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## SEGMENT REPORTING IN JORDANIAN LISTED COMPANIES

### Key Words

***Segment Reporting;  
Segment Disclosure;  
IAS 14; IFRS 8;  
Jordan.***

### Abstract

*Segment information helps users of financial statements to better understand a company's performance, provides a better assessment of a company's risks and opportunities, and offers additional judgment about the entity as a whole (IFRS, 2006). The purpose of this study is to measure the extent of usage of segment reporting in Jordanian companies and to produce evidence about the characteristics that affect the level of segment reporting. The sample of 70 public-listed companies is based on the financial statements of Jordanian companies listed in the Amman Stock Exchange (ASE) in 2005. We show that the level of segment disclosure for all companies is less than half of the primary disclosure, which indicates the low level of segment disclosure in the segmented Jordanian companies. This finding provides some implications for preparers of financial information, auditors, and the Jordanian Securities Commission (JSC). Also, this study indicates that companies that have disclosed segmental information are larger, have less ownership diffusion, and a higher Assets-In-Place percentage. However, the study has also found that earnings volatility and financial leverage variables are not related to the level of segment disclosure.*

### Introduction

Segment reporting provides financial information by segment, including products and services, and geographical areas. Segment informa-

tion is expected to be useful in reducing uncertainties and enable more accurate predictions.

Submitted February 2008, accepted August 2008.

There is evidence that financial analysts use segment reporting information to estimate risk and returns on investments (AICPA, 1994; Boersema and Van Weelden, 1992; Baker and McFarland, 1968; Mautz, 1968). The expectation is that additional units of relevant information lead to improve precision in forecasting. The International Accounting Standards Board (IASB) is concerned with segment information, because such information is believed to help the users of financial statements to better understand a company's performance, provide a better assessment of the company's risks and opportunities, and offer additional judgment about the entity as a whole (IFRS, 2006).

The purpose of this study is to measure aspects of disclosure in segment reporting in Jordanian companies. The study also seeks evidence about the characteristics that affect the level of segment reporting, such as size, financial leverage, assets in place, ownership diffusion, and reported profit volatility. The results of the study have implications for the government, preparers of financial information and auditors.

The study is organized as follows; motivation of the study is presented in section 2 followed by the Jordanian institutional setting on financial reporting in section 3. Section 4 reviews the

current and proposed accounting regulations related to segment reporting. Related literature and hypotheses are considered in section 5. This is followed by a description of research method and data collection in section 6. The results and conclusions are then presented and discussed in sections 7 and 8.

## Motivation of the Study

Related studies in Jordan have examined the relationship between a company's financial characteristics and the extent of disclosure, the quality of disclosure, and the adequacy or comprehensiveness of disclosure (e. g. Naser *et al.*, 2002, Naser and Al-Khatib, 2000; Naser, 1998; Solas, 1994). A disclosure index was prepared as a yardstick to measure the comprehensiveness of a company's disclosure.

Measuring information disclosure detailed in a company's annual report may be misleading or may even be intended to misinform its users (Naser *et al.*, 2002). Furthermore, the number of items used to measure the extent of disclosure in Jordanian companies was insufficient. For example, Karim and Ahmed (2005) measured the level of disclosure of financial information in Bangladesh by an index comprising 411 items. Street and Gray (2002) assessed the extent of compliance with International Accounting Standards

(IAS) of a worldwide sample of companies by measuring hundreds of items. Whereas, in Jordan, Naser (1998) and Naser *et al.* (2002) measured extent of disclosure in a company's annual report by 74 and 86 items, respectively.

An alternative viewpoint to measure the comprehensiveness of disclosure or the compliance with IFRS, is to concentrate on specific areas of disclosure instead of measuring all disclosure requirements, which could call for the measurement of several informational items. Therefore, measuring the level of segment information in Jordanian companies is one of the major objectives of this study. Other reasons behind the choice of segment reporting area of research to be investigated in Jordan are:

- There is a lack of studies in Jordan or Middle Eastern countries that reveal important areas of disclosure in detail such as segment reporting. To fill the gap, Jordan has been chosen.
- The program of Reports on the Observance of Standards and Codes (ROSC), funded by the World Bank, prepared a report in 2004 to review accounting and auditing standards and practices in Jordan. This report found non-compliance with IFRS in some major areas; segment information in the banking sector is one of these areas (ROSC, 2004).

- The results of the study have implications for current and potential national and foreign investors. Since applying segment reporting is expected to assist local and foreign investors in making more informed decisions.
- The results of the study have important implications about compliance or departure from IFRS, with implications for auditors, preparers of financial statements and the Jordanian Securities Commission. Complying with accounting standards is not left to the discretion of a company's board of directors and its own auditors.
- It is assumed that applying a segment reporting standard leads to the improvement of the quality of financial information and provides detailed information available to investors, which raises investors' confidence. This would bring Amman Stock Exchange closer to efficiency and attract local, regional, and foreign investment.

### **The Jordanian Institutional Setting on Financial Reporting**

Over the last two decades, attempts have been made by Jordanian authorities to improve and promote its investment climate to make it appeal to both local and foreign investors. Such measures have included the

adoption of International Accounting Standards (IAS's) in 1990, amendments of the Companies Act in 1997, amendments of Accountancy Profession Law (2006), as well as major revisions to the Investment Promotion Law in 2003. In particular, one of the main objectives of the revised Companies Act of 1997 and Accountancy Profession Law of 2003 (later amended in 2006) is to improve the quality of financial reporting of Jordanian companies.

Accounting practices and disclosure in Jordan are regulated by three laws:

- The Jordanian Securities Commission (JSC) Law (76/2002)
- Accountancy Profession Law 73/2003 (and its amendments 2006)
- The Companies Law 22/1997

According to the JSC Law and Directives of disclosures, auditing, and accounting standards, all entities subject to JSC's supervision are required to apply International Financial Reporting Standards (IFRS). The JSC reviews the annual financial statements presented by the listed companies. The review is intended to monitor compliance with accounting and auditing requirements. A checklist, which includes some basic reporting and disclosure requirements, is used in the review process to determine non-compliance in the financial

statements. The main purpose of the review is to basically ensure timely filing of financial statements. With regard to compliance, the reviewers concentrate on the form of elementary disclosure requirements, rather than the substance of important accounting requirements.

Accountancy Profession Law has Important features include establishment of a "High Council for Accounting and Auditing" headed by the Minister of Industries and Trade, and the creation of an improved Jordanian Association of Certified Public Accountants (JACPA).

The Companies Law requires public shareholding companies, general partnerships, limited partnerships, limited liability companies, private shareholding companies, and foreign companies operating in Jordan to prepare annual audited financial statements. All companies registered under the Companies Law should maintain sound accounting records and present annual audited financial statements in accordance with "internationally recognized accounting and auditing principles." Auditors are elected for one year with the possibility of renewal. The Companies Law also requires the auditor's report to address the following at the annual general meeting (ROSC, 2004):

- All data and explanations for satisfactory fulfillment of duties have been obtained.
- The company maintains satisfactory accounting records and documents.
- The company's financial statements (balance sheet, income statement, and statement of cash flows) are prepared in accordance with internationally recognized accounting and auditing principles.
- Audit procedures have been sufficiently followed.
- Financial statements, which are included in the Board of Director's report addressed to the General Assembly, comply with the company's records.
- All relevant legal requirements have been reflected in the accounts.

### **Regulations of Segment Reporting**

International Financial Reporting Standards (IFRS) are the most prominent standards worldwide. IFRS/IAS are published by International Accounting Standards Board (IASB); the successor of International Accounting Standards Committee (IASC). Other well known accounting standards are US GAAP issued by the Financial Accounting Standards Board (FASB).

### **IAS 14: Segment Reporting**

The objective of IAS 14 is to establish the principle for reporting financial information by line of business and by geographical area (IFRS, 2006). This indicates that IAS requires the de-segregation of a company's financial statements into segments based on related products and services and on geographical areas.

According to IAS 14, a segment shall be identified as a reportable segment if a majority of its revenues is derived from external customers and one of three criteria is met (IFRS, 2006):

- 1 - Segment revenues from sales to external customers and from transactions with other segments are 10 percent or more of the total revenues of all segments.
- 2 - Segment is 10 percent or more of the combined result of all segments.
- 3 - Segment assets are 10 percent or more of the total assets of all segments.

While IAS 14 requires less disclosure for secondary segments (segment revenue, assets, and capital addition), it requires the following disclosures for primary segments: segment revenues, results, assets, liabilities, capital additions, depreciations, non-cash expenses other than depreciation, equity method income, and basis of inter-segment pricing.

### **SFAS 131: Disclosure about Segments of an Enterprise and Related Information**

SFAS 131 issued by US FASB became effective after December 15<sup>th</sup>, 1997. It requires companies to report disaggregated information about segments based on the way management organizes the enterprise internally for the purpose of making operating decisions and assessing performance (Behn *et al.*, 2002). The method chosen by FASB to meet segment reporting is referred to as the management approach. It focuses on information about components of the business that management uses to match decisions about operating matters (Kieso *et al.*, 2005).

FASB recognized that a company may not be structured according to the products and services or geographical areas despite the fact that users may

still find such information useful. Therefore, the FASB chose to necessitate disclosure about this type of information (products / services reporting and geographic areas) (Kieso *et al.*, 2005). Table (1) shows in detail the key differences between IAS 14 and SFAS 131.

### **IFRS 8: Operating Segments**

IFRS 8 was issued by IASB at November 2006 and is applicable from 2009 onwards. Issuing this standard is a result of the short-term convergence project between IASB and FASB to reduce differences between IFRS and US GAAP.

IFRS 8 replaces IAS 14 and aligns segment reporting with the requirement SFAS 131. Therefore, the new standard requires an entity to report on the financial performance of its

**Table 1**  
**Segment Disclosure key Differences between IFRSs and US GAAP**

| Accounting and Reporting issues                 | IAS 14                                                           | SFAS 131                                                                                                                                                |
|-------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Basis of reportable segments</b>             | Lines of business and geographical areas                         | Components for which information is reported internally to top management, which may or may not be based on lines of business or geographical areas     |
| <b>Types of segment disclosures</b>             | Required disclosures for both 'primary' and 'secondary' segments | Only one basis of segmentation, although certain "enterprise-wide" disclosures are required such as revenue from major customers and revenue by country |
| <b>Accounting basis for reportable segments</b> | Amounts are based on IFRS GAAP measures                          | Amounts are based on whatever basis is used for internal reporting purposes                                                                             |
| <b>Segment result</b>                           | Defined segment result                                           | No definition of segment result                                                                                                                         |

Source: Deloitte, IAS Plus, June 2004 - Special Edition

operating segments. Generally, the information to be reported would be what management uses internally for evaluating segment performance and determining resource allocation to operating segments (IASB, New Release, 2006).

By releasing IFRS 8, IASB achieve substantial convergence with requirements of SFAS 131, and there are no major differences between the two standards.

## **Related Literature and Hypotheses**

### **Prior Related Literature**

Bradbury (1992) used an economic incentives framework to examine the relation between voluntary segment disclosure and specific firm characteristics. The 1983 study, conducted on 29 New Zealander companies, found that a higher level of voluntary disclosure is positively related to larger firm size. No significant relation was found between segment disclosure and assets-in-place percentage (book value of fixed assets related to total assets), earning volatility, or funding sources variables.

Mckinnon and Dalimunthe (1993) study examined incentives motivating listed diversified companies in Australia to voluntarily disclose segment information. The findings of 65 firms show a strong relationship between

the disclosure of segment information and some explanatory variables. If the company is large, has widely held shareholdings, politically incentive industry, or with high level of minority in their subsidiaries, the Australian company is more likely to increase the level of segment information disclosure. No support was found for leverage or diversification variables.

Mitchell, Chan and Loh (1995) study provided further empirical evidence on incentives for Australian firms to voluntarily report segment information. Several hypotheses relating to size, financial leverage, assets-in-place, earning volatility, ownership diffusion, outside equity (minority) interests, overseas association, and diversification factors were empirically examined by using different multivariate statistical tests. The study found that voluntary segment disclosure was significantly related to size and leverage factors.

Aitken, Hooper, and Pickering (1997) add additional insights from Australian-based studies. They found that diversification strategy, firm size, and the level of minority interest are related to segment disclosure while the results for ownership diffusion and industry are mixed. The result did not support the existing relationship between segment disclosure and leverage effect.

Kevin and Zain (2001) examined the compliance rate of the segment reporting information into Malaysian companies. Also, they examined the relationship between the extent of disclosure with four firm characteristics (firm size, leverage, proportion of assets-in-place, and earnings volatility). The results of the study indicated that only firm size and proportion of assets-in-place were significant and the level of compliance to IAS 14 rate was increasing slowly.

Prencipe (2004) used the proprietary cost theory to identify determinants of the extent of voluntary segment disclosure. According to this theory, the study stated that companies limit voluntary disclosure due to data collection cost and to avoid revealing too much information to competitors. A sample of 64 Italian listed companies was selected and a multiple regression model was used. The results showed that the listing status, age, and legally identifiable sub-groups of companies' factors were significantly related to the extent of segment disclosure. There was no significant relation between the growth rate factor and the extent of segment disclosure.

Extensive literature has been found in the area of segmental reporting, mostly emphasizing and comparing the extent of disclosure with firm

characteristics. However, the findings of these studies lack consistency for some characteristics. While the company size factor was significantly related to segment disclosure, and earnings volatility was insignificantly related in most prior empirical studies, the results of other firm characteristics (e.g. financial leverage, assets-in-place, ownership diffusion, level of minority interests and diversification factors) were mixed. Inconsistency in results of some variables is likely due to the institutional environment of some countries and different measurement of these variables.

### **Independent Variables and Hypotheses**

The examination of segment information based on specific characteristics of the company has been put forward in previous empirical studies. This area of research is based on the assumption that the role of, or demand for, segment information is not the same for all diversified firms. Rather, segment disclosure is expected to be greater for firms with particular economic characteristics (Mckinnon and Dalimunthe, 1993).

By reviewing the prior related literature, Table (2) presents the main characteristics that affect segment reporting disclosure.

In order to limit the number of characteristics, only those which are repeated in prior studies and found to

**Table 2**  
**The Most Related Characteristics Affecting Segment Reporting**

| Study                                | Key Characteristics                                                                                                                                         |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bradbury (1992)                      | Diversification, Ownership Diffusion, Level Of Minority, Industry, Firm Size, Financial Leverage, Assets In Place, Earning Volatility, Overseas Association |
| Mckinnon and Dalimunthe (1993)       | Firm Size, Industry, Financial Leverage, Diversification, Ownership Diffusion, Minority Interest                                                            |
| Mitchell, Chan and Loh (1995)        | Firm Size, Financial Leverage, Assets In Place, Earning Volatility, Ownership Diffusion, Minority Interest, Industry, Overseas Association                  |
| Aitken, Hooper, and Pickering (1997) | Firm Size, Industry, Financial Leverage, Diversification, Ownership Diffusion, Minority Interest                                                            |
| Kevin and Zain (2001)                | Firm Size, Financial Leverage, Assets In Place, Earning Volatility                                                                                          |
| Prencipe (2004)                      | Growth Rate, Listing Status Age, Legal Identifiable Sub-Groups Of Companies, Firm Size, Financial Leverage, Ownership Diffusion, Profitability              |

be significantly related to segment reporting disclosure were selected. These variables are firm size, financial leverage, assets in place percentage, ownership diffusion, and earnings volatility.

#### *Firm Size*

Prior studies found a positive relationship between firm size and level of segment reporting disclosure (e. g. Bradbury, 1992; Mckinnon and Dalimunthe, 1993; Mitchell et al., 1995; Leuz, 1999). Firm size and disclosure have been found in many studies and well accepted in the literature. Firth (1979 : 273) justify this relationship by "collection and dissemination of information is a costly exercise and perhaps it is the larger who can best afford such expenses".

Schipper (1991) noted that large firms are under pressure by analysts to produce more information than the smaller ones because such firms are more attractive to be analyzed for public reasons.

Size variable is used to be tested by different measures, for example Kevin and Zain (2001); Aitken et al. (1997); and Mckinnon and Dalimunthe (1993) used the natural logarithm of total asset, Prencipe (2004) used the natural logarithm of sales. Some studies used multiple measures of size because results could differ (e. g. Bradbury, 1992; Mitchell et al., 1995). In this study, size is measured by the natural logarithm of total assets and by the natural logarithm of issued

capital. Therefore, two models will be run to test results by each measure.

With regards to the prior literature, corporate size is expected to be positively related to the extent of segment reporting disclosure in the company. The following hypothesis is then formulated;

*H1: Higher segment reporting disclosure is positively associated with higher level of corporate size.*

### *Financial Leverage*

It was presumed that there is a positive relationship between financial leverage and the level of segment reporting disclosure. Prior studies have confirmed this direction (e. g. Bradbury, 1992; Mitchell *et al.*, 1995; Hos-sain and Adams, 1995; Giner *et al.*, 1997). This association occurs because segment information allows debt holders to make better predictions about the growth, risk and return of a company (Mckinnon and Dalimunthe, 1993). Also, providing more detailed information to creditors may improve the company's chances of receiving a lower interest rate and facilitating process (Kevin and Zain, 2001).

Some studies found a negative (e. g. Leuz, 1999) or an insignificant relationship between disclosure and financial leverage (Mckinnon and Dalimunthe, 1993). This may be due to the institutional environment of some

countries such as Germany in the Leuz study, or because of suspicion by the creditors, shareholders, and investors about the company's ability to pay back the debt.

Financial leverage is measured by total liabilities divided by total assets. This measure was used by Mitchell *et al.* (1995) and Prencipe (2004). Other measures of financial leverage are in-applicable because of lack of data. For example, Bradbury (1992) used book value of debt over market value of total assets. A positive relationship is expected between the extent of segment disclosure and financial leverage. The following hypothesis is formulated:

*H2: Higher segment reporting disclosure is positively associated with higher level of corporate financial leverage.*

### *Assets-In-Place*

The proportion of assets-in-place has been conducted by some prior studies as an explanatory factor affecting the level of segment reporting (e. g. Kevin and Zain, 2001; Hossain and Adams, 1995; Mitchell *et al.*, 1995; Bradbury, 1992). This variable was measured in prior studies by book value of fixed assets relative to market value of total assets (or relative to book value of total assets).

While, Bradbury (1992) and Mitchell *et al.* (1995) could not find a

significant relationship between the level of segment information and assets in place, other studies found a negative relationship (e. g. Hossain and Adams, 1995). This negative relationship was explained by Kevin and Zain, (2001). Based on the cost-related interpretation, the firm involved in an excessive fixed cost will be suspected by external users on the cash flow generated ability. In order to convey a good financial position, a firm will not normally make a detailed disclosure. Therefore, non-disclosure will gain more user confidence in the firm's performance. The disclosure of the excessive proportion of assets will push the firm to a disadvantage position when compared with a firm possessing less asset in the same industry (Kevin and Zain, 2001 : 16).

In this study the negative relationship between the proportion of assets-in-place and the level of segment reporting disclosure is assumed. This variable will be measured as book value of fixed assets relative to total assets. Hypothesis 3 is therefore:

*H3: Higher segment reporting disclosure is negatively associated with a higher proportion of corporate Assets-In-Place.*

#### *Ownership Diffusion*

Ownership diffusion is a variable that was measured in prior studies by the percentage of the ordinary shares

held other than the top twenty shareholders or board of directors. This variable measures the spread of shareholders who are not directly involved in the management of the company.

The relationship between ownership diffusion and segment reporting presumed is based on the fact that financial reports are the main source of information for small shareholders. Segment reporting considered as a means of reducing information asymmetry (Prencipe, 2004). Earlier, Mckinnon and Dalimunthe (1993) expects that agency costs of equity will be higher where a firm's shares are widely held, and one way of reducing these costs is by providing additional information about the outcomes of their decision. Agency cost stems from the fact that managers often have both the discretion and incentives to pursue strategies and practices that benefit themselves at the expense of shareholders.

Thus, a positive relationship was expected and confirmed (e. g. Prencipe, 2004; Leuz, 1999). Hypothesis 4 therefore is stated as follows:

*H4: Higher segment reporting disclosure is positively associated with a higher level of corporate ownership diffusion.*

#### *Earning Volatility*

Investigating the relationship between reported earnings volatility and

the level of segment information was examined by (Prencipe, 2004; Kim and Pantzalis, 2001; Kevin and Zain, 2001; Leuz, 1999; Haris, 1998; Allen and Pantzalis, 1996; Bradbury, 1992; Morck and Yeung, 1991). This relationship was found by Kevin and Zain, (2001); the firm with high earnings volatility represents an unbalanced earning growth. It would obliterate the performance image of the firm. The shareholders, creditors and investors will be skeptical about the firm's ability to solve its difficulty. Therefore, the company increased its disclosure information in order to reduce the risk of being adversely selected by the market.

In most of the previous studies earnings volatility has proven to be a significant determinant of segment disclosure, but there is no clear evidence of the direction of the relationship. A positive correlation was found by Giner *et al.* (1997), while Leuz (1999) and Kevin and Zain (2001) found the opposite. Earnings volatility was found not to be significantly related to the extent of segment reporting by Bradbury (1992) and Prencipe (2004).

In the present study, it is assumed that there is a positive relationship between earnings volatility and segment disclosure. Earning volatility is measured according to a company's

related net income behavior over the last four years (the maximum value less minimum value over the average income for the previous four years). This measurement was used and advocated by Metchell *et al.* (1995) and Kevin and Zain (2001). Hypothesis 5 therefore is stated as follows:

*H5: Higher segment reporting disclosure is positively associated with higher levels of corporate earnings volatility.*

## Research Method and Data Collection

### Sample Selection

The sample of 70 public-listed companies is based on the 2005 financial statements of Jordanian companies listed on the Amman Stock Exchange (ASE) that met the following criteria:

- The company can be segmented along business or geographical lines and segmented disclosure is presented.
- The financial statements are available for the last four years.

Table (3) summarizes the study population, the sample size, and the percentage of the sample according to the sector of business. Appendix (1) presents the codes and names of companies included in the study sample.

**Table 3**  
**Study Population and Sample Size**

| Sector       | Population | Sample    | Percentage  |
|--------------|------------|-----------|-------------|
| Industry     | 90         | 19        | 27%         |
| Banks        | 15         | 12        | 17%         |
| Service      | 100        | 19        | 27%         |
| Insurance    | 27         | 20        | 29%         |
| <b>Total</b> | <b>232</b> | <b>70</b> | <b>100%</b> |

### Dependent Variable

Measuring the extent of segment reporting disclosure in Jordanian companies is one of the main objectives of this study and it is the dependent variable which is expected to be associated with the independent variables. The independent variables were presented and justified in the previous section.

Using indices to measure the extent of disclosure has a long tradition in the accounting literature. Indices are typically constructed as a function of the number and sometimes the relevance of the items provided in financial reports (Prencipe, 2004:10). It was proved that disclosure indices are valid and used in empirical research (Ahmed and Courtis, 1999).

The first step is to design a disclosure index. Items are generally selected by examining the accounting standards (Prencipe, 2004). In this study, the primary items required by IAS 14 for all reportable segments are considered, and the selected items are relevant to all companies included in the sample. These items are as follows:

external revenues, internal revenues, operating results, segment asset, segment liabilities, capital expenditure, depreciation and amortization, and share of profit or loss from investments accounted by equity method.

Segment disclosure items stated in IAS 14 as primary disclosure requirements are applied to each reportable segment (business and geographical area). The following are details of the main items of primary disclosure (IASB, 2006):

- An entity shall disclose segment revenue for each reportable segment. Segment revenue from sales to external customers and segment revenue from transactions with other segments shall be separately reported.
- An entity shall disclose segment results for each reportable segment, presenting the results from continuing operations separately from the results of discontinued operations.
- An entity shall disclose the total carrying amount of segment assets for each reportable segment.

- An entity shall disclose segment liabilities for each reportable segment.
- An entity shall disclose the total cost incurred during the period to acquire segment assets that are expected to be used during more than one period.
- An entity shall disclose the total amount of expense included in segment results for depreciation and amortization of segment assets for the period for each reportable segment.
- If an entity's aggregate share of the profit or loss of investments accounted for under the equity method is disclosed by reportable segments, the aggregate investments in these investments shall also be disclosed by reportable segments.

To measure disclosure, each item is rated 0 if not present and 1 if disclosed. Hence, the level of segment disclosure is measured by the percentage of the number of items that are presented to the total number of items (eight segment items).

## Method

The hypotheses that related to the characteristics that affect the level of segment reporting objectives are tested using two multivariate regression models. The two models differ only in the size variable, which is the natural logarithm of total assets in

model (A) and the natural logarithm of issued capital in model (B). We use multiple measures of size because results could differ (e. g. Bradbury, 1992; Mitchell *et al.*, 1995). In this study raw data converted to log values to obtain a symmetric distribution of the size variable. The two models are formulated as follows:

$$\text{Model (A): } \text{SegLevel} = \text{B0} + \text{B1 LnTotAss} + \text{B2 Leverage} + \text{B3 AIP} + \text{B4 Diffusion} + \text{B5 Volatility}$$

$$\text{Model (B): } \text{SegLevel} = \text{B0} + \text{B1 LnIssCap} + \text{B2 Leverage} + \text{B3 AIP} + \text{B4 Diffusion} + \text{B5 Volatility}$$

SegLevel: Segment Level

LnTotAss: Logarithm Total Assets

LnIssCap: Logarithm Issued Capital

Leverage: Financial Leverage

AIP: Assets-in-Place

Diffusion: Ownership Diffusion

Volatility: Earnings Volatility

Multiple regression is used to examine the relationship between a single dependent variable and a set of independent variables (Hair *et al.*, 1998:159). However, assumptions of multicollinearity, linearity, independent error, and sample size must be met when undertaking multiple regression analysis (Bryman and Cramer, 2001; Hair *et al.*, 1998).

To meet the multicollinearity assumption, the values of VIF should be

**Table 4**  
**Collinearity Statistics**

| Independent Variables    | Collinearity Statistics |      |
|--------------------------|-------------------------|------|
|                          | Tolerance               | VIF  |
| Financial Leverage       | 0.21                    | 4.87 |
| Assets In Place          | 0.22                    | 4.45 |
| Ownership Diffusion      | 0.90                    | 1.11 |
| Earning Volatility       | 0.94                    | 1.06 |
| Logarithm Issued Capital | 0.80                    | 1.24 |
| Logarithm Total Assets   | 0.68                    | 1.47 |

**Table 5**  
**Residual Statistics**

|                      | Minimum | Maximum | Mean  | Std. Deviation |
|----------------------|---------|---------|-------|----------------|
| Predicted Value      | 0.245   | 0.900   | 0.405 | 0.106          |
| Residual             | -0.384  | 0.464   | 0.000 | 0.190          |
| Std. Predicted Value | -1.512  | 4.651   | 0.000 | 1.000          |
| Std. Residual        | -1.963  | 2.374   | 0.000 | 0.971          |

less than 10 and the values of tolerance should be less than 1 (Field, 2001). Table (4) shows tolerance and VIF results. The best way to examine linearity is by examining the residuals. According to Field (2001) standardized residuals within the range -3 to +3 are considered appropriate; Table (5) presents residual statistics. The Durbin-Watson test will be used to test independent error. The value of this test in the two models is approximately 1.8 (the acceptable statistical value can vary between 0 and 4). According to sample size, several rules of thumb have been proposed ranging from 10 to 15 observations per independent variable (Hair et al., 1998:

182). In this study there are five independent variables, which require 50 to 75 observations, and the sample size of this study is 70.

## The Results

This section presents descriptive and empirical analyses of the data and tests and the empirical hypotheses of the study.

### Descriptive Results

Table (6) reports the frequency of each segment item in the selected sample of companies.

External revenues are disclosed by 81% of the sample. The second most frequent item is segment results

**Table 6**  
**Frequency of Segment Disclosure**

| Segment Disclosure Items                                      | No. of companies reporting the item | Frequency (%) (total no. of companies 70) |
|---------------------------------------------------------------|-------------------------------------|-------------------------------------------|
| External Revenues                                             | 57                                  | 81%                                       |
| Internal Revenues                                             | 3                                   | 4%                                        |
| Segment Results                                               | 44                                  | 63%                                       |
| Segment Assets                                                | 34                                  | 49%                                       |
| Segment Liabilities                                           | 33                                  | 47%                                       |
| Capital Expenditure                                           | 16                                  | 23%                                       |
| Depreciation and Amortization                                 | 19                                  | 27%                                       |
| Segment share from investments accounted for by Equity Method | 21                                  | 30%                                       |

(63%). These two items are disclosed frequently because they are considered to be relevant pieces of information for financial statement users. Investors usually consider net income as a key indicator of a company's financial health and future prospects (Kieso *et al.*, 2007). The segment assets and segment liabilities items are used by about half of the sample (49% and 47% respectively). Other items are used by a limited number of companies. One of main reasons for this result is that these transactions are not applicable. For example, the company may not have internal revenues and investments accounted for by the Equity Method.

There is an inconsistency related to the results of segment assets (49%) and depreciation and amortization (27%) items. According to IAS 14, the company has to disclose segment

assets and the depreciation of these assets. Results show that some companies do not present information about segmented depreciation of assets. This may be justified because companies are unaware of the IAS 14 requirements. Moreover, most segments in Jordanian companies are internal branches (profit centers or investment enters) and not separate legal subsidiaries. Therefore, depreciation accounts are journalized by head center without calculating segments share of depreciation. These justifications may be used to explain the low frequency of the other items (e. g. Capital Expenditure).

The results of frequency of segment disclosure items are shown in Table (7). Results reveal that the majority of the service and insurance companies provide information about external revenue and segment

**Table 7**  
**Frequency of Segment Disclosure Items by Sector of Business**

| Segment Disclosure Items                                      | Industry  | Banks     | Service   | Insurance | Total     |
|---------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| External Revenues                                             | 13        | 6         | 18        | 20        | <b>57</b> |
| Internal Revenues                                             | 2         | 0         | 1         | 0         | <b>3</b>  |
| Segment Results                                               | 7         | 0         | 17        | 20        | <b>44</b> |
| Segment Assets                                                | 10        | 12        | 8         | 4         | <b>34</b> |
| Segment Liabilities                                           | 4         | 12        | 13        | 4         | <b>33</b> |
| Capital Expenditure                                           | 5         | 6         | 5         | 0         | <b>16</b> |
| Depreciation and Amortization                                 | 10        | 0         | 9         | 0         | <b>19</b> |
| Segment share from investments accounted for by Equity Method | 8         | 4         | 8         | 1         | <b>21</b> |
| <b>Sample size</b>                                            | <b>19</b> | <b>12</b> | <b>19</b> | <b>20</b> | <b>70</b> |

results, while all bank companies present disclosures about segment assets and liabilities. This concentration on a specific type of information is related to the distinctive feature of the business, which provides indication about an indifference with the requirements of IAS.

Table (8) provides a descriptive analysis information for all variables of the study. The segment level (the independent variable) information states that the extent of using segment information in Jordanian companies ranged between 12.5% and 100% or between disclosure on one item and all the eight items. The mean of segment level for all companies is 40.5%.

To assess these findings, the following points should be considered:

The size of Jordanian companies is relatively small and the separate legal subsidiaries in these companies are limited.

Some items may not be disclosed because such information is not applicable (e.g. internal revenues, capital expenditure, segment share from investments accounted for by Equity Method).

Therefore, the level of segment disclosure found in this study provides an indication of the type of disclosure used in Jordanian companies.

The other variables in Table (8) will be examined empirically. The earnings volatility variable has a wide range and a high standard deviation, which indicates that there was unstable performance in Jordanian companies between the periods of 2002 and 2005.

**Table 8**  
**Descriptive Statistics for Dependent and Independent Variables**

| Dependent and Indep. Variables | Minimum | Maximum | Mean   | Std. Deviation |
|--------------------------------|---------|---------|--------|----------------|
| Segment Level                  | 0.125   | 1.000   | 0.405  | 0.217          |
| Logarithm Total Assets         | 12.935  | 24.339  | 17.473 | 2.029          |
| Logarithm Issued Capital       | 13.122  | 19.690  | 16.555 | 1.341          |
| Financial Leverage             | 0.006   | 5.878   | 0.497  | 0.706          |
| Assets In Place                | 0.001   | 10.252  | 0.348  | 1.230          |
| Ownership Diffusion            | 0.001   | 0.907   | 0.478  | 0.220          |
| Earning Volatility             | -8.731  | 119.519 | 4.801  | 17.857         |

Examination of Pearson correlation in Table (9) reveals a significant influence between segment level disclosure and the following explanatory factors: size (measured by issued capital), financial leverage, assets-in-place, and ownership diffusion. These variables have a positive direction except the negative direction of own-

ership diffusion. Table (9) shows high correlation between issued capital and total asset variables (76.6%) and between financial leverage and assets-in-place variables (87%). Thus, there are two models and only one measure of size variable that will be used in each model (issued capital or total asset). While the second high

**Table 9**  
**Pearson Correlations among Dependent and Independent Variables**

|            |                         | SegLevel | LnTotAss | LnIssCap | Leverage | AIP   | Diffusion |
|------------|-------------------------|----------|----------|----------|----------|-------|-----------|
| SegLevel   | correlation Coefficient |          |          |          |          |       |           |
| LnTotAss   | correlation Coefficient | .078     |          |          |          |       |           |
|            | Sig. (2-tailed)         | .520     |          |          |          |       |           |
| LnIssCap   | correlation Coefficient | .311**   | .756**   |          |          |       |           |
|            | Sig. (2-tailed)         | .009     | .000     |          |          |       |           |
| Leverage   | correlation Coefficient | .316**   | .179     | .370**   |          |       |           |
|            | Sig. (2-tailed)         | .008     | .137     | .002     |          |       |           |
| AIP        | correlation Coefficient | .349**   | -.093    | .211     | .870**   |       |           |
|            | Sig. (2-tailed)         | .003     | .444     | .080     | .000     |       |           |
| Diffusion  | correlation Coefficient | -.337**  | .198     | .014     | -.161    | -.205 |           |
|            | Sig. (2-tailed)         | .004     | .101     | .907     | .184     | .089  |           |
| Volatility | correlation Coefficient | -.063    | .004     | -.051    | -.014    | -.041 | .229      |
|            | Sig. (2-tailed)         | .606     | .977     | .674     | .911     | .735  | .056      |

Correlation is significant at the 0.01 level (2-tailed).

correlation between financial leverage and assets-in-place variables may affect the regression analysis result, the regression models are run several times as follows:

- A- Size is logarithm of total asset and all other independent variables.
- B- Size is logarithm of issued capital and all other independent variables.
- C- Size is logarithm of total asset and all other independent variables except financial leverage variables.
- D- Size is logarithm of total asset and all other independent variables except assets-in-place variables.
- E- Size is logarithm of issued capital and all other independent variables except financial leverage variables.
- F- Size is logarithm of issued capital and all other independent variables except assets-in-place variables.

### **Empirical Results**

Due to Pearson correlation results, an additional four models (models C, D, E, and F) are tested to determine if the high correlation between financial leverage and assets-in-place variables affect the study results. Such a procedure was extensively used in prior empirical studies (e. g. Street and

Gray, 2002; Aitken *et al.*, 1997; Mitchell *et al.*, 1995; Mckinnon and Dalimunthe, 1993).

Multiple regression results are shown in Appendix (2). Each model contains one size variable (assets or capital) and one or both of leverage and assets-in-place variables. Appendix (2) shows that each of the six models is significant at  $p \leq 0.001$ . F ratio is useful as a test of statistical significance for the model as a whole and provides information about the ability of the independent variables to predict the dependent variable.

The logarithm total asset variable does not have a significant relationship with the level of segment disclosure in any model that contains this variable. The logarithm of issued capital has a positive significant relationship with the level of segment disclosure in all models that contain this variable (models B, E, and F) at the 0.05 level. Accordingly the first hypothesis (H1) is accepted by using issued capital for measuring the size variable. This result is consistent with all prior related studies (e. g. Prencipe, 2004; Kevin and Zain, 2001; Aitken *et al.*, 1997).

The ownership diffusion variable is confirmed to be negatively related to the extent of segment disclosure, with a coefficient that is significant at the 0.01 level in all models. This

result indicates that the high ownership diffusion (high percentage of small shareholders who are not directly involved in the management of the company) leads to reduction in the level of segment reporting. Therefore, this result is in accord with hypothesis 4 (H4) and with prior related studies (Prencipe, 2004; Leuz, 1999; Sadaa, 1998; Mckinnon and Dalimunthe, 1993), but the direction of the relationship is inconsistent from H4 and prior literature.

This result reveals that when the ownership of Jordanian companies is concentrated in the hands of a few shareholders, the management will prevent or limit the additional information (e. g. segment information) which allows shareholders to better assess the risk/return profit and growth prospects of the firm as a whole. This result is in contradiction with sub-section 5.2.4 and the viewpoint of management in other countries (e. g. France, German, Italy, Malaysia and Australia).

Financial leverage is found to be insignificantly related to the extent of segment reporting in all models except model D (when assets-in-place was excluded and total assets included instead of an issued capital variable). Therefore, hypothesis 2 (H2) is not accepted. This result coincides with Mckinnon and Dalimunthe (1993)

study and enhances Kevin and Zain (2001) viewpoint concerning the concerns of creditors, shareholders, and investors about the firm's ability to pay back the debt. Other studies (e. g. Prencipe, 2004; Giner *et al*, 1997) found a significant relationship; segment information reduces agency costs and allows the debt holder to make more accurate assessments about the company's growth, risk and return.

Assets-In-Place (AIP) variable is shown to be positively related to the extent of segment disclosure at 1% and 5% in model C and E respectively, and moderate significant relationship at level 10% in models A and B (AIP was excluded in models D and F). When the regression analysis is run by using the stepwise statistical method instead of enter method, all significant relationships are at 5% level. This result is consistent with hypothesis 3 (H3) and prior studies in terms of the existing relationship. However, it contrasts with H3 and some prior studies for the direction of the relationship being positive.

Thus, when a company has a high percentage of AIP (the company has a high portion of property, plant and equipment assets related to total assets) there is an association with increases in the levels of segment information. This positive relation-

ship could be justified because in order to convey a good financial position and gain more user confidence in the firm's performance, a firm will normally make a detailed disclosure.

The relationship between a volatility variable and the extent of segment reporting disclosure is insignificant in all six models. Therefore, hypothesis 5 is rejected. Thus, the result supports prior research.

## Conclusion

This study was motivated by several factors. There is no clear empirical research which tests the importance of underlying determinants that affect segment disclosure. Moreover, no Jordanian studies have measured the level of this disclosure in all of the listed companies in ASE.

The study has found some explanatory factors that are related to the level of segment disclosure in different directions. This conclusion is supported by prior studies such as Tan and Ngan, (1990); Bradbury (1992); Mckinnon and Dalimunthe (1993); Mitchell *et al.* (1995); Aitken *et al.* (1997); Kevin and Zain (2001); and Prencipe (2004).

The study has shown that the overall average level of segment disclosure information presented by Jordanian companies is 40.5%. The study has indicated that companies that have

disclosed segmental information are larger, have less ownership diffusion, and more Assets-in-Place percentage. The study has found that earnings volatility and financial leverage variables are not related to the level of segment disclosure.

The results show that the mean level of segment disclosure for all companies is less than half. Only three of the eight items are disclosed, which indicates the low level of segment disclosure in Jordanian companies. This finding provides some implications for preparers of financial information, auditors, and the Jordanian Securities Commission (JSC). The preparers of financial information pay too little attention to disclosure of segment information. The auditor should encourage the preparer of financial information to present sufficient disclosure. Finally, the JSC, who review the annual financial statements presented by the listed companies, have to ensure and enforce the listed companies to present all required segment information to improve the quality of financial information and to provide detailed information available to investors, so as to raise investors' confidence, and the credibility of external financial reporting.

**Appendix 1**  
**List of Companies in the Study Sample**

| <b>CODE</b> | <b>REUTERS CODE</b> | <b>Comp. Short Name</b> |
|-------------|---------------------|-------------------------|
| 111001      | JOIB                | JOR ISLAMIC BANK        |
| 111002      | JOKB                | JOR KUWAIT BANK         |
| 111003      | JOGB                | JCBANK                  |
| 111004      | THBK                | HOUSING BK TRD F        |
| 111006      | INDV                | INDSTRL DEV BANK        |
| 111007      | UBSI                | UNION BK SAV/INV        |
| 111009      | ABCO                | ARAB BANKING CO.        |
| 111014      | JIFB                | JOR INV FIN BANK        |
| 111021      | CABK                | CAIRO AMMAN BANK        |
| 111022      | BOJX                | BANK OF JORDAN          |
| 111033      | JONB                | JORDAN AHLI BANK        |
| 113023      | ARBK                | ARAB BANK               |
| 121002      | MEIN                | MIDDLE EAST INS         |
| 121004      | JOIN                | JORDAN INSURANCE        |
| 121005      | GARI                | GENERAL ARAB INS        |
| 121006      | DICL                | DELTA INS               |
| 121007      | JERY                | JERUSALEM INS           |
| 121008      | UNIN                | UNITED INSURANCE        |
| 121009      | JOFR                | JOR FRENCH INS          |
| 121010      | HOLI                | HOLY LAND INS           |
| 121012      | GERA                | GERASA INSURANCE        |
| 121013      | ARSI                | ARABIAN SEAS INS        |
| 121014      | AALI                | ARAB ORIENT INS         |
| 121018      | PHIN                | PHILADELPHIA INS        |
| 121020      | AIUI                | ARAB INT UNI INS        |
| 121021      | NAAI                | NATL AHLIA INS          |
| 121022      | JIJC                | JOR INT INSUR CO        |
| 121023      | AMMI                | EURA ARAB INS.          |
| 121024      | AGICC               | ARAB GERMAN INS         |
| 121025      | TIIC                | ISLAMIC INSUR CO        |
| 121026      | ARAS                | ARAB ASSURERS           |
| 121031      | ARAI                | ARAB AMRCAN.INS         |
| 131002      | ABMS                | AL-BELAD MED SRV        |
| 131012      | SHIP                | SHIPPING LINE           |
| 131014      | HIMM                | HIMMEH MINERALS         |
| 131030      | JOPP                | JOR PRESS/ PUBLI        |
| 131039      | JOIT                | JOR INV TRUST           |

**Cont. Appendix 1**  
**List of Companies in the Study Sample**

| <b>CODE</b> | <b>REUTERS CODE</b> | <b>Comp. Short Name</b> |
|-------------|---------------------|-------------------------|
| 131067      | ZARA                | ZARA INVESTMENTS        |
| 131073      | ULDC                | UNION LAND DEV          |
| 131076      | JNTH                | TAJCATERINGHOUSI        |
| 131077      | SPIC                | SPCZ.INVST.COMD         |
| 131078      | AIPC                | AL SHARQ INV            |
| 131079      | UAIC                | UNI ARAB INVEST         |
| 131092      | ARED                | ARAB REAL EST           |
| 131093      | ITSC                | ITTIHAD SCHOOLS         |
| 131096      | JOCE                | JORDAN CENTRAL          |
| 131206      | JTEL                | JORDAN TELECOM          |
| 131208      | NAQL                | TRANSPORT BARTER        |
| 131211      | JPTD                | JOR PROJ TOUR DE        |
| 131217      | IEAI                | INVEST ESTATE IN        |
| 141002      | JPPC                | JORDAN POUL PROC        |
| 141003      | APCT                | ARAB INVEST PROJ        |
| 141004      | JODA                | JORDAN DAIRY            |
| 141006      | AALU                | ARAB ALUM IND           |
| 141011      | NAST                | NATIONAL STEEL          |
| 141012      | DADI                | DAR ALDAWA DV/IV        |
| 141013      | IPET                | ITERMED/PETR/CH         |
| 141014      | JOWM                | JOR WORSTED MILL        |
| 141015      | JOCF                | JOR CERAMIC FAC         |
| 141018      | JOPH                | JOR PHOSPHATE MN        |
| 141020      | JOTN                | JORDAN TANNING          |
| 141042      | JOCM                | JOR CEMENT FACT         |
| 141043      | APOT                | ARAB POTASH CO          |
| 141045      | JOWL                | JOR ROCK WOOLID         |
| 141054      | NATC                | NAT CHLORINE            |
| 141084      | NATP                | NAT'L POULTRY           |
| 141097      | MECE                | MID EASTCOMPLEX         |
| 141103      | NAPT                | NATONAL PETROLM         |
| 141117      | INTI                | INV & INTEG INDU        |
| 142041      | JOPT                | JOR PETROLM REF         |

## Appendix 2

### Multiple Regression Results

| Model statistics | Model A    |       |        | Model B    |       |        | Model C    |       |        | Model D    |       |        | Model E    |       |        | Model F    |       |        |
|------------------|------------|-------|--------|------------|-------|--------|------------|-------|--------|------------|-------|--------|------------|-------|--------|------------|-------|--------|
|                  | Coeff. (B) | t     | Sig.-t | Coeff. (B) | T     | Sig.-t | Coeff. (B) | t     | Sig.-t | Coeff. (B) | t     | Sig.-t | Coeff. (B) | t     | Sig.-t | Coeff. (B) | T     | Sig.-t |
| (Constant)       | 0.16       | 0.68  | 0.50   | -0.26      | -0.83 | 0.41   | 0.22       | 1.05  | 0.30   | 0.34       | 1.59  | 0.12   | -0.19      | -0.64 | 0.52   | -0.15      | -0.49 | 0.62   |
| LnTotAss         | 0.02       | 1.57  | 0.12   | N/A        | N/A   | N/A    | 0.02       | 1.50  | 0.14   | 0.01       | 0.83  | 0.41   | N/A        | N/A   | N/A    | N/A        | N/A   | N/A    |
| LnIssCap         | N/A        | N/A   | N/A    | 0.05       | 2.52  | 0.01   | N/A        | N/A   | N/A    | N/A        | N/A   | N/A    | 0.04       | 2.45  | 0.02   | 0.04       | 2.17  | 0.03   |
| Leverage         | -0.05      | -0.58 | 0.56   | -0.05      | -0.69 | 0.49   | N/A        | N/A   | N/A    | 0.08       | 2.14  | 0.04   | N/A        | N/A   | N/A    | 0.05       | 1.44  | 0.15   |
| AIP              | 0.08       | 1.68  | 0.10   | 0.06       | 1.63  | 0.11   | 0.05       | 2.70  | 0.01   | N/A        | N/A   | N/A    | 0.04       | 2.09  | 0.04   | N/A        | N/A   | N/A    |
| Diffusion        | -0.32      | -2.71 | 0.01   | -0.30      | -2.67 | 0.01   | -0.31      | -2.68 | 0.01   | -0.32      | -2.67 | 0.01   | -0.30      | -2.68 | 0.01   | -0.32      | -2.82 | 0.01   |
| Volatility       | 0.00       | 0.23  | 0.82   | 0.00       | 0.31  | 0.76   | 0.00       | 0.19  | 0.85   | 0.00       | 0.12  | 0.91   | 0.00       | 0.27  | 0.79   | 0.00       | 0.23  | 0.82   |
| R Square         | 0.23       |       |        | 0.27       |       |        | 0.22       |       |        | 0.19       |       |        | 0.26       |       |        | 0.24       |       |        |
| F-Statistics     | 3.75       |       |        | 4.71       |       |        | 4.65       |       |        | 3.87       |       |        | 5.82       |       |        | 5.10       |       |        |
| F-Sig.           | 0.00       |       |        | 0.00       |       |        | 0.00       |       |        | 0.01       |       |        | 0.00       |       |        | 0.00       |       |        |

LnTotAss: Logarithm Total Assets

LnIssCap: Logarithm Issued Capital

Leverage: Financial Leverage

AIP: Assets In Place

Diffusion: Ownership Diffusion

Volatility: Earnings Volatility

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## الملخص

### التقارير القطاعية بالشركات الأردنية

مجدي عيسى زريقات  
الجامعة الألمانية الأردنية

جمال عبدالرحمن أبو سردانة  
جامعة العلوم التطبيقية

تهدف هذه الدراسة إلى قياس مدى استخدام التقارير القطاعية، والتعرف إلى العوامل التي تؤثر على استخدام التقارير القطاعية بالشركات الأردنية المدرجة في سوق عمان المالي. ولتحقيق هذه الأهداف تم إجراء تحليل للقوائم المالية لسبعين شركة مساهمة عامة. وأظهرت النتائج أن متوسط الإفصاح عن البيانات القطاعية أقل من النصف، مما يعني عدم كفاية هذا النوع من الإفصاح لدى الشركات الأردنية المدرجة بسوق عمان المالي. وهذه النتيجة تستلزم المراجعة واتخاذ القرارات اللازمة من قبل معدي البيانات المالية والمدققين وهيئة الأوراق المالية الأردنية. كما بينت الدراسة أن الشركات التي تستخدم المعلومات القطاعية تكون أكبر حجماً، وملكيته أقل انتشاراً، ونسبة الأصول القائمة فيها تكون أكبر. كما أظهرت الدراسة أن نسبة الرفع المالي وتذبذب الأرباح ليس لها تأثير على مدى الإفصاح عن المعلومات القطاعية في الأردن.

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