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ORIGINAL PAPER

The impact of ownership structure and family board domination on voluntary disclosure for Jordanian listed companies

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Abstract This study investigates the impact of ownership structure and family board domination on voluntary disclosure for Jordanian listed companies. Ownership structure is characterised by government ownership, outside ownership, managerial ownership and number of shareholders. This study is based on a cross-sectional examination of the effect of corporate ownership structure and family domination on voluntary disclosure after controlling other variables for 57 non-financial Jordanian companies listed on the Amman Stock Exchange. The multiple regression results show that the extent of voluntary disclosure is positively associated with government ownership and negatively associated with the proportion of shares held by management. Furthermore, we show that family domination is a significant factor in explaining variations in voluntary disclosure. We conclude that government ownership can help to promote transparency, but it has not yet eliminated the influence of management and the family control of boards on

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disclosure. However, outside ownership and number of shareholders are not associated with voluntary disclosure.

Keywords Ownership structure · Voluntary disclosure · Agency conflicts · Jordan

1 Introduction

Previous literature has examined various determinants of voluntary disclosure using disclosure indices in developed countries (Singhvi and Desai 1971; Buzby 1974; Malone et al. 1993; Belkaoui and Kahl 1978; Firth 1979; McNally et al. 1982; Hossain et al. 1995; Depoers 2000). However, a few disclosure studies addressing the extent of voluntary disclosure and its relationship with firm-specific characteristics have been conducted in emerging capital markets (Chow and Wong-Boren 1987; Hossain et al. 1994; Leventis and Weetman 2004a; Barako 2007). Ahmed and Courtis (1999) provided a meta-analysis of the results of 29 separate studies of the relationship between the extent of voluntary disclosure and firm characteristics. They found that firm size, exchange listing status and leverage are significantly associated with disclosure level.

Other studies have also examined the impact of firm ownership structure on the extent of voluntary disclosure (Gisbert and Navallas 2013; Lim et al. 2007; Allegrini and Greco 2011; García-Meca and Sánchez-Ballesta 2010). This relationship can be viewed from agency theory perspectives that are based upon conflicts of interest between various parties (managers, shareholders and debt-holders). Healy and Palepu (2001) suggest that using voluntary disclosure, released via annual reports, will mitigate this conflict, which indicates that due to the separation of control and ownership, the agent (manager) may voluntarily disclose additional information to reduce the agency's clashes and information asymmetry with the principal (shareholder).

Chau and Gray (2002) examine the relationship between ownership structure and voluntary disclosure for listed companies in two Asian markets—Hong Kong and Singapore—for 1997. They find that the level of disclosure is positively associated with wider ownership. The study also reveals that family-controlled companies are negatively associated with disclosure, a result which can be found in previous studies (e.g. Ho and Wong 2001; Haniffa and Cooke 2002). Makhija and Patton (2004) find that the extent of disclosure is positively related to Czech investment fund ownership at low levels of fund ownership, but it is negatively related to investment fund ownership at high levels of fund ownership. Eng and Mak (2003) show that lower managerial ownership and government ownership are associated with increased voluntary disclosure. However, they also find that blockholder ownership is not associated with disclosure in Singapore. Lakhal (2007) finds that French managers are less likely to disclose more information when they are controlled by a large shareholder or by a family. Ghazali and Weetman (2006) reveal that the traditional effects of director ownership and family domination have the strongest influence on voluntary disclosure. However, government ownership and number of shareholders are found to have no effect in this respect in Malaysia. Chen et al. (2006) find that family firms provide fewer voluntary disclosures in

USA. Ajinkya et al. (2005) document that the likelihood of voluntary disclosure through management increases in line with higher institutional ownership levels and more outside directors in USA. Similar results are also reported in Karamanou and Vafeas (2005). Gisbert and Navallas (2013) and Lim et al. (2007) find a significant relationship between voluntary disclosure and ownership structure in Spain and Australia, respectively.

This paper investigates the impact of ownership structure on the extent of voluntary disclosure practice for a sample of Jordanian companies listed on the Amman Stock Exchange (ASE) in 2004. To date, empirical evidence on the association between disclosure and corporate ownership structure is limited and focused on developed and non-Arab financial markets, the disclosure environment of which is particularly rich (Hail 2002). This study contributes to the current disclosure literature, examining the impact of corporate ownership structure on voluntary disclosure by using data from Arab countries (the case of Jordan), whose disclosure environment is relatively poor. Unlike many developed countries, where the separation of ownership and control is the main form of a firm's corporate governance, the ownership of Jordanian firms is highly concentrated and is dominated mostly by families or government, and consequently, serious agency conflicts between controlling and minority shareholders (Shleifer and Vishny 1997). Therefore, the impact of ownership composition and concentration might have a different effect on the level of disclosure provided by Jordanian firms compared to that of firms in many developed countries.

It has been argued that companies in Arab countries do not disclose additional information due to the cultural and social environment. Jordanian society, as in other Arab countries, tends to have a large power distance and high uncertainty avoidance (Hofstede 1984; Perera 1989; Kabasakal and Bodur 2002; Beard and Al-Rai 1999), suggesting that people in such nations are expected to be relatively more secretive and conservative compared to their counterparts in developed countries, thus implying a lower level of voluntary disclosure (Gray 1988). Furthermore, Arab culture is rooted ostensibly in Islamic values that encourage collectivism over individualism (Haniffa and Cooke 2002).[1] Collectivist societies prefer a tightly knit social framework in which individuals can expect their relatives and clan to protect them in exchange for loyalty (Hofstede 1984). Gray (1988) argues that secrecy[2] is linked with a preference for collectivism, as opposed to individualism, in that its concern is for the interests of those closely involved with the firm rather than external parties. Therefore, in collectivist societies, there could be a preference for keeping information within the firm rather than disclosing such information to external parties.

In addition to the relatively low level of disclosure in Arab markets, it can be argued that they have concentrated equity ownership, with a relatively narrow and small equity markets, and a less stringent regulatory environment than their counterparts in developed and non-Arab financial markets. It can also be argued that companies in

[1] Studies examining the relationship between religions and accounting (e.g. Gambling and Karim 1991; Hamid et al. 1993) suggest that the relationship between Islam and accounting could or should be a significant one.

[2] According to Gray (1988, p. 8), secrecy refers to "the preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing as opposed to a more transparent, open and publicly accountable approach".

Arab countries are dominated by family members on boards of directors. This might suggest that agency conflicts are likely to be relatively more prevalent in Arab firms than in their non-Arab counterparts, which in turn might make the composition and concentration of ownership structure have a greater impact on the level of disclosure provided in annual reports. As distinct from other Arab and MENA countries, Jordan represents an institutional setting characterized by the presence of high ownership concentration levels across most of the firms listed on ASE that are controlled by families or government (e.g. Omran et al. 2008; Omet 2005). Many companies in Jordan are held in the hands of families. The average control position for the top 48 listed companies at the ASE is about 30 % of shares in 2004. Control is reinforced by cross-shareholdings, and inter-locking directorships (ROSC 2004). ROSC also shows that around 70 firms are supermajority owned, so that the fundamental corporate decisions can be taken without the consent of minority shareholders. In addition, the Jordanian government had substantial equity holdings and has control over major listed companies (Al-Akra et al. 2010a, b; Al-Smadi et al. 2013). Furthermore, voluntary disclosure in this study is defined as those items of information that are not stipulated by Jordanian statutory regulations. These Jordanian regulations are different from those promulgated in other countries, especially developed ones, resulting in less disclosure and transparency. These characteristics make the Jordanian setting appealing for a research about the role of ownership structure and family board domination in voluntary disclosure practices.

The ASE—the only entity in the country authorised to trade securities—was established in 1976 through the cooperation of the Central Bank of Jordan and the International Finance Corporation (IFC). The ASE is a non-profit private legal entity, with financial and administrative autonomy subject to the supervision of the Jordanian Securities Commission (JSC). In 2004, Jordan's equity market capitalisation was $11.3 billion, or 113 % of 2003 GDP, making the nation one of the largest emerging equity markets relative to GDP in the world. Jordanian companies listed on the ASE are dominated by family board membership, which may suggest a significant agency problem among the interested parties.

However, Jordan has spent considerable time and effort improving corporate governance and transparency, which began with the issuance of the Temporary Securities Law No. 23 of 1997. This law aims at reforming the financial market and improving disclosure standards (JSC 1999). Moreover, for the first time, Jordanian companies listed on the ASE are required to adhere to specific disclosure requirements according to new regulations known as Directives of Disclosure and Accounting and Auditing Standards No. 1 for the year 2004. This issue creates an opportunity to examine whether the implementation of new financial reporting might have influenced the voluntary disclosure of firms,[3] and thereby mitigate the

[3] The main purpose of new financial reporting and market reformation in Jordan is to ensure that the financial statements are transparent for users (ASE Website) through mandatory and voluntary disclosure. Furthermore, prior studies show that new financial reporting regulations and market reformation have a significant positive impact on the corporate voluntary disclosure (e.g. Johnson et al. 2001; Gigler and Hemmer 1998). It was also found that there is a significant positive association between mandatory disclosure and voluntary disclosure in the context of Arab countries (e.g. Naser and Nuseibeh 2003; Al-Razeen and Karbhari 2004).

effect of family board domination and management concentration on information released through annual reports. These changes in the reporting environment call for a constant updating of the research in this area of study.

In general, previous studies applied in different countries have produced inconclusive evidence on the relationship between corporate disclosure and ownership structure. This is expected because of the unique business environment attributable to each study. There are number of studies examined the disclosure practice and its relationship with other firm's characteristics in Jordan (e.g. Suwaidan et al. 2004; Haddad et al. 2009; Al-Shattarat et al. 2010; Al-Akra et al. 2010b; Mardini et al. 2012; Omar and Simon 2011). These studies have included ownership structure factor mainly as control variable. These studies have not aimed specifically to examine the nature of the association between voluntary disclosure and several variables of ownership structure in Jordan. For example, Naser et al. (2002) investigated the relationship between corporate disclosure after the implementation of International Financial Reporting Standards (IFRSs) and the company's characteristics. Suwaidan et al. (2004) evaluated the level of social responsibility disclosure practices of 65 industrial Jordanian firms using 37 items of information. Haddad et al. (2009) examined the impact of disclosure on stock market liquidity for companies listed on the ASE. Al-Akra et al. (2010b) investigate the impact of privatization on the extent of voluntary disclosure in Jordan. They found that accounting regulation reforms and privatization have a significant impact on the disclosure practice in Jordan after controlling for foreign investment ownership; company size and industry type. In general, prior studies examining the disclosure practice in Jordan confirm that firm size, profitability, risk and industry type are significantly associated with disclosure, but they do not address the impact of ownership structure using several measures on voluntary disclosure. Thus, our research contributes to this gap looking at several aspects of ownership: government ownership, outside ownership, managerial ownership and number of shareholders. This study is also the first to examine the association between family domination and disclosure level in Jordan.

Using the unweighted approach for measuring the extent of voluntary disclosure, this study investigates the impact of ownership structure and family board domination on voluntary disclosure for 57 non-financial Jordanian firms listed on the ASE in 2004. The study shows that the extent of voluntary disclosure is positively associated with government ownership and negatively associated with the proportion of shares held by management. Furthermore, the study shows that family domination has a significant influence over variations in voluntary disclosure. However, outside ownership and number of shareholders are not associated with voluntary disclosure.

The results of this study are potentially of interest to investors and regulatory bodies in Jordan. Regulators may use it to evaluate current corporate governance requirements and whether existing mandatory disclosures are sufficient for the users of financial statements (investors). The results may also prove to be useful to investors in helping them to understand Jordanian companies better when diversifying their investment portfolios.

The remainder of this paper is organised as follows. Section 2 presents corporate financial reporting in Jordan, and Sect. 3 develops a number of hypotheses. Section 4 describes the sample and the methodology used in this paper, Sect. 5 reports on the empirical results of the paper and Sect. 6 presents robustness tests. Finally, Sect. 7 presents the conclusions.

2 Corporate financial reporting in Jordan

Corporate disclosure and reporting by Jordanian companies listed on the ASE are largely influenced by three major sources of regulations. The first is the Companies Law 1964, 1989, 1997, amended by Law No. 35 of 2002. The law requires that listed companies prepare and publish a balance sheet as well as profit and loss accounts. Financial statements must give a "true and fair" view of the state of the company's affairs during the fiscal year. The law asks the auditors of any public shareholding company to audit its accounts in accordance with internationally accepted accounting principles, and then to have them audited by independent auditors. The law also lays down penalties for any person who prepares the balance sheet and profit and loss account of any firm in a manner that does not reflect the true financial position of the firm.

The second source of regulation in Jordan is the accounting profession. Before 1985, entry into the accounting profession was "loosely" regulated by the Auditing Law 1961 and 1964. The Auditing Profession Practice Law 1985 (amended) regulated the audit profession in the country and made membership of an association compulsory. This law provided for the establishment of the Jordanian Association of Certified Public Accountants (JACPA), which aims at developing the competence and independence of its members, developing accounting standards and auditing standards that best meet the needs of the country and publishing accounting principles for the training and awareness of its members. However, the JACPA has not developed any national standards or even defined generally accepted accounting principles (GAAPs). In 1989, the JACPA adopted IFRSs in the hope that these would be adopted as national standards. However, the JACPA failed to force companies or its members to comply with the IAS because there was no legal or professional implementation until 1997, when the Securities Law No. 23 for the year 1997—replaced with the effective Securities Law No. 35 of 2002—gave consideration, authority and more power to the JACPA. The Securities Law of 2002 provides that listed companies should apply IFRSs. In addition, the Securities Law has given more power to the JACPA concerning auditing financial statements. For example, auditors of any entity subject to the Commission's monitoring are required to hold a valid licence issued by the Council of the Auditing Profession (CAP), and to be a member of the JACPA. In late 2003, the Auditing Profession Practice Law 1985 was amended by Law No. 73 of 2003, to further improve the audit profession in Jordan and to ensure that IFRSs and international auditing standards are applied.

The third source of corporate financial reporting used to enhance the standards of reporting and disclosure in Jordan is the Directives of Disclosure, Accounting and

Auditing Standards issued by virtue of the Securities Law 2002. In addition to the adoption of IAS/IFRSs, Jordanian companies for the first time are also required to adhere to specific items of information subject to the Directives. The main objectives of these Directives are to provide investors with important and material information that is related to investment decision making, to enhance the trust of investors and to achieve transparency in the market in line with international standards (JSC annual report 1999). Prior to the implementation of these instructions, Jordanian disclosure requirements were minimal, meaning that the major part of the content of annual reports could be considered as voluntarily disclosed. Examples of information that a company listed on the ASE must disclose according to the Directives are:

- a description of any governmental protection or privileges and a description of any patents or concessions that were granted to the company;
- the organizational chart, the number of employees and the level of their qualifications, and personnel qualifying and training programmes;
- a description of the company's risk exposure;
- the Company's accomplishments during the fiscal year;
- the financial impact of non-recurrent transactions during the fiscal year;
- a chronology of the realized profits or losses, dividends, shareholders' net equity and the prices of securities, for a minimum period of 5 years;
- important prospective developments for at least one upcoming year;
- the amount of auditing fees;
- the numbers of securities owned by any member of its Board of Directors, Senior Executive Management;
- privileges and bonuses given to the board of directors and senior executive managers during the fiscal year;
- donations and grants given during the fiscal year;

It has been shown in many disclosure studies that compliance with disclosure requirements' regulations is low in the context of Arab capital markets; Solas (1994), for instance, reports 46.4 % for Jordan. The main reasons (among others) for such low compliance in these financial markets may be attributable to the following reasons: loopholes in financial regulations and auditing guidelines, the cost of compliance, a lack of familiarity with new financial legislation and standards (e.g. IFRS) and the inefficiency of regulatory bodies (e.g. Owusu-Ansah and Yeoh 2005; Tai et al. 1990; Saudagaran and Diga 1997). Moreover, the particular strategy of regulatory enforcement also has an influence on the degree of compliance with statutory requirements. Jordan employed the co-operative model to enforce compliance with adopted standards and disclosure requirements. For example, the JSC issues letters pointing out the instances of non-compliance to a company and its auditor. JSC has been given power to request the company to make the corrections. However, if the company refuses to make the corrections required, the JSC has power to suspend or delist a company from trading.

3 Hypotheses

This study uses the agency relationship as a framework to examine the association between voluntary disclosure and the monitoring role played by the corporate ownership structure and family board members. Jensen and Meckling (1976, p. 308) defined an agency relationship as 'a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent'. The principal-manager assumes that investors or managers act in an opportunistic way to maximise their self-interest; thus, a conflict of interests is expected to arise. Investors want to maximise their return on investment, whereas the manager wants to maximise his utility. For example, if investors acquire an equity stake in a firm, the manager can use those funds received to acquire perquisites, pay excessive compensation or make investments or operating decisions that are harmful to the interests of outside investors (Healy and Palepu 2001). As the investors recognise that the manager of a company will make decisions contrary to their best interests, they will discount the prices they are willing to pay for the firm's securities.[4] According to Jensen and Meckling (1976), conflicts among parties are not free of costs. Agency cost includes: (1) bonding expenditures by the agent that guarantee that the agent will not take certain actions to harm the principal's interests (e.g. preparing financial statements), (2) monitoring expenditures by the principal (cost of controlling and observing the agent's behaviour, such as auditing these financial statements prepared by managers) and (3) residual loss, which represents differences in wealth between the agent and the principal, if the principal takes the action himself. Jordan is a code law country with a weak legal protection for external investors, and its companies are characterized by the presence of a high ownership concentration. Jordanian companies are significantly controlled by family or government (Omran et al. 2008). In this case the core agency conflicts are less severe between principals and managers (Type I agency conflicts problem), but more severe between controlling and minority shareholders (Type II agency conflicts problem). This suggests at a high level of ownership concentration the controlling shareholders may seek opportunities to expropriate minority shareholders (Gisbert and Navallas 2013; Ho and Wong 2001; Ben Ali 2009, 2014; Patelli and Prencipe 2007; Donnelly and Mulcahy 2008). Expropriations could take many different forms, such as selling inputs or purchasing outputs at higher or below prices, high or low interest rate loans, and so on (Johnson et al. 2000).

There are several important mechanisms employed to solve agency problems and align the interests of company managers with those of company owners. Firstly, managers and owners are given incentives to create contracts to control managerial behaviour and align more closely the interests of managers with those of external

[4] Theory suggests that one of the primary motivations for managers to increase their level of voluntary disclosure is to raise capital at the lowest cost (e.g. Choi 1973; Spero 1979). Scholars show that greater disclosure can reduce non-diversifiable estimation risk (or information risk) which in turn reduces the cost of equity capital (e.g. Klein and Bawa 1976; Brown 1979; Welker 1995; Healy et al. 1999). These studies recognized that investors estimate the parameters of a securities' future return or payoff distribution based on available information about the firm.

equity and debt claimants, for example creating a management remuneration agreement in which the manager has to be rewarded in line with profits, sales, return on assets or the market price of the firm's shares (Deegan 1997). A second mechanism for mitigating conflict among the parties (managers, controlling/minority shareholders and debt-holders) is the board of directors, "whose role is to monitor and discipline managers' behavior on behalf of external owners" (Healy and Palepu 2001, p. 410). Allegrini and Greco (2011) find board size and diligence have a positive relationship with voluntary disclosure for Italian listed companies.

This paper examines the effect of ownership structure on the level of voluntary disclosure provided by companies listed on the ASE. Ownership structure is characterised by government ownership, outside ownership, managerial ownership and number of shareholders. The paper also establishes whether having family board members has a significant impact on the level of voluntary disclosure by companies listed on the ASE. Family membership is calculated by the percentage of family board members to total directors.

3.1 Disclosure level and ownership structure

3.1.1 Disclosure level and government ownership

There is significant empirical evidence that government ownership plays a dominant role in improving the extent of disclosure (e.g. Eng and Mak 2003; Nasir and Abdullah 2004). In companies where there is government ownership, a number of government representatives sit on the board of directors. Therefore, these representatives may seek to achieve objectives related to the interests of the nation rather than commercial objectives related to the interests of other shareholders (e.g. profitability) (Eng and Mak 2003). This may create pressure on government-linked corporations to disclose additional information, in order to minimise the conflicting objectives of various shareholders. On the other hand, it can be argued that companies under government ownership might not disclose information extensively via annual reports because of their separate monitoring by the government, the government's guaranteed returns from those companies (Naser and Nuseibeh 2003)[5] and easier access to government funding, and hence less need to raise funds from external parties. In Jordan, Governmental linked companies like the Royal Jordanian whose board of directors is appointed by the government has significant ownership for many firms (Omran et al. 2008). The government share ownership through its government linked companies is expected to supply greater disclosure in order to mitigate agency costs. Accordingly, we test the following hypothesis:

H1: There is a positive association between the level of voluntary disclosure and government ownership.

[5] Naser and Nuseibeh (2003) assess the quality of information disclosed by a sample of non-financial Saudi companies listed on the Saudi Stock Exchange for 1992 and 1999. However, they justify the low level of disclosure achieved by government-controlled companies by the fact that the Saudi government guarantees a fixed rate of return to investors in those companies, so companies are left with little incentive to disclose more information.

3.1.2 Disclosure level and outside ownership

Jensen and Meckling (1976) argue that in widely-held firms the potential for conflicts between the principal and the agent is higher than in closely-held firms, due to the divergence of interests between these parties. Agency theory argues that such firms will disclose more information to reduce agency costs and information asymmetries among parties in a diffused ownership environment (Chau and Gray 2002). Shleifer and Vishny (1997) argue that large outside ownership can reduce agency conflicts through playing a monitoring role and putting pressure on management to disclose more information to prevent expropriation by insiders. Previous empirical studies provide support for this argument. For instance, Akhtaruddin et al. (2009) found a positive association between outside share ownership and the level of voluntary disclosure provided by firms listed on the Bursa Malaysia at the end of 2002, while Chau and Gray (2002) found a similar result in both Hong Kong and Singapore. Accordingly, we hypothesise that increased outside ownership of Jordanian firms will serve to monitor managers' actions and reduce the likelihood that the manager will withhold information for his self-interest. The hypothesis is developed as below:[6]

H2: There is a positive association between the level of voluntary disclosure and outside ownership.

3.1.3 Disclosure level and managerial ownership

Gelb (2000) examines the relationship between ownership concentration and disclosure in the USA where ownership is widely dispersed. Gelb shows that ownership dispersion increases outsiders' information demand and thus the amount of information disclosed by a firm. On the other hand, firms with a concentrated ownership structure as in the case of Jordan may suffer more from the conflicts between controlling and minority shareholders (Fan and Wong 2002). The controlling shareholders will have incentives to expropriate wealth from minority shareholders especially in a country like Jordan where the legal protection for shareholders is weak. The controlling shareholders can obtain private information easily leading them to report accounting information for self-interested purposes at the expense of minority shareholders (Fan and Wong 2002; Patelli and Prencipe 2007; Attig et al. 2006; Chen et al. 2006; Haniffa and Cooke 2002; Lim et al. 2007; García-Meca and Sánchez-Ballesta 2010; Ben Ali 2009, 2014). Attig et al. (2006) argue that controlling shareholders have a selfish behavior that they can reduce or delay the corporate disclosure so the other shareholders cannot interfere.

[6] The outside ownership is measured in this study by deducting the percentage of shares held by insider shareholders and government from 100 %. We examine hypothesis *H2* between disclosure and outside ownership. We find no relationship (Table 4). However, examining the nature of outside ownership (institutional, individuals, other investors) may have yielded different conclusions as institutional owners, for example, may demand more disclosure, assuming zero cost of disclosure. On the other hand, individual investors may be too diffused to provide any effective monitoring mechanisms. Consequently, the firm may not disclose much.

In general, previous accounting research (e.g. Ben Ali 2014; Ruland et al. 1990; Eng and Mak 2003; Chau and Gray 2002; Cheng and Courtenay 2006; Donnelly and Mulcahy 2008) has found a negative association between voluntary disclosure and management ownership. This discussion leads to the following hypothesis:

H3: There is a negative association between the level of voluntary disclosure and managerial ownership for firms in Jordan.

3.1.4 Disclosure level and number of shareholders

Agency theory suggests that companies with a widespread diffusion of shareholders may disclose additional information to mitigate agency problems and information asymmetries (Fama and Jensen 1983; García-Meca and Sánchez-Ballesta 2010). Cooke (1989) suggests that companies with a large number of shareholders are expected to disclose more information to meet the information required by various shareholders. Cooke also found an association between the number of shareholders and disclosure level in the annual reports of non-financial firms listed on the Stockholm Stock Exchange. Companies with a greater number of shareholders were found to provide more voluntary information in annual reports in most of the previous studies. Singhvi and Desai (1971), Patelli and Prencipe (2007) and Malone et al. (1993) also found a positive association between the number of shareholders and the extent of disclosure level. However, Ghazali and Weetman (2006) found no association. Overall, previous studies provide mixed evidence on the association between disclosure and the number of shareholders. Accordingly, we test the following hypothesis:

H4: There is an association between the level of voluntary disclosure and number of shareholders.

3.1.5 Disclosure level and family membership of boards of directors

Agency theory argues that a family-controlled company tends to have the rights to control the company in a way that maximises their own interests, ignoring the benefits of other parties. Therefore, this may suggest that family-controlled firms do not require more information, since family members can obtain information from the company easily, thus leading to lower agency costs. This argument is supported by previous empirical studies (e.g. Chau and Gray 2002; Haniffa and Cooke 2002; Ghazali and Weetman 2006). Ho and Wong (2001) find a negative relationship between family members in the board and voluntary disclosure in Hong Kong where family firms are prevalent. Ho and Wong suggest that boards dominated by family members may act in a way and vote decisions that maximize the interest of the family members at the expense of minority shareholders and other stakeholders.

However, both Wang (2006) and Ali et al. (2007) found that family firms have higher information quality relative to non-family firms in the U.S. These previous studies argue that the entrenchment impact of family owners on the quality of disclosure can be reduced by a greater demand by outside investors for detailed disclosure of information in annual reports. However, the role of outside investors in

reducing this entrenchment effect in Jordan cannot be considered an effective control mechanism, as, compared to developed capital markets, Jordan offers low legal protection for external investors.[7] The overall arguments suggest that the existence of family board members will reduce managers' incentives to release information voluntarily in annual reports to outside investors.

Therefore, we expect a negative association between voluntary disclosure and the percentage of family board members for firms in Jordan, backed up by the following hypothesis:[8]

H5: There is a negative association between the level of voluntary disclosure and family board members.

3.2 Control variables

Previous empirical studies have identified other firm-specific characteristics associated with disclosure. Therefore, we include firm size, financial leverage, industry type and profitability as control variables in the regression model. Previous studies, such as Gisbert and Navallas (2013), Donnelly and Mulcahy (2008), Chow and Wong-Boren (1987), Patelli and Prencipe (2007), Hossain et al. (1995), Raffournier (1995), Lim et al. (2007), Donnelly and Mulcahy (2008), and Hail (2002) found that disclosure varies directly with firm size. Larger companies may be in the public eye more than their smaller counterparts. Therefore, it is likely that better disclosure will minimize government interference and pressure from other external groups on these companies. This paper applies total sales (revenues) as a proxy of firm size (e.g. Belkaoui and Kahl 1978; Ahmed and Nicholls 1994; Wallace et al. 1994; Wallace and Naser 1995; Raffournier 1995).

Agency costs are expected to be higher for firms with proportionally more debt in their capital structure. As leverage increases, shareholders and lenders may demand more information from the company to assess the probability of a firm meeting its debt obligations (Jensen and Meckling 1976; Wallace et al. 1994; Bradbury 1992; Lim et al. 2007). This paper applies the ratio of long-term debt to owners' equity as a measure of financial leverage. It has also been argued that the extent of disclosure in the annual reports of different companies is not likely to be identical throughout all industries. Each industry has its own characteristics that distinguish it from other industries (e.g. competition, products, demand, accounting policy and risk), which could consequently lead to different levels of disclosure (Belkaoui and Kahl 1978;

[7] The legal system of a country was found to be an important factor influencing accounting reporting systems. La Porta et al. (1998) showed that civil law countries offer lower legal protection for external investors than common law countries. Jordan, as with any other Arab country, is classified as having a civil law code.

[8] It is worth noted that empirical evidence in corporate disclosure suggests that voluntary disclosure practices are adopted if the benefits from disclosure exceeds the costs on non-disclosures (Depoers 2000). For example, if strategic information of the firm entails heavy costs of disclosure relating of property information, the family members in the board (or management) are willing not to disclose this information because leakage of such information to competitors may lower the firm's future profitability. On the other hand, if disclosure is costless and it may reduce the information asymmetries between inside and outside shareholders, the firm may disclose such information. Thus, the hypotheses of this study may have alternative explanation when considering the disclosure costs.

Cooke 1991; Verrecchia 1983; Lim et al. 2007). In fact, the relationship between disclosure level and industry type was not consistent across all empirical studies. For the purpose of this study, we categorised the sample into three categories relevant to Jordan, namely (1) mining, oil and construction (MIN), (2) other industrial companies (IND) and (3) service companies (SER).[9] Finally, an association between voluntary disclosure and the profitability of a firm is expected. Agency theory suggests that managers of companies with higher profits are motivated to disclose more detailed information, in order to support the continuance of their positions and to boost management compensation (Singhvi and Desai 1971). However, managers of firms with poor performance may have an incentive to disclose bad earning information at an early opportunity, in order to reduce the likelihood of legal costs and loss of reputation (Skinner 1994). Following Leventis and Weetman (2004b), we apply the ratio of return on total assets as a measure of the profitability of a firm.

4 Research method

4.1 The study sample

The study sample includes industrial and service sector companies listed on the ASE in 2004.[10] The total amount of companies listed on the ASE was 192 for 2004, 31 more than in 2003. Although all companies are required to provide a copy of their annual reports to the ASE, it seems that some did not comply with this provision. Consequently, a great deal of effort was expended to collect a sufficient number of annual reports. As a result, 121 annual reports were collected through both the ASE library and personal visits to companies. However, in order to enhance the homogeneity of the sample, four criteria were imposed. Firstly, 27 financial and insurance companies listed on the ASE were excluded because they are strongly influenced by specific disclosure requirements—so much so that the content of their annual reports cannot be considered as voluntarily determined (e.g. Gisbert and Navallas 2013; Wallace et al. 1994; Wallace and Naser 1995; Raffournier 1995; Depoers 2000; Abdelsalam and Weetman 2003; Patelli and Prencipe 2007; Lim et al. 2007; Allegrini and Greco 2011). Secondly, seven industrial and service companies listed for the first time in 2004 were excluded from the sample because they may still have been developing their disclosure policy (e.g. Leventis and Weetman 2004b). Thirdly, nine companies that ceased operations in 2004 were excluded from the sample. Finally, 21 companies were excluded due to incomplete annual financial reports or insufficient data to compute the ownership structure. Table 1 summarises the sample selection process of the study.

[9] MIN, IND and SER represent 19.3, 42.1 and 38.6 % of the sample, respectively.

[10] This study selects 2004 because it is recent enough to ensure that data for the variables included in this study, especially companies' annual reports, are still available from the sources of information. Lang and Lundholm (1993) observed firms' disclosure policies and practices and pointed out that these practices tend to remain relatively constant from year to year. They added that this might be because reporting firms seek to enhance the year-to-year comparability of the financial statements in their corporate annual reports.

Table 1 Study sample selection summary

Total companies listed in 2004	192
Financial reports collected	121
Companies excluded	
Financial and insurance companies	27
Companies first listed on the ASE in 2004	7
Companies which ceased operation in 2004	9
Companies with incomplete annual financial reports or insufficient data on ownership structure	21
Final sample	57

Taking the data description stated above, the final sample of the study consists of 57 companies from the industrial and service sectors. The sample size represents 29.7 % of the total listed companies on the ASE at the end of 2004. The annual reports for the companies included in the sample were collected from the ASE library and by making personal visits to companies. Further information about other variables included in the study was collected from the "Jordanian Shareholding Companies Guide".

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4.2 The voluntary disclosure index

4.2.1 Definition of voluntary disclosure

This study adopts the disclosure index suggested by Haddad et al. (2009) to measure the voluntary disclosure of information in the annual reports of Jordanian non-financial companies listed on the ASE. A voluntary disclosure, as applied in this study, is defined as those items of information that are not stipulated by Jordanian statutory regulations. However, Haddad et al. (2009) definition was previously adopted by many previous researchers (e.g. Marston and Shrives 1991; Bradbury 1992). In fact, finding a direct way to measure disclosure level is a difficult undertaking, since financial disclosure is an abstract concept that cannot be measured directly (Cooke and Wallace 1989). However, the process of measuring firm disclosure level cannot be carried out in a precise scientific way, since researcher subjectivity cannot be removed completely (Marston and Shrives 1991).

4.2.2 List of disclosure items

One important issue in the construction of a voluntary disclosure index is the selection of information that may be disclosed by companies included in the study.

Haddad et al. (2009) followed a four-step approach in this respect. Firstly, they reviewed the disclosure literature applied in developed and developing capital markets (e.g. Botosan 1997; Barrett 1975; Firth 1979; Chow and Wong-Boren 1987; Cooke 1989; Raffournier 1995; Hossain et al. 1995; Abu-Nassar and Rutherford 1995; Meek et al. 1995; Gray et al. 1995; Botosan 1997; Healy et al. 1999; Depoers 2000; Haniffa and Cooke 2002). Secondly, Haddad et al. (2009) compared these items with Jordanian financial reporting regulations, to exclude any items that appeared mandatory. Thirdly, the list from the second step was pilot-tested on a sample of annual reports issued by Jordanian industrial and services companies listed on the ASE in 2003. This step served the purpose of refining the index and excluding any information irrelevant to disclosure practice in the country. Finally, voluntary items of information (from step 3) were then validated through discussions with a number of auditors and with the Head of the Issuance and Disclosure Division in the ASE.

Haddad et al. (2009) classified their final list into three main groups according to their information content (Hossain et al. 1994; Barros et al. 2013; Patelli and Prencipe 2007). Disclosures were then divided into nine further categories. The groups and categories are as follows: (1) background and strategic disclosure group, which includes three categories: background information (12 individual items), future and projected information (six individual items) and management discussion and analysis (eight individual items); (2) financial information disclosure group, consisting of four categories: historical information (five individual items), financial ratios (eight individual items), capital market data (three individual items) and acquisition and disposal information (four individual items) and (3) non-financial information disclosure group, consisting of two categories: key non-financial information (nine individual items) and employee information (seven individual items). "Appendix" shows the final list of the voluntary disclosure items applied in Haddad et al. (2009). Therefore, the disclosure index covered a wide range of voluntary information that could appear in annual financial reports, and it included both financial and non-financial items of information, qualitative and quantitative items and historical and future items of information. The groups of information included in disclosure index are relevant to different users of the annual reports (e.g. investors and other stakeholders). The background and strategic and financial information are relevant to the decision making of the investors. Non- financial information is recognized as a company's social accountability and is used by a broader group of stakeholders than the owners and investors (Meek et al. 1995). In order to maximize their own benefits at the expense of other shareholders, the majority of shareholders or family members in the board may limit, delay, or choose not to disclose relevant strategic information like discussion of changes in gross profit or factors affecting future business or the impact of competition on the future performance to minority shareholders in order to avoid the intervention of minority shareholders or to conduct them to take inappropriate decisions based on lack of information (Attig et al. 2006).

Another important issue in index construction is the problem of applicability/non-applicability. In other words, the researcher needs to decide whether a certain item is applicable to a given firm. To reduce the subjectivity involved in this problem, we read the entire contents of annual reports to make a judgement on whether a particular item was relevant. This methodology was used by previous disclosure studies (e.g. Cooke 1989, 1992; Haniffa and Cooke 2002; Ahmed and Nicholls 1994; Hossain et al. 1995; Meek et al. 1995; Inchausti 1997; Abdelsalam and Weetman 2003). As a result, the firm under investigation was not penalised for not disclosing an item of information, if the item was not relevant to its activities.

4.2.3 Scoring of corporate annual reports

The unweighted approach is applied in this study by using a dichotomous scale as follows:

- A score of one (1) is awarded to the firm if an item of information is disclosed within the annual report.
- A score of zero (0) is awarded to the firm if such an item is not disclosed and the item is applicable to that firm.
- Not applicable (–) is assigned to the firm if an item is not applicable.

The level of disclosure is measured as the ratio of the actual total score awarded to a particular firm to the maximum number of applicable items of information. This methodology was used by previous disclosure studies (e.g. Cooke 1989, 1998; Ahmed and Nicholls 1994; Raffournier 1995; Hossain et al. 1995; Wallace and Naser 1995; Depoers 2000; Suwaidan et al. 2004; Hassan et al. 2006; Gisbert and Navallas 2013). Therefore, the minimum score for a company is 0 % if it did not disclose any item, and the maximum is 100 % if it disclosed all applicable items.

4.3 Ownership structure and family board member variables

Previous studies examining voluntary disclosure show that it is associated with a firm's ownership structure and family control of the board. Ownership structure is measured by government ownership, outside ownership, managerial ownership and number of shareholders. Government ownership is the ratio of shares held by government institutions. Outside ownership is computed by deducting the percentage of shares held by insider shareholders and the percentage of shares held by the government from total shares (100 %). Managerial ownership is the proportion of shares held by the CEO and executive directors. The number of shareholders is included in the study as a measure of the dispersion of shareholder control (Ghazali and Weetman 2006). Finally, a family member on the board variable is measured as the percentage of family board directors to total directors.

5 Empirical results

5.1 Descriptive statistics of the sample study

The descriptive statistics of the sample study are provided below (Table 2). DISC is the firm's overall voluntary disclosure. GOVOWN is government ownership at the end of 2004. OUTOWN is outside ownership and is measured by the proportion of the number of stock equities owned by outside parties. MGTOWN is managerial ownership of equity at the end of 2004. NUMOWN is the number of shareholders at the end of 2004. FMLY is the ratio of family members on the board to total number of directors. MC is the market value of equity at the end of 2004 in millions of Jordanian Dinars (JOD) (1 JOD = USD 1.401). ASSETS is total assets, SALES is total sales (revenues) and PROFIT is total profit, all at the end of 2004 and all in millions of JOD. EMP is the number of employees for 2004. DEBT is the long-term debt-to-equity ratio. Finally, ROA is the return on the firm's total assets at the end of 2004.

As evident, there is a wide variety of firm sizes, with market values ranging from a minimum of JOD 0.568 (USD 0.796) million through to a maximum of JOD 742.862 (USD 1.041) million, with a mean value of JOD 42.260 (USD 59.206) million. The average total assets in the sample is JOD 37.515 (USD 52.560) million, with a minimum value of JOD 1.539 (USD 2.156) million and a maximum value of JOD 368.831 (USD 516.732) million. SALES, PROFIT and EMP also have a wide range of variations in size. DEBT as a measure of financial leverage has a mean of 27.154 %. FMLY has a mean (median) of 20 % (21.55 %). OUTOWN has a mean (median) 41.344 % (45.744 %). Finally, NUMOWN ranges from 41 for SLCA Company to 33,974 for Jordan Cement Factories.

As shown in Table 2, there is a clear variation in the extent of voluntary information disclosed by companies. Jordanian companies show a low overall level of voluntary disclosure with a mean of 26 %; the lowest and the highest scores were 3.22 % and 67.74 %, respectively. In fact, the National Steel Company's disclosure scored the lowest level of 3.22 %, while the Arab Potash Company received the highest score of 67.74 %.[11] The National Steel Company's financial report provided no information on historical information, key non-financial information, future and projected information, capital market data or management discussion and analysis. The Arab Potash Company's financial report provided detailed discussions for all categories. The relatively low extent of voluntary disclosure should send a signal to Jordanian regulators to strengthen their regulatory framework, in order to encourage listed companies to disclose information on a voluntary basis. The voluntary disclosure level in the case of Jordan is lower than the mean reported by Barros et al. (2013) and Lakhal (2007) on French companies, Jalila and Devi (2012) on Malaysian companies, Chakroun and Matoussi (2012) on Tunisian companies, Juhmani (2013) and Ramadhan (2014) on Bahraini companies, Alturki (2014) on Saudi companies, Allegrini and Greco (2011) on Italian companies, Leventis and

[11] The Arab Potash Company disclosed 42 out of 62 applicable items in the disclosure index. The company disclosed 67.74 % of applicable items in its annual report for 2004.

Table 2 Descriptive statistics of the study sample

Variables	Minimum	Maximum	Median	Mean	SD
DISC (%)	3.225	67.741	24.723	26.106	12.601
GOVOWN (%)	0.000	82.000	4.000	10.001	14.518
OUTOWN (%)	2.741	86.730	45.744	41.344	22.255
MGTOWN (%)	3.000	97.100	41.500	42.400	23.500
NUMOWN	41	33,974	1521	3762	6613
FMLY (%)	0.000	80	21.550	20	20.800
MC	0.568	742.862	12.190	42.260	101.179
ASSETS	1.539	368.831	14.460	37.515	67.453
SALES	0.203	277.556	6.982	22.354	47.812
PROFIT	−1.917	53.152	0.606	2.925	7.653
EMP	3.00	4367	154	342.883	648.875
DEBT (%)	1.370	73.77	21.534	27.154	20.445
ROA (%)	−37.140	33.090	7.005	6.452	9.879

Variable definitions (number of observations (n) = 57)

DISC voluntary disclosure index, *GOVOWN* government ownership as the ratio of shares held by government institutions, *OUTOWN* outside ownership, *MGTOWN* percentage of equity held by the CEO and executive directors, *NUMOWN* number of shareholders at the end of 2004, *FMLY* percentage of the number of family board directors to the total number of directors on the board, *MC* market value of equity at the end of 2004 in JD millions, *ASSETS* Total assets at the end of 2004 in JD millions, *SALES* total sales (revenues) at the end of 2004 in JD millions, *PROFIT* total profit at the end of 2004 in JD millions, *EMP* number of employees at the end of 2004, *DEBT* long-term debt-to-equity ratio, *ROA* return on total assets at the end of 2004

Weetman (2004b) on Greek companies, and Cheng and Courtenay (2006) on Singapore companies. However, the voluntary disclosure level is higher than the mean reported by Gisbert and Navallas (2013) on Spain, Lim et al. (2007) on Australian companies and Patelli and Prencipe (2007) on Italian companies.

To assess the reliability and validity of DISC, different sets of analyses were used. Firstly, the Cronbach's coefficient alpha (Cronbach 1951)—the most common estimate of internal consistency—uses repeated measurements to assess the degree to which the correlation among the measurements is attenuated due to random error. The procedure output of the disclosure index revealed that the Cronbach's coefficient alpha for the categories in the disclosure index was 0.73,[12] which indicates that the reliability of the disclosure index has good internal consistency, considering that 0.70 is the cutoff value for acceptability (e.g. Nunnally 1978).

We also assessed the relationship between the DISC overall company disclosure score and its nine components. The figures in the correlation matrix between DISC and its components are positive and highly correlated to each other, thus supporting the argument that companies that are good at disclosing certain types of information are also good at disclosing other types (Botosan 1997; Cheng and Courtenay 2006). Finally, the reliability of the disclosure index was also validated by requesting three

[12] The Cronbach's Coefficient Alpha scores 0.64 in Botosan (1997), 0.69 in Gisbert and Navallas (2013) and 0.72 in Haddad et al. (2009).

independent academic scholars to score 15 randomly selected annual reports. The scores assigned by these independent persons were compared with the researchers' scores reported in this study. The figures in the Pearson's correlation matrix between these scores were highly correlated (range 0.891–0.935) with each other (p value <0.01), indicating a high degree of reliability. Such an approach was suggested by previous studies (e.g. Owusu-Ansah 2000).

Table 3 shows the correlation matrix between variables included in the study. It was found that disclosure level is positively associated with government ownership (GOVOWN). Table 3 also reveals that disclosure level is negatively correlated with managerial ownership (MGTOWN). Although it has the expected positive sign, the outside ownership (OUTOWN) variable lacks statistical significance. The correlation between voluntary disclosure level and number of shareholders is not significant. It was also found that disclosure level is negatively associated with family board directors.

Further examination of Table 3 shows that disclosure level is also associated with firm size (SALES) and industry type. However, it was also found that financial leverage and profitability (ROA) do not show a significant correlation with disclosure level.

5.2 Multivariate analysis

5.2.1 Disclosure level and ownership structure

Multiple regression is applied to assess the impact of corporate ownership structure on voluntary disclosure, after controlling for other variables. The following model is estimated:

$$\begin{aligned}\mathrm{DISC}_i = {} & \alpha + \beta_1 \mathrm{GOVOWN}_i + \beta_2 \mathrm{OUTOWN}_i + \beta_3 \mathrm{MGTOWN}_i + \beta_4 \mathrm{NUMOWN}_i \\ & + \beta_5 \mathrm{SALES}_i + \beta_6 \mathrm{DEBT}_i + \beta_7 \mathrm{MIN}_i + \beta_8 \mathrm{SER}_i + \beta_9 \mathrm{ROA}_i + e\end{aligned}$$

where DISC is the overall voluntary disclosure level for the company, α the intercept, β the regression coefficient of the independent variables, GOVOWN the government ownership as the ratio of shares held by government institutions, OUTOWN the percentage of equity held by outside ownership, MGTOWN the percentage of equity held by the CEO and executive directors, NUMOWN the number of shareholders (Log form), SALES the total sales (revenues) (Log form), DEBT the long-term debt to owners' equity ratio (Log form), MIN the mining, oil and construction company (MIN = 1, otherwise 0), SER the service company (SER = 1, otherwise 0), ROA the return on a firm's total assets, e the error term.

Table 4 presents the results of examining the relationship between disclosure level and the explanatory variables. The F-value (F = 5.172) is significant at the 1 % level. The disclosure model has an adjusted R^2 of 0.321, suggesting that approximately 32 % of the variance in disclosure level is explained by the explanatory variables included in the model.

Table 3 Pearson's correlation matrix among variables

	DISC	GOVOWN	OUTOWN	MGTOWN	NUMOWN	FMLY	SALES	DEBT	MIN	IND	SER	ROA
DISC	1	0.490**	0.193	−0.205*	0.064	−0.405**	0.479**	0.014	0.295*	−0.148	−0.073	0.168
GOVOWN		1	−0.499***	0.020	0.082	−0.321**	0.596***	0.035	0.196	−0.161	−0.003	0.076
OUTOWN			1	−0.123	0.207*	0.166	−0.046	0.053	0.105	0.078	−0.176	0.102
MGTOWN				1	−0.223*	0.231*	0.101	−0.231*	0.006	−0.011	0.006	−0.128
NUMOWN					1	0.042	0.266*	0.121	0.097	0.152	−0.248*	0.198
FMLY						1	−0.246*	−0.042	−0.185	0.110	0.046	0.301**
SALES							1	0.157	0.377**	0.147	−0.177	0.092
DEBT								1	0.150	−0.043	−0.073	0.343**
MIN									1	−0.497***	−0.253*	0.027
IND										1	−0.714***	−0.237*
SER											1	0.230*
ROA												1

Variable definitions (n = 57)

DISC voluntary disclosure index, *GOVOWN* Government ownership as the ratio of shares held by government institutions, *OUTOWN* outside ownership, *MGTOWN* percentage of equity held by the CEO and executive directors, *NUMOWN* number of shareholders at the end of 2004, *FMLY* percentage of number of family board directors to the total directors, *SALES* total sales (revenues) at the end of 2004, *DEBT* long-term debt-to-equity ratio, *MIN* mining, oil and construction company (MIN = 1, otherwise 0), *IND* other industrial companies (IND = 1, otherwise 0), *SER* service company (SER = 1, otherwise 0), *ROA* return on total assets

* Significant at the 0.05 level (one-tailed)

** Significant at the 0.01 level (one-tailed)

*** Significant at the 0.001 level (one-tailed)

Table 4 Results of the regression model for listed companies $DISC_i = \alpha + \beta_1 GOVOWN_i + \beta_2 OUTOWN_i + \beta_3 MGTOWN_i + \beta_4 NUMOWN_i + \beta_5 SALES_i + \beta_6 DEBT_i + \beta_7 MIN_i + \beta_8 SER_i + \beta_9 ROA_i + e$

F				5.172
F-significance				0.000
Adj. R^2				0.321
	Non-standardised coefficients B	Standardised coefficients beta	T	Sig.
Variables in the model				
(Constant)	0.902		0.054	0.453
GOVOWN	0.298	0.331	2.326	0.010**
OUTOWN	−0.032	−0.055	−0.398	0.345
MGTOWN	−15.892	−0.288	−2.329	0.012*
NUMOWN	−1.685	−0.080	−0.598	0.276
SALES	5.708	0.289	1.964	0.023*
DEBT	−3.782	−0.105	−0.782	0.219
MIN	8.273	0.266	2.178	0.015*
SER	5.652	0.225	1.887	0.025*
ROA	0.056	0.043	0.315	0.365

Variable definitions (n = 57)

DISC voluntary disclosure index, *GOVOWN* government ownership as the ratio of shares held by government institutions, *OUTOWN* outside ownership, *MGTOWN* percentage of equity held by the CEO and executive directors, *NUMOWN* number of shareholders at the end of 2004 (log form), *SALES* total sales (revenues) at the end of 2004 (log form), *DEBT* long-term debt-to-equity ratio, *MIN* Mining, oil and construction company (MIN = 1, otherwise 0), *SER* service company (SER = 1, otherwise 0), *ROA* return on total assets

* Significant at the 0.05 level (one-tailed)

** Significant at the 0.01 level (one-tailed)

For the ownership structure variables, the level of voluntary disclosure has a positive association with government ownership. One explanation for such a result is that ownership in this respect has a significant influence on companies releasing additional information. This result may be consistent with the idea that firms owned by the Jordanian government are more likely to disclose information on a mandatory and voluntary basis, in order to be more transparent and in compliance with regulations issued before 2004, which aimed at encouraging transparency and consequently attracting investment from both local and international actors. It was also found that the disclosure level is negatively associated with the proportion of shares held by the CEO and executive directors (MGTOWN). This indicates that a company with a higher proportion of shares held by management discloses less information in its annual financial reports. However, outside ownership is not significantly associated with the extent of disclosure level. This result suggests that share ownership by outsiders is likely to be dispersed to the extent that it does not influence the firms' disclosure level. Therefore, Jordanian companies listed on the ASE, with most of their shares dominated by external shareholders; do not have a significant impact on the level of voluntary disclosure provided via Jordanian annual

reports. This result is also found in previous studies (e.g. Eng and Mak 2003). Finally, the number of shareholders is not significantly associated with the extent of disclosure level. It seems that the presence of a greater number of shareholders does not play a role in mitigating agency problems, which is consistent with other previous studies (Ghazali and Weetman 2006).

For the control variables, it was found that companies with higher sales (as a measure of firm size), and those operating in certain types of industry, disclose more information than other companies.[13] These findings are consistent with findings in previous studies (Wallace and Naser 1995; Gisbert and Navallas 2013; Lim et al. 2007, Allegrini and Greco 2011). Financial leverage and profitability are not significantly associated with disclosure, and it seems that Jordanian listed companies with high leverage do not seek to reduce their monitoring costs by disclosing voluntary information in annual reports. This finding is also evident in previous studies (e.g. Chow and Wong-Boren 1987; Wallace et al. 1994; Hossain et al. 1994; Raffournier 1995; Depoers 2000; Hail 2002; Patelli and Prencipe 2007). Finally, consistent with Ho and Wong (2001) and Raffournier's (1995) findings, the ROA variable is found to be insignificant in relation to the level of disclosure, suggesting that more profitable firms listed on the ASE do not disclose significantly more information than their less profitable counterparts.[14]

5.2.2 *Disclosure level and family control of the board*

To examine the impact of family membership on the level of voluntary disclosure, we added an indicator for family control (FMLY) to the model presented in Table 4, and then we re-ran the model. As shown in Table 5, the multiple regression model for the Jordanian companies listed on the ASE reported an F-value of 5.285, significant at the 1 % level or better for the level of overall disclosure. It was shown that the number of family board members coefficient is negative and significant ($p < 0.05$). This suggests that companies with more family board members disclose less information. One explanation for this finding is that when family members sit on the board there is a preference for releasing less information in annual reports, as they have better access to internal information. This is consistent with other previous studies (Haniffa and Cooke 2002; Ahmed and Nicholls 1994; Chau and Gray 2002). Therefore, this result supports hypothesis H5 that there is a negative association between the number of family board members and a disclosure level at the 5 % level of significance.

In addition, government ownership, managerial ownership, firm size and listing industry type continue to be correlated with the level of disclosure. This suggests that although the Jordanian government, through its ownership of companies, plays a role in promoting transparency and accountability, it has not yet eliminated the impact of the cultural influences of management ownership and family board

[13] Using number of employees (EMP) as a proxy of firm size (e.g. Ghazali and Weetman 2006) did not show any significant differences against the results reported in Table 4.

[14] We also replace ROA with return on firm's shareholders' equity (ROE) as another measure of the firm's profitability. These results (not reported) did not materially violate the results reported in Table 4.

Table 5 Results of the regression model, including family control of boards of directors $DISC_i = \alpha + \beta_1 GOVOWN_i + \beta_2 OUTOWN_i + \beta_3 MGTOWN_i + \beta_4 NUMOWN_i + \beta_5 FMLY_i + \beta_6 SALES_i + \beta_7 DEBT_i + \beta_8 MIN_i + \beta_9 SER_i + \beta_{10} ROA_i + e$

F	5.285
F-significance	0.000
Adj. R^2	0.341

	Non-standardised coefficients B	Standardised coefficients beta	t	Sig.
Variables in the model				
(Constant)	2.077		0.126	0.450
GOVOWN	0.264	0.294	2.031	0.025*
OUTOWN	−0.019	−0.033	−0.243	0.400
MGTOWN	−14.052	−0.255	−2.028	0.024*
NUMOWN	−0.770	−0.036	−0.267	0.387
FMLY	−11.524	−0.220	−1.642	0.041*
SALES	5.472	0.277	1.891	0.031*
DEBT	−4.244	−0.117	−0.880	0.190
MIN	7.275	0.234	1.888	0.032
SER	5.794	0.210	1.636	0.050*
ROA	−0.017	−0.013	−0.089	0.410

Variable definitions (n = 57)

DISC voluntary disclosure index, *GOVOWN* government ownership as the ratio of shares held by government institutions, *OUTOWN* outside ownership, *MGTOWN* percentage of equity held by the CEO and executive directors, *NUMOWN* number of shareholders at the end of 2004 (log form), *FMLY* percentage of number of family board directors to the total directors, *SALES* total sales (revenues) at the end of 2004 (log form), *DEBT* long-term debt-to-equity ratio, *MIN* mining, oil and construction company (MIN = 1, otherwise 0), *SER* service company (SER = 1, otherwise 0), *ROA* return on total assets

* Significant at the 0.05 level (one-tailed)

control on the extent of disclosure. However, the adjusted R^2 of 0.341 reported in Table 5 suggests that approximately 34 % of the variance in disclosure level is explained by the other variables included in the model.

Finally, upon examination of all the models tested in this study, the Pearson's correlations reported in Table 3 suggest that multicollinearity is not a problem, since all correlations among the explanatory variables are less than 0.90. Furthermore, the Variance Inflation Factor (VIF) method was also applied to determine any form of multicollinearity. A VIF higher than 10 indicates a potential problem in this respect (Kennedy 1992), which occurs when the correlations among the variables are extremely high. All VIF for all independent variables included in the study are below 1.45, suggesting no evidence of multicollinearity problems in the multiple regression model.

6 Sensitivity analysis

Several tests were performed to investigate the sensitivity of the results reporting relationship disclosure level and the explanatory variables.

In measuring the disclosure level for Jordanian listed companies, we assigned equal weights to items of information included in a self-constructed disclosure index. To assess whether the results of DISC are sensitive to the assumption of weights, we performed several alternative calculations of the disclosure scores by assigning different weights to different items/categories included in a self-constructed disclosure index. The correlations coefficient (not reported) among different measures of voluntary disclosure level, using different weights and an equally-weighted approach (DISC), showed a highly significant relationship, suggesting that the results of the study are robust with respect to the choice of weights.

The second specification test involved allowing government ownership (GOVOWN) to enter as a categorical variable (GOVDUM). GOVDUM is equal to "1" if the government has share equity above the mean, and "0" otherwise. The regression results (not reported) are robust for this speciation test.

7 Conclusion

This study examined the impact of ownership structure and family control of boards of directors on corporate voluntary disclosure. Ownership structure was characterised by government ownership, outside ownership, managerial ownership and number of shareholders. Family control was computed as the ratio of family board directors to total directors. A total of 57 non-financial Jordanian firms were included in this study, and the extent of voluntary disclosure was measured using an unweighted approach.

We found that significant government ownership and the lower proportion of shares held by CEOs and executive directors are associated with increased voluntary disclosure. We also found that the dominance of family members is negatively

associated with disclosure. We conclude that government ownership can help to promote transparency, but it has not yet eliminated the influence of management and family control on disclosure. Furthermore, the study reveals that a number of shareholders and outside ownership have no impact on voluntary disclosure. Finally, we also find that larger firms and those operating in certain types of industry disclose more information in annual reports than their counterparts.

This article is subject to the following limitations. Firstly, the selection of companies is restricted to publicly traded industrial and service companies. Further research is therefore required to determine whether the results obtained by this study could be generalised to companies in other industries. Secondly, the number of firms included in the research is small and represents only 29.7 % of the whole market, an issue which was restricted by the availability of data. Further research is needed to extend this examination to include more companies and over two or more periods. Thirdly, the disclosure level was weighted according to the quantity rather than the quality of content. It can be argued that measuring the disclosure index based on the quality of information would probably provide more robustness to the empirical results on the relationship between disclosure level and ownership structure. Therefore, further research needs to address the quality of the disclosure index.

It is also important to note that while the disclosure index provides an approach for measuring the extent to which Jordanian companies disclose important financial information, it cannot be used to measure the extent of annual report compliance with disclosure standards and requirements (for information on disclosure requirements in Jordan, see Sect. 2). As a result, if a company disclosed more mandatory items, but provided less information on the voluntary items included in the self-designed index than another company, then the firm with more mandatory disclosure would be considered as offering less information, as the measure of disclosure level examines only the extent of voluntary information. This may suggest that including some mandatory items of information may produce a set of results different to those reported in this study. The outside ownership is measured in this study by deducting the percentage of shares held by insider shareholders and government from 100 %. Further research could also provide additional insight about the linkage between voluntary disclosure and the nature of outside ownership (e.g. institutional, individual, other investors). Finally, this study assumes a direct causal relationship between the extent of voluntary disclosure and the ownership structure of Jordanian firms. However, previous studies in the disclosure literature identify that there might an endogeneity problem affecting disclosure practices. Most studies on ownership structure and disclosure assume that ownership structure variables are exogenous variables. However, some ownership structure variables itself may actually be endogenous variables, that is, variables influenced by other ownership structure variables or other firm characteristics. In the case of endogeneity, if exist, the results of this study may have reported biased and inconsistent results. The result of endogeneity is that a regressor is correlated with the error-term and therefore OLS will lead to biased estimates (Gujarati and Porter 2009).

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Appendix: Voluntary information index

Item of Information
Group 1: background and strategic disclosure
Background information category
1. A statement of corporation goals
2. A general statement of corporate strategy
3. Action taken during the year to achieve corporate goals
4. Barriers to entry discussed
5. Analysis of products/services
6. Description of principal markets
7. The impact of current competition on current profits
8. The impact of current competition on future profits
9. Multiple language presentation
10. Information about the economy
11. Discussion of major industry trends
12. General information on the impact of inflation on the company
Future and projected information category
13. Factors influencing future business
14. Cash flow projection
15. Planned research and development for the next year
16. Information on future sales (revenue)—quantitative
17. Information on future sales (revenue)—qualitative
18. Forecast for next year's profits
Management discussion and analysis category
19. Discussion of changes in sales
20. Discussion of changes in net income
21. Discussion of changes in inventory
22. Discussion of changes in market share
23. Discussion of changes in gross profit
24. Discussion of changes in account receivable
25. Discussion of changes in selling and administrative expenses
26. Discussion of changes in the cost of goods sold
Group 2: Financial information disclosure
Historical information category
27. Sales (revenue) for the last 3–5 years (JD)
28. Sales (revenue) for the last 6–10 years (JD)
29. Sales (revenue) for past years (quantity)
30. Summary of net income for more than 5 years

Item of Information
31. Historical summary of price range of ordinary shares for at least 6 years
Financial ratios category
32. Return on assets
33. Net profit margin
34. Liquidity ratios
35. Gearing ratios
36. Rate of growth in earnings per share for past years
37. Ratio of number of units produced compared with previous year
38. Working capital
39. Other ratios
Capital market data category
40. Market capitalisation at the end of the year
41. Market share for each product/service produced by the company
42. Number of shares compared with previous years
Acquisition and disposal category
43. Reason for disposals
44. Discussion of future business opportunity of disposals
45. Reason for acquisitions
46. Discussion of future business opportunity of acquisitions
Group 3: Non-financial disclosure
Key of non-financial information category
47. Units sold
48. Unit selling price
49. Growth in units sold
50. Information on input/output ratio
51. Volume of materials consumed
52. Price of materials consumed
53. Number of units produced
54. Breakdown of net income by major product lines, customer classes or geographical location
55. Graphics and pictures
Employee information category
56. Categories of employee by sex
57. Categories of employee by function
58. Number of employees for 2 or more years
59. Reasons for changes in employee numbers or categories over time
60. Amount spent on training
61. Number of employees trained
62. Safety policy

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