

AN EMPIRICAL ANALYSIS ON THE DETERMINANTS OF FRAUD CASES IN TURKEY**Tamer Aksoy, PhD**

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Abstract

In this paper, the perspectives of executive managers have been analyzed to evaluate the potential determinants of fraud cases in Turkey. The analysis integrates the theory of the fraud triangle, which states that corporate fraud is a function of incentives, opportunities and attitudes/rationalizations, and the corporate governance (CG) principles. Auditing regulation (AICPA, 1988, 1997, 2002) has outlined frequent fraud indicators and related risk factors. These indicators are also called “red flags” and correspond to possible signs within an organization’s business environment which indicate a higher risk of an intended misstatement of the financial statements. This paper tries to provide empirical evidence on the determinants of fraud cases in Turkey based on the executive managers’ current experiences and perspectives related to fraudulent cases they witnessed in business environment. The data is obtained from (146) executive managers from prominent companies in various sectors by interviewing with them to complete the questionnaires or online surveys. The data is analyzed by using Logit Models to assess the empirical findings.

The logit model results of fraud survey in Turkey indicates that the probability of at least one fraud case occurring in a company is estimated as %2,4. The relation between the probability of fraud case occurring in a company and the existence of procedure and policy, the amount of fraud case, the revenue level, labor and being publicly traded is an inverse relationship, which means that if a company is having a policy and procedure, increasing revenue and labor size and also publicly traded then, the probability of having fraud case is % 2,4. In the contrary case, if these conditions are not existing for a company, then the probability of having a fraud case will be %97,6. The variables used in the fraud model are also good indicators of corporate governance for a company. In other words, if a company is having above mentioned conditions then the probability of having a fraud case will be less likely. The marginal effects of each explanatory variable are also estimated and the results are parallel to the relevant literature. Briefly, all variables contained in the model influence the probability of having a fraud case in Turkey, i.e. the degree of corporate governance implementation increase under these conditions. Finally based on these findings, some policy recommendations are presented as concluding remarks.

Key Words: Fraud Triangle, ATM Approach, Corporate Governance, Logit Model**JEL Classification:** G34, M42**1. INTRODUCTION**

A wave of corporate frauds in the world occurred with the symbolic example of Enron’s failure. After the 1990s, the list of corporate scandals and failures has grown rapidly, i.e. WorldCom, Kmart, Tyco, Global Crossing, Adelphia and many others. Some of these companies such as Enron, WorldCom, and Tyco etc. have destroyed billions of dollars in shareholder value while moving toward bankruptcy. It is a fact that the number and the importance of corporate scandals have raised questions about the quality of corporate governance in the world. Corporate governance is considered as a structure that is all about who controls companies and why. In addition, ‘Good’ governance is also needed for ensuring ethical conduct and socially responsible behavior (Allaire and Firsirotu 2003).

In reality, it is argued that even if some of the corporate scandals occurred as a result of the financial market bubble burst in 2000, the extensive corporate misconduct and misreporting reveals also a failure of the auditing and corporate governance system. The objective of this paper is to analyze the executives' perspectives from various outstanding companies in Turkey regarding concept of fraud, prevention, detection and investigation and measures taken against fraudulent acts. We contribute to the existing literature by providing additional evidence on the situation in emerging markets, i.e. Turkey. The remainder of this paper is organized as follows: The next section presents our theoretical framework and relevant literature review, which is based on the fraud triangle and the Awareness Theory and Methodology (ATM) approach. The following sections discuss the data, research methodology and our empirical results. The last section presents a discussion (with limitations) and some directions for future research on Turkey.

2. THE THEORETICAL FRAMEWORK AND LITERATURE REVIEW

In this paper, we are interested in the determinants of fraud cases. In this respect, the fraud risk assessment starts with a definition of fraud and the type of fraud facing organizations. The American Institute of Certified Public Accountants (AICPA) recommends guidance in its Statement of Auditing Standards (SAS No.99) for the auditor's responsibilities to detect fraud that would have a material impact on the financial statements. This standard focuses mainly on financial statement and asset misappropriation schemes.

However, the standard does not provide a definition of fraud. Rather auditors are guided by the standard definitions of errors in financial statements.

On the other hand, there is an example of a professional standard applicable to fraud is proposed by the Institute of Internal Auditors (IIA). The IIA standards contain a section called "What is Fraud?"¹. According to the IIA standard, fraud is perpetrated by a person knowing that it could result in some unauthorized benefit to him or her, to the organization, or to another person, and can be perpetrated by persons outside and inside the organization. After defining the fraud, it is important to make fraud risk assessment which is essential for analyzing the determinants of fraud cases. The fraud triangle is commonly accepted as the major process of identifying and assessing fraud risk. In the fraud theory, there needs to be rationalization, pressure, and opportunity for fraud to take place. The AICPA has referred to these three elements as the fraud risk factors or conditions of fraud, i.e. fraud triangle. The three elements of fraud triangle coexist at different levels within an organization and also influence each personality differently.

Therefore, the fraud risk assessment process must consider the fraud conditions as a whole. It is a fact that measuring the three elements of the fraud triangle is not easy. The audit process is expected to identify and understand how the fraud conditions lead to the likelihood of fraud. In practice, identifying the fraud condition is easier than measuring these elements. Vona (2008) argues that the audit process should be aware of the fraud condition; nevertheless ranking the three factors is highly subjective.

According to Vona (2008), fraud is like an ATM machine at a bank. Vona uses the ATM terminology, because both fraud and ATM are somehow intended to withdraw money. ATM machines are designed to enable users withdrawing money from banks.

Likewise, fraud is the withdrawal of funds from an organization. The funds may be embezzled directly, siphoned off through kickback schemes, or be the result of inflated costs due to bribery and conflict of interests. In addition, the ATM stands for awareness, theory, and methodology (ATM) to detect fraud (Vona 2008, 3-4). Understanding the ATM approach is important for successful internal auditors while discovering fraud cases and the major steps of ATM is explained at Appendix 1.

The ethical factor of numerous corporate scandals has been well established in the literature. For example, Zandstra (Zandstra 2002,16) hypothesizes that the fundamental rationale for Enron's failure was a malfunction of the board of directors to behave in a morally and ethically responsible manner.

¹ IIA provides guidance on "Auditor's Responsibilities Relating to Fraud Risk Assessment, Prevention, and Detection". The IIA standard states that internal auditors should have sufficient knowledge to identify the indicators of fraud, but they are not expected to have the expertise of a person whose primary responsibility is detecting and investigating fraud.

An assessment of prior literature shows that the likelihood of committing fraud has typically been investigated by using financial and/or governance variables (For instance, Beasley (1996); Abbott et al. (2004); Kinney et al. (2004); Agrawal and Chadha (2005); Farber (2005); Srinivasan (2005); Erickson et al. (2006). We try to contribute to prior literature by analyzing the determinants of fraud cases in Turkey in the following section.

3. THE DATA AND METHODOLOGY

The data is obtained from (146) executive managers from prominent companies in various sectors by interviewing with them to complete the questionnaires or online surveys. The overview of fraud risk survey* indicates the following issues for Turkey. Among all participants; 93% of participants pointed out that fraud is a considerable issue of Turkey. 92% of participants pointed out that fraud is not a considerable issue for their company. 81% of participants pointed out that they have faced with fraud at least once throughout their career. 96% of participants pointed out that fraud cases would have a negative effect on employee's morale and motivation. Although fraud risk levels differ in various sectors, it is an impending threat for all sectors and companies. As the most risky sectors and companies in terms of fraud questioned to the participants, construction, finance and health care sectors are stated in top three rows.

Table 1. The Overview of Fraud Risk Survey	Percentage (%)
Fraud is a considerable issue of Turkey	93
Fraud is not a considerable issue for their company	92
They have faced with fraud at least once throughout their career.	81
Fraud cases would have a negative effect on employee's morale and motivation.	96

*Source: (KPMG Turkey 2009), the survey was organized by KPMG and GfK marketing company and all the names in data are strictly confidential.

The brief summary of descriptive statistics based on the survey results are shown at Appendix 2. In this empirical work; the following variables are used in the model and the descriptive statistics are shown at Appendix 3.

Number of fraud cases (FC): the number of fraud cases (FC) faced by the executive managers in Turkey as the dependent variable to test the probability of which factors influence the fraud cases in Turkey. Independent variables are as follows:

The amount of fraud case (FA): the probability of incurring financial loss for a company in case of experiencing a fraud case.

The existence of policy (POL): the probability of a company having a fraud policy.

The existence of procedures (PRO): the probability of a company having a written fraud procedure.

The revenue of company (REV): the revenue levels of the company that executive manager works.

The labor force of company (LAB): the number of workers in the company that executive manager works.

The publicly traded company (PUB): the company that executive manager works is publicly traded company.

The logistic model is used for econometric modeling. The logistic regression analysis is widely used as a reporting approach in social research results based on the analysis of data with a dichotomous dependent variable. The major reasons for preferring logistic regression models are clearly explained by various authors in the literature.

Aldrich and Nelson (1984); Hanushek and Jackson (1977); Maddala (1983) state that the logistic regression models are statistically more powerful than using simple linear regression (OLS) analysis. In addition, DeMaris (1995) noted that there are major difficulties of OLS analysis by using a linear function, with the assumption of independence between the predictors and the error term, and error heteroskedasticity, or non-constant variance of the errors across combinations of predictor values. This means that, applying a linear function is challenging because it leads to predicted probabilities outside the choice of 0 to 1. If the choice of distribution is not an important issue for modeling, then the logistic distributions and normal distributions will be alike in shape and suitable for empirical modeling purposes.

In addition, logistic regression models are easy to interpret. Principally, the closed form of expression for logistic function is shown in equation 1 with the probability that $Y = 1$:

$$P(Y = 1) = \pi = \frac{\exp(\alpha + \sum \beta_k X_k)}{1 + \exp(\alpha + \sum \beta_k X_k)} \quad (1)$$

In Equation 1, the exponential function (exp) always results in a number between 0 and infinity. The right-hand side of Equation 1 is always bounded between 0 and 1. To write the right-hand side of Equation 1 as an additive function of the predictors, the logit transformation on the probability π can be used. The logit transformation is $\log[\pi/(1-\pi)]$, where log refers to the natural logarithm. The term $\pi/(1-\pi)$ is called the odds, and is a ratio of probabilities. The log odds takes any value between minus and plus infinity.

Hence, this means that it can be modeled as a linear function of the predictor set. Based on this explanation, the logistic regression model can be written as below Equation 2:

$$\log\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k \quad (2)$$

According to DeMaris (1995) the maximum likelihood estimates have advantageous properties, for instance, in large samples; the regression coefficients are approximately normally distributed. In this way it will be possible to test each coefficient for significance by using a z test.

4. EMPIRICAL FINDINGS

Based on the survey results of (146) executive managers in Turkey, the logistic regression analysis is applied in E-views 6. The fraud model is estimated as follows:

$$P = \frac{1}{1 + e^{-(0.426FA - 0.387POL - 1.14PRO - 0.97PUB - 0.123REV - 0.66LAB)}} \cong 0.024 \quad (3)$$

The logit model results of fraud survey in Turkey indicates that the probability of at least one fraud case occurring in a company is estimated as %2,4. Hence, the coefficients of variables will be interpreted as the probability of a fraud case taking place in a company by logistic function analysis. In addition, the effect of each explanatory variable will be estimated by logit model.

The relation between the probability of fraud case occurring in a company and the existence of procedure and policy, the amount of fraud case, the revenue level, labor and being publicly traded is an inverse relationship, which means that if a company is having a policy and procedure, increasing revenue and labor size and also publicly traded then, the probability of having fraud case is % 2,4. In the contrary case, if these conditions are not existing for a company, then the probability of having a fraud case will be %97,6. This result supports the descriptive statistics of the survey explained above and also in Appendix 2.

The variables used in the fraud model are also good indicators of corporate governance for a company. In other words, if a company is having above mentioned conditions then the probability of having a fraud case will be less likely.

The marginal effects of each explanatory variable are also estimated as follows in Equation 4 and the results are parallel to the relevant literature. Briefly, these variables all influence the probability of having a fraud case in Turkey, i.e. the degree of corporate governance implementation increase under these conditions.

$$P(1 - P) * FA = 0.024(1 - 0.024) * -0.426 = -0.009978 \quad (4)$$

$$P(1 - P) * POL = 0.024(1 - 0.024) * -0.387 = -0.0090$$

$$P(1 - P) * PRO = 0.024(1 - 0.024) * -1.14 = -0.0027$$

$$P(1 - P) * PUB = 0.024(1 - 0.024) * -0.97 = -0.0023$$

$$P(1 - P) * REV = 0.024(1 - 0.024) * -0.123 = -0.0029$$

$$P(1 - P) * LAB = 0.024(1 - 0.024) * -0.66 = -0.00154$$

5. CONCLUSION

In this empirical work the probability of having fraud case and the factors affecting these fraud cases are analyzed by using logit model. In result, depending on the view of the executive managers in Turkey, fraud is a significant issue for Turkey. The overview of fraud risk survey indicates the following issues for Turkey. Among all participants; 93% of participants pointed out that fraud is a considerable issue of Turkey. 92% of participants pointed out that fraud is not a considerable issue for their company. 81% of participants pointed out that they have faced with fraud at least once throughout their career. 96% of participants pointed out that fraud cases would have a negative effect on employee's morale and motivation. The logit model results of fraud survey in Turkey indicates that the probability of at least one fraud case occurring in a company is estimated as %2,4.

The relation between the probability of fraud case occurring in a company and the existence of procedure and policy, the amount of fraud case, the revenue level, labor and being publicly traded is an inverse relationship, which means that if a company is having a policy and procedure, increasing revenue and labor size and also publicly traded then, the probability of having fraud case is % 2,4. In the contrary case, if these conditions are not existing for a company, then the probability of having a fraud case will be %97,6. The variables used in the fraud model are also good indicators of corporate governance for a company. In other words, if a company is having above mentioned conditions then the probability of having a fraud case will be less likely.

The marginal effects of each explanatory variable are also estimated and the results are parallel to the relevant literature. Briefly, all variables contained in the model influence the probability of having a fraud case in Turkey, i.e. the degree of corporate governance implementation increase under these conditions. Although fraud risk levels differ in various sectors, it is an impending threat for all sectors and companies. As the most risky sectors and companies in terms of fraud questioned to the participants, construction, finance and health care sectors are stated in top three rows. Companies should take necessary precautions to prevent fraud cases and also the probability of financial losses for their company. The major precautions may be adapting corporate governance principals to their company and having a written policy and procedures related to fraud risk assessment and awareness.

Companies which are publicly traded are less likely to have fraud cases and in Turkey. There is plenty of room for improving management style since there are mostly small and medium sized companies (SMEs) in Turkey owned by families. The family companies and SMEs should consider these empirical findings if they want to have a competitive advantage in such a global market. After the recent financial crisis, companies and the top management should be aware of their risk factors and how to cope with them in the long run. Fraud risk is one of the major risks most of the companies facing in Turkey and it worth having this issue in the agenda of top management.

6. REFERENCES

- Abbott, L. J., S. Parker, and G. F. Peters. 2004. 'Audit committee characteristics and restatements', *Auditing: A Journal of Practice and Theory* 23(1), 69-87.
- Agrawal, A., and S. Chadha. 2005. 'Corporate governance and accounting scandals', *Journal of Law and Economics* 48(2), 371-406.
- AICPA. 1988. Statement on auditing standards (SAS) No.53: The auditor's responsibility to detect and report errors and irregularities, American Institute of Certified Public Accountants.
- AICPA. 1997. Statement on auditing standards (SAS) No.82:Consideration of fraud in a financial statement audit, American Institute of Certified Public Accountants.
- AICPA. 2002. Statement on auditing standards (SAS) No. 99: Consideration of fraud in a financial statement audit, American Institute of Certified Public Accountants.
- Aldrich, J. H., and Nelson, F. D. 1984. *Linear probability, logit, and probit models*, Thousand Oaks, CA: Sage. Begg, C.
- Allaire, Y., and Firsirotu, M. 2003. "Corporate governance and performance: The elusive link", *Journal of Armand Bombardier Chair Working Paper*, Montreal: University of Quebec.
- Beasley, M. S., .1996. 'An empirical analysis of the relation between the board of director composition and financial statement fraud', *The Accounting Review* 71(4), 443-465.

- DeMaris, A. 1995. A Tutorial in Logistic Regression, *Journal of Marriage and the Family*, Vol. 57, No. 4, Nov. 956-968.
- Erickson, M., M. Hanlon, and E. L. Maydew. 2006. 'Is there a link between executive equity incentives and accounting fraud?', *Journal of Accounting Research* 44(1), 113-143.
- Farber, D. B. 2005. 'Restoring trust after fraud: Does corporate governance matter?', *The Accounting Review* 80(2), 539-561.
- Hanushek, E. A., and J. E. Jackson. 1977. *Statistical methods for social scientists*, New York: Academic Press.
- Kinney, W. R., Z.-V. Palmrose, and S. Scholz. 2004. 'Auditor independence, non-audit services, and restatements: Was the U.S. Government right?', *Journal of Accounting Research* 42(3), 561-588.
- KPMG Türkiye. 2009. *Yöneticilerin Bakış Açısı ile Türkiye’de Suistimal: Riskler, Etkiler ve Alınması Gereken Dersler*, www.kpmg.com.tr.
- Maddala, G.S. 1983. *Limited dependent and qualitative variables in econometrics*, Cambridge, England: Cambridge University Press.
- 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.
- Vona, L.W. 2008. *Fraud Risk Assessment- Building a Fraud Audit Program*, Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
- Zandstra, G. 2002. 'Enron, board governance and moral failings', *Corporate Governance* 2(2), 16-19.

Appendix 1: ATM: AWARENESS, THEORY AND, METHODOLOGY

AWARENESS	THEORY	METHODOLOGY
Awareness of the red flags of fraud:	Theory provides an understanding how fraud occurs in a business environment:	Methodology designed to locate and reveal fraudulent transactions. The methodology employed in designing a fraud audit program consists of the following stages:
I. Fraud concealment strategies II. Sophistication of the concealment strategy III. Indicators of fraudulent transactions	I. Fraud definitions II. The fraud triangle	I. Define the scope of fraud to be included and excluded from the audit program. II. Verify compliance with the applicable professional standards. III. Develop the fraud risk assessment including: <ol style="list-style-type: none"> Identify the type of fraud risk. Identify business processes or accounts at risk. Internal controls are linked to the fraud risk. Concealment strategies revealed using the red flags of fraud. Develop a sampling plan to search for the specific fraud scheme. Develop the appropriate fraud audit procedures. IV. Write the fraud audit report. V. Understand the fraud conversion cycle. VI. Perform the fraud investigation.

Resource: (Vona 2008, 4)

Appendix 2: OVERVIEW OF FRAUD RISKS SURVEY

Who, Why, What: Fraudsters and Fraud	Prevention, Detection and Investigation	Fraud Risk Management	Our survey results also indicate that;
<ul style="list-style-type: none"> • Approximately 40% of participants consider that fraud can be committed by employees and executives in their company. This ratio is followed by suppliers and service providers with the proportion of 33%. • The ratio of organizations that pay more than TL 1,000,000 each year to service providers which are considered as one of the most risky third parties in terms of fraud is 43%. 66% of companies consider that payments to the service providers are effectively controlled. • According to the participants, most important facilitators in the occurrence of fraud are insufficient proactive control environment, insufficient importance attached to the controls by the management, inexistence or disuse of business procedures. • Most commonly encountered fraudulent act types are theft of company assets, corruption and counterfeit. 	<ul style="list-style-type: none"> • 30% of participant executives pointed out that their companies are not subject to any sort of fraud risk; they are also not forecasting any fraud risks by the forthcoming three years. • 66% of participants consider that the internal control function within their organization is adequate to prevent fraudulent acts. • Fraudulent acts occurred in the companies that participated in our survey have mostly detected by internal controls, whistle blowing and coincidences were following internal controls. • 64% of detected fraud cases are investigated by the internal teams within the companies. • Actions that have been taken upon the detection of fraudulent act are respectively termination of fraudsters' employment and reviewing the adequacy of control environment against fraudulent acts within the company. 	<p>Among all interviewee executives;</p> <ul style="list-style-type: none"> • 71% of participants pointed out that no fraud risk management plan exists within the company they are working for. • 42% of participants pointed out those proactive controls against fraudulent acts are assumed to be a responsibility of internal control departments. 	<ul style="list-style-type: none"> • the most common three steps to prevent fraud are; controlling the correctness of employees' resumes, identifying fraud risks and whistle blowing mechanism and the management systems about those risks. • only 11% of participants have specific departments to fight with fraud risks • 54% of participants pointed out that the organizations don't have special systems that employees can report their suspicion concerning doubtful events • 45% of participants pointed out that the incidents are followed via legal ways • Approximately 50% of participants pointed out that the organizations are not aware of the whether there is an increase of the claims made in last two years about fraud, corruption, bribe, and etc. • 66% of participants pointed out that the organizations do not use any advanced computer programs to figure out the risky areas • 72% of participants pointed out that the organizations do resume check when hiring new employees • 61% of participants pointed out that the organizations particularly check the employment history of the candidate • 79% of participants pointed out that the organizations consider that resume check is necessary for all employees and % 19 of them consider that it is necessary for employees who have permission to access strategic information • 95% of participants pointed out that the organizations are aware of the importance of the corporate intelligence and integrity work done about their strategic partners • 85% of participants pointed out that the organizations consider that evaluation of the integrity before partnership is a crucial part of the process • 82% of participants pointed out that the organizations having whistle blower/hot lines remark that these lines are managed by organization employees • According to our survey, 50% of the reported issues to those lines, are resulted with investigation. • 86% of the organizations using forensic technologies, remark that they believe the efficiency of those programs • 84% of the organizations using forensic technology tools remark that those systems like real time data analysis are sufficient and beneficial to detect fraud • 88% of the organizations consider that in Turkish business world bribe is given under the name of 'gift' • 13% of the organizations cite that they get offers from their foreign partners to implement bribe protection program • 64% of the organizations have policies against corruption and fraud

Appendix 3: THE DESCRIPTIVE STATISTICS OF FRAUD MODEL

Variables	Survey Question Reference	Average	Std Dev.
FC- Number of fraud cases	B51	0,459	0,498
	B52	0,185	0,388
	B53	0,096	0,294
	B54	0,041	0,199
	B55	0,021	0,142
	B56	0,199	0,399
FA- The amount of fraud case	B71	0,432	0,495
	B72	0,151	0,358
	B73	0,048	0,214
	B74	0,192	0,394
	B75	0,178	0,383
POL- The existence of policy	C21	0,288	0,453
	C22	0,712	0,453
PRO- The existence of procedures	G41	0,637	0,481
	G42	0,363	0,481
REV- The revenue of company	N21	0,096	0,294
	N22	0,110	0,312
	N23	0,390	0,488
	N24	0,336	0,472
	N25	0,068	0,253
LAB- The labor force of company	N31	0,288	0,453
	N32	0,205	0,404
	N33	0,185	0,388
	N34	0,212	0,409
	N35	0,110	0,312
PUB- The publicly traded company	HA	0,274	0,446