determined Internal Audit	Proportion of Number of Certificated Staff in Internal Control Department on Total Staff
	Resource	contbudget	As determined Internal Audit	Percentages of total budget allocated to Internal Control Department
Risk Management	Staff Size	riskstaff	Marchetti (2005)	Proportion of Number of Staff in Risk Management Department on Total Staff
	Reporting	riskreport	Lam (2003), Fraser and Simkins (2009)	Proportion of Number of Report prepared by Risk Management on Department Total Staff
	Competent	riskcert	Dickinson (2001)	Proportion of Number of Certificated Staff in Risk Management Department on Total Staff
	Resource	riskbudget	Fraser and Simkins (2009)	Percentages of total budget allocated to Risk Management Department
IA, IC & RM (Total Evaluation)	Staff Size	totalstaff		Proportion of Number of Staff in Three Departments on Total Staff
	Reporting	totalreport		Proportion of Number of Report prepared by three departments on Total Staff
	Competent	totalcert		Proportion of Number of Certificated Staff in three departments on Total Staff
	Resource	totalbudget		Percentages of total budget allocated to three departments

#### 4.1.2.2 Dependent Variable

The BIS has called for better measurement and management of operational risk, described as the risk of loss caused by inappropriate or erroneous internal processes, human-borne actions, and systems, or by external incidents (Hsu et al., 2013). Chernobai et al. (2011) suggest that firms with stronger governance have lower levels of operational risk. However, the literature cannot explain fully which corporate governance mechanism effects operational risk. The literature on the effects of internal control, internal audit, risk management, and audit committees on operational risk is limited because of lack of data.

Turkish banks try to collect operational-risk loss data according to the Basel criteria and classification. Although they do not use these data for calculating regulatory capital-adequacy ratios, they comply with the Basel criterions. Therefore, along with the approaches of Fiordelisi et al. (2013) and Chernobai et al. (2011), the dependent variable employed in this study is the ratio of annual operational loss to total assets.<sup>15</sup> These data are confidential data taken through BDDK. These data are not audited by an independent organization. When banks decide to use advanced models, their models and operational-loss data have to be validated by an independent organization or regulatory board. Until then, banks should keep correct data available, but even so, operational-loss data may be unsound. On the other hand, while banks managers are keen to manipulate banks profits in theory, because their bonus systems depend on profit, there is no similar incentive for manipulating operational loss data because operational loss is calculated and reported by risk management departments and the bonus system of these departments is not based on operational loss.

#### 4.1.2.3 Control Variables

The control variables employed help to neutralize bank-specific differences in the current sample that have the tendency to affect the dependent variable (Gürbüz et al., 2010). It is important to control the effects of other factors in order to determine whether there is any association between corporate governance mechanisms and operational loss. We borrow

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<sup>15</sup> It is a normalized amount of operational loss for each financial institution obtained by dividing by the total assets (Angela et al. 2007).

the control variables from the earnings-management and corporate governance literature. Considering the literature review, there are three common variables determined that may have an influence on operational loss. Hence, three common variables are being utilized: log of total assets, leverage, and return on assets (ROA).<sup>16</sup> These variables were chosen from the prominent literature.

While Klein (2002) emphasizes committee and some corporate governance issues, Prawitt et al. (2009) state that overall investment on certain corporate governance mechanisms are related to **total assets**. Wang and Hsu (2013) report that the scope and complexity of a company increases the possibility of an operational incident at the company.

The business risk of a bank is under the influence of its current **financial leverage**; it is regarded as a general tool to manage risk, which may have an impact on effectiveness and performance of corporate governance (Andersen, 2008; Bhagat and Bolton, 2008).

Controlling for the effect of performance is important for econometric analysis (Kothari et al., 2005). Financial performance of firms can be indicated by the return on assets because operational loss is part of profitability. Besides, Anderson and Gupta (2009) used these variables to control for their research on corporate governance.

On the other hand, audit committee and board-of-directors literature try to control for foreign ownership. While Bonin et al. (2005) claim that entry of a foreign bank creates a more efficient and competitive environment for the banking industry, Zajc (2006) reports contrary results. According to Berger et al. (2003; 2005), foreign-originated banks may have a superior ability to diversify risks and they are able to offer distinguished services to their international customers which cannot easily be offered by those customers' domestic banks. On the other hand, foreign-owned banks may experience some problems such as distant management, tackling varying economic/regulatory circumstances, and acquiring "soft" subjective information regarding domestic conditions.

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<sup>16</sup> We also used three additional variables to check robustness. Further information can be found in Chapter 5.

**Table 4.2 Control variables**

<b>Control Variables</b>	<b>Abb.</b>	<b>Author</b>	<b>Measurement</b>
Return on Assets	roa	Andersen and Gupta (2005) (2009)	Return on Asset (Percentage)
Size	size	Klein (2002), Prawitt et al.(2009)	Log of Total Asset
Debt Ratio	Leverage	Andersen (2008)	Total Debt/Total Assets
Foreign Ownership	foreignown	Berger et al. (2003), Berger (2005) Zajc (2006)	Dummy variable that equals one if the bank is controlled by a foreign partner.

## 4.2 Descriptive Statistics and Univariate Analyses

In this section, the descriptive statistics of all variables for each year are presented. Table 4.3 exhibits the descriptive statistics for the model.

The descriptive statistics reveal that the proportion of the average number of employees in an internal-audit department to the total staff is higher than those of internal-control and risk management departments<sup>17</sup> (0.01, 0.008, and 0.002, respectively). The percentage of total budget allocated to an internal-audit department is much more than that of the internal-control and risk management departments. Descriptive results suggest that the Turkish banking system gives significantly more importance to internal-auditing activities. The average number of board members with certification in internal audit is 8, while the figures for internal control and risk management are 105 and 1, respectively.

While the average for female representation on an audit committee is 17%, auditor representation is 72% of total members. This means that banks prefer male members with audit background on their committees.

Table 4.3 also exhibits the control variables of the study sample. While the mean value for the natural log of the asset size is 10.40, the minimum and maximum values are 6.29 and 13.07, respectively. The degree of leverage ranges between 78% and 93%, which suggests that banks use one unit of capital in return for four or five units of external sources. The

<sup>17</sup> Because the denominator is the same: total staff.



average return on asset is 1.3%. This ratio is an important profitability indicator for banks when we evaluate their performance for seven years.

**Table 4.3 Descriptive statistics**

<b>Variables</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>oplossx</b>	129	0.0299	0.1376	0.0000	1.2633
<b>iastaff</b>	128	0.0107	0.0037	0.0024	0.0196
<b>iareport</b>	128	0.1028	0.1278	0.0152	0.6493
<b>iacert</b>	128	0.0010	0.0013	0.0000	0.0069
<b>iabudget</b>	118	0.0115	0.0052	0.0030	0.0230
<b>contstaff</b>	128	0.0081	0.0040	0.0008	0.0209
<b>contcont</b>	128	0.1209	0.1276	0.0000	0.5628
<b>contcert</b>	128	0.0045	0.0187	0.0000	0.1188
<b>contbudget</b>	116	0.0076	0.0057	0.0000	0.0268
<b>riskstaff</b>	128	0.0020	0.0014	0.0000	0.0076
<b>riskreport</b>	128	0.0027	0.0037	0.0000	0.0186
<b>riskcert</b>	128	0.0002	0.0003	0.0000	0.0015
<b>riskbudget</b>	115	0.0060	0.0143	0.0000	0.0761
<b>acforeign</b>	129	0.4729	0.5012	0.0000	1.0000
<b>acaudit</b>	129	0.7287	0.4464	0.0000	1.0000
<b>acgender</b>	129	0.1783	0.3843	0.0000	1.0000
<b>totalstaff</b>	128	0.0208	0.0072	0.0047	0.0386
<b>totalreport</b>	128	0.3394	0.4345	0.0159	2.2684
<b>totalcert</b>	128	0.0057	0.0189	0.0000	0.1240
<b>totalbudget</b>	118	0.0247	0.0184	0.0044	0.0984
<b>roa</b>	129	0.0127	0.0062	0.0008	0.0354
<b>size</b>	129	10.4043	2.2879	6.2949	13.0690
<b>leverage</b>	129	0.8825	0.0248	0.7806	0.9335
<b>foreignown</b>	129	0.4031	0.4924	0.0000	1.0000

Finally, in Table 4.4, a pair-wise correlation matrix for all variables used in this research is presented. None of the correlation coefficients is higher than 70 percent, revealing significant multicollinearity problems (Archambeault and DeZoort, 2001).

**Table 4.4 Correlation matrix**

	oplossx	iastaff	iareport	iacert	iabudget	contst~f	contcont
oplossx	1.0000						
iastaff	-0.1700	1.0000					
iareport	-0.0813	0.3816	1.0000				
iacert	0.2459	-0.0972	-0.1835	1.0000			
iabudget	-0.2372	0.6167	0.2283	-0.1775	1.0000		
contstaff	0.1432	0.4815	0.1957	-0.1076	0.4793	1.0000	
contcont	0.2456	0.0998	0.2344	0.1304	0.1936	0.2590	1.0000
contcert	0.0013	-0.1378	-0.0170	0.1212	0.0057	-0.0739	0.0734
contbudget	-0.0129	0.2894	-0.0430	-0.1297	0.6790	0.5601	0.1821
riskstaff	0.1944	0.3225	-0.0237	0.0847	0.0683	0.2026	0.4145
riskreport	0.2371	0.4960	0.1391	0.0359	0.2192	0.3544	0.3800
riskcert	-0.0416	-0.0400	0.1471	0.1268	0.0519	0.0178	0.3957
acforeign	0.1518	-0.4021	-0.1305	0.2675	-0.2493	-0.3122	-0.0512
acaudit	-0.0098	0.0528	0.1518	-0.0640	-0.0942	0.1517	-0.2496
acgender	0.0067	0.0990	-0.0154	0.2138	0.0103	-0.0613	0.3142
roa	-0.1555	0.0707	0.1095	-0.2342	-0.0690	0.0021	-0.2756
size	-0.1719	-0.4532	-0.4344	-0.0179	-0.1273	-0.2051	-0.3993
leverage	-0.0848	0.1506	-0.1278	0.0110	0.1360	0.1725	-0.3159
foreignown	0.2248	-0.3156	-0.3708	0.1133	-0.1470	-0.3519	0.0233
	contcert	contbu~t	riskst~f	riskre~t	riskcert	acfore~n	acaudit
contcert	1.0000						
contbudget	0.1021	1.0000					
riskstaff	-0.1586	0.0724	1.0000				
riskreport	-0.1228	0.1423	0.5698	1.0000			
riskcert	-0.0567	0.0469	0.3820	0.1221	1.0000		
acforeign	-0.2043	-0.2603	-0.2105	-0.0489	0.0558	1.0000	
acaudit	0.1276	-0.0576	-0.0905	-0.0278	-0.1218	-0.1903	1.0000
acgender	0.1537	0.0428	0.2666	0.2270	0.1512	-0.0355	-0.1712
roa	-0.0620	-0.1236	-0.2693	-0.0908	-0.2502	-0.0304	0.1258
size	0.2220	-0.0116	-0.4468	-0.5672	-0.0761	0.0558	0.1891
leverage	-0.0451	0.2312	-0.1177	-0.0728	-0.2349	0.0556	0.2711
foreignown	-0.1788	-0.1863	0.0852	0.0140	0.0101	0.5511	-0.3516
	acgender	roa	size	leverage	foreign~n		
acgender	1.0000						
roa	-0.2830	1.0000					
size	-0.1305	-0.2534	1.0000				
leverage	-0.0208	-0.1834	0.2743	1.0000			
foreignown	0.0714	-0.1296	0.0448	-0.0262	1.0000		

### 4.3 Analytical Framework

When a sample is composed of a combination of time series and cross-sectional data, panel data analysis is more preferable and the most efficient method to utilize (Andres and Vallelado, 2008). The analysis of panel data allows learning about economic processes while accounting for both heterogeneity across individuals, banks, and so on, and dynamic effects that are not visible in cross sections (Greene, 2008). It is possible to expose unobservable and constant heterogeneity through panel data analysis, which means that it is possible to reveal the specific characteristics of individual banks (for instance, business strategy, their management style, quality, etc.) (Andres and Vallelado, 2008). There are two types of panel data models: static and dynamic. Panel data models also measure

dynamic effects in a model as well as heterogeneity. Estimating a dynamic relationship via a static model (pooled OLS, fixed or random effect model) may cause bias and inconsistency problems because of the involvement of the lagged dependent variable (Greene, 2008 p.497). On the other hand, when the unobserved effect is correlated with explanatory variables, estimation of pooled OLS can be biased and inconsistent. However, the methods that solve this problem cannot remedy endogeneity problems. Endogeneity has been accepted as one of the most important problems in corporate finance (Wintoki et al., 2012 p.581).

Dynamic panel-data models generally deal with the endogeneity problem. It is more convenient to address the endogeneity issue in dynamic panel models compared to static models which do not let us utilize internally generating instruments (Greene, 2008, p.228). The advantage of dynamic GMM estimation is that it is potentially possible to employ all variables (even including lagged and differenced) with no correlation with the error term found in the regression model as a valid instrument (Greene, 2008, p.253). As summarized by Wintoki et al. (2012, p.582–583):

- Unlike OLS estimation, dynamic panel-data models involve firm-fixed effects in order to overcome unobservable heterogeneity.
- Different than the estimations of the static fixed-effects, dynamic panel allows current management to be affected by former performance or shocks.
- Different than the OLS or estimations of traditional fixed-effects, dynamic panel-data estimators lay underneath the economic process.

As a result, the dynamic panel model is one of the most effective econometric techniques in corporate governance (Wintoki et al., 2012; Flannery and Hankins, 2012). Therefore, the dynamic panel-data model will be used in this empirical research.

Testing for cross-sectional dependence can be important in determining panel-data estimations in order to diagnose the presence of cross-sectional dependence; it employs a Pesaran (2004) test for cross-sectional dependence (CD test) for all models because the CD test of Pesaran can also be applied to heterogeneous dynamic models with small time periods (Sarafidis et al. 2009). The CD test statistics are given in the table below, stating

that the null hypothesis of cross-sectional independence is rejected at the 5 per cent significance level.

**Table 4.5 Pesaran CD Test**

	<b>Pesaran's test of cross sectional independence</b>	<b>Probability</b>
<b>Internal Audit Department</b>	0.290	0.7718
<b>Internal Control Department</b>	0.062	0.9509
<b>Risk Management Department</b>	1.839	0.0658
<b>Total Departments</b>	0.590	0.5552

Although some dynamic panel data models- such as LSDVC- developed for dealing with non-stationary problems of small size data (Bruno, 2005b), a few studies used stationary data (Afonso and Hauptmeier, 2009; Castro 2013; Kappeler et al. 2013). However, Bun and Kiviet (2001) strongly claim that LSDVC should be used in a case of non-stationary dependent variables. Before using lagged values of an independent variable, we need to be sure whether the independent variable in our model contains unit roots. In the case given above, a first-generation unit-root test can be used (Breitung and Pesaran, 2007). In doing so, it is adopted as the approach suggested by Fisher-type tests using the Augmented Dickey-Fuller test as a first-generation unit-root test (Moon and Perron 2004)<sup>18</sup>. To sum up, Table 4.6 reports that dependent variable has unit root.

**Table 4.6 Unit Root Test**

Fisher-type unit-root test for oplossx Based on Augmented Dickey-Fuller test		
Ho: All panels contain unit roots Ha: At least one panel is stationary		
Statistic	p-value	
	Statistics	Probability
Inverse chi-squared(38)	41.6873	0.3135
Inverse normal	0.2134	0.5845
Inverse logit t(89)	0.1794	0.571
Modified inv. chi-squared Pm	0.423	0.3362

<sup>18</sup> Fisher-type unit-root tests are appropriate for unbalanced panel-data models (Tatoğlu, 2012)

The literature defends that the dynamic panel model is particularly designed for a situation where “T” (time) is smaller than “N” (sample) in order to control for dynamic-panel bias (Bond, 2002; Baum, 2006; Roodman, 2007; and Baltagi, 2008). The flexible framework of dynamic panel data is suitable for working with unbalanced panels and multiple endogenous variables.

Dynamic panel-data models have one major disadvantage. The estimated speed of adjustment is still biased upward in these models and this issue is called “short-panel bias” (Drobtz et al., 2013). The bias comes into question when the coefficient on the lagged dependent variable is close to unity. GMM methods can handle this problem (Blundell and Bond, 1998). Arellano–Bond and Blundell–Bond’s GMM method can overcome this problem “by using the lagged levels or first differences of endogenous variables as instruments” (Flannery and Hankins, 2012, p.4). However, these methods are become invalid by second-order autocorrelation (Baltagi, 2008).<sup>19</sup>

One alternative approach is Kiviet’s (1995) and Bruno’s (2005b) least-squares dummy variable (bias) corrected method, or LSDVC. Although LSDVC is not successful in large datasets, this least-squares dummy variable corrected estimator (LSDVC) removes an approximated small sample bias from the fixed effect (static panel data) estimator (Kiviet, 1995). Because the research data set is a short matrix, unbalanced panel, and the model contains explanatory variables that could be endogenous or serially correlated, LSDVC is a good alternative for the present research model. The research of Flannery and Hankins (2012, p.8) has recently showed that LSDVC seems to be one of the best choices for short time data in **corporate finance**. According to Flannery and Hankins (2012), LSDVC is one of the best alternatives for the endogeneity problem in spite of the fact that it is not primarily designed to work with endogenous regressors because the bias with an endogenous independent variable is small when LSDVC is used. Flannery and Hankins (2012, p.9) also claim that LSDVC is the “*most accurate estimators in the presence of second order serial correlation.*” Also Flannery and Hankins (2012), Bun and Carree (2006), Judson and Owen (1999), and Drobtz et al. (2013) indicate that LSDVC is one of

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<sup>19</sup> Long difference techniques have developed to solve this problem. Yet, there is not enough empirical research on corporate finance or governance.

the best alternatives compared to the OLS, Fixed Effects and the GMM methods.<sup>20</sup> Therefore, we prefer LSDVC to Instrumental Variable (IV) estimators and the GMM. Other dynamic approaches could lead to loss of information, if the nature of panel is unbalanced because of adopting correction in an unbalanced panel (Growitsch and Stronzik, 2008).

In order to ensure robustness of the study results estimated along with the LSDVC model, results of the LSDVC (BB) was reported after the bias regarding the estimates was corrected by Blundell and Bond's estimator (System GMM estimator) (Blundell and Bond, 1998; Bruno, 2005(a); Bruno, 2005(b)). The bootstrapped standard errors are generated by means of Monte Carlo simulations by running 50 replications.

In sum:

- The Static OLS model has unobserved effects (Baltagi, 2008). The OLS regression is biased because the dependent and the lagged dependent variable is a function of the unobserved effect (Baltagi, 2008).
- Fixed-effect panel-data regression models eliminate unobserved effects. However, it is still biased due to the fact that dependent and lagged dependent variables are both correlated with the time-demeaned error terms (Reinhard and Li, 2010).
- On the other hand, when the lagged dependent variable and the firm-fixed effects are taken together, they introduce a bias that could be significant for short panel (Flannery and Hankins, 2012).
- We reckon into the lagged dependent variable to consider a dynamic equation.
- We face the problem of endogeneity because of the inclusion of the lagged dependent variable. Solution of the problem is using a LSDVC estimator (Bun and Kiviet, 2003) which may also handle unbalanced panels (Bruno, 2005b). LSDVC is an autoregressive panel-data model and wipes out individual effects.
- The existence of a lagged dependent variable can bias the estimates. One way to deal with the bias issue is to measure it; there are three possible approximation of

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<sup>20</sup> System GMM is an alternative for my research. However, GMM regression models suffer from weak instrument bias because of not allowing cross-sectional correlations.

the bias (consistent estimators; Anderson–Hsiao, Arellano–Bond and Blundell–Bond) (Tatoğlu, 2012)

- The bootstrapped estimation-error method (50 iterations) was utilized to correct the poor approximation of estimated asymptotic standard errors which lead to unsound t-statistics.

On the other hand, we have 15 different explanatory variables and 3 control variables. Using all of them in one equation will increase the multicollinearity problem because we have only 19(id)\*7(year) data to calculate. Therefore, following Cohen et al. (2004) and Allegrini et al. (2006), they are separated into four segments: audit committee, internal audit, internal control, and risk management, respectively.

$$oploss_{it} = \beta_0 oploss_{i,t-1} + \beta_1 acforeign_{i,t} + \beta_2 acaudit_{i,t} + \beta_3 acgender_{i,t} + \beta_{18} roa_{i,t} + \beta_{19} size_{i,t} + \beta_{20} leverage + \beta_{19} foreignown_{i,t} + \beta_{24} roa_{i,t} + \beta_{25} size_{i,t} + \beta_{26} leverage_{i,t} + u_i + e_{i,t}$$

$$oploss_{it} = \beta_4 oploss_{i,t-1} + \beta_5 iastaff_{i,t} + \beta_6 iareport_{i,t} + \beta_7 iacert_{i,t} + \beta_8 iabudget_{i,t} + \beta_{24} roa_{i,t} + \beta_{25} size_{i,t} + \beta_{26} leverage_{i,t} + u_i + e_{i,t}$$

$$oploss_{it} = \beta_9 oploss_{i,t-1} + \beta_{10} contstaff_{i,t} + \beta_{11} contcontrd_{i,t} + \beta_{12} contcert_{i,t} + \beta_{13} contbudget_{i,t} + \beta_{24} roa_{i,t} + \beta_{25} size_{i,t} + \beta_{26} leverage_{i,t} + u_i + e_{i,t}$$

$$oploss_{it} = \beta_{14} oploss_{i,t-1} + \beta_{15} riskstaff_{i,t} + \beta_{16} riskreport_{i,t} + \beta_{17} riskcert_{i,t} + \beta_{18} riskbudget_{i,t} + \beta_{24} roa_{i,t} + \beta_{25} size_{i,t} + \beta_{26} leverage_{i,t} + u_i + e_{i,t}$$

$$oploss_{it} = \beta_{19} oploss_{i,t-1} + \beta_{20} totalstaff_{i,t} + \beta_{21} totalreport_{i,t} + \beta_{22} totalcert_{i,t} + \beta_{23} totalbudget_{i,t} + \beta_{24} roa_{i,t} + \beta_{25} size_{i,t} + \beta_{26} leverage_{i,t} + u_i + e_{i,t}$$

$$LSDVC_i = LSDV - B3 \text{ (For bias correction)}^{21}$$

The model can calculate long-run coefficients as well as short-run coefficients. As Bruno (2005b) states, the long-run coefficient can be calculated if  $\beta/(1 - \gamma)$  is kept fixed to unity. However, the aim of my dissertation is not to find and analyze long-run coefficients and speeds of adjustment. Therefore, we are not interested in the estimation of the long-run coefficient.

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<sup>21</sup>

Bruno (2005b)

## CHAPTER 5: EMPIRICAL RESULTS

In this section, results of the panel-data analyses are analyzed in order to investigate the linkage between corporate governance mechanisms and operational loss. Tables 5.1, 5.2, 5.3, 5.4 and 5.5 show results from the dynamic panel-data models with the least-squares dummy variable corrected (LSDVC).

### 5.1 Audit Committee vs. Operational Loss

Table 5.1 presents the relationships between the characteristics of audit committees and operational loss.

**Table 5.1 Audit committee**

LSDVC dynamic regression (bootstrapped SE)

Variable	Active
oplossx	
L1	2,740***
acgender	-0,139***
acforeign	0,082*
acaudit	-0,059*
roa	-2,257
size	0,055**
leverage	-2,290***
foreignown	-0,042

\*  $p \leq 0,05$ ; \*\*  $p \leq 0,01$  and \*\*\*  $p \leq 0,001$

Note: Bias correction up to order  $O(1/NT^2)$

Table 5.1 illustrates that female representation in audit committees is negatively (-0.209) associated with operational loss. Banks with audit committees including women members as a majority experience lower operational loss. It is claimed that female audit committee members have more independent thinking and improve the monitoring process (Adams et al., 2010). In Green Paper on the EU Corporate Governance Framework, having a female in audit committees makes a contribution to developing the talent pool for a firm to acquire the highest management and oversight functions. Overconfidence of males (Srinivasan, 2005) and greater financial risk aversion of females (Jianakoplos and Bernasek, 1998) could also be contributing to this result. Thiruvadi's study (2012) shows that female audit committee members perform their duty more diligently and they gather the board members



more frequently because of their characteristics such as being sensitive to maintaining reputation, risk-averse, less overconfident, and better compliance with current codes. Adams and Ferreira (2009) state that women have fewer attending problems than men. Furthermore, having female members improves the attendance behavior of male directors.

**Hence, Hypothesis 1 cannot be rejected.**

The results imply that foreign representation in audit committees increases (0.1102) the operational risk in the Turkish banking system. This finding is consistent with Delios and Beamish (1995) and Masulis et al. (2012). An audit committee member needs to understand the local culture and to create culturally sensitive solutions when tackling problems that are rooted in local culture. Although banking is a part of globalization, and the monetary system of a developing country is similar to the rest of the world, the complexity of the bank's local environment, local consumer's needs, and local market dynamics need directors who are familiar with the cultural codes of the local world. These market conditions pose operational risks; thus, local audit committee members are required to ensure that monitoring of the efficiency and adequacy of a bank's internal systems is maintained and proper functioning of these systems is provided. Current findings are consistent with this situation.

**Hence, Hypothesis 2 cannot be rejected.**

Finally, the results in Table 5.1 indicate a negative relationship (-0.0735) between auditor representation in audit committees and operational loss. Financial expertise is one of the key characteristics of audit committee members (Chtourou et al., 2001). There is an extensive literature which shows the negative linkage between financial expertise of audit committee members and earnings management, fraud, or the other corporate governance inefficiencies (Agrawal and Chadha, 2005; Abbott et al., 2004; and Xie et al., 2003). However, the roles and responsibilities of audit committees are supervision of bank activities (BDDK, 2006) and this involves more specific requirements. Audit committee members are required to have sufficient experience because the majority of supervision judgments can be considered as subjective and they might lack clear answers of "correct"

or “mistaken” (Dezoort, 1999). Consequently, when there are no objective criteria, committee members with no sufficient experience may make misleading judgments in auditing since these members do not possess the required technical expertise; they are incapable of comprehending the various prevailing and potential problems and they lack problem-solving skills and independence. Our finding is parallel to Dezoort (1999), Dezoort and Salterio (2001) and European Commission draft on experience of audit committee (European Commission, 2011).

**Hence, Hypothesis 3 cannot be rejected.**

Overall, banks with audit committees that are consisted of female members and members with audit background tend to perform better oversight while audit committees with foreign representation tend to decrease the oversight performance of these committees.

## **5.2 Internal Audit vs. Operational Loss**

The proportion of the number of staff in the internal-audit department to the total staff in the bank is statistically significant in reducing the operational loss. This result is compatible with Arena and Azzone’s (2009) study, which claims that the large number of employees is a primary condition for an effective internal-audit function. This result postulates that larger board size would result in superior corporate performance and could also assist banks in decreasing the probability of critical resources (Al-Matari et al., 2013).

Results indicate that the number of reports prepared by internal-audit departments has a statistically significant negative impact on operational loss. The more reports prepared by auditors mean that more banking processes and operations are examined. A detailed examination decreases the probability of an event of operational loss. The result confirms the findings of Gendron et al. (2004). Holt and Dezoort (2009) also state that the internal-audit report affects confidence in the financial reporting reliability and degree of fraud.

**Hence, Hypothesis 4 and 5 cannot be rejected.**

The percentage of total budget allocated to internal-audit departments does not have a statistically significant negative effect on operational loss. This finding is not consistent with the findings of Ho and Hutchinson (2010) which show a significant negative relationship between the assigned resources for the internal audit and superior competence and the possibility to detect errors and negligence.

On the other hand, the number of certificated staff in internal-audit departments is statistically significantly related with operational loss. The hypotheses were, larger audit committees would beef up the monitoring of factors affecting operational loss and well-qualified staff could improve the performance of internal-audit departments (Zain et al., 2006 and Ziegenfuss et al., 2006). The results of the present study are not compatible with the current literature.

### **Table 5.2 Internal Audit**

LSDVC dynamic regression (bootstrapped SE)

Variable	Active
oplossx L1	2,731***
iastaff	-45,910***
iareport	-0,887***
iacert	-0.151
iabudget	3,086
roa	5,303*
size	0,721***
leverage	-1,803***

\*  $p \leq 0,05$ ; \*\*  $p \leq 0,01$  and \*\*\*  $p \leq 0,001$

Note: Bias correction up to order  $O(1/NT^2)$

**Hence, Hypothesis 6 and 7 are rejected.**

### **5.3 Internal Control vs. Operational Loss**

Table 5.3 shows the relationship between the characteristics of internal control and operational loss.

**Table 5.3 Internal Control**

LSDVC dynamic regression (bootstrapped SE)

Variable	Active
oplossx L1	2,763***
contstaff	-32,135***
contcont	-0,743***
contcert	5,736
contbudget	-44,830***
roa	5,936**
size	0,168***
leverage	-4,648***

\*  $p \leq 0,05$ ; \*\*  $p \leq 0,01$  and \*\*\*  $p \leq 0,001$ Note: Bias correction up to order  $O(1/NT^2)$ 

As a process, internal control can be considered as the most important corporate governance mechanism; accordingly, its weakness can lead to bankruptcy of corporations. As given in the second section, although internal control is crucial for companies, an internal-control department is not a common application around the world. Therewith, research on the role of internal-control departments is limited. On the other hand, internal-control structure is similar to that of internal audit. Therefore, the internal-audit literature is taken into consideration when internal control is assessed.

The results in Table 5.2 indicate that the proportion of the number of staff in internal-control departments to the total staff is negatively associated (-32,16) with operational loss. The Basel Committee (2011) claim that strong internal control is a crucial point of operational-risk management. This is compatible with Yurtsever's study (2008) indicating that banks can recognize their deficiencies and prevent losses in advance if they have competent and sufficient internal-control staff. Therefore, not only the existence of a control department, but also the characteristics of the internal-control environment such as more crowded personnel and superior personnel competence contribute to the decrease of control risk in a corporation. Our results support these views suggesting that a larger control organization could decrease the operational loss.

**Hence, Hypothesis 8 cannot be rejected.**

Table 5.2 indicates that the proportion of the number of control points to total staff (-11.48) has a statistically significant negative effect on operational loss. This is confirmed by studies of Agbejule and Jokipii (2009), Danescu et al. (2012), and Masli et al. (2010) who state that effective internal-control monitoring practices (such as system points) increase internal-control effectiveness.

Internal-control systems and effectiveness of control points show variation over time. Effectiveness of implementing the process and IT systems, time and resources constraints, and variations in the circumstances could be reasons for changes in the output. Control activities help to ensure that indispensable actions are taken to reduce exposure to operational loss (Noorvee, 2006). Because of high-speed evaluation of computer-based internal-control systems, the appropriate techniques integrate all bank operations and this turns out to be widespread across all banking units. As Dabbagolu (2012) claims, losses arising from fraudulent transactions have reached serious levels for companies in Turkey. He also points out that the necessary preventive measure against fraudulent operations is an internal-control system. An effective and efficient internal-control system requires proper control proceedings, oversight, and information systems. In fighting against fraud, corporations are required to employ the right people for the internal-control systems, creating a positive working environment and eliminating fraud opportunities (Bozkurt, 2009).

**Hence, Hypothesis 9 cannot be rejected.**

Having certificated staff in an internal-control department does not statistically affect operational loss in the Turkish banking system.

**Hypothesis 10 is rejected.**

Finally, the results in Table 5.3 indicate that the percentage of the total budget allocated to the internal-control department is negatively related to operational loss. Ashbaugh-Skaife (2009) et al. conclude that one of the reasons for the internal-control weakness is fewer resources allocated to internal control. Elder and Allen (2003) indicate that

auditors/controllers can decrease the length of risk assessment and sample size when they experience budget constraints; while Cianci and Bierstaker (2009) assert that high time–budget pressure has a negative effect on the performance of controllers. These literatures are compatible with the findings of the present study. Therefore, it is suggested that a sufficient internal-control budget is one of the significant criteria for decreasing the possibility of an operational event.

**Hypothesis 11 cannot be rejected.**

#### **5.4 Risk Management Department vs. Operational Loss**

When duties and responsibilities of risk management departments in the Turkish banking system are investigated, it can be seen that banks constitute their organization structure according to the Regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks which was published in 2006 and updated in 2012 and 2014; it is still being enforced on banks. Risk management departments in Turkish banks generally concentrate on quantifiable risks such as credit risk, market risk, interest-rate risk, and liquidity risk originating from the activities of the bank.<sup>22</sup> One of the most important responsibilities is to *ensure that the quantifiable risks are kept within the limits determined and to monitor the utilization of these limits* (BDDK, 2014). However, banks are not authorized to put any limit on operational risk, because it generally arises unexpectedly. On the other hand, risk management departments of larger Turkish banks have sub-operational risk divisions. Their primary task is to collect operational-loss data from the relevant departments; and to generate daily reports through the risk measurement models utilized by the bank (BDDK, 2014). These data sets are blended, analyzed, and sent to the internal-audit and internal-control departments via the audit committee. Although the risk management department is vital for banks, their responsibilities presented below do not capture the essence of operational-risk management (BDDK, 2014).

- *To determine the risk management policies and implementation procedures on the basis of the risk management strategies,*

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<sup>22</sup> See at Article 37: Internal Systems in Banks.

- *To ensure that the risk management policies and implementation procedures are conducted and complied with,*
- *To ensure that, before entering into a transaction, the risks are understood and sufficiently evaluated,*
- *To monitor compliance with the limits determined on the basis of the bank as a whole by aggregating the limits determined on a unit basis for each type of risk.*

Even though decreasing operational loss is an important responsibility of audit committees, they fulfill this duty by means of internal-control and internal-audit departments. In summary, a risk management department is only one phase of reporting in this process. In another words, the functioning body of operational-risk management consist of internal-control and internal-audit departments. A risk management department merely functions as the reporting body of the whole process. Nevertheless, it is required to examine whether such a view would be empirically supported.

The results in Table 5.4 need to be analyzed under these factual circumstances. Table 5.4 indicates that the number of report, number of certificated staff in the risk management department, and percentages of total budget allocated to risk management purposes are irrelevant to operational loss.

#### **Table 5.4 Risk Management**

LSDVC dynamic regression (bootstrapped SE)

Variable	Active
Oplossx L1	2,416***
Riskstaff	- 84.048***
Riskreport	2.205
Riskcert	-27.023
riskbudget	-2,637
Roa	-2.437
Size	0.433*
leverage	-1,639***

\*  $p \leq 0,05$ ; \*\*  $p \leq 0,01$  and \*\*\*  $p \leq 0,001$

Note: Bias correction up to order  $O(1/NT^2)$

More proactive approaches, such as enterprise risk management, are rigorous approaches to assessing and addressing the risks from all sources. It is claimed that these types of risk

management can be successful in decreasing operational risk (Sabato, 2010). However, the success of these systems cannot only be attributed to a risk management department, but to all units in banks. On the other hand, other basic approaches are rapidly becoming inadequate to prevent diversified risks such as operational risk. Unfortunately, there is no data about the quality of enterprise risk management of banks in order to measure the effectiveness of enterprise risk management on operational loss.

The Basel Committee (2011) separates operational risk management into three lines: (i) *business line management*, (ii) *an independent operational risk management function*, and (iii) *an independent review*. A risk management department is not a main actor in business line management and independent review. Hence, a risk management department could not be considered as active for operational risk as much as it is taken considered as other quantifiable risks.

The single important connection between the characteristics of the risk management department and operational risk is the important negative relationship between the proportion of the number of staff in the risk management department of the total staff to operational loss. Risk management units of major and larger banks have an operational risk sub-department or operational-risk staff due to the complexity of these institutions. By doing so, these financial institutions are able to generate more detailed and efficient reports for audit committees and management boards (Demircioglu, 2009). Their reports can be proactive and help banks to take timely precautions for operational losses.

**Hence Hypothesis 13, 14 and 15 are rejected, while Hypothesis 12 cannot be rejected.**

Overall, the impacts of the individual characteristics of audit committee which functions as an umbrella agency on operational losses are consistent with the expectations. Female representation and past audit experience tend to improve committee oversight while foreign representation deteriorates it.

Moreover, larger internal audit departments and issuing more reports helps banks achieve a proactive approach for operational loss, and thus improve governance quality, while a



greater amount of resources and certificated staff does not have an important effect on the oversight performance of operational events. Similarly, larger internal control departments with more efficient report facilities that are supported with larger budgets display a stronger control environment resulting in less possibility of material operational loss. Finally, larger internal systems supported with more resources tend to display better oversight on reducing operational losses in banks. Reporting to senior level management and various boards in banks also ensure that banks' shareholders experience fewer surprises. Larger risk management departments provide a greater level of insight in operational risk management; however we cannot deduce from this study that increasing reporting facilities and certificated staff of risk management departments and larger budget support to this department without evaluating enterprise risk management practices.

### **5.5 A General Analysis of Audit Committee Related Internal Systems**

As described in previous sections, while operational risk management is an inherent part of all departments in banks, corporate governance mechanisms are the most important tools for reducing the potential for occurrences of costly incidents. While executing their tasks, departments related to corporate governance interact with each other and this can create a synergy or a reverse-synergy effect.

Departments related to corporate governance (we have already called them as internal systems according to Banking Law no: 5411) can also provide rationale for their decisions and input to business decisions, so they can change the operational-risk level in banks (Fraser and Simkins, 2009). For example, a practice of the internal-control department can be revoked by a risk management department and this action can decrease operational risk.

On the other hand, an internal-control department is unique for Turkey and there is ambiguity in its function among the financial institutions. There can be a conflict of duty between the internal-audit and internal-control departments because their tasks and duties are similar. Some responsibilities of one department could be taken over by the other department because of the fact that tasks are not defined well enough or implemented

effectively. Therefore, characteristics of all departments are evaluated in an aggregate sense, analyzed in this section and results are presented in table below.

**Table 5.5 A General analysis**

LSDVC dynamic regression (bootstrapped SE)

Variable	Active
oplossx L1	2,527***
totalstaff	-28,499***
Totalreport	-0,169***
Totalcert	8,385
totalbudget	-2,967***
roa	4,505*
size	0,074***
leverage	-2,707***

\*  $p \leq 0,05$ ; \*\*  $p \leq 0,01$  and \*\*\*  $p \leq 0,001$

Note: Bias correction up to order  $O(1/NT^2)$

It is clearly seen that an increase in the proportion of the total number of employees in these departments to the total staff decreases operational loss. As employees in all departments have a significant effect on operational loss, this result is expected. According to Banking Law no: 5411, banks are obliged to establish and operate adequate and efficient internal-control, risk management, and internal-audit systems that are in harmony with the scope and structure of their activities. This rule requires effective harmonization. While employees in different departments are evaluated together, their positive effect on operational loss can be clearly seen.

The other result is associated with reporting facilities. Although reporting facilities in a risk management department do not have a significant effect on operational loss, total reporting facilities help to mitigate operational risk. Some risk management activities (intra-reporting, early warning system, expert view, etc.) can be reasons for this indirect effect, and this effect can be part of the result of enterprise risk management activities.

While certification (an indicator of competency) has no effect on operational risk in accord with estimation based on previous models, this is not valid for budget. An increase in the percentage of total budget allocated to internal-audit, internal-control, and risk

management departments decreases operational loss. Allocating resources to these departments decreases operational loss roughly three fold.

Investing in a risk management department deserves further discussion. Some software developed for risk management departments can be used by different departments and this can provide a positive externality. In particular, an external-loss database in a risk management department helps internal-audit and internal-control departments to create their risk-based scenarios and examination plans.

It is indicated that, in general, the cooperation among risk management, internal audit and internal control departments can influence the contribution of knowledge, skill set, and cooperative efforts of risk management and this can hinder the role of risk management departments.

**Hence Hypothesis 16, 17 and 19 cannot be rejected, while Hypothesis 18 is rejected.**

**Table 5.6 Qualitative summary of results**

<b>Qualitative Summary of Results</b>					
	<b>Internal Audit</b>	<b>Internal Control</b>	<b>Risk Management</b>	<b>Internal Systems Combined</b>	<b>Audit Committee</b>
<b>Staff</b>	-	-	-	-	N/A
<b>Report / Control Certificate</b>	-	-	Notsig.	-	N/A
<b>Budget</b>	Notsig.	Notsig.	Notsig.	Notsig.	N/A
<b>Foreign representation</b>	N/A	-	Notsig.	-	N/A
<b>Audit experience</b>	N/A	N/A	N/A	N/A	+
<b>Female representation</b>	N/A	N/A	N/A	N/A	-

## **CHAPTER 6: CONCLUSION AND IMPLICATIONS OF THE STUDY**

Corruptions, scandals, and turmoil in the financial sector have always directed attention toward corporate governance mechanisms because corporate governance deficiencies are linked with the bankruptcy of financial institutions. These corporate governance problems have not received the necessary attention; this has led to an enormous regulatory boost. However, are these prudential measures and structures simply enough to tackle the governance problems? In spite of the measures taken after major governance crises (such as Enron and Parmalat), the 2008 crisis proved that not all have been fixed. What is still missing and what and how should we regulate? Do new and splendid mechanisms really decrease the risk of financial institutions? The present dissertation is seeking to find answers to these questions from the point of operational risk.

This study is the first to examine the effects of characteristics of internal audit, internal control, risk management, and audit committees on operational loss in the Turkish banking sector within the scope of agency theory based on individual characteristics. As our study uses data from the sample of Turkish banks between 2006 and 2012, the asset value of the sample constitutes 93.64 percent of the total asset in the Turkish banking sector. In the study, a set of hypotheses are tested by applying a dynamic least-squares dummy-variable corrected technique, which is argued to be one of the most robust econometric models for corporate finance studies.

First, the study examines internal-audit characteristics. It is predicted that the level of staff size, report, qualification, and budget is negatively correlated with operational loss. Results indicate that the more reports are prepared by the internal-audit department and the more staff allocated to this department means less operational loss in banks. Reporting to the upper-management level or to the audit committee is an important early warning indicator for banks; this prevents an adverse operational event before it happens. This is also valid for the internal-control department. Lastly, allocating corporate resources to an internal-audit department does not affect the operational loss in banks.

This study examines whether female representation, audit experience, and nationality of audit committee members affect operational loss in banks. The result suggests that gender affects operational loss in banks. When compared to males, female counterparts are not overconfident and they attend board meetings more frequently. Audit experience of audit committee members also decreases operational loss. Since audit committees have many responsibilities requiring independent evaluation and supervision, this result confirms our expectations. The last result for audit committees is that foreign members cause an increase in operational loss compared to local ones. The difficulty of understanding local culture and dynamics in the banking sector could be a reason for this outcome.

The study also focuses on the impact of the characteristics of audit committee sub divisions in the Turkish banking sector versus operational loss. The results not only indicate the mitigating effects of number of staff, extensiveness of control facilities, and budget of internal-control department on operational loss in banks, but also illustrate that an internal-control department is an efficient and expedient unit for banking system. Turkey is a rare example in the world in that it has an internal-control department and this study is the first empirical research concerning internal-control department versus operational loss. Allocating funds, appointing qualified staff, and creating control points provide benefits to banks.

Lastly, the study concentrates on risk management departments. Operational risk occupies only a little of the time of a risk management department. The hypothesis, which tests whether resources allocated to the department, qualification of staff, and number of report affect operational loss, are rejected. Only staff size of a risk management department is found to have a decreasing effect on operational loss. As banks grow in size, their risk management departments turn out to be sub-operational risk departments and new staffs are assigned to operational-risk issues.

Major contributions to the corporate governance literature deserve discussion. The present study shows that an effective internal-audit department is required to mitigate the risk of loss caused by insufficient or erroneous internal processes, people, or systems, or by external incidents. This result is not only compatible with the current studies, but also

expands studies in the current literature. Although some surveys conclude that the resources and competencies of internal-audit and internal-control departments are important for firms, this study is the first empirical research that shows the causal relation using real data.

Even though it is shown that female representatives on audit committees contributes earning performance (Krishnan and Parsons, 2008; and Adams et al., 2010), this is the first study that shows its effect on operational loss. To our knowledge, it is also the first study that examines the impact of financial expertise of audit committee members and foreign representation in audit committee on operational loss by means of a unique data set.

This dissertation also reveals that risk management organizations have almost no effect on operational-risk management concerning bank operations, which is contrary to the literature (Chernobai et al., 2011; Cope et al., 2012). This result contributes to several aspects of the corporate governance literature. First, a growing literature suggests that risk management departments are important for financial institutions to prevent operational loss. However, allocating resources to this department can be useless, and one of the main reasons for this problem is that operational risk is only marginally on the agenda of risk management departments. Nevertheless, the interpretation of the results can change when evaluating all departments together. An aggregate examination of number of staff, number of reports and the percentage of budget of internal-audit, internal-control, and risk management departments indicates that all these characteristics helps to mitigate operational loss, even though risk management characteristics have no significant effect on the loss. This can be explained by indirect effect. Providing the creation of a risk-awareness culture within the organization by the risk management department and some risk management activities (intra-reporting, early warning system, expert view, etc.) can be reasons of this indirect effect, and this effect can be part of the result of enterprise risk management activities. In sum, operational corporate governance defense mechanisms are endogenous to the organization and are mainly embodied in both internal-audit and internal-control departments, but are supported by risk management departments.

The present study is considered as significant according to the perspective of regulators and policy makers. Lessons learnt from the erroneous activities of corporate governance in the banking industry are reflected in the regulations and guidelines issued by the Basel Committee and the Financial Stability Board, etc., which are enforced on banks in order to tighten their corporate governance policies. Regarding Regulatory Authorities and Supervisory Agencies, in harmony with guidelines and regulations of the Basel Committee, it may be enforced on banks to (1) allocate more resources/appropriate budget to support the internal-control department's activities, (2) increase the capacity of human resources of internal-audit and internal-control departments, and (3) broaden the scope of the control environment and reporting facilities of internal auditing of the bank.

Policy makers should also consider that at least one member on the audit committee of banks can be obliged to have experience and knowledge in auditing in order to strengthen the independence and capacity of the audit committee, as the European Parliament suggests (2011).

Finally, the present dissertation validates the implementation of mandatory quotas for female representation on boards that some European countries, including Norway, Spain and France, have introduced. Moreover, regulators may mandate additional requirements concerning foreign audit committee members to ensure that they possess knowledge about local markets and regulations in effect and cultural background — such as minimum residency period in the business country — and interviews with a supervisory authority.

## REFERENCES

- Abbott, L.J., Parker, S. and Peters, G.F. (2004), "Audit Committee Characteristics and Restatements", *Auditing: A Journal of Practice and Theory*, 23(1), 69-87.
- Act, S. O. (2002), "Sarbanes-Oxley Act, In United States of America 107<sup>th</sup> congress, US Congress", available at: <http://www.sec.gov/about/laws/soa2002.pdf>, (accessed at 19, January 2013).
- Adams, R. B. and Ferreira, D. (2009), "Women in the Boardroom and Their Impact on Governance and Performance", *Journal of Financial Economics*, 94(2), 291-309.
- Adams, R., Gray, S. and Nowland, J. (2010), "Is There a Business Case for Female Directors? Evidence from the Market Reaction to All New Director Appointments", In 23<sup>rd</sup> *Australasian Finance and Banking Conference*.
- Afonso, A. and S. Hauptmeier (2009), "Fiscal Behaviour in the European Union: Rules, Fiscal Decentralisation and Government Indebtedness", ECB Working Paper, No. 1054.
- Agbejule, A. and Jokipii, A. (2009), "Strategy, Control activities, Monitoring and Effectiveness", *Managerial Auditing Journal*, 24(6), 500-522.
- Agrawal, A. and Chadha, S. (2005), "Corporate Governance and Accounting Scandals", *Journal of Law and Economics*, 48(2), 371-406.
- Aggarwal, R., Erel, I., Stulz, R. and Williamson, R. (2010), "Differences in Governance Practices between US and Foreign Firms: Measurement, Causes and Consequences", *Review of Financial Studies*, 23(3), 3131-3169.
- Allegrini, M., D'Onza, G., Paape, L., Melville, R. and Sarens, G. (2006), "The European Literature Review on Internal Auditing", *Managerial Auditing Journal*, 21(8), 845-853.
- Altamuro, J. and Beatty, A. (2010), "How Does Internal Control Regulation Affect Financial Reporting?", *Journal of Accounting and Economics*, 49(1), 58-74.
- Al-Matari, E. M., Al-Swidi, A. and Fadzil, F. H. B. (2013), "The Effect of the Internal Audit and Firm Performance: A proposed Research Framework", *International Review of Management and Marketing*, 4(1), 34-41.
- Andersen, L. B., Häger, D., Maberg, S., Næss, M. B. and Tungland, M. (2012), "The Financial Crisis in an Operational Risk Management Context-A Review of Causes and Influencing Factors", *Reliability Engineering & System Safety*, 105, 3-12.
- Andersen, T. J. (2008), "The Performance Relationship of Effective Risk Management Exploring the Firm-Specific Investment Rationale", *Long Range Planning*, 41(2), 155-176.



- Anderson, A. and Gupta, P. P. (2009), “A Cross-Country Comparison of Corporate Governance and Firm Performance: Do Financial Structure and the Legal System Matter?”, *Journal of Contemporary Accounting & Economics*, 5(2), 61-79.
- Andres, P. D. and Vallelado, E. (2008), “Corporate Governance in Banking: The Role of the Board of Directors”, *Journal of Banking & Finance*, 32(12), 2570-2580.
- Angela, C., Bisignani, R., Masala, G. and Micocci, M. (2007), “Advanced Operational Risk Modelling in Banks and Insurance Companies”, *Working paper*.
- Archambeault, D. and DeZoort, F. T. (2001), “Auditor Opinion Shopping and the Audit Committee: An Analysis of Suspicious Auditor Switches”, *International Journal of Auditing*, 5(1), 33-52.
- Arena, M. and Azzone, G. (2007), “Internal Audit Departments: Adoption and Characteristics in Italian Companies”, *International Journal of Auditing*, 11(2), 91-114.
- Arena, M. and Azzone, G. (2009), “Identifying Organizational Drivers of Internal Audit Effectiveness”, *International Journal of Auditing*, 13(1), 43-60.
- Arena, M., Arnaboldi, M. and Azzone, G. (2010), “The Organizational Dynamics of Enterprise Risk Management”, *Accounting, Organizations and Society*, 35(7), 659-675.
- Arnold, M., Larsen, P.T., Hollinger, P., O’Doherty, J. and Milne, R. (2008), “How Kerviel Exposed Lax Controls at Societe Generale”, *Financial Times*, 7 February.
- Ashbaugh-Skaife, H., Collins, D. W. and Kinney Jr, W. R. (2007), “The Discovery and Reporting of Internal Control Deficiencies Prior to SOX-Mandated Audits”, *Journal of Accounting and Economics*, 44(1), 166-192.
- Ashbaugh-Skaife, Hollis., Collins, D. W. and Lafond, R. (2009), “The Effect of SOX Internal Control Deficiencies on Firm Risk and Cost of Equity”, *Journal of Accounting Research*, 47(1), 1-43.
- Baltagi, B.H., 2008, *Econometric Analysis of Panel Data*, John Wiley and Sons, West Sussex.
- Bankacılık Düzenleme ve Denetleme Kurulu (BDDK) (2006), *The Regulation on the Internal Systems*, 01.11.2006 date and 26333 number Official Newspaper.
- Bankacılık Düzenleme ve Denetleme Kurulu (BDDK) (2014), *The Regulation on the Internal Systems and Internal Capital Adequacy Assessment Process of Banks*, 11.07.2014 date and 29057 number Official Newspaper.
- Barber, B. M. and Odean, T. (2001), “Boys will be boys: Gender, Overconfidence and Common Stock Investment”, *The Quarterly Journal of Economics*, 116 (1), 261-292.

- Basel Committee on Banking Supervision (1998), “Operational Risk Management”, available at: <https://www.bis.org/publ/bcbs42.pdf>, accessed 23, May 2013.
- Basel Committee on Banking Supervision. (2001), “Working Paper of the Regulatory Treatment of Operational Risk”, *Bank for International Settlements*.
- Basel Committee on Banking Supervision (2006), “Basel II: Revised International Capital Framework”, available at: <http://www.bis.org/publ/bcbsca.htm> (accessed 21, January, 2014).
- Basel Committee on Banking Supervision (2010), “Principles for Enhancing Corporate Governance”, available at: <http://www.bis.org/publ/bcbs176.pdf> (accessed 21, January 2014).
- Basel Committee on Banking Supervision (2011), “Principles for the Sound Management of Operational Risk”, available at: <http://www.bis.org/publ/bcbs195.htm>. (accessed 23, January 2014).
- Basel Committee on Banking Supervision (2012), “The Internal Audit Function in Banks”, available at: [www.bis.org/publ/bcbs223.pdf](http://www.bis.org/publ/bcbs223.pdf) (accessed 14, January 2014).
- Basel Committee on Banking Supervision (2014), “External Audits of Banks”, available at: <http://www.bis.org/publ/bcbs280.pdf> (accessed 24, March 2014).
- Baum, C.F., (2006), *An Introduction to Modern Econometrics Using Stata*, Stata Press, College Station, Texas.
- Bedard, J., Chtourou, S. M. and Courteau, L. (2004), “The Effect of Audit Committee Expertise, Independence and Activity on Aggressive Earnings Management”, *Auditing: A Journal of Practice & Theory*, 23(2), 13-35.
- Berger, A. N., Dai, Q., Ongena, S. and Smith, D. C. (2003), “To What Extent Will the Banking Industry Be Globalized? A Study of Bank Nationality and Reach in 20 European Nations”, *Journal of Banking & Finance*, 27(3), 383-415.
- Berger, A. N., Clarke, G. R., Cull, R., Klapper, L. and Udell, G. F. (2005), “Corporate Governance and Bank Performance: A Joint Analysis of the Static, Selection and Dynamic Effects of Domestic, Foreign and State Ownership”, *Journal of Banking & Finance*, 29(8), 2179-2221.
- Berger, A., Imbierowicz, B. and Rauch, C. (2012), “The Roles of Corporate Governance in Bank Failures During the Recent Financial Crisis”, *European Banking Center Discussion Paper*, (2012-2023).
- Bhagat, S. and Bolton, B. (2008), “Corporate Governance and Firm Performance”, *Journal of Corporate Finance*, 14(3), 257-273.
- Blundell, R. and Bond, S. (1998), “Initial Conditions and Moment Restrictions in Dynamic Panel Data Models”, *Journal of Econometrics*, 87(1), 115-143.

- Bank of England (2013), “News Release – PRA and FCA Welcome Internal Audit Guidance, Prudential Regulation Authority, Bank of England, London”, available at: [www.bankofengland.co.uk/publications/Pages/news/2013/087.aspx](http://www.bankofengland.co.uk/publications/Pages/news/2013/087.aspx), (accessed 29, August 2013).
- Bond, S. R. (2002), “Dynamic Panel Data Models: A Guide to Micro Data Methods and Practice”, *Portuguese Economic Journal*, 1(2), 141-162.
- Bonin, J. P., Hasan, I. and Wachtel, P. (2005), “Bank Performance, Efficiency and Ownership in Transition Countries”, *Journal of Banking & Finance*, 29(1), 31-53.
- Bozkurt, N. (2009), *İşletmelerin Kara Deliği: Hile: Çalışan Hileleri*, Alfa Yayınları.
- Breitung J. and Pesaran MH. (2007), “Unit Roots and Cointegration in Panels”, In the *Econometrics of Panel Data: Fundamentals and Recent Developments in Theory and Practice*, MátyásL, SevestreP, Kluwer Academic Publishers.
- Bruno, G. S. (2005a), “Estimation and Inference in Dynamic Unbalanced Panel-Data Models with a Small Number of Individuals”, *Stata Journal*, 5(4), 473.
- Bruno, G. S. (2005b), “Approximating the Bias of the LSDV Estimator for Dynamic Unbalanced Panel Data Models”, *Economics Letters*, 87(3), 361-366.
- Bun, M.J.G. and Kiviet, J.F. (2001), “The Accuracy of Inference in Small Samples of Dynamic Panel Data Models”, *Tinbergen Institute Discussion Paper*, 006/4, 47.
- Bun, M. J. and Carree, M. A. (2006), “Bias-corrected Estimation in Dynamic Panel Data Models with Heteroscedasticity”, *Economics Letters*, 92(2), 220-227.
- Bun, M. J. and Kiviet, J. F. (2003), “On the Diminishing Returns of Higher-Order Terms in Asymptotic Expansions of Bias”, *Economics Letters*, 79(2), 145-152.
- Carcello, J. V., Hermanson, D. R. and Raghunandan, K. (2005), “Factors Associated with US Public Companies’ Investment in Internal Auditing”, *Accounting Horizons*, 19(2), 69-84.
- Castro, V. (2013), “Macroeconomic Determinants of the Credit Risk in the Banking System: The Case of the GIPSI”, *Economic Modelling*, 31, 672-683.
- Charreaux, G. and Desbrières, P. (2001), “Corporate Governance: Stakeholder Value versus Shareholder Value”, *Journal of Management and Governance*, 5(2), 107-128.
- Chernobai, A. S., Rachev, S. T. and Fabozzi, F. J. (2008), *Operational Risk: A Guide to Basel II Capital Requirements, Models and Analysis*, John Wiley & Sons.

- Chernobai, A., Jorion, P. and Yu, F. (2011), “The Determinants of Operational Risk in US Financial Institutions”, *Journal of Financial and Quantitative Analysis*, 46(6), 1683.
- Chtourou, S. M., Bedard, J. and Courteau, L. (2001), “Corporate Governance and Earnings Management”, *University of Laval, Quebec, Canada*.
- Cianci, A. M. and Bierstaker, J. (2009), “Auditors’ Efficiency Motivated Evaluation”, *Advances in Accounting*, 25(1), 20-27.
- Cohen, J., Krishnamoorthy, G. and Wright, A. (2004), “The Corporate Governance Mosaic and Financial Reporting Quality”, *Journal of Accounting literature*, 23(1), 87-152.
- Cohen, A. and Sayag, G. (2010), “The Effectiveness of Internal Auditing: An Empirical Examination of Its Determinants in Israeli Organizations”, *Australian Accounting Review*, 20(3), 296-307.
- Committee of Sponsoring Organizations of the Treadway Commission (1992), *Internal Control—Integrated Framework: Evaluation Tools* (Vol. 4), Committee of Sponsoring Organizations of the Treadway Commission.
- Cope, E. W., Piche, M. T. and Walter, J. S. (2012), “Macro Environmental Determinants of Operational Loss Severity”, *Journal of Banking & Finance*, 36(5), 1362-1380.
- Coram, P., Ferguson, C. and Moroney, R. (2008), “Internal Audit, Alternative Internal Audit Structures and the Level of Misappropriation of Assets Fraud”, *Accounting & Finance*, 48(4), 543-559.
- Council, F. R. (1999; 2003; 2006; 2008), “The UK Corporate Governance Code”, *London: Financial Reporting Council*.
- Council, F. R. (2010), “The UK Corporate Governance Code”, *London: Financial Reporting Council*.
- Cummins, J. D., Lewis, C. M. and Wei, R. (2006), “The Market Value Impact of Operational Loss Events for US Banks and Insurers”, *Journal of Banking & Finance*, 30(10), 2605-2634.
- Dabbagoglu, K. (2012), “Fraud in Businesses and Internal Control System”, *Journal of Modern Accounting and Auditing*, 8(7), 983-989.
- Dahen, H. and Dionne, G. (2010), “Scaling Models for the Severity and Frequency of External Operational Loss Data”, *Journal of Banking & Finance*, 34(7), 1484-1496.
- Dănescu, T., Prozan, M. and Dănescu, A. C. (2012), “The Role of the Risk Management and of the Activities of Internal Control in Supplying Useful Information Through the Accounting and Fiscal Reports”, *Procedia Economics and Finance*, 3, 1099-1106.

- De Jongh, E., De Jongh, D., De Jongh, R. and Van Vuuren, G. (2013), "A Review of Operational Risk in Banks and Its Role in the Financial Crisis", *South African Journal of Economic and Management Sciences*, 16(4), 364-382.
- Defond M. L., Hann, R. N. and Hu, X. (2005), "Does the Market Value Financial Expertise on Audit Committees of Boards of Directors?", *Journal of Accounting Research*, 43(2), 153-193.
- Delios, A. and Beamish, P. W. (2001), "Survival and Profitability: The Roles of Experience and Intangible Assets in Foreign Subsidiary Performance", *Academy of Management Journal*, 44(5), 1028-1038.
- Demircioglu K. (2009), "Ticari Bankalarda Operasyonel Risk Yönetimi ve Denetimi, Türkiye, Hollanda ve Rusya Uygulaması", Marmara Üniversitesi, Yayınlanmamış Doktora Tezi.
- DeZoort, F. T. (1998), "An Analysis of Experience Effects on Audit Committee Members' Oversight Judgments", *Accounting, Organizations and Society*, 23(1), 1-21.
- DeZoort, F. T. and Salterio, S. E. (2001), "The Effects of Corporate Governance Experience and Financial-Reporting and Audit Knowledge on Audit Committee Members' Judgments", *Auditing: A Journal of Practice & Theory*, 20(2), 31-47.
- Dickinson, G., (2001), "Enterprise Risk Management: Its Origins and Conceptual Foundation", *The Geneva Papers on Risk and Insurance*, 26 (3), 360-366
- Dionne, G. and Triki, T. (2005), "Risk Management and Corporate Governance: The Importance of Independence and Financial Knowledge for the Board and the Audit Committee", *HEC Montréal Working Paper*, Centre de Recherché en E-finance.
- Dionne, G. and Chun, O. M. (2013), "Default and Liquidity Regimes in the Bond Market During the 2002-2012 Period", *Canadian Journal of Economics/Revue Canadienne d'économique*, 46(4), 1160-1195.
- Dowd, V. (2003), "Measurement of Operational Risk: the Basel Approach", *Operational Risk: Regulation, Analysis and Management*, Ed. Carol Alexander. Great Britain, Prentice Hall, p. 36.
- Doyle, J., Ge, W. and McVay, S. (2007) "Determinants of Weaknesses in Internal Control Over Financial Reporting", *Journal of Accounting and Economics*, 44(1), 193-223.
- Drobetz, W. Wolfgang, Dirk C. Schilling and Henning Schröder (2013), "International Evidence on the Heterogeneity of Capital Structure Adjustment Speeds", Frankfurt. available at <http://efmaefm.org>, (accessed 5, January 2014).
- Elder, R. J. and Allen, R. D. (2003), "A Longitudinal Field Investigation of Auditor Risk Assessments and Sample Size Decisions", *The Accounting Review*, 78(4), 983-1002.

- Esterhuysen, J. N., Van Vuuren, G. and Styger, P. (2010), “The Effect of Stressed Economic Conditions on Operational Risk Loss Distributions”, *South African Journal of Economic and Management Sciences*, 13(4), 577-592.
- European Banking Authority (2011), “EBA Guidelines on Internal Governance”, (GL 44).
- European Commission. (2011), “Proposal for a Regulation of the European Parliament and of the Council on Specific Requirements Regarding Statutory Audit of Public-Interest Entities”, *Brussels, Belgium*.
- Fadzil, F. H., Haron, H. and Jantan, M. (2005), “Internal Auditing Practices and Internal Control System”, *Managerial Auditing Journal*, 20(8), 844-866.
- Federal Deposit Insurance Corporation, (2005), “Risk Management Manual of Examination Policies”, available at <http://www.fdic.gov/regulations/safety/manual/>, (accessed 10, May 2013).
- Federal Reserve, (2013), “Supplemental Policy Statement on the Internal Audit Function and Its Outsourcing”, *Board of Governors of the Federal Reserve System* [supplemental to 2003 Interagency policy statement on the internal audit function and its outsourcing (2003)].
- Fiordelisi, F., Soana, M. G. and Schwizer, P. (2013), “The Determinants of Reputational Risk in the Banking Sector”, *Journal of Banking & Finance*, 37(5), 1359-1371.
- Flannery, M. J. and Hankins, K. W. (2012), “Estimating Dynamic Panel Models in Corporate Finance”, *Journal of Corporate Finance*, 19, 1-19.
- Fraser, J. and Simkins, B. (2009), *Enterprise Risk Management: Today's Leading Research and Best Practices for Tomorrow's Executives* (Vol. 3), John Wiley & Sons.
- Garcia, L. S., Barbadillo, E. R. and Pérez, M. O. (2012), “Audit Committee and Internal Audit and the Quality of Earnings: Empirical Evidence from Spanish Companies”, *Journal of Management & Governance*, 16(2), 305-331.
- Gendron, Y., Bédard, J. and Gosselin, M. (2004), “Getting Inside the Black Box: A Field Study of Practices in “Effective” Audit Committees”, *Auditing: A Journal of Practice & Theory*, 23(1), 153-171.
- Ghafran, C. and O’Sullivan, N. (2012), “The Governance Role of Audit Committees: Reviewing a Decade of Evidence”, *International Journal of Management Reviews*, 15(4), 381-407.
- Ghosh, A., Marra, A. and Moon, D. (2010), “Corporate Boards, Audit Committees and Earnings Management: Pre-and Post-SOX Evidence”, *Journal of Business Finance & Accounting*, 37(9-10), 1145-1176.
- Greene, W. H. (2008), *Econometric Analysis – Sixth Edition*, New Jersey, Upper Saddle River: Pearson International.

- Grossman, S. J. and Hart, O. D. (1986), "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration", *The Journal of Political Economy*, 94(4), 691-719.
- Growitsch, C. and Stronzik, M. (2008), "Ownership Unbundling of Gas Transmission Networks-Theoretical Background and Empirical Evidence", In *paper presentato alla prima conferenza della rivista Competition and Regulation in Network Industries* (Vol. 18).
- Gul, F. A., Srinidhi, B. and Tsui, J. S. (2008), "Board Diversity and the Demand for Higher Audit Effort", available at SSRN, <http://ssrn.com/abstract=1359450>.
- Gürbüz, A. O., Aybars, A. and Kutlu, Ö. (2010), "Corporate Governance and Financial Performance with a Perspective on Institutional Ownership: Empirical Evidence from Turkey", *Journal of Applied Management Accounting Research*, 8(2), 21-37.
- Habbash, M. (2010), "*The Effectiveness of Corporate Governance and External Audit on Constraining Earnings Management Practice in the UK*", Doctoral Dissertation, Durham University.
- Hakkarainen, A., Kasanen, E. and Puttonen, V. (1997), "Interest Rate Risk Management in Major Finnish Firms", *European Financial Management*, 3(3), 255-268.
- Hammersley, J. S., Myers, L. A. and Shakespeare, C. (2008), "Market reactions to the Disclosure of Internal Control Weaknesses and to the Characteristics of Those Weaknesses under Section 302 of the Sarbanes Oxley Act of 2002", *Review of Accounting Studies*, 13(1), 141-165.
- Haron, H., Jantan, M. and Pheng, E. G. (2005), "Audit Committee Compliance with Kuala Lumpur Stock Exchange Listing Requirements", *International Journal of Auditing*, 9(3), 187-200.
- Hayali, A., Dinç, Y., Sarılı, S., Dizman, A. S. and Gündoğdu, (2011), "A Importance Of Internal Control System In Banking Sector: Evidence From Turkey", LCBR European Marketing Conference 2011. Frankfurt am Main, Germany. July 7-8, 2011, The Lupcon Center for Business Research.
- Herring, R. J. (2002), "The Basel 2 Approach to Bank Operational Risk: Regulation on the Wrong Track", *Journal of Risk Finance*, 4(1), 42-45.
- Hess, C. (2011), "The Impact of the Financial Crisis on Operational Risk in the Financial Services Industry: Empirical Evidence", *Journal of Operational Risk*, 6(1), 23-35.
- Ho, S. and Hutchinson, M. (2010), "Internal Audit Department Characteristics/Activities and Audit Fees: Some Evidence from Hong Kong Firms", *Journal of International Accounting, Auditing and Taxation*, 19(2), 121-136.
- Hoffman, D. G. (2002). *Managing Operational Risk: 20 Firmwide Best Practice Strategies* (Vol. 109), John Wiley & Sons.

- Holt, T. P. and DeZoort, T. (2009), “The Effects of Internal Audit Report Disclosure on Investor Confidence and Investment Decisions”, *International Journal of Auditing*, 13(1), 61-77.
- Hopt, K. J. (2013), “Corporate Governance of Banks and Other Financial Institutions after the Financial Crisis-Regulation in the Light of Empire and Theory”, *Journal of Corporate Law Studies*, 13(2), 219-253.
- Hsu, C., Backhouse, J. and Silva, L. (2013), “Institutionalizing Operational Risk Management: An Empirical Study”, *Journal of Information Technology*, 29(1), 59-72.
- IIA. (2008), “International Standards for the Professional Practice of Internal Auditing. Altamonte Springs”, *The Institute of Internal Auditors*.
- Institute of International Finance (2008), “Final Report on Market Best Practices for Financial Institutions and Financial Products”, *Venulex Legal Summaries*, 2.
- Institute of Operational Risk (2010), “Operational Risk Sound Practice Guidance Key Risk Indicators”, available at [https://subscriber.riskbusiness.com/ComponentFiles/Website/InterestingReading\\_FileName\\_95.pdf](https://subscriber.riskbusiness.com/ComponentFiles/Website/InterestingReading_FileName_95.pdf), (accessed 24 March 2014).
- IMF, S. and Soundness, R. F. (2014), “Global Financial Stability Report”, *International Monetary Fund*.
- Jameson, R. (2001), “Operational Risk Charges: A Bad Case of Mission Creep?” *Erisk*, May.
- Jensen, K. L. and Payne, J. L. (2003), “Management Trade-Offs of Internal Control and External Auditor Expertise”, *Auditing: A Journal of Practice & Theory*, 22(2), 99-119.
- Jensen, M. C. and Meckling, W. H. (1976), “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure”, *Journal of Financial Economics*, 3(4), 305-360.
- Jianakoplos, N. A. and Bernasek, A. (1998), “Are Women More Risk Averse?”, *Economic Inquiry*, 36(4), 620-630.
- Joann S. Lublin, (2005), “Globalizing the Boardroom”, *The Wall Street Journal*, October 31.
- Jobst, A. (2010), “The Credit Crisis and Operational Risk-Implications for Practitioners and Regulators”, *Journal of Operational Risk*, 5(2). 43-62.
- Johl, S., Subramaniam, N. and Mat Zain, M. (2012), “Audit Committee and CEO Ethnicity and Audit Fees: Some Malaysian Evidence”, *The International Journal of Accounting*, 47(3), 302-332.



- Johnstone, K., Li, C. and Rupley, K. H. (2011), "Changes in Corporate Governance Associated with the Revelation of Internal Control Material Weaknesses and Their Subsequent Remediation", *Contemporary Accounting Research*, 28(1), 331-383.
- Judson, R. A. and Owen, A. L. (1999), "Estimating Dynamic Panel Data Models: A Guide for Macroeconomists", *Economics letters*, 65(1), 9-15.
- Kappeler, A., Solé-Ollé, A., Stephan, A., & Väilä, T. (2013), "Does Fiscal Decentralization Foster Regional Investment in Productive Infrastructure?", *European Journal of Political Economy*, 31, 15-25.
- Kirkpatrick, G. (2009), *Corporate Governance Lessons from the Financial Crisis* (Vol. 1), OECD, Financial Market Trends.
- Kiviet, J. F. (1995), "On Bias, Inconsistency and Efficiency of Various Estimators in Dynamic Panel Data Models", *Journal of Econometrics*, 68(1), 53-78.
- Kleffner, A. E., Lee, R. B. and McGannon, B. (2003), "The Effect of Corporate Governance on the Use of Enterprise Risk Management: Evidence from Canada", *Risk Management and Insurance Review*, 6(1), 53-73.
- Klein, A. (2002), "Audit Committee, Board of Director Characteristics and Earnings Management", *Journal of Accounting and Economics*, 33(3), 375-400.
- Kothari, S. P., Leone, A. J. and Wasley, C. E. (2005), "Performance Matched Discretionary Accrual Measures", *Journal of Accounting and Economics*, 39(1), 163-197.
- Krishnan, G. V. and Parsons, L. M. (2008), "Getting to the Bottom Line: An Exploration of Gender and Earnings Quality", *Journal of Business Ethics*, 78(1-2), 65-76.
- Lam, J. (2003), *Enterprise Risk Management: From Incentives to Controls* (Vol. 181), John Wiley & Sons.
- Lang, W. W. and Jagtiani, J. A. (2010), "The Mortgage and Financial crises: The Role of Credit Risk Management and Corporate Governance", *Atlantic Economic Journal*, 38(3), 295-316.
- Larry, A. M. and Taylor, D. W. (2012), "Governance Characteristics and Role Effectiveness of Audit Committees", *Managerial Auditing Journal*, 27(4), 336-354.
- Lee, C. A., Bang, H. Y., Ha, J. W., Lee, J. Y. and Kim, Y. H. Y. (2011), "An Analysis of Cultural Impact on International Business Performance via Foreign Market Entry Mode: Case of South Korean MNCs", *Journal of Management & Marketing Research*, 7(1), 219-253.
- Lenz, R. and Sarens, G. (2012), "Reflections on the Internal Auditing Profession: What Might Have Gone Wrong?", *Managerial Auditing Journal*, 27(6), 532-549.

- Lin, J. W. and Hwang, M. I. (2010), "Audit Quality, Corporate Governance and Earnings Management: A Meta-Analysis", *International Journal of Auditing*, 14(1), 57-77.
- Louis, B. J. and Zhou, J. (2008), "An Exploratory Study of the Effects of the European Union 8th Directive on Company Law on Audit Committees: Evidence from EU Companies Listed on the US Stock Exchanges", *Advances in Accounting*, 24, 1-9.
- Lowndes, V. and Skelcher, C. (1998), "The Dynamics of Multi-Organizational Partnerships: An Analysis of Changing Modes of Governance", *Journal of Public Administration*, 76(2), 313-333.
- Marchetti, A. M. (2005), *Beyond Sarbanes-Oxley Compliance: Effective Enterprise Risk Management*, Wiley.
- Masli, A., Peters, G. F., Richardson, V. J. and Sanchez, J. M. (2010), "Examining the Potential Benefits of Internal Control Monitoring Technology", *The Accounting Review*, 85(3), 1001-1034.
- Masulis, R. W., Wang, C. and Xie, F. (2012), "Globalizing the Boardroom—The Effects of Foreign Directors on Corporate Governance and Firm Performance", *Journal of Accounting and Economics*, 53(3), 527-554.
- McNeil, A. J., Frey, R., & Embrechts, P. (2010), *Quantitative Risk Management: Concepts, Techniques and Tools*, Princeton University Press.
- Menon, K., & Deahl Williams, J. (1994), "The Use of Audit Committees for Monitoring", *Journal of Accounting and Public Policy*, 13(2), 121-139.
- Mihăilescu, C., & Ducu, C. (2011), "Internal Audit-A Key Element of Corporate Governance in Credit Institutions", *Annales Universitatis Apulensis-Series Oeconomica*, 13(2).
- Mo, S., Shi, Y., & Wang, Y. (2013), "The More, The Better?—A Case History Of Audit Committee Regulations", *Journal of Business Case Studies (JBSCS)*, 9(2), 105-110.
- Moon, H. and Perron, B. (2004), "Testing for a Unit Root in Panels with Dynamic Factors", *Journal of Econometrics*, 122 (1), 8-126.
- Moosa, I. A. (2007), "Operational Risk: A Survey. *Financial Markets, Institutions & Instruments*", 16(4), 167-200.
- Naciri, A. (2013), *Internal and External Aspects of Corporate Governance*, Routledge.
- New York Stock Exchange (2003), "Final NYSE Corporate Governance Rules NYSE", New York (2003), available at: <http://www.nyse.com/pdfs/finalcorpgovrules.pdf>, (accessed 3 February 2014).
- Noorvee, L. (2006), "Evaluation of the effectiveness of internal control over financial reporting (Unpublished master's thesis)", University of Tartu, Estonia, available at [www.proquest.com](http://www.proquest.com), (accessed 15 August 2013).

- Norman, C. S., Rose, J. M. and Suh, I. S. (2011), "The Effects of Disclosure Type and Audit Committee Expertise on Chief Audit Executives' Tolerance for Financial Misstatements", *Accounting, Organizations and Society*, 36(2), 102-108.
- Paula, C. and Victoria, D. S. (2001), "Global Competence: What Is It and Can It Be Developed Through Global Assignments?", *Human Resource Planning*, 24(3), 27.
- Peni, E. and Vähämaa, S. (2012), "Did Good Corporate Governance Improve Bank Performance During the Financial Crisis?", *Journal of Financial Services Research*, 41(1-2), 19-35.
- Pesaran, M. H. (2004), "General Diagnostic Tests for Cross Section Dependence in Panels", Cambridge Working Papers in Economics No. 0435, Faculty of Economics, University of Cambridge available at SSRN, <http://ssrn.com/abstract=572504>.
- Pitelis, C. N. (2007), "A Behavioral Resource-Based View of the Firm: the Synergy of Cyert and March (1963) and Penrose (1959)", *Organization Science*, 18(3), 478-490.
- Plumlee, M. and Yohn, T. L. (2010), "An Analysis of the Underlying Causes Attributed to Restatements", *Accounting Horizons*, 24(1), 41-64.
- Power, M. (2005), "The Invention of Operational Risk", *Review of International Political Economy*, 12(4), 577-599.
- Pratt, John W. and Richard J. Zeckhauser. (1985), "Principals and Agents: An Overview", *Principals and Agents: The Structure of Business*, 1, 12-15.
- Prawitt, D. F., Smith, J. L. and Wood, D. A. (2009), "Internal Audit Quality and Earnings Management", *The Accounting Review*, 84(4), 1255-1280.
- Ratcliffe, T. A. (2009), "Understanding Internal Control and Internal Control Services", *New York, Estados Unidos: American Institute of Certified Public Accountants*, 9.
- Reinhard, L. and Li, S. (2010), "A Note on Capital Structure Target Adjustment—Indonesian Evidence", *International Journal of Managerial Finance*, 6(3), 245-259.
- Report of the High-Level Group on Financial Supervision in the EU (2009), *Larosiere Group chaired by Jacques Larosiere*.

- Rippel, M. and Teplý, P. (2012), “Overview of Operational Risk Management Methods, In Proceedings of World Academy of Science, Engineering and Technology”, *World Academy of Science, Engineering and Technology*, 70, 461-464.
- Rittenberg, L. E. and Miller, P. K. (2005), “Sarbanes-Oxley Section 404 Work: Looking at the Benefits”, *The IIA Research Foundation*.
- Romano, R. (2005), “Is Regulatory Competition a Problem or Irrelevant for Corporate Governance?”, *Oxford Review of Economic Policy*, 21(2), 212-231.
- Roodman, D. (2007), “A Short Note on the Theme of Too Many Instruments”, *Center for Global Development Working Paper No.125*, 135-158.
- Ruigrok, W., Peck, S. and Tacheva, S. (2007), “Nationality and Gender Diversity on Swiss Corporate Boards”, *Corporate Governance: An International Review*, 15(4), 546-557.
- Sabato, G. (2010), “Financial Crisis: Where did Risk Management Fail?”, *International Review of Applied Financial Issues and Economics*, 2, 315-327.
- Sarafidis, V., Yamagata, T. and Robertson, D. (2009), “A Test of Cross Section Dependence for a Linear Dynamic Panel Model with Regressors”, *Journal of Econometrics*, 148(2), 149-161.
- Sarens, G. and De Beelde, I. (2006), “Internal Auditors' Perception about Their Role in Risk Management: A Comparison between US and Belgian Companies”, *Managerial Auditing Journal*, 21(1), 63-80.
- Sarens, G., De Beelde, I. and Everaert, P. (2009), “Internal Audit: A Comfort Provider to the Audit Committee”, *The British Accounting Review*, 41(2), 90-106.
- Sarens, G. and Abdolmohammadi, M. J. (2011), “Monitoring Effects of the Internal Audit Function: Agency Theory versus Other Explanatory Variables”, *International Journal of Auditing*, 15(1), 1-20.
- Senior Supervisors Group (2008), “Observation on Risk Management Practices During the Recent Market Turbulence”, *Senior Supervisors Group*, New York, NY, March 6.
- Shleifer, A. and Vishny, R. W. (1997), “A Survey of Corporate Governance”, *The Journal of Finance*, 52(2), 737-783.
- Smith, R. (2003), “Audit Committees Combined Code Guidance”, *London: Financial Reporting Council*.
- Soh, D. S. and Martinov-Bennie, N. (2011), “The Internal Audit Function: Perceptions of Internal Audit Roles, Effectiveness and Evaluation”, *Managerial Auditing Journal*, 26(7), 605-622.
- Srinidhi, B., Gul, F. A. and Tsui, J. (2011), “Female Directors and Earnings Quality”, *Contemporary Accounting Research*, 28(5), 1610-1644.

- Srinivasan, S. (2005), “Consequences of Financial Reporting Failure for Outside Directors: Evidence from Accounting Restatements and Audit Committee Members”, *Journal of Accounting Research*, 43(2), 291-334.
- Stiglitz, J. (2008), “Realign Wall Street’s Interests”, *Harpers Magazine*, November, 36-37.
- Sun, W., Stewart, J. and Pollard, D. (Eds.). (2011), *Corporate Governance and the Global Financial Crisis: International Perspectives*, Cambridge University Press.
- Swinkels, W. H. A. (2012), *Exploration of a Theory of Internal Audit*, Eburon Uitgeverij BV.
- Tatoğlu, F. Y. (2012), *İleri Panel Veri Analizi*, Birinci Baskı, İstanbul: Beta Yayınevi.
- Thiruvadi, S. (2012), “Gender Differences and Audit Committee Diligence”, *Gender in Management: An International Journal*, 27(6), 366-379.
- Tseng, C.Y. (2007), “Internal Control, Enterprise Risk Management and Firm Performance” Doctoral Thesis of University of Maryland, Baltimore, available at: [www.proquest.net](http://www.proquest.net), (accessed 15, August 2013).
- Van de Poel, K. and Vanstraelen, A. (2011), “Management Reporting on Internal Control and Accruals Quality: Insights from a “Comply-or-Explain Internal Control Regime””, *Auditing: A Journal of Practice and Theory*, 30(3), 181-209.
- Wang, T. and Hsu, C. (2013), “Board Composition and Operational Risk Events of Financial Institutions”, *Journal of Banking & Finance*, 37(6), 2042-2051.
- Watson, J. and McNaughton, M. (2007), “Gender Differences in Risk Aversion and Expected Retirement Benefits”, *Financial Analysts Journal*, 63(4), 52-62.
- Wernerfelt, B. (1995), The Resource-Based View of the Firm: Ten Years After”, *Strategic Management Journal*, 16(3), 171-174.
- Williamson, O. E. (1981), “The Economics of Organization: The Transaction Cost Approach”, *American Journal of Sociology*, 87, 548-577.
- Williamson, O. E. (1996), “Economic Organization: The Case for Candor”, *Academy of Management Review*, 21(1), 48-57.
- Wintoki, M. B., Linck, J. S. and Netter, J. M. (2012), “Endogeneity and the Dynamics of Internal Corporate Governance”, *Journal of Financial Economics*, 105(3), 581-606.
- Wittayapoom, K. and Limsuwan, S. (2012), “How Does Internal Control Effectiveness Create Reliability of Financial Reporting? An Empirical Research of Thai Listed Firms”, *Journal of the Academy of Business & Economics*, 12(2), 89-98.
- Wu, J., Liu, L. and Jones, F. (2011), “Firm Value and Earnings Management After Internal Control Weakness Remediation”, *International Journal of Business Research*, 11(5), 111-122.

- Wu, X. (2005), *Corporate Governance and Corruption: A Cross-Country Analysis. Governance*, Wiley Online Library, 18(2), 151-170.
- Xie, B., Davidson III, W. N. and DaDalt, P. J. (2003), "Earnings Management and Corporate Governance: The Role of the Board and the Audit Committee", *Journal of Corporate Finance*, 9(3), 295-316.
- Yeh, Y. H., Chung, H. and Liu, C. L. (2011), "Committee Independence and Financial Institution Performance during the 2007–08 Credit Crunch: Evidence from a Multi-Country Study", *Corporate Governance: An International Review*, 19(5), 437-458.
- Yurtsever, G. (2008), *Bankacılığımızda İç Kontrol.*, Türkiye Bankalar Birliği.
- Zain, M. M., Subramaniam, N. and Stewart, J. (2006), "Internal Auditors' Assessment of Their Contribution to Financial Statement Audits: The Relation with Audit Committee and Internal Audit Function Characteristics", *International Journal of Auditing*, 10(1), 1-18.
- Zajc, P. (2006), "A Comparative Study of Bank Efficiency in Central and Eastern Europe: The Role of Foreign Ownership", In Jonathan A. Batten, Colm Kearney (ed.) *Emerging European Financial Markets: Independence and Integration Post-Enlargement*, *International Finance Review*, 6, 117-156, Emerald Group Publishing Limited.
- Zhang, G. Q. (2008), "Internal Control and Earnings Quality-Based on the Empirical Evidence from A-Share Companies in 2007", *Economic Management*, 23, 112-119.
- Ziegenfuss, D. E., Myers, P. M., Hall, T. and Talley, W. K. (2006), "Determinants of Internal Audit Function Performance, available at: [http://www.bpa.odu.edu/bpa/news\\_events/deans\\_seminar/attachments/Fall06/doug.doc](http://www.bpa.odu.edu/bpa/news_events/deans_seminar/attachments/Fall06/doug.doc), (accessed 1, February 2014).

**Annex: List of banks**

Akbank T.A.Ş.  
Albaraka Türk Katılım Bankası A.Ş.  
AlternatifBank A.Ş.  
Asya Katılım Bankası A.Ş.  
Citibank A.Ş.  
Denizbank A.Ş.  
Finansbank A.Ş.  
HSBC Bank A.Ş.  
ING Bank A.Ş.  
Şekerbank A.Ş.  
T.C. Ziraat Bankası A.Ş.  
Tekstil Bankası A.Ş.  
Türk Ekonomi Bankası A.Ş.  
Türkiye Finans Katılım Bankası A.Ş.  
Türkiye Garanti Bankası A.Ş.  
Türkiye Halk Bankası A.Ş.  
Türkiye İş Bankası A.Ş.  
Türkiye Vakıflar Bankası A.Ş.  
Yapı ve Kredi Bankası A.Ş.

**VITA**

Born in 1984, Gürcan Avcı graduated from Gazi University in 2005 with a Bachelor of Arts in Business Administration and also completed minor program in department of Industrial Engineering. He became Sworn Bank Auditor in Banking Regulation and Supervision Agency of Turkey in 2005. He has been head of audit group in the same agency since 2013. Gürcan Avcı also represents Turkey on the Basel Committee to design within the framework new global financial architecture