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## **WORKING PAPER**

### **A Research Note on the Relationship between the Control Environment and the Size of the Internal Audit Function in Belgium**

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## **Abstract**

This study attempts to contribute to the literature by developing three control environment variables, reflecting the contemporary context in which internal auditing is operating, and testing how these variables are related with the size of the internal audit function. Data were collected through a questionnaire sent to Chief Audit Executives. The new control environment variables turned out to be relevant when studying the size of the internal audit function. The results show that the degree of formalisation of the risk management system and the risk culture are both positively associated with the size of the internal audit function. Furthermore, the significance of the control environment variables seems to be different between the smallest and largest companies in this study. The results of this study lead to an assumed model for further research.

**Keywords:** internal auditing, control environment, Belgium.

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## **Introduction**

Increased demands for accountability has made organisation's risk management and internal control systems part of public policy debates on corporate governance. Many national and international corporate governance regulations and guidelines, including recent initiatives taken by the European Commission (2003), clearly demand board of directors and executive management to adhere to sound risk management and internal control. By stating that internal auditing should evaluate and contribute to the improvement of risk management, control and governance, the Institute of Internal Auditors (IIA, 2004) formally recognizes the assurance and consulting role of internal auditing in corporate governance.

Recent studies clearly have illustrated the growing importance of internal auditing as a crucial player in corporate governance in different countries (Carcello et al., 2005a; 2005b; Goodwin-Stewart and Kent, 2006; Paape et al., 2003; Spira and Page, 2003). Nevertheless, establishing an internal audit function is only formally required for companies listed on the New York Stock Exchange (SEC, 2003) and for companies operating in the banking and insurance industry (Basel Committee, 2001). Although all other companies are stimulated by corporate governance best practices to consider the establishment of an internal audit function, it still remains voluntarily. Few studies have investigated voluntary demand for internal auditing in a US (Wallace and Kreutzfeldt, 1991) and Australian environment (Anderson et al., 1993; Carey et al., 2000), illustrating the relevance of agency variables. Recently, Sarens (2007) found that agency variables are highly relevant when explaining the size of the internal audit function within Belgian companies. It was confirmed that the more diffused the ownership structure of the company, the larger the company and the more reporting levels within the company, the larger the internal audit function.

Complementary to existing explanatory models, recent studies in this area (cf. Goodwin-Stewart and Kent, 2006; Sarens and De Beelde, 2006a; 2006b) illustrate the growing influence of the control environment on internal auditing practices. This study intends to develop three variables reflecting the control environment in which internal audit functions are operating, and tests whether these variables can be associated with the size of the internal audit function. These new variables better fit with the increased attention for risk management and internal control and the growing role of internal auditing in these areas. Given the exploratory character of these variables, this paper opens new ways of conducting research on internal auditing characteristics. These variables also offer practitioners a tool to evaluate and benchmark the size of their internal audit function based on specific characteristics of their control environment.

The results of this study confirm the relationship between the control environment and the size of the internal audit function. It is shown that the degree of formalisation of the risk management system and the risk culture are positively associated with the size of the internal audit function. Besides, interesting differences exist between the smallest and the largest companies in this study.

The remainder of this paper is structured as follows. The second section describes the control environment variables and develops hypotheses based on a review of the relevant literature. The third section gives an outline of the methodology of this study. The fourth section shows the empirical results. Finally, the paper ends with a summary and discussion of the conclusions.

## **Development of Control Environment Variables and Hypotheses**

The study by Wallace and Kreutzfeldt (1991) can be considered as one of the first to illustrate the importance of control environment characteristics in explaining the existence of an internal audit function. More than ten years later, Goodwin-Stewart and Kent (2006) elaborate further on this idea. They take into account factors related to risk management and internal control. When explaining the existence of an internal audit function within Australian companies, they found that the existence of an internal audit function is positively associated with the use of a separate risk management committee and the use of a designated risk manager. These results suggest that firms with an integrated risk management framework are more likely to have an internal audit function, and that internal auditing is complementary to other risk management mechanisms.

Recent case based research studies on internal auditing in Belgium illustrate the importance of the control environment. Sarens and De Beelde (2006b) found that the tone-at-the-top and the control awareness are important when studying internal auditing practices. Another recent study by Sarens and De Beelde (2006a) revealed that the status of the risk management system has a strong impact on the role of internal auditing within an organisation. Factors that turned out to have an influence on internal auditing are: the level of risk and control awareness, the degree of formalisation of the risk management system, the extent to which responsibilities related to risk management and internal controls are clearly defined and communicated, and the existence of a separate risk management function.

The risk management environment seems to have an important effect on how the internal audit function operates within organisations (Selim and McNamee, 1999b; Spira and Page,

2003). The description of the control environment provided by the Enterprise Risk Management framework (ERM, 2004) is used as the basis for this study. The ERM framework (2004) describes the control environment of a company as:

“...the foundation for all other components of enterprise risk management, providing discipline and structure. The internal environment influences how strategy and objectives are established, business activities are structured and risks are identified, assessed and acted upon. It influences the design and functioning of control activities, information and communication systems, and monitoring activities”.

This description suggests that the control environment has an influence on all other components of a risk management system, thus, also on internal auditing. Internal auditing plays a crucial monitoring role with respect to risk management and internal control systems, as clearly outlined by the IIA (2004) and confirmed by recent studies (Allegrini and D’Onza, 2003; Paape et al., 2003; Sarens and De Beelde, 2006a; Spira and Page, 2003). Given these indications, this study has the intention to develop three variables reflecting different dimensions of the control environment. Three hypotheses will test the relationship between these variables and the size of internal audit functions.

### *Tone-at-the-Top*

According to the ERM framework (2004), the so-called tone-at-the-top is an important element of the control environment. This refers to a company’s ethical values as well as management’s philosophy and operating style (Cohen et al., 2002) which is reflected by the code of conduct or code of ethics of the company. Schein (1990) suggests that the modelling by leaders and powerful organisational members enables other group members to identify with them and internalise their values and assumptions. Sarens and De Beelde (2006b) illustrate the influence of the tone-at-the-top on the scope of internal audit activities. Based on this study, it can be reasonably assumed that when the company pursues integrity and clear ethical values and management has an integer philosophy and operating style, greater

importance will be attached to the independent and objective monitoring role of internal auditing. This can be considered as a way of translating and communicating the tone-at-the-top throughout the company. Furthermore, Sarens and De Beelde (2006a; 2006b) illustrate that risk and control awareness at management level is another element that can be considered as part of the tone-at-the-top, and that has an influence on the scope of internal audit work. It can be assumed that the more management is aware of risks and controls, the more they will appreciate internal auditing's supportive role in monitoring and improving risk management and internal control. Consequently, we formulate the following hypothesis:

Hypothesis 1: A more supportive tone-at-the-top in the company is associated with a larger internal audit function.

#### *Formalisation of the Risk Management System*

In addition to the overall risk and control awareness within the company, Sarens and De Beelde (2006a) and Selim and McNamee (1999b) demonstrate the relationship between the status of the risk management system and internal audit activities. A company with a more formalised risk management system, in which the responsibilities are clearly defined, is a more supportive environment for internal auditing. The more the risk management system is formalised, the more the systematic and disciplined assurance and consulting role of internal auditing in evaluating and improving the risk management system will be valued. Following Goodwin-Stewart and Kent (2006) and Selim and McNamee (1999b), who both found that risk management functions interact with internal auditing, it can be assumed that the existence of a separate risk manager or risk management function, as part of the overall risk management system, will enhance the role of internal auditing. It can be argued that a separate risk manager, supporting management in their risk management responsibilities, will

more appreciate the complementary role of internal auditing in monitoring and improving the risk management system. We will test the following hypothesis:

Hypothesis 2: A more formalised the risk management system is associated with a larger internal audit function.

### *Risk Culture*

Selim and McNamee (1999a) found that an organisation's culture is greatly influenced by the tacit acceptance that business risks, both negative and positive facets, are paramount in all decisions relating to the strategic and tactical levels. As described by the ERM framework (2004), the risk culture characterises how a company considers risk in its day-to-day activities, to what extent does the company looks for or rather avoids high risk projects or solutions in their day-to-day activities. For many companies, the risk culture flows from the company's risk appetite, influencing the final extent of risk a company wants to accept when pursuing its goals and objectives. Companies with a higher (lower) risk appetite will more (less) actively look for high risk projects or solutions. It would be expected that in a high risk culture, the probability of a fraud case will be enhanced. Selim and McNamee (1999a) found empirical indications that the risk culture cascaded down the organisational structure to include managers at all levels and. By implication, this can be internal auditing. It is supposed that within a high risk culture, internal auditing can play a more value adding role in monitoring risk taking and the way of managing risks as well as looking for potential fraud indicators resulting from this high risk-taking behaviour. This leads to a fourth hypothesis.

Hypothesis 3: A higher risk culture in the company is associated with a larger internal audit function.



## **Methodology**

### **Target Population**

Our target population consists of two groups of companies. First, banks and insurance companies, as they have internal audit functions in order to comply with regulatory requirements (Basel Committee, 2001). Second, based on the membership database of the Belgian Institute of Internal Auditors (IIABEL), manufacturing and service companies that have an internal audit function. This results in a target population of 260 companies.

### **Data Collection**

Data for this study were collected using a questionnaire based on previous literature and pre-tested with nine experienced Chief Audit Executives<sup>2</sup> to fine tune. This questionnaire was e-mailed in November 2005 to the head of the internal audit department of all 260 companies from the target population. By March 2006, after an intensive follow-up by e-mail and phone<sup>3</sup>, 85 questionnaires were returned (overall response rate of 32.69 percent). After leaving out 12 questionnaires containing many missing values, the final count of usable questionnaires was 73. This represents 28.08 percent of the target population, which is similar to recent studies in this area (e.g. Carcello et al., 2005a, Mat Zain et al., 2006).

### **Non-Response Bias**

To detect a possible non-response bias, Armstrong and Overton (1977) suggest comparing key constructs between early and late respondents<sup>4</sup>. The analysis reveals no significant differences in terms of number of employees ( $p = .702$ ) and total assets (.109) between early

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<sup>2</sup> Note that all these Chief Audit Executives have more than 15 years of experience in internal auditing. Three of them are working in a financial company (bank and insurance) and six are working in a non-financial company.

<sup>3</sup> We gratefully acknowledge the assistance of IIABEL in this part of the data collection.

<sup>4</sup> We consider those respondents returning their questionnaire during the last week of the data collection, who lasted 18 weeks in total, as so-called 'late respondents'.

and late respondents. Comparing the control environment variables did not show significant differences between early and late respondents. It can be concluded that the data do not suffer from a non-response bias.

### **Size of the Internal Audit Function**

Respondents were asked to indicate the number of internal auditors (FTE) in their internal audit department.

### **Company Size**

Consistent with previous research, total assets as reporting in the 2005 annual report is used to measure company size (cf. Carey et al., 2000; Chow, 1982; Sarens, 2007; Wallace and Kreutzfeldt, 1991).

### **Operationalization of the Control Environment Variables**

Table 1 gives an overview of the different items for each of the three variables and the results of the factor analysis (Varimax). Together, these three variables account for 69 percent of the total variance. All items were measured through the questionnaire using a Likert scale ranging from one (strongly disagree) to five (strongly agree). The first variable (*Tone-at-the-Top*) is measured using four items based on the ERM framework (2004) as well as previous research done by Sarens and De Beelde (2006a; 2006b). It has a Cronbach's alpha of 0.85, which is quite high for a new developed measure. The second variable (*Formalisation of the Risk Management System*) is measured using three items based on Goodwin-Stewart and Kent (2006) and Sarens and De Beelde (2006a), resulting in a sufficiently reliable measure (Cronbach's Alpha = 0.74). The third variable (*Risk Culture*) is measured based on three items inspired by the ERM framework (2004). The reliability of this measure is still

acceptable (Cronbach's Alpha = 0.66) given the exploratory character of this study. For each variable, the average of the items was calculated and will be used in further analysis.

[INSERT TABLE 1 HERE]

## **Empirical Results**

### **Descriptive Statistics**

Panel A of Table 2 shows a breakdown of the respondents by industry. It becomes clear that almost one third (32 per cent) of the respondents comes from the production, energy and utility sector, whereas one fourth (26 per cent) of the respondents operates in the financial sector (bank or insurance company). Panel B of Table 2 divides the respondents into three groups based on their size (total assets). A first group contains the relatively smaller companies (total assets < 500 million Euro) and represents about 29 percent of the respondents. A third group contains the largest companies (total assets > 7.5 billion Euro) and represents 22 percent of the respondents. Almost half of the respondents (49 percent) falls within the middle group.

Table 3 indicates substantial variability in the number of internal auditors, ranging from 1 to 130, with a mean of about 11 internal auditors. The scores for the control environment variables show that the tone-at-the-top is supportive (overall average score above 4) in 73 percent of the responding companies. This is supported by an average score of 4.07. The risk management system of the responding companies is, on average, somewhat formalised (average score of 3.14). Only 34 percent of the responding companies has a formalised risk management system (overall average score above 4). Overall, the culture seems to be

relatively risk averse (average score of 2.92). Only one fourth (26 percent) of the companies has a high risk culture (overall average score above 4).

[INSERT TABLE 2 HERE]

[INSERT TABLE 3 HERE]

### **Correlations and Significance Tests**

Table 4 gives an overview of the correlations when taking into account all respondents. Consistent with previous research (Abdel-Khalik, 1993; Anderson et al., 1993; Chow, 1982; Sarens, 2007) the size of the internal audit function is strongly positively correlated ( $p < .01$ ) with the company size.

Besides, the correlation matrix indicates a significantly positive correlation ( $p < .01$ ) between the formalisation of the risk management system and the size of the internal audit function. An ANOVA test reveals a significantly larger internal audit function in those companies with a formalised risk management system ( $F = 12.594$ ;  $p < .01$ ). This result confirms the second hypothesis and indicates that *a more formalised risk management system is associated with a larger internal audit function*. It is suggested that a more formalised risk management system in which responsibilities are clearly defined and a separate risk manager or risk management function exists, can be considered as a more supportive environment for internal auditing (Sarens and De Beelde, 2006a). This is reflected in a larger internal audit function. Furthermore, this result is consistent with previous findings of Goodwin-Stewart and Kent (2006) and Selim and McNamee (1999b), indicating the complementary role between the internal audit function and the risk manager.

[INSERT TABLE 4 HERE]

A closer investigation of Table 4 reveals that the formalisation of the risk management system is significantly positively related ( $p < .01$ ) with the company size and the tone-at-the-top. A more formalised risk management system is associated with larger companies and a more supportive tone-at-the-top.

It seems that the company size is a dominant variable. Therefore, the group of respondents is divided into three sub-groups based on the company size (cf. Panel B of Table 2). Table 5 shows the correlation matrix for the smallest companies (total assets < 500 million Euro). The size of the internal audit function is only significantly positively ( $p < .05$ ) correlated with the formalisation of the risk management system. This is supported by an ANOVA test indicating a significantly larger internal audit function ( $F = 5.867$ ;  $p < .05$ ) in those companies with a formalised risk management system. Within the smallest companies, the formalisation of the risk management is not significantly correlated with other variables.

[INSERT TABLE 5 HERE]

Table 6 shows the correlation matrix for the largest companies (total assets > 7.5 billion Euro). Contrary to the smallest companies, the size of the internal audit function is only significantly positively ( $p < .01$ ) correlated with the risk culture. This is supported by an ANOVA test revealing a significantly larger internal audit function ( $F = 4.421$ ;  $p = .05$ ) in those companies with a high risk culture. A further investigation of Table 6 shows a significantly positive correlation ( $p < .05$ ) between the risk culture and the company size. It seems that, within this group, the largest companies are associated with a higher risk culture.

[INSERT TABLE 6 HERE]

Table 7, showing the correlation matrix for all other companies that fall within the middle group (total assets > 500 million Euro and < 7.5 billion Euro), reveals no significant correlation between the size of the internal audit function and nor the control environment variables, neither the company size.

[INSERT TABLE 7 HERE]

## **Discussion and Conclusion**

In this paper, three control environment variables were developed and their relationship with the size of the internal audit function was tested. Contrary to previous research, incorporating single characteristics of the control environment (cf. Goodwin-Stewart and Kent, 2006; Wallace and Kreutzfeldt, 1991), this study reflects different dimensions of the control environment measured by well-considered items. The operationalisation of this new model was inspired by the ERM framework (2004) and indications from recent studies on internal auditing in Belgium (Sarens and De Beelde, 2006a; 2006b). It can be concluded that some characteristics of the control environment are significantly correlated with the size of the internal audit function. This alternative approach opens new areas for further research.

The results suggest that companies with a more formalised risk management system have a larger internal audit function. Given previous research (Goodwin-Stewart and Kent, 2006; Sarens and De Beelde, 2006a), this may lead to the conclusion that the monitoring role of internal auditing with respect to risk management and internal controls is more valued in

companies that adopt a formalised risk management approach. A company in which risk management responsibilities are clearly defined and communicated and a separate risk management function exists, would be a more supportive environment for the development of the internal audit function.

Further analysis indicates a significant positive relationship exists between the tone-at-the-top and the degree of formalisation of the risk management system. This suggests that when a company pursues integrity and clear ethical values and when management has an integer philosophy and operating style, combined with a high level of risk and control awareness, a more formalised risk management system will be implemented. Further research could elaborate more on this by investigating whether the following assumption makes sense: the more supportive the tone-at-the-top, the more formalised the risk management system, and consequently, the larger the internal audit function. In other words, could the formalisation of the risk management system be considered as an intermediate variable?

Further examination also reveals a significant positive correlation between company size and the degree of formalisation of the risk management system, suggesting that larger companies are likely to have a more formalised risk management system. Given previous research indicating the positive relationship between company size and the size of the internal audit function (Sarens, 2007), one can wonder whether the degree of formalisation of the risk management system is an intermediate variable between the company size and the size of the internal audit function. Can it be assumed that larger companies are more likely to have a formalised risk management system, and therefore, are more appreciating the monitoring role of internal auditing with respect to risk management and internal controls? This may suggest that the control environment variables are, to some extent, complementary to the agency

model adopted by previous studies in this area (Abdel-Khalik, 1993; Anderson et al., 1993; Carey et al., 2000; Sarens, 2007; Wallace and Kreutzfeldt, 1991). Further research could elaborate more on this relationship.

Further analysis suggests that the control environment variables are more relevant when investigating the size of the internal audit function within the smallest and largest companies in this study. It was found that the size of the internal audit function within the smallest companies is strongly related with the degree of formalisation of the risk management system. Within smaller companies, the degree of formalisation of the risk management system can vary much more (cf. Sarens and De Beelde, 2006a), and therefore, it seems reasonable that it has a more significant influence on the size of the internal audit function. As soon as the company reaches a certain size, a formalised risk management system becomes more common. Therefore, it can be assumed that the influence of the formalisation of the risk management system on the size of the internal audit function becomes less significant when the company becomes larger. This may suggest that company size could be considered as a moderating variable between the formalisation of the risk management system and the size of the internal audit function.

Within the largest companies, the size of the internal audit function is strongly associated with the risk culture of the company. This suggests that, within the largest companies, the role of internal auditing in monitoring risk taking, and the related internal controls as well as its potential role in detecting fraud become more important. Furthermore, it was suggested that, within this group of largest companies, the risk culture becomes even higher when the company grows further. Or could it be interpreted the other way around? In other words, does a company grow thanks to a higher risk culture, which in its turn, leads to a larger



internal audit function? Nevertheless, it can be assumed that the influence of the risk culture on the size of the internal audit function becomes more significant when the company becomes larger. Again, this may suggest that company size could be considered as a moderating variable.

Figure 1 summarises the relationships that were supported by this study, without indicating any direction. Figure 2 comes up with the assumed relationships and their direction which could become the focus of further research.

[INSERT FIGURE 1 HERE]

[INSERT FIGURE 2 HERE]

### **Limitations**

Although providing interesting exploratory evidence, this study needs to be considered as a first attempt to come up with alternative explanations for the size of the internal audit function. More conclusive statistical techniques need to be performed in order to conclude on the direction of each of the assumed relationships. Further research could also improve the operationalisation of the current variables to increase their explanatory power. Adding new constructs, for example characteristics of the board and/or the audit committee, could further enhance the relevance of this control environment approach in explaining contemporary internal auditing practices.

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**Table 1: Control Environment Variables**

Measures and Items	Alpha	Factor Loading	Source (based on)
<i>Tone-at-the-top</i>	.848		
We pursue formalised integrity and clear ethical values		.881	ERM framework (2004); Sarens and De Beelde (2006a; 2006b)
Management has an integer philosophy and operating style		.744	
There exists a code of conduct and/or code of ethics		.852	
There is a high level of risk and control awareness at management level		.783	
<i>Formalisation of the risk management system</i>	.739		
A formal risk management system is used within our company		.887	Sarens and De Beelde (2006a); Goodwin-Stewart and Kent (2006)
Responsibilities related to risk management and internal controls are clearly defined within our company		.769	
There exists a separate risk manager or risk management function within our company		.740	
<i>Risk culture</i>	.660		
In our company, it is common to avoid risks		.714	ERM framework (2004)
Management avoids high risk projects or solutions		.852	
There did not happen any serious fraud case during the last five years		.734	

**Table 2 : Breakdown of the Respondents**

	Frequency	Percentage
<b><i>Panel A : Industry</i></b>		
Production, energy, utilities	23	31.50%
Telecom, IT, media, entertainment	9	12.33%
Trade, Transport, logistics	9	12.33%
Professional services	13	17.81%
Financial services and insurances	19	26.03%
	73	100%
<b><i>Panel B: Company Size (Total Assets in thousand Euro)</i></b>		
< 500 000 Euro	21	28.77%
500 000 – 7 500 000 Euro	36	49.31%
> 7 500 000 Euro	16	21.92%
	73	100%

**Table 3: Descriptive Statistics (n = 73)**

	Min.	Max.	Mean	S.D.
Number of internal auditors	1	130	10.71	21.19
Tone-at-the-top	1	5	4.07	0.99
Formalisation of the risk management system	1	5	3.14	1.24
Risk culture	1	5	2.92	1.05

**Table 4: Correlation Matrix (all companies)**

	Number_IA	Total_Assets	Tone_at_the_Top	Formalisation	Risk_Culture
Number_IA	1				
Total_Assets	.522**	1			
Tone_at_the_Top	.167	.193	1		
Formalisation	.371**	.315**	.428**	1	
Risk_Culture	.178	.193	-.205	-.009	1

\* :  $p < .05$       \*\* :  $p < .01$

**Table 5: Correlation Matrix (smallest companies)**

	Number_IA	Total_Assets	Tone_at_the_Top	Formalisation	Risk_Culture
Number_IA	1				
Total_Assets	.222	1			
Tone_at_the_Top	.091	.245	1		
Formalisation	.484*	.102	.431	1	
Risk_Culture	.085	.068	-.277	-.159	1

\* :  $p < .05$       \*\* :  $p < .01$



**Table 6: Correlation Matrix (largest companies)**

	Number_IA	Total_Assets	Tone_at_the_Top	Formalisation	Risk_Culture
Number_IA	1				
Total_Assets	.377	1			
Tone_at_the_Top	.105	.347	1		
Formalisation	.260	.347	.445	1	
Risk_Culture	.653**	.531*	.359	.064	1

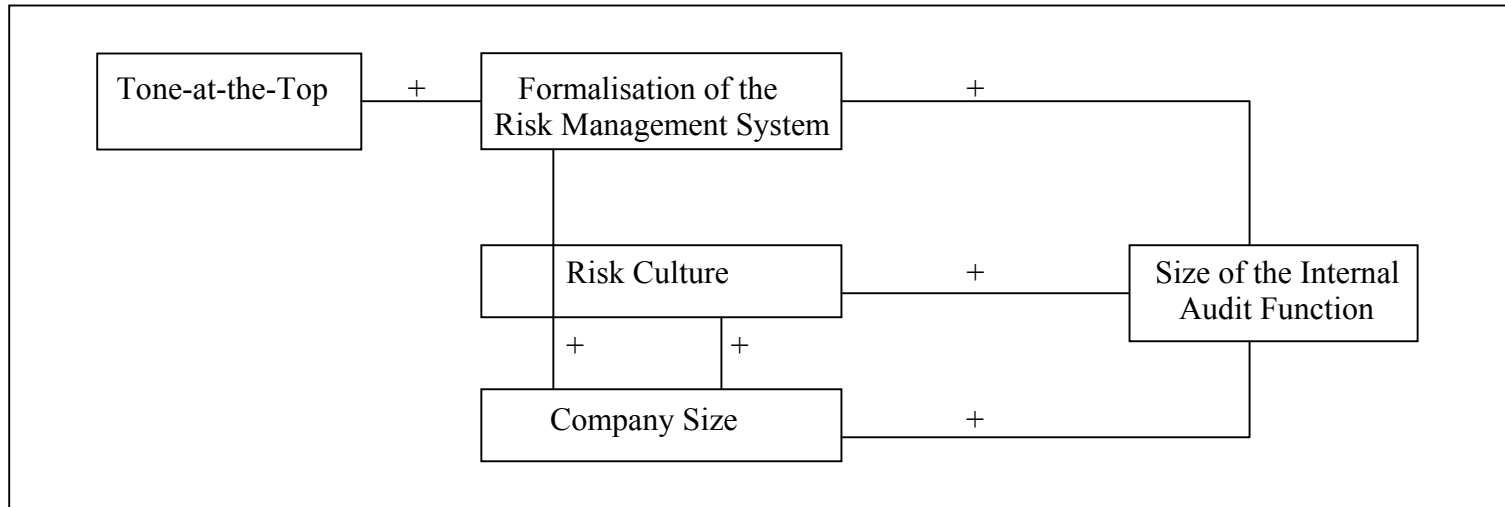
\* :  $p < .05$       \*\* :  $p < .01$

**Table 7: Correlation Matrix (middle group)**

	Number_IA	Total_Assets	Tone_at_the_Top	Formalisation	Risk_Culture
Number_IA	1				
Total_Assets	.190	1			
Tone_at_the_Top	-.180	.095	1		
Formalisation	.073	.282	.593	1	
Risk_Culture	-.058	.210	-.262	.146	1

\* :  $p < .05$       \*\* :  $p < .01$

**Figure 1: The Relationship between the Control Environment and the Size of the Internal Audit Function  
(Supported Relationships)**



**Figure 2: The Relationship between the Control Environment and the Size of the Internal Audit Function  
(Assumed Direction of the Relationships)**

