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Industry Type and Accounting Numbers Relevance: The Case of Jordan

***Dhiaa Shamki*[1]**
***Hasan Mohammed Bamahros*[2]**

[1]Managerial and Financial Sciences Department, AL Zahra College for Women, Muscat, Sultanate of Oman
[2]School of Accountancy, College of Business, University Utara Malaysia, Kedah, Malaysia and University of Aden
(✉ Corresponding Author)

Abstract

The paper examines the impact of industry type on the accounting numbers relevance regarding three measures for security price known as average security price, closing security price and after three months security price for Jordanian service and manufacturing sectors within 2004-2013. Three regression models are used with and without control variables. The outcomes of the pooled sample are used in evaluating our hypotheses to reveal which security price is the most dependable. Influenced by the industry type, the relevance of book value regarding the three security measures and that of earnings regarding closing security price are greater in services sector than that in manufacturing sector. Cash flows are irrelevant regarding the three security measures. Our results reveal that closing security price is the most dependable in detecting the value relevance of the accounting numbers. Taking our findings in consideration could enable market participants to better extract the firm's value through the type of industry that they invest in. Our conclusions regarding the importance of book value is supported by many studies making it being new evidence related to Jordan as one of the Middle Eastern region.

Keywords: Earnings, Book value, Cash flows, Security price, Services sector, Manufacturing sector, Jordan.

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1. Introduction

In the valuation research, testing the association between accounting numbers and security price is a basis in determining the accounting numbers relevance. To extend the research, employing different accounting variables and security price measurements is required. This extension also might be touched through indicating whether or not this association is impacted by the non-accounting variables such as industry type.

Does industry type impact the accounting numbers relevance? To answer this question, a deep understanding to indicate whether different industries could provide different levels of financial information is required. Since companies operate within different types of industry, they might announce different financial disclosure levels for the same item as such is the firm value. In the literature, a lot of papers have investigated the accounting numbers relevance such as earnings, book value or cash flows in services and manufacturing companies and provided mixed results, while limited studies have investigated the impact of the industry type on those accounting variables relevance. Since no study on the impact of industry type on earnings, book value and cash flows relevance has been found particularly in Jordan, the present study attempts to examine whether listing a company in Jordanian services or manufacturing sector has affected the relevance of its accounting numbers within the selected period and regarding to the three aforementioned security price measures. The paper also objects to distinguish which among the three security price measures could be the most dependable in reflecting the relevance of those accounting numbers. Regarding the valuation research in Jordan, the current paper adds new empirical evidence to find how the accounting numbers relevance varies according to different financial markets and economic sectors. Considering that the impact of industry type on the relevance of earnings, book value and cash flows is rarely examined in literature, this paper attempts to fill this gap by adding new evidence and assist investors by providing them the relevant information related the industry type that they can invest in.

2. Literature on Value Relevance and Industry Type

In a country, information disclosure practices could vary according to the industry nature and importance (Owusu-Ansah, 1998). This might explain why some accounting standards are specified or more common for some industry types (Gallary *et al.*, 2008). In literature, many studies found a positive and significant impact for industry type on the disclosure level in service sectors (Street and Gray, 2001; Gallary *et al.*, 2008) while no clear or significant impact has been found in other studies (Street and Bryant, 2000; Glaum and Street, 2003).

Definitely, different industries provide different levels of financial information. This is due to that each industry has its own characteristics in terms of growth, competition and risks. A difference in these characteristics will result in differences in disclosure policies among companies (Dye and Sridhar, 1995). Bartram (2007) showed that industry classification is an important factor in determining the relationship between earnings and cash flows, and stock prices. Furthermore, recent findings by Malaysian studies show the association between industry type and earnings management is significantly negatively associated (Bamahros and Wan-Hussin, 2015a;2015b). Relative to valuation research, prior studies have concluded that the accounting numbers are value relevant in manufacturing business (Harris *et al.*, 1994; Vardavaki and Mylonakis, 2007; Gee-Jung, 2009) while they are irrelevant or having declined value relevance in this sector (Francis and Schipper, 1999; Shamki and Abdul Rahman, 2011). Other value relevance studies have concluded that the accounting numbers are value relevant in services sector (Harris *et al.*, 1994; Ely and Waymire, 1999; Dastgir and Velashani, 2008; Gee-Jung, 2009; Shamki and Abdul Rahman, 2011) while they are irrelevant or declined in their relevance in this sector (Amir and Lev, 1996; Bao and Bao, 2001). The all mentioned studies have examined the accounting numbers relevance in different sectors, while the impact of industry type on this relevance has been examined in limited papers such as (Abayadeera, 2010). Abayadeera (2010) tested the impact of industry type on the earnings and book value relevance for Australian companies. Her sample included 91 companies from different sectors including different medical, technological and communication services. She argued that manufacturing sector has affected only the value relevance of book value, while services sector has affected those of both book value and earnings. Since the accounting numbers are positively or negatively associated with security price in different industry types, we expect to find a significant impact for industry type on earnings, book value and cash flows relevance in Jordan. Due to the rare in studies on this area and the mixed results in the previous studies, it is difficult to predict which sector more impacts the accounting numbers relevance. We measure industry type by differentiating the manufacturing and services companies. While the relationship between accounting numbers and security price can be explained by the valuation theory, it is beneficial to include different accounting numbers and security price measurements in the price model. To indicate whether this relationship could be impacted by industry type, a better understanding of firms' economic activities is required. Theoretically, firms' economic activities types have been studied by business entity approach. This approach is used in classifying firms based on their economic activities types (American Accounting Association (AAA), 1964; Holmes and Stevens, 2004; Office for National Statistics (ONS), 2009). According to AAA (1964) a business entity is an enterprise unit that is organized to achieve specified express or implied purposes. Profit objectives, goods and services acquisition, transferring these acquisitions and delivering the resulted outputs to the market are the usual activities of an entity.

Entity's accounting includes accumulating information about this area and communicating this information to the interested parties. In most stock markets, companies have been classified based on their economic activity structure. This classification includes sectors and products. It can be sub-classified to cover the different economic activities such as distribution, transportation and services (ONS, 2009). Classifying country's companies according to their economic activities forms an important step in building tools to obtain information that can assist in performing the economic activities statistical analyses. Relative to business entity theory and according to Amman Stock Exchange (ASE) activities classifications, Jordanian manufacturing and services sectors include companies under different activities as stated in Table 1. According to business entity approach, the entity concept is essential to accounting. In accounting, the role of the financial reports that are interested in business entities and their activities is to distinguish the information that is relevant and the information that is not (AAA, 1964). It is clear that the business entity

approach is related to the relevant information of the financial reports. Since the business entity theory plays a real role in distinguishing the relevant accounting numbers and then the firm value, this is of interest to indicate company's industry type in the market. To test the impact of industry type on the earnings, book value and cash flows relevance, linking the business entity theory with the valuation theory is relevant to be adopted in this paper.

Table-1. Companies regarding their activities in ASE

Service Sector	Manufacturing Sector
• Health Care Services • Educational Services • Hotels and Tourism • Transportation • Technology and Communications Media • Media • Utilities and Energy • Commercial Services • Financial services	• Chemical products • Electrical products • Engineering and Construction • Food and Beverage • Glass and Ceramic products • Extraction and Mining products • Cartoon and Paper products • Medical and Pharmaceutical products • Printing and Packaging • Textile, Leather and Clothing • Tobacco and Cigarettes

Resource: Jordan Securities Commission (JSC) (2014).

As company's size plays an important role regarding accounting numbers availability and companies are considered to be highly leveraged when they are financed via debts, companies size and leverage have to be controlled when investigating the relevance of their accounting numbers. Following Shamki (2013) and Shamki and Abdul Rahman (2013) we measure companies size by the logarithm of total assets and their leverage by debt to total assets ratio. Industry type with three accounting variables namely earnings, book value of equity and operating cash flows are linked to three different measures for security price after controlling company's size and leverage and diagramed as our framework in Figure 1.

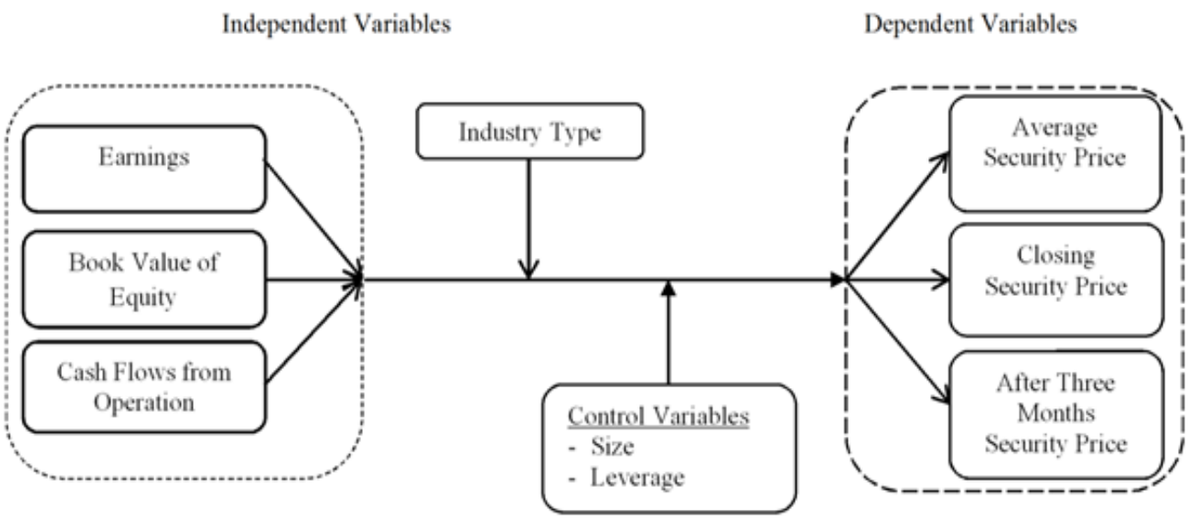

Figure-1. Conceptual Framework

3. Jordanian Accounting Environment

Several reasons have been taken in consideration when choosing Jordanian companies as our sample. Since Jordan has long period stability in accounting policies and practices (Jordan Central Bank, 2013) which might increase the reliability of the results, the current paper adds confident evidence to the valuation research in this country. This paper enriches the limited studies on accounting disclosure in ASE and its results might cover the needs of financial statements users regarding the accounting numbers that are influenced by the changeable economic and technologies. Many important economic developments have been occurred in ASE within 2004-2013. In million Jordanian dinars, the market capitalization has grew from 13033.8 to 18233.5, value traded revolves between 3793.2 and 3027.3, average daily trading between 15.4 and 12.4, number of transactions between 1178.1 and 1074.4 (thousand) and the number of companies grew up from 192 to 240 (JSC, 2014). ASE services and manufacturing sectors frequency and percentage within the researched period are summarized in Table 2.

As shown in Table 2 and according to ASE annual reports, while ASE listed 2 new companies, 32 companies has been delisted in 2011from this market as a result of the amendment of listing securities directives in ASE, which resulted in delisting the shares of companies subjected to mandatory liquidation upon a court sentence, and the companies whose general assemblies have approved the acceptance of its voluntary liquidation, in addition to delisting the companies that were suspended from trading for a period that exceeded two years. One-third of Jordan's rapid economic growth is addressed to the manufacturing sector indicating that this sector plays a major role in Jordanian economy. This might explain how the gross domestic product growth of 35% in the 1970s has doubled in the last two decades.

Table-2. Research Populations' Frequency and Percentage in ASE

Yrs.	Total number in ASE 1	SRV		MNF		SRV and MNF	
		No. 2	% 3 (2/1)	No. 4	% 5 (4/1)	No. 6 (2+4)	% 7 (6/1)
2004	192	66	34	84	44	150	78
2005	201	73	36	87	43	160	79
2006	227	95	42	88	39	183	81
2007	245	110	45	90	37	200	82
2008	262	121	46	96	37	217	83
2009	272	129	47	95	35	224	82
2010	277	133	48	96	35	229	83
2011	247	118	48	80	32	198	80
2012	243	115	47	69	28	184	75
2013	240	114	48	68	28	182	76

Resources: Annual Reports of ASE and JSC for 2004 to 2013
SRV: Services Companies.
MNF: Manufacturing Companies.

Despite this growth, services sector's stock was even higher than that of manufacturing sector due to the increased activity in the real estate market (Alakra *et al.*, 2009).

4. Hypothesis Development and Models

The paper attempts to determine whether the earnings, book value and cash flows relevance has been impacted by the industry type and which security price among its three selected measures could be the dependable one in presenting this value. In Jordan, services sector is larger in number of companies Table 2 and total shareholders' equity and greater in total number of shares traded and their values than those manufacturing sector (Amman Stocks Exchange (ASE), 2010). Therefore, the paper hypothesizes the impact of industry type on accounting numbers relevance as:

H1: Earnings, book value and cash flows relative to average security price are more relevant in services than in manufacturing companies.
H2: Earnings, book value and cash flows relative to closing security price are more relevant in services than in manufacturing companies.
H3: Earnings, book value and cash flows relative to after three months security price are more relevant in services than in manufacturing companies.

Examining the association between accounting numbers and market values of equity such as security price is the main objective of value relevance research. this association is typically examined using regression analysis. The price valuation models are used to regress security price on accounting numbers in value relevance literature (Ely and Waymire, 1999; Francis and Schipper, 1999; Shamki and Abdul Rahman, 2013). As done by previous value relevance studies, this study examined (1) how accounting variables affect security price, (2) how accounting numbers are significantly related to security price or (3) how much the variance in security price can be explained by the selected accounting numbers to indicate the value relevance of those numbers (Ely and Waymire, 1999; Francis and Schipper, 1999; Bao and Bao, 2001; Vardavaki and Mylonakis, 2007; Dastgir and Velashani, 2008; Gee-Jung, 2009; Shamki and Abdul Rahman, 2011; Shamki, 2013; Shamki and Abdul Rahman, 2013). The significant level of individual coefficient of price regression model can address the first and second questions, while by having a look at betas values, one can immediately notice which accounting numbers explains more the variation in the security price. In order to test the impact of industry type on the earnings, book value and cash flows relevance, we categorized our companies based on whether they are in services or manufacturing sectors. Since Abayadeera (2010) interacted industry type with earnings and book value to capture its impact on these accounting variables relevance, the paper extends her study to include cash flows. Regarding the three security price measures, our models with and without control variables are:

$$AP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + e \quad (1a)$$

$$AP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + \mu_8 SIZ + \mu_9 LVG + e \quad (1b)$$

$$CP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + e \quad (2a)$$

$$CP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + \mu_8 SIZ + \mu_9 LVG + e \quad (2b)$$

$$ATMP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + e \quad (3a)$$

$$ATMP = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E{*}IND + \mu_4 BV + \mu_5 BV{*}IND + \mu_6 CF + \mu_7 CF{*}IND + \mu_8 SIZ + \mu_9 LVG + e \quad (3b)$$

Where for a company at a year:
AP: average annual security price; *CP*: annual closing security price; or *ATMP*: security price after a three-month period following the financial year-end.
IND: Industry type as a dummy variable with value 1 for services companies, 0 otherwise.
E: earnings per share.
BV: book value of equity per share.
CF: cash flows from operation per share.
SIZ: log of total assets.

LVG: ratio of debt to total assets.
e: error term.

Coefficients μ_1 represent the industry type relevance in its own right. Excluding industry type impact, coefficients μ_2, μ_4 and μ_6 point to the earnings, book value and cash flows relevance respectively, while coefficients $\mu_2 + \mu_3$, $\mu_4 + \mu_5$ and $\mu_6 + \mu_7$ represent the response of security price to those accounting variables impacted by industry type respectively. The paper hypothesized the impact of this factor as $\mu_3 > 0$, $\mu_5 > 0$, and $\mu_7 > 0$. The differences in our models outcomes regarding the three price measures revealing which measure is the best to be depended on when determining accounting numbers relevance. Since there are limited studies that examined the impact of industry type on the accounting numbers relevance, a weak comparison could be made and needs to be more supported by future research. Following Abayadeera (2010); Shamki (2013) and Shamki and Abdul Rahman (2013) the paper depends on its regression models outcomes for the pooled sample in evaluating its hypotheses.

5. Findings and Discussion

Since the current paper deals with financial statements and ASE data, our sample companies have to be registered in ASE within the selected period ignoring data related to companies that registered after 2004 or those with incomplete information regarding study's variables. We gathered our historical data from the annual financial statements and ASE database for companies correspond to services and manufacturing sectors for the years from 2004 to 2013. Since limited financial information could be presented by banking compared with services and manufacturing sectors, banks has been excluded from our sample due to the specific accounting practices nature and it is controlled by specific regulations. The paper tested 87 of ASE companies including 38 companies related to services sector and 49 ones related to manufacturing sector for the selected ten years period with total observations of 7830 (87 companies * 9 variables * 10 years). The raw data and variables quality are tested and some variables show a non-normal distribution which leads to miss some observations regarding earnings and cash flows within transformation process. Standard deviation values are well below 3 indicating the absence of outliers that are significantly affected the results. Finally, as all skewness and kurtosis values are within ± 2, no violation has been detected for regression assumptions that might influence our analysis.

Table-3. Descriptive statistics

Panel A		**AP**	**CP**	**ATMP**	**E**	**BV**	**CF**
N	Valid	870	870	870	633	866	553
	Missing	0	0	0	273	4	317
Mean		-.3989	-.3722	-.3878	-.8975	-.1723	-.7568
Median		-.3665	-.3394	-.3375	-.8693	-.1386	-.7003
Std. Deviation		.33713	.35824	.35691	.50301	.22389	.55311
Skewness		.511	.352	.497	-.036	.604	-1.147
Kurtosis		.439	.667	.708	.138	3.143	5.677
Minimum		-.49	-.87	-.51	-1.59	-.91	-4.29
Maximum		1.45	1.47	1.79	.53	1.05	.78

Panal B(cont)		**IND**	**SIZ**	**LVG**
N	Valid	870	870	870
	Missing	0	0	0
Mean		.41	7.2988	.3140
Median		.00	7.2510	.2812
Std. Deviation		.513	.56887	.20383
Skewness		.311	.463	.914
Kurtosis		-1.935	.212	.653
Minimum		0	5.83	.00
Maximum		1	8.81	1.03

All variables are previously defined.

For the pooled sample, Table 4 reveals our regression models outcomes including and excluding the control variables regarding the three security measures. Without control variables and relative to those measures, the table shows that industry type factor is irrelevant in its own right reflected by the insignificant coefficient (μ_1), while earnings, book value and cash flows are relevant as reflected by μ_2, μ_4 and μ_6 (significant at 0.01 level) respectively demonstrating their value relevance in the absence of the impact of the industry type. For earnings and only regarding closing security price, industry type factor shows significant positive impact reflected by (μ_3). In services companies, closing security price responded to earnings and its reaction increased from 0.53 (μ_2) to 0.72 ($\mu_2 + \mu_3$) with the impact of industry type factor. This result is supported by what Abayadeera (2010) has found. Average and after three months security price measures didn't respond to earnings when the impact of this factor has been included as reflected by the insignificant coefficient (μ_3). This result is inconsistent with that from Abayadeera (2010) who concluded significant impact for this factor on earnings relevance. This result is inconsistent with other studies that found earnings to be value relevant in the services sector (Harris *et al.*, 1994; Ely and Waymire, 1999; Francis and Schipper, 1999; Bao and Bao, 2001; Vardavaki and Mylonakis, 2007; Dastgir and Velashani, 2008).

For the three security price measures, industry type factor appears to have significant positive impact on the book value relevance reflected via the significant positive coefficients (μ_5). Average security price, closing security price and after three months security price reactions to book value went up from 0.59 (μ_4) to 0.86 ($\mu_4 + \mu_5$), 0.60 to 0.88 and from 0.56 to 0.85 respectively in the presence of the effect of industry type.

Table-4. Industry type and Earnings, Book Value and Cash Flows Relevance

$P = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E*IND + \mu_4 BV + \mu_5 BV*IND + \mu_6 CF + \mu_7 CF*IND + e$

$P = \mu_0 + \mu_1 IND + \mu_2 E + \mu_3 E*IND + \mu_4 BV + \mu_5 BV*IND + \mu_6 CF + \mu_7 CF*IND + \mu_8 SIZ + \mu_9 LVG + e$

P measure / Statistics	AP		CP		ATMP	
	Without CVs	With CVs	Without CVs	With CVs	Without CVs	With CVs
μ_1	0.15	0.09	0.21	0.17	-0.02	-0.08
t-test	1.45	0.71	1.45	1.23	-0.09	-0.49
μ_2	0.49	0.44	0.53	0.50	0.36	0.31
t-test	11.12 ***	10.30 ***	12.19 ***	11.43 ***	7.63 ***	6.52 ***
μ_3	0.13	0.14	0.19	0.19	-0.03	-0.02
t-test	1.39	1.51	1.82 *	1.94*	-0.21	-0.13
μ_4	0.59	0.61	0.60	0.61	0.56	0.55
t-test	15.76 ***	15.21 ***	15.95 ***	15.51 ***	14.37 ***	13.57 ***
μ_5	0.27	0.24	0.28	0.24	0.29	0.28
t-test	3.05 ***	2.87 ***	3.04 ***	2.89 ***	3.23 ***	3.28 ***
μ_6	0.23	0.22	0.24	0.28	0.23	0.22
t-test	4.92 ***	4.89 ***	5.73 ***	5.99***	4.74 ***	4.89 ***
μ_7	0.02	0.05	0.03	0.05	0.06	0.10
t-test	0.39	0.79	0.39	0.88	0.97	1.47
μ_8		0.08		0.04		0.17
t-test		1.61		0.63		3.42 ***
μ_9		0.07		0.06		0.03
t-test		1.43		1.27		0.51
Adj. R^2	0.63	0.64	0.65	0.66	0.63	0.65
F	44.91 ***	41.83 ***	44.74 ***	40.89 ***	42.02 ***	41.13 ***

Notes: *, ** and *** Significant at 10%, 5% and 1% levels.
All variables are previously defined.

This result is supported by Abayadeera (2010) and it is consistent with previous studies that found book value to be relevant in services sector (Ely and Waymire, 1999; Dastgir and Velashani, 2008; Gee-Jung, 2009) while it is inconsistent with the study of Amir and Lev (1996). Regarding the three price measures, the interaction terms coefficients (μ_7) are insignificant reveals that industry type factor has no impact on cash flows relevance and the three price measures did not respond to cash flows when the impact of this factor is included. This result is inconsistent with Gee-Jung (2009). Since our hypotheses assumed that the industry type impacts the accounting numbers relevance, the results came out of expectations for both earnings and cash flows. These results might be explained by that regardless to the industry type effect, Jordanian investors, like others anywhere, direct their investments relying on brokers who might not be able to fully extract the relevant information (Francis and Schipper, 1999). Also, these results might be related to the characteristics of each industry where services companies have more growth, competition, and then risks than manufacturing business. This leads the former to disclose more relevant information to reflect the variance in their security prices (Dye and Sridhar, 1995). Referring to business entity approach and the valuation theory, in the absence of earnings relevance their reliability is reduced or lacked.

As stated in Table 4, the earnings, book value and cash flows relevance regarding closing security price is greater than that regarding other security price measures when the impact of industry type is not included. Including this impact, closing security price responded more to earnings and book value than the other two security price measures in terms of coefficients and significance levels. Making a comparison among the results through the three security price measures in terms of coefficients significance and models' adjusted R^2 reveals that closing security price is the most dependable in reflecting the accounting numbers relevance. After a deep searching, no study on the superiority among the selected security price measures has been found in literature which making results comparison seems to be unavailable. Table 4 points out that including company's size and leverage in our regression models fortify their adjusted R^2 and the interaction terms' importance and significance remain the same. The *adjusted* R^2 values are slightly increased and this increase is strongly ascribed to the involvement of the control variables.

6. Conclusions and Future Research

The paper concluded that, for the three security prices, earnings, book value and cash flows are relevant regardless the impact of industry type factor. Including this impact influenced the book value relevance but not that of cash flows. Regarding closing price, earnings and book value are more relevant in services companies than in manufacturing ones. Therefore, we concluded that among the three prices measures, closing security price is the best in detecting the accounting numbers relevance. Hence, we adopted our three hypotheses for book value but not for cash flows, while earnings correspond to H2 only. As this paper contributes in providing evidence referring to the impact of industry type on the accounting numbers relevance, our findings imply the potential error in valuation literature due to fixation on earnings. The results of this paper reveal that there is a shift away from earnings towards book value as the basis in firm valuation. Taking our findings in consideration could enable market participants to better extract the firm's value through the type of industry that they invest in. Also, the paper contributes to the literature by adopting data from Jordan as a developing country and concluding findings similar to that from US, UK and other developed countries could generalize them to different markets. Our models might present a tool to whether or not we could predict firms value through their accounting numbers or the industry that they are belong to and distinguishing the measure for security price that is the best to be adopted in the valuation models. Our paper could serve as a primary fundamental to assess the financial statements quality. Earnings are the figure that financial analysis courses concentrated on and the one that valuation models mainly used. Our conclusions regarding the importance of book value is supported by many studies which making it being a new evidence related to Jordan as one of the Middle Eastern region. Book value shows significant positive association with our three selected measures

for security price bringing in the light that the integrity in accounting information is significantly correlated to information usefulness to interest parties in stock market.

The limited number of companies sample and their observations, that is considered as paper's limitations, are dealt by evaluating the pooled data. However, as long as this research employed precision analyses to accomplish its objectives, the paper's value has not been underestimated and its importance and usefulness have not been questioned. For the previously mentioned reasons, the completeness of the gathered data limited the research period. Therefore, future studies are encouraged to extend testing period and companies' sample size to capture the effect of this extension on the value relevance trend and determining whether it could moderate the results reliability. Also, researchers are invited to generalize our findings by investigating the impact of industry type in many markets across the world.

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