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Agency Problems and the Choice of Auditors: Evidence from the MENA Region

Abstract: What determines the choice of auditors in the MENA region? This paper uses the data from Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait and Bahrain and shows that the extent of agency problems in a firm dictates what sort of auditors are chosen by a firm. Our results show that high dividend payout ratios are negatively related to the appointment of one of the big-four auditors. High payout ratios are synonymous to low agency problems and thus firms feel lesser need for having one of the big-four auditors. We also show that high ownership concentration - a proxy for high agency problem is positively related to firm's decision of having one of the big-four auditors. High ownership concentration exacerbates agency problems between insiders and outsiders and thus induces firms to appoint one of the big-four auditors to mitigate agency problems. We also document that increased operational complexity and transactional complexity leads to hiring of one of the big-four auditors by a firm. We argue that complexity hinders investor's ability to understand firm's information and thus introduces agency problems. Being aware of agency problems, firms hire one of the big-four auditors to alleviate some of these problems.

Keywords: agency problems, corporate governance, choice of auditors, emerging markets

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1 Introduction

An important decision made by any firm is the choice of its auditor. Prior literature suggests that investors consider quality of auditor as a value-relevant

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signal and reward firms with high-quality auditors. In a recent paper, Farooq and Kacemi (2011) document that choosing one of the big-four auditors results in better stock price performance in the MENA region. Therefore, an important question that arises is: What determines the choice of auditors? Prior literature suggests that, among many other factors, the extent of agency problems in a firm also dictates what sort of auditor is chosen by a firm. Fan and Wong (2005), for example, show that firms with agency problems embedded in their ownership structure are more likely to employ big auditors in the East Asian markets. Similarly, Faroog and Kacemi (2011) report a positive relationship between ownership concentration - proxy for agency problems in a firm - and the likelihood that a firm will hire one of the big-four auditors in the MENA region. This strand of literature argues that firms can mitigate agency problems by voluntarily adopting mechanisms that lessen managers' ability to expropriate. One such action is hiring one of the big-four auditors. Appointing reputable external auditors improves the quality of accounting information, and thus helps outside investors to make value relevant decisions.

Using a number of proxies for agency problems, this paper attempts to see whether the extent of agency problems in a firm influences its decision to employ one of the big-four auditors. More specifically, we look at how dividend payout ratio, ownership structure, operational complexity and transactional complexity influence firm's decision regarding the choice of auditors in the MENA region - Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait and Bahrain. Our results show that dividend payout ratio is positively related to employing one of the big-four auditors by a firm. Regression analysis shows that for every one unit increase in dividend payout ratio, there is a 0.0081 decrease in the log odds of appointing one of the big-four auditors. Our results are consistent with prior literature that considers high dividend payouts as a mechanism via which firms can reduce agency problems (La Porta et al. 2000). This strand of literature argues that high dividend payouts reduce the amount of cash that managers can use on unprofitable opportunities. Firms with high dividend payout ratios understand that markets consider their dividend policy as a signal for low agency problems. Therefore, high dividend paying firms do not feel the need to appoint one of the big-four auditors as their external auditors. Furthermore, our results also show that firms with high ownership concentration are more likely to employ one of the big-four auditors. Our analysis shows that for every one unit increase in ownership concentration, there is a 0.0576 increase in the log odds of appointing one of the big-four auditors. Our result is consistent with Fan and Wong (2005) and Farooq and Kacemi (2011) who argue that firms with high ownership concentration are more likely to hire one of big-four auditors. One of the reasons for this result is the fact

that high ownership concentration gives rise to the conflicts of interests between insiders and outsiders (Baker and Owsen 2002). Being aware of agency problems, firms have to adopt certain mechanisms, such as hiring one of the bigfour auditors, to reduce these problems. This paper also documents that increased operational complexity and transactional complexity leads firms to hire of one of the big-four auditors. Regression analysis shows that for every unit increase in operational complexity, there is a 0.9518 increase in the log odds of appointing one of the big-four auditors, while for every unit increase in transactional complexity, there is a 3.4150 increase in the log odds of appointing one of the big-four auditors. Our results are consistent with prior literature that argues that more complex firms have more agency problems (Knechel, Niemi, and Sundgren 2008). We argue that complexity hinders investor's ability to understand firm's information and thus introduces adverse selection problems for them. More agency problems of complex firms also result in higher level of asymmetric information and thus allow managers to take advantage of outside investors (Lins and Servaes 2002; Lins 2003). Being aware of agency problems, firms hire one of the big-four auditors to alleviate some of these problems.

The study contributes to the auditor choice literature by examining how agency problems influence choice of auditors in the MENA region. To the best of our knowledge, this is the first detailed study on the relationship between agency problems and the choice of auditors in the MENA region. An important implication of our study is that it will help investors to find out firms that deliberately make effort to reduce agency problems embedded in their structure. This is value relevant information in a way that the MENA region has weak governance and enforcement mechanisms and any firm that can make conscious effect to reduce agency problems should command investors' confidence.

The remainder of the paper is structured as follows: Section 2 briefly discusses motivation and background for this study. Section 3 discusses and summarizes the data used in this study. Section 4 presents assessment of our hypothesis, and the paper ends with Section 5, where we present conclusions.

2 Motivation and Background

What causes a firm to choose one auditor over another? Is there any information that a firm is trying to convey while choosing its auditors? Prior literature suggests that having a reputable auditor serves as a mechanism to signal outside investors that a firm is governed properly and has less agency problems (DeFond 1992; Carey, Simnet, and Tanewski 2000). This strand of literature

argues that reputable auditors are more prudent in their assessment of client firms' financial statement, McKinley, Pany, and Reckers (1985), for example, document that financial statements audited by reputable auditors are less likely to contain undetected fraud as compared to those audited by less reputable auditors. One of the reasons for more objectivity of reputable auditors is their more independence relative to less reputable auditors. Pearson (1980) argues that reputable auditors are usually larger in size and have many clients. Therefore, they do not have to depend on any single client firm for their financial sustainability. This is in contrast with less reputable auditors, who usually have smaller client base and thus have to rely exclusively on few of their clients to survive. As a result, less reputable auditors experience more difficulty in resisting pressures from client firms in situations of conflict (Pearson 1980). Therefore, information contents of audit reports certified and produced by reputable auditors are considered to be more credible and reliable than those of less reputable auditors. In addition, audit by reputable auditors can also help managers improve efficiency of a firm and remove information asymmetries in internal reporting. One consequence of the above discussion is that firms can use reputable auditors to signal to outside investors that they are safer investment opportunities than the other firms.

The importance of reputable auditors increases many folds in emerging stock markets, where agency problems are high and information disclosure is below par. Leuz, Nanda, and Wysocki (2003), for example, document that managers in emerging markets do not disclose true information regarding future prospects of their firms. Therefore, it becomes hard for outside investors to gauge the true economic conditions of firms. Auditors with superior reputation give credibility to information disclosed by firms. Faroog and Kacemi (2011) document that big-four auditors, proxy for reputable auditors, mitigate the agency problems created by ownership concentration. They show that for any given level of ownership concentration, choosing one of the big-four auditors results in better stock price performance. In another related study, Fan and Wong (2005) document that firms with agency problems are more likely to employ reputable auditors. They also show that firms hiring reputable auditors receive smaller stock price discounts associated with the agency conflicts.

In this paper, we aim to revisit the previous research and document whether the extent of agency problems influences firm's choice of auditor in the MENA region. Firms with higher agency problems should be more inclined to appoint one of the big-four auditors as their external auditors to tone down the concerns of outside investors. For the purpose of this paper, we consider four variables that can proxy for agency problems. More specifically, we use dividend payout ratio, ownership structure, operational complexity and transactional complexity as proxies for agency problems. The following sections will explain the rationale behind using these factors as proxies for agency problems.

2.1 Dividend Payout Ratio

An important consequence of inadequate governance and enforcement mechanisms is that managers can use the excess cash available with them on unprofitable opportunities. Grossman and Hart (1980) and Jensen (1986) argue that high dividend payouts reduce cash available with managers, and thus diminish any opportunity for managers to squander excess cash. This, therefore, reduces some of the agency conflicts that may be present in a firm. In another related study, La Porta et al. (2000) formalize the above arguments in a theory known as the substitute model of dividends. This model maintains that firms disgorge cash as dividends to establish a reputation for acting in the best interests of minority shareholders. One of the reasons why firms care about their reputation is their persistent need to raise capital in future. Continuous need to raise capital induces firms to act in a way that is beneficial for outside investors. Paying high dividend is one mechanism via which investors can ensure that not enough cash is left with managers to expropriate. High dividend payments, therefore, result in lower agency problems. We argue that since high dividend paying firms already have low agency problem, therefore there is less incentive for them to hire one of the big-four auditors. While low dividend paying firms, having high agency problems, have more incentives to hire one of the big-four auditors to signal investors that they have lower agency conflicts.

H1: Firms with high dividend payout ratios have lower need to appoint one of the big-four auditors as external auditors than firms with low dividend payout ratios.

2.2 Ownership Concentration

Prior literature considers ownership concentration as an important characteristic of emerging market firms. Farooq and Kacemi (2011) document that insiders own, on average, almost 50% of shares in firms listed at MENA stock exchanges. Similar observation is also made by Faroog and Seffar (2012) regarding firms in the MENA region. Concentration of ownership in the hands of few allows managers and controlling shareholders to evade effective disclosure of information (Leuz, Nanda, and Wysocki 2003). Poor information disclosure exacerbates information asymmetries between insiders and outsiders and results in agency problems. Prior literature suggests that high ownership concentration creates an entrenchment problem that allows self-dealings by controlling shareholders to go unchallenged by boards of directors. This entrenchment problem is noticed by investors and they discount the stock prices of firms with high ownership concentration. Therefore, we argue that firms have to introduce certain mechanisms that can limit the ability of controlling shareholder to expropriate minority shareholders. One such mechanism is appointing one of the big-four auditors as an external auditor of a firm.

H2: Firms with high ownership concentration have higher need to appoint one of the big-four auditors as external auditors than firms with low ownership concentration.

2.3 Operational Complexity

Operational complexity of a firm also intensifies agency problems. Prior literature maintains that operational complexity allows broader scope to management for control to assure effective operations (Abdel-Khalik 1993; Hay and Davis 2004). This strand of literature also indicates that an increasing amount of complexity gives rise to moral hazard problems between managers/controlling shareholders and minority shareholders. Knechel, Niemi, and Sundgren (2008) argued that operational complexity, eventually, leads to the manipulation of information by managers/controlling shareholders, thereby increasing agency problems. We hypothesize that high agency problems associated with operationally complex firms lead to hiring one of the big-four auditors. The big-four auditors, being more objective, are one of the mechanisms via which firms can reduce agency problems embedded in complexity of their operations.

H3: Firms with high operational complexity have higher need to appoint one of the big-four auditors as external auditors than firms with low operational complexity.

2.4 Transactional Complexity

Another mechanism that can increase agency problems in a firm is transactional complexity (Abdel-Khalik 1993). Transactional complexity relates to the amount of accruals and inventory. Ge and McVay (2005) observe that the two largest sources of reported material weaknesses in internal control of any firm relate to accruals (receivables) and inventory. Firms with high transactional complexity usually have less informative financial statement and thus have higher agency

problems (Knechel, Niemi, and Sundgren 2008). We argue that higher agency problems result in a higher level of information asymmetry, which may allow managers and controlling shareholders to take advantage of minority shareholders. Therefore, transactional complexity in a firm is perceived as a negative signal by investors. Given the information asymmetries embedded in firms with high transactional complexities, we hypothesize that these firms are more likely to hire one of the big-four auditors than firms with less transactional complexity.

H4: Firms with high transactional complexity have higher need to appoint one of the big-four auditors as external auditors than firms with low transactional complexity.

3 Data

This paper documents whether the extent of agency problems in a firm affects its choice of auditors in the MENA region. For the purpose of this paper, we select Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait and Bahrain as the representative stock markets for the MENA region. Our sample period consists of the time period between 2006 and 2008. The following sections will explain the data in greater detail.

3.1 Choice of Auditors

This paper defines the choice of auditors by firm's decision to appoint one of the big-four auditors as its auditor. Our definition of big-four auditors consists of KPMG, Ernst & Young, PriceWaterhouseCoopers and Deloitte & Touche. The data for auditors was collected from Infinancials. Table 1 documents the descriptive statistics for the choice of auditors. Panel A documents the number of firms audited by one of the big-four auditors and the number of firms audited by one of the non-big-four auditors for each year, while Panel B and Panel C document similar statistics for each industry and each country, respectively. Table 1, Panel A, shows that most of the firms choose to get audited by one of the big-four auditors throughout our sample period. For example, our results show that 299 firms chose one of the big-four auditors in 2008 in comparison to 154 firms who chose one of the non-big-four auditors. The results also indicate that big-four auditors dominate the audit market in the MENA region. Our results in Table 1, Panel B, show that all industrial sectors, except health care, consumer goods and oil and gas, prefer one of the big-four auditors as their external auditors.

Table 1: Descriptive statistics for the choice of auditors.

Panel A: Distribution of auditors by year					
Year	Big-Four Auditors	Non-Big-Four Auditors			
2006	271	149			
2007	274	143			
2008	299	154			

Panel B: Distribution of auditors by industry

Year	Big-Four Auditors	Non-Big-Four Auditors
Oil and gas	18	24
Basic materials	51	33
Industrials	162	105
Consumer goods	48	54
Health care	9	12
Consumer services	72	24
Telecommunications	30	9
Utilities	9	6
Financials	462	171
Technology	6	3

Panel C: Distribution of auditors by country

Year	Big-Four Auditors	Non-Big-Four Auditors
Bahrain	75	3
Egypt	111	72
Jordan	75	33
Kuwait	129	234
Morocco	60	24
Qatar	6	102
Saudi Arabia	177	81
UAE	168	9

Note: This table shows the number of big-four auditors and non-big-four auditors in our sample. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Panel A of the table documents the number of big-four auditors and non-big-four auditors for each year. Panel B documents similar statistics for each industry, while Panel C documents the number of big-four auditors and non-big-four auditors for each country.

Our results in Table 1, Panel C, confirm our previous findings that big-four auditors dominate the audit markets in the MENA region. The only exception is Qatar, where non-big-four auditors are the preferred choice of auditors.

3.2 Agency Variables

This paper uses dividend payout ratio, ownership concentration, operational complexity and transactional complexity to capture various aspects of agency problems. In this paper, we define dividend payout ratio as the proportion of earnings paid as dividends. Dividend payouts are supposed to alleviate agency conflicts through the reduction of free cash flow available to managers (LaPorta et al. 2000). Ownership concentration, another variable used as a proxy for agency problems, is defined as the proportion of shares held by insiders. Concentrating ownership in the hands of few exacerbates the information disclosure and increase information asymmetry. Leuz, Nanda, and Wysocki (2003) document that whenever ownership is concentrated in the hands of insiders, quality of disclosed information goes down. This paper uses operational complexity and transactional complexity to capture those aspects of agency problems that are related to transparency. Prior literature defines operational complexity as the ratio of salary expense to total operating expenses, while transactional complexity is defined as the ratio of inventory and receivables to total assets (Knechel, Niemi, and Sundgren 2008). High complexity is supposed to decrease the transparency of firms, thereby making it hard for investors to decipher information reported by firms. The data for the calculation of abovementioned variables was collected from Worldscope and Thomson Financials. Table 2 documents the descriptive statistics for agency variables used in this study. The results in Table 2, Panel A, show a gradual increase in dividend payout ratios and decrease in ownership concentration for our sample firms during our sample period. It may indicate lowering of agency problems in the MENA region over the period of time. However, when comparing the findings of Table 2 against the developed financial markets, we argue that firms in the MENA region pose significant agency problems. Our results show that an average firm in the MENA region is owned by insiders – an indication of information asymmetry for the MENA region firms. Similarly, dividend payout ratio of less than 35% indicates that insiders have greater cash flow to expropriate in the MENA region. Table 2, Panel A, also shows that operational complexity and transactional complexity remained more or less the same during our sample period. The results in Table 2, Panel B, indicate that, except for firms in telecommunication and health-care sector, all others have relatively low dividend payout ratios. We report almost 47% dividend payout ratio for telecommunication sector and 44% dividend payout ratio for health-care sector. It indicates relatively low agency problems for firms belonging to these sectors. The results in Table 2, Panel B, also show that firms belonging to health-care sector are the most widely held firms in the MENA region. We report 15% ownership by

Table 2: Descriptive statistics for agency variables.

Panel A: Distribution of agency variables by year							
Year	Payout Ratio	Ownership Concentration	Operational Complexity	Transactional Complexity			
2006	27.33	54.22	0.16	0.23			
2007	30.15	54.17	0.19	0.23			
2008	34.64	47.70	0.14	0.24			

Panel B: Distribution of agency variables by industry

Industry	Payout Ratio	Ownership Concentration	Operational Complexity	Transactional Complexity
Oil and gas	32.08	66.62	0.18	0.30
Basic materials	31.26	68.49	0.13	0.25
Industrials	32.91	55.46	0.11	0.27
Consumer goods	35.52	48.96	0.06	0.29
Health care	44.69	15.39	0.14	0.33
Consumer services	25.47	57.34	0.17	0.22
Telecommunications	47.72	68.85	0.14	0.10
Utilities	25.04	58.99	0.07	0.14
Financials	28.26	47.43	0.21	0.18
Technology	23.54	32.66	0.12	0.28

Panel C: Distribution of agency variables by country

Country	Payout Ratio	Ownership Concentration	Operational Complexity	Transactional Complexity
Bahrain	35.90	40.83	0.22	0.20
Egypt	33.77	63.73	0.07	0.31
Jordan	33.09	50.63	0.13	0.25
Kuwait	30.93	34.03	0.24	0.19
Morocco	43.49	70.21	0.10	0.48
Qatar	27.17	52.54	0.18	0.15
Saudi Arabia	26.47	47.54	0.13	0.20
UAE	22.38	49.72	0.14	0.24

Note: This table shows the average payout ratio, average ownership concentration, average operational complexity and average transactional complexity in our sample. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Panel A of the table documents averages for payout ratio, ownership concentration, operational complexity and transactional complexity for each year, while Panel B and Panel C document similar statistics for each industry and for each country.

insiders for firms belonging to health-care sector. The results in Table 2, Panel B, also indicate the highest operational complexity for firms belonging to financial sector, while the same table indicates the least operational complexity for firms belonging to utility and consumer goods sector. The results are intuitive because financial sector deals with more complex operations, while utility sector usually has the least operational complexity. Our results also show that unusually low transactional complexity for telecommunication and utility sector. We show in Table 2, Panel C, that North African firms have the highest ownership concentration and the highest transactional complexity. We report average ownership concentration of almost 63% and 70% for Egypt and Morocco, respectively, and average transactional complexity of almost 0.31 and 0.48, respectively, for the same countries. Furthermore, our results also show high payout ratios for Moroccan firms, i.e. almost 43%.

4 Methodology

In this section, we document the relationship between the extent of agency problems and the choice of auditors in the MENA region. More specifically, we will look at how dividend payout ratio, ownership structure, operational complexity and transactional complexity affect the firm's choice of auditors. It is important to mention here that we could not include all agency proxies together in a single equation because it resulted in a significant loss of observations. Not every firm in the sample has all the four variables available simultaneously.

4.1 Payout Ratio and Choice of Auditors

Prior literature considers payout ratio as a mechanism via which firms can reduce agency problems. Grossman and Hart (1980), for example, document that high dividend payouts alleviate agency conflicts through the reduction of free cash flow available to managers. In order to test our hypothesis, we estimate a logistic regression with a dummy variable representing whether a firm is audited by one of the big-four auditors or not (AUDITOR) as a dependent variable and payout ratio (PoR) as an independent variable. We define PoR as the proportion of earnings paid as dividends, while AUDITOR is defined as a dummy variable that takes the value of 1 if firm is audited by one of the big-four auditors and 0 otherwise. Our basic equation takes the following form. The country dummies, industry dummies and year dummies are represented by CDUM, IDUM and YDUM, respectively:

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{PoR}) \\ &+ \sum_{\text{Ctry}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{[1]}$$

However, there may be concerns that some of the firm-specific characteristics might be driving the decision of a firm to engage a particular type of auditor. For example, prior literature suggests that agency cost increase with the percentage of debt in the capital structure (Kim and Sorensen 1986). Firth and Smith (1992) argue that increased agency costs lead firms to hire reputable auditor. Therefore, we add total debt to total asset ratio (LEV) in our regression equation. In addition, we also control for the size of firm. Citron and Manalis (2001) document that bigger firms usually appoint one of the big-four auditors as their external auditors. Log of firm's market capitalization (SIZE) was, therefore, added in eq. [1] to control for the effect of size on the choice of auditor. Furthermore, we add growth in earnings (GROWTH) in our regression equation as a proxy for growth opportunities. High growth firms should have excessive need for external financing and thus should have incentives to hire one of the big-four auditors (Das and Sengupta 2001). We also added earnings per share (EPS) as a proxy for firm's profitability. Abbott and Parker (2000) suggest that more profitable firms can engage reputable auditors because they have means to pay the high fee charged by one of the big-four auditors. Our modified regression equation takes the following form:

The results of the above set of regression are reported in Table 3. Our results show that as dividend payout ratio goes up, the probability of appointing one of the big-four auditors goes down significantly. Our result from eq. [2], the most comprehensive equation, shows that for every one unit increase in dividend payout ratio, we expect a 0.0081 decrease in the log odds of appointing one of the big-four auditors. Our results are consistent with La Porta et al. (2000) who consider high dividend payouts as a mechanism via which firms can establish a reputation for acting in the best interest of minority shareholders. High dividend payouts result in lower agency problems because of the reduced cash flows available with managers. We argue that low agency problems of high dividend

	Equation [1]	Equation [2]
Payout ratio	-0.0010***	-0.0081***
Size		0.6923
Leverage		0.0035***
EPS		0.0419**
Growth		-0.0001***
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Industry dummies	Yes	Yes
No. of observations	981	815
Wald χ^2	195.96	184.78
Pseudo-R ²	0.2376	0.3308

Table 3: Relationship between choice of auditors and payout ratio.

Note: The table documents the relationship between choice of auditors and payout ratio using egs [1] and [2]. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Coefficients with 1% significance are followed by ***, coefficient with 5% by ** and coefficients with 10% by *.

paying firms reduce the need to appoint one of the big-four auditors. Consistent with our expectations, we show that EPS and leverage are positively related to firm's choice of appointing one of the big-four auditors. However, contrary to previous literature, our results show negative relationship between growth opportunities and firm's choice of appointing one of the big-four auditors. We show that for one unit increase in growth rate, there is a 0.0001 decrease in the log odds of appointing one of the big-four auditors. Our results show no significant relationship between size and firm's choice of appointing one of the big-four auditors.

4.2 Ownership Structure and Choice of Auditors

Concentrated ownership has been one of the main characteristic of emerging markets. Claessens, Djankov, and Lang (2000) document that more than twothirds of firms are controlled by a single shareholder in emerging markets. Concentration of ownership in the hands of a few results in exacerbating agency problems in these markets (La Porta, Lopez-de-Silanes, and Shleifer 1999). In order to test whether ownership concentration gives rise to the need of having a reputable auditor, we estimate a logistic regression with AUDITOR as a dependent variable and ownership concentration (OWNERSHIP) as an independent variable. We define OWNERSHIP as the proportion of shares held by insiders.

Our regression equations take the following forms. As before, we also control for various firm-specific characteristics:

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{OWNERSHIP}) \\ &+ \sum_{\text{Ctrv}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{3}$$

and

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{OWNERSHIP}) \\ &+ \beta_2(\text{LEV}) + \beta_3(\text{SIZE}) + \beta_4(\text{GROWTH}) + \beta_5(\text{EPS}) \\ &+ \sum_{\text{Ctrv}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{4}$$

The results of the above set of regression are reported in Table 4. Our results show that as the ownership concentration goes up, the probability of appointing one of the big-four auditors also goes up significantly. Our result from eq. [4] shows that for every one unit increase in ownership concentration, there is a 0.0576 increase in the log odds of appointing one of the big-four auditors. Our results may be driven by the fact that high ownership concentration allows controlling shareholder to take decisions without taking into account wishes of minority shareholder. Therefore, high ownership concentration exacerbates agency problems in a firm and thus induces firms to hire one of

Table 4: Relationshi	p between	choice of	auditors and	l ownership	concentration.

	Equation [3]	Equation [4]
Ownership concentration	0.0252**	0.0576**
Size		2.6995
Leverage		0.0481**
EPS		0.1619
Growth		-0.0016***
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Industry dummies	Yes	Yes
No. of observations	217	184
Wald χ^2	40.03	49.59
Pseudo-R ²	0.3544	0.7074

Note: The table documents the relationship between choice of auditors and payout ratio using eqs [1] and [2]. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Coefficients with 1% significance are followed by ***, coefficient with 5% by ** and coefficients with 10% by *.

the big-four auditors to reduce some of agency problems. Our results are consistent with Faroog and Kacemi (2011) who document positive relationship between ownership concentration and firm's choice of appointing one of the big-four auditors in the MENA region. They also report that market considers appointing one of the big-four auditors as a value relevant signal and reward firms with one of the big-four auditors with better stock price performance.

4.3 Operational Complexity and Choice of Auditors

The more operationally complex a firm is, the broader is management's scope of control to assure effective operations (Hay and Davis 2004; Abdel-Khalik 1993). Higher control by management increase agency costs, decrease transparency and enhance moral hazard problems. Therefore, firms with higher operational complexity have greater desire to appoint of the big-four auditors to lower these problems. In order to test our hypothesis, we estimate a logistic regression with AUDITOR as a dependent variable and operational complexity (OPERCOMP) as an independent variable. We define OPERCOMP as the ratio of salary expense to total operating expenses (Knechel, Niemi, and Sundgren 2008). Our regression equations take the following forms:

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{OPERCOMP}) \\ &+ \sum_{\text{Ctry}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{5}$$

and

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{OPERCOMP}) \\ &+ \beta_2(\text{LEV}) + \beta_3(\text{SIZE}) + \beta_4(\text{GROWTH}) + \beta_5(\text{EPS}) \\ &+ \sum_{\text{Ctry}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{6}$$

The results of the above set of regression are reported in Table 5. Our results show that as the operational complexity goes up, the probability of appointing one of the big-four auditors also goes up. Our result from eq. [6] shows that for every one unit increase in operational complexity, there is a 0.9518 increase in the log odds of appointing one of the big-four auditors. Our results are consistent with our earlier arguments as operational complexity goes up, it becomes hard for outside investors to understand and interpret information. Appointment of one of the big-four auditors provide reliability to information and help

	Equation [5]	Equation [6]
Operations complexity	0.9457***	0.9518**
Size		0.6727***
Leverage		0.0018
EPS		0.0742***
Growth		-0.0018
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Industry dummies	Yes	Yes
No. of observations	1,288	933
Wald χ^2	258.26	218.17
Pseudo-R ²	0.236	0.341

Table 5: Relationship between choice of auditors and operational complexity.

Note: The table documents the relationship between choice of auditors and operational complexity using eqs [1] and [2]. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Coefficients with 1% significance are followed by ***, coefficient with 5% by ** and coefficients with 10% by *.

investors resolve some of the information asymmetry associated with operationally complexity firms.

4.4 Transactional Complexity and Choice of Auditors

As a last step, we test whether transactional complexity of a firm affects the choice of auditors or not. Prior literature argues that firms with more transactional complexity are less transparent and thus will have more agency problems. This strand of literature argues that complexity hinders investor's ability to understand firm's information and thus introduces adverse selection problems for investors (Knechel, Niemi, and Sundgren 2008). It, eventually, leads to having a need of reputable auditor. In order to test our hypothesis, we estimate a logistic regression with AUDITOR as a dependent variable and transactional complexity (TRANSCOMP) as an independent variable. We define TRANSCOMP as the ratio of inventory and receivables to total assets (Knechel, Niemi, and Sundgren 2008). Our regression equations take the following forms:

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{TRANSCOMP}) \\ &+ \sum_{\text{Ctry}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{[7]}$$

and

$$\begin{split} \text{AUDITOR} &= \alpha + \beta_1(\text{TRANSCOMP}) \\ &+ \beta_2(\text{LEV}) + \beta_3(\text{SIZE}) + \beta_4(\text{GROWTH}) + \beta_5(\text{EPS}) \\ &+ \sum_{\text{Ctry}} \beta^{\text{Ctry}}(\text{CDUM}) + \sum_{\text{Ind}} \beta^{\text{Ind}}(\text{IDUM}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon \end{split} \tag{8}$$

The results of the above set of regression are reported in Table 6. Consistent with previous results, we show that as the transactional complexity goes up, the probability of appointing one of the big-four auditors also goes up. Our result from eq. [8] shows that for every one unit increase in ownership concentration, there is a 3.4150 increase in the log odds of appointing one of the big-four auditors. We argue that high transactional complexity increases agency problems and it induces firms to appoint one of the big-four auditors. By appointing reputable auditors, a firm can signal outside investors that there are less agency conflicts embedded in its structure.

Table 6: Relationship between choice of auditors and transactional complexity	Table 6: R	Relationship	between	choice of	auditors	and	transactional	complexity
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	Equation [7]	Equation [8]
Transactional complexity	1.1214***	3.4150***
Size		0.6736***
Leverage		0.0163***
EPS		0.0813***
Growth		-0.0031*
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Industry dummies	Yes	Yes
No. of observations	1029	737
Wald χ^2	204.31	197.05
Pseudo-R ²	0.210	0.352

Note: The table documents the relationship between choice of auditors and transactional complexity using eqs [1] and [2]. Our sample consists of firms from Morocco, Egypt, Bahrain, Kuwait, UAE, Saudi Arabia, Qatar and Jordan during the period between 2006 and 2008. Coefficients with 1% significance are followed by ***, coefficient with 5% by ** and coefficients with 10% by *.

5 Conclusion

This paper examines whether the extent of agency problems in a firm determines its choice of auditors in Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait and Bahrain. Our results indicate that firms choose their auditors

to reduce some of the agency problems embedded in their structure. For example, our results show that firms that pay high dividends are less likely to hire one of the big-four auditors. High dividends represent low agency problems and thus lower the need for having reputable auditors. Our results also show that high ownership concentration is positively related to firm's decision of having one of the big-four auditors. High ownership concentration exacerbates agency problems between insiders and outsiders and thus induces firms to appoint one of the big-four auditors. We also document that increased operational complexity and transactional complexity - proxy for higher agency problems - lead to hiring of one of the big-four auditors by a firm.

Our findings can have significant implications for investors in the MENA region. Our results indicate that investors are able to take some important clues about the actions that firms voluntarily take to reduce agency problems present in them. We expect that firms making deliberate effort to reduce agency problems should be doing something good and are supposed to perform better. Our arguments are supported by Farooq and Kacemi (2011) who show that firms with high ownership concentration – firms with potentially high agency problems – are able to outperform other firms in the MENA region if they appoint one of the big-four auditors as their external auditors. Appointment of a big-four auditor signals the market that firm is disclosing truthful and value relevant information. Better disclosure is supposed to lower the agency problems. Investors, generally, reward such firms by increasing their investing in these firms.

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