“Determinants of profitability in Jordanian services companies”

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DETERMINANTS OF PROFITABILITY IN JORDANIAN SERVICES COMPANIES

Abstract

Due to the uniqueness of the services sector in terms of its characteristics and profitability, as well as the lack of studies on this sector, this study is considered to be the first to improve the knowledge of the key factors that play an important role in the profitability of the Jordanian services sector. This study investigates the effect of financial characteristics and capital structure on the profitability of all 46 services companies listed on the Amman Stock Exchange over the period 2014–2018. This study applies fixed and random effects models to panel data variables, namely, size, tangible assets, growth, business risk, debt to equity ratio and debt to assets ratio as independent variables. At the same time, profitability was measured by operating profits (earnings before interest and tax divided by total assets), return on assets (ROA), and return on equity (ROE), which acted as the dependent variables. This study reveals the first evidence that the debt to assets ratio has a negative and significant impact on the profitability of services companies in Jordan. In line with the pecking order theory, this finding suggests that more profitable services companies tend to prioritize the use of retained earnings in financing business activities rather than in financing debt. This study shows that profitability is significantly and positively affected by size and business risk, while ROA is negatively affected by business risk. It also shows that tangible assets have a negative and significant effect on profitability, while growth has a positive and significant effect on operating profits.

Keywords business risk, capital structure, profitability

JEL Classification G23, G32

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INTRODUCTION

The service sector is one of the most important and profitable sectors in Jordan and vastly contributes to the economic development of the country. It is of great value to the Jordanian economy in terms of gross domestic product (GDP) generated. According to the annual report issued by the Central Bank of Jordan (2017), the services sector accounted for almost 32% of GDP in 2017. The same report states that the services sector is the most active for the Jordanian workforce, particularly for transport companies and educational services (Central Bank of Jordan, 2017). Therefore, this study focuses on determining whether variables such as size, tangible assets, business risk, and growth are the key determinants of profitability in Jordanian services companies for two main reasons.

First, previous studies that have been carried in Jordan have only focused on a few sectors, such as the banking and industrial sectors. However, financial decisions in the service sector cannot be made based on the results of those studies. Those sectors cannot represent the services sector because the services sector in Jordan has some unique characteristics. Therefore, the main purpose of this study is

to contribute to the literature by examining in detail the effect of size, tangible assets, growth opportunity, and business risk as financial characteristics, as well as the debt to equity ratio and debt to assets ratio as capital structure factors, on the profitability of services companies in Jordan. The motivation for this study was the need to identify which factors are significant in determining the profitability of services companies in Jordan. It is envisaged that managers in the sector will be able to use the results of this study to develop their financial policies. Furthermore, it is hoped that the results can be used by investors to make better investment decisions and thereby in profitable listed services companies in Jordan.

Besides, this study also intends to contribute to the financial literature by examining the determinants of the success of services companies in Jordan. In other words, it is anticipated that this study will improve the knowledge of the key factors that play an important role in the profitability of the Jordanian services sector. Although this sector is an important component of the Amman Stock Exchange (ASE), it has not received the same level of attention as other sectors. Therefore, this study on Jordanian services companies is very significant, and to the best of the authors' knowledge, it is the first study in Jordan to undertake such an analysis.

Second, previous studies have applied similar variables in examining the services companies' profitability. After reviewing the literature, this study tries to build a new model by combining the capital structure variables with financial characteristics, which play an important role in the profitability of a company. Soumadi and Hayajneh (2012), Taani (2013), Shubita and Alsawalhah (2012), Zeitun and Tian (2014), and Z. Ramadan and I. Ramadan (2015) have examined the effect of capital structure on the profitability of the companies and banks on the ASE. On the other hand, Ramadan, Kilani, and Kaddumi (2011), Al Nimer, Warrad, and Al Omari (2015), Al-Debi'e (2011), and Taani and Mari'e (2011) have investigated the effect of financial characteristics on the profitability of the companies and banks on the ASE. However, these previous studies investigated the effect of either capital structure or financial characteristics separately. In other words, none of them addressed the impact of both capital structure and financial characteristics on the profitability of companies on the ASE. Also, only a few of these studies looked at these variables in the context of the services sector. Therefore, this study is the first to examine the impact of capital structure and financial characteristics on the profitability of services companies in Jordan.

Finally, in previous studies, profitability has been calculated based on return on assets (ROA), return on equity (ROE), and Tobin's Q. No study has used operating profit (earnings before interest and tax divided by total assets [EBIT/TA]) as a measure of profitability. This study attempts to fill this gap by calculating profitability not only by ROA and ROE but also by operating profit. What distinguishes the EBIT/TA ratio from other measures is that it does not include bank interest and tax expenses. Hence, operating profit gives a precise picture of the profitability of the company, which is based on the basic services it provides.

This study is important because it investigates the determinants of profitability for Jordanian services companies. Therefore, its findings have some practical implications for those who wish to understand the subject more fully. Besides, managers can utilize the findings of this study to minimize business risk. Moreover, this study can help managers to make financial decisions for their companies. Furthermore, it can help management and investors in making clear decisions on the capital structure of services companies.

The rest of this paper is organized as follows: section 1 presents a review of the literature on the determinants of profitability. Next, section 2 describes the data, variables, and methodology used in this study. Then, section 3 presents and discusses the results. Final section concludes the study.

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1. LITERATURE REVIEW

This section presents a literature review on six determinants of profitability, namely, company size, tangible assets, growth, business risk, debt to equity ratio, and debt to total assets ratio.

1.1. Size

Many studies have suggested a positive relationship between the size of a firm and its performance. This positive relationship occurs because size offers greater diversity, greater access to modern technology, economies of scale in production, and cheaper sources of finance (Orser, Hogarth-Scott, & Riding, 2000). Nunes, Serrasqueiro, and Sequeira (2009) showed that size has a positive and significant effect on profitability in the Portuguese market. Also, using both ROA and ROE as measures of profitability, Yang and Chen (2009) and Pantea, Gligor, and Anis (2014) found that size positively and significantly affected firm performance. Besides, Zeitun and Saleh (2015) showed that size has a positive and significant effect on firm performance in the country. Similarly, Getahun (2016) showed that size has a positive and significant impact on the profitability of insurance companies in Ethiopia. In the case of Vietnam, Batten and Vo (2019) who used panel data methods to examine the determinants of bank profitability for the period 2006–2015 found that capital adequacy, bank size, risk, productivity, and expenses have strong effects on profitability. Furthermore, they demonstrated that bank industry characteristics and macroeconomic variables also affected bank profitability.

However, a negative relationship between size and profitability has been documented by some previous studies. Such studies have argued that because smaller companies usually have a larger level of risk, investors are rewarded with larger returns. For example, Drew, Naughton, and Veeraraghavan (2003) proposed that smaller firms generate larger returns compared to larger companies. Also, using stock return as an indicator of firm performance, Vintila and Nenu (2015) showed a negative relationship between size and firm performance. In the case of companies listed on the ASE in Jordan, Ramadan et al. (2011) found that size does not significantly affect profitability as proxied by ROA and ROE. In a comprehensive study of 52 developing and underdeveloped states in the Organization of Islamic Cooperation, Al-Harbi (2019) examined the effects of internal and external factors on the operating profitability of 686 conventional banks over the period 2006–2014. Return on assets represented profitability, and the ordinary least squares fixed effects model was employed to assess the data. The results showed that off-balance-sheet activities, foreign ownership, real GDP growth, equity, real interest rate, and concentration increase a bank's profitability, whereas deposits lead to decreased profitability. The study also showed that bank size, market capitalization, and GDP per capita do not affect profitability.

The current study uses the natural logarithm of total assets as a proxy for firm size (SIZE). As the previous results regarding the effect of size on profitability are unclear, the first hypothesis is formulated as follows, with no expectation regarding the sign:

H1: Size has a significant effect on the profitability of Jordanian services companies.

1.2. Tangible assets

Pushner (1995) found a negative relationship between tangible assets and profitability among Japanese companies. Deloof (2003) confirmed this negative relationship and showed that the higher the level of tangible assets, the lower the profitability because Belgian companies with higher liquid assets were found to have a greater ability to discover long-term investment opportunities. Using various panel models, Nunes et al. (2009) examined the determinants of profitability in the Portuguese services industries. They showed that tangible assets negatively influence profitability. Chinaemerem and Anthony (2012) found a negative relationship between tangible assets and profitability, as measured by ROA and ROE among Nigerian firms. Getahun (2016) confirmed this result and showed that tangible assets have a negative and significant impact on the profitability of insurance companies in Ethiopia.

The current study uses the ratio of fixed assets divided by total assets as a proxy for tangibility (TANG). Based on the relevant literature, the second hypothesis is formulated as follows:

H2: Tangible assets have a significant effect on the profitability of Jordanian services companies.

1.3. Growth

Both trade-off theory and agency theory suggest a positive relationship between growth and profitability. According to trade-off theory, growth opportunity is a proxy for company's success. A company that has growth opportunities usually enjoys a good reputation, which leads to easy access to funds, and this is reflected in better firm performance. Therefore, such companies do not suffer from financial distress. Besides, in agency theory, a company that has high growth opportunities enjoys lower agency costs. Such companies could have lower debt ratios because they fear that debt holders may abandon them for valuable investment opportunities and confiscate the company's wealth for their personal benefit, and this is a fear that is consequently reflected in lower agency costs (Hutchinson & Gul, 2006). Based on an analysis of the data of the top 500 Australian firms, Hutchinson and Gul (2006) showed that companies with high investment opportunities have lower agency costs and thus improved ROE. Besides, Getahun (2016), in his study of the 2004–2013 financial data of Ethiopian insurance firms, found that growth opportunity as measured by change in total assets has a significant positive effect on profitability.

In light of the above, the current study uses change in total assets as an indicator of the growth opportunities (GROW). Based on previous findings, the third hypothesis is formulated as follows:

H3: Growth opportunity has a positive and significant effect on the profitability of Jordanian services companies.

1.4. Business risk

Agency theory suggests a positive relationship between business risk and profitability because investors require a big profit to hold the risks associated with financial distress and bankruptcy as priority is given to debt holders in the case of bankruptcy. Despite the great interest among researchers in the relationship between risk and profit, many studies could not fully determine the nature of this relationship (Fisher & Hall, 1969). Besides, over the years, the cross-sectional studies on profitability have provided mixed results in regard to this relationship. Grabowski and Mueller (1978) used a beta capital asset pricing model as a measure of business risk. Their result showed that this risk measure is not statistically significant. Armour and Teece (1978) showed that the risks associated with firm performance, as measured by past earnings fluctuations, are negative but not statistically significant. Meanwhile, using variation in earnings per share as a measure of risk, Shergill and Sarkaria (1999), in their study of the data of Indian firms for the period 1981–1991, showed a positive relationship between risk and financial performance. On the other hand, El-Masry, Al-Najjar, and Taylor (2008) employed the standard deviation of ROA as an indicator of business risk. They argued that the use of this ratio is justified because debt implies an obligation to pay periodically; hence, the companies with high debt ratios are exposed to the costs of financial distress. Therefore, companies with volatile incomes are likely to be less effective. On the other hand, Getahun (2016) used the standard deviation of operating income divided by total assets. Using this measure, he found a positive and significant effect of business risk on the profitability of insurance companies in Ethiopia.

The current study uses the standard deviation of the ROA ratio as an indicator of business risk (BR). However, as the relationship between business risk and profitability is unclear in previous studies, the fourth hypothesis is formulated as follows, with no expectation regarding the sign:

H4: Business risk has a significant effect on the profitability of Jordanian services companies.

1.5. Debt ratios

Companies have many options to choose from when it comes to financing their investments. These options include retained earnings, issuing shares, or borrowing. Some studies have pointed out that if a company finances its investments by equity or debt, this does not affect the profitability and value of the company. In contrast, other studies such as Myers (1984), in which the pecking order theory was modified, have indicated that this the-

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ory is based on asymmetrical information, which means that managers have more information about their company's activities than outsiders. In this context, according to the theory, the issuing of shares by a company to finance its investments signals the market that the shares are undervalued. Thus, the management of such a company is not confident to finance their investment by debt, and this lack of confidence negatively affects the profitability and value of the company. However, if a company finances its investments using debt, management signals that they are confident that their company can service its debt in the future. Thus, debt is preferred over shares as an indicator of future profitability (Jensen & Meckling, 1976; Myers, 1984). In general, the capital structure plays an important role in determining the profitability and value of a company. Therefore, the current study also decided to examine the effect of capital structure on the profitability of Jordanian services companies.

Based on pecking order theory, a company prefers internal financing over external financing, while trade-off theory indicates that a company has a target debt ratio and attempts to move toward this target (Myers, 1984). Jensen and Meckling (1976) argued that firm performance might be affected by its capital structure. Accordingly, several studies have since discussed this issue. For example, Goddard, Tavakoli, and Wilson (2005), Serrasqueiro and Nunes (2008), Goel, Chadha, and Sharma (2015) and Getahun (2016) all found that the debt to assets ratio has a negative and significant effect on firm performance. They justified this relationship based on the fact that companies cannot benefit from good investment opportunities because of the requirement for the periodic payment of interest. Using ROA, ROE, and Tobin's Q as measures of profitability, several studies such as Onaolapo and Kajola (2010), Olokoyo (2013), and Ahmed Sheikh and Wang (2013) have confirmed this previous result and have found that debt can negatively and significantly influence the economic performance of the firms. Employing various panel models, Nunes et al. (2009) examined the determinants of profitability in the Portuguese services industries. They showed that the debt ratio negatively influences profitability. Using the 2011–2018 data of 214 companies in the Indian automobile, cement, and steel industries, Vaidya and Patel (2019) examined the effect of leverage, cash flow, net block, and total liabilities divided by net block ratio on profitability. Based on the fixed effects model, they showed that profitability is negatively affected by leverage, while it is positively affected by cash flow, net block, and total liabilities divided by net block ratio.

In their analysis of the data from Gulf Cooperation Council countries, Zeitun and Saleh (2015) showed a negative effect of debt ratio on profitability using both ROA and Tobin's Q. In Jordan, utilizing data from a sample of 40 firms listed on the ASE, Taani and Mari'e (2011) investigated the effect of the debt to equity ratio on earnings per share. They found that this ratio has a significant effect on earnings per share. On the other hand, many studies have documented a positive relationship between debt ratio and profitability, such as Hadlock and James (2002), Roden and Lewellen (1995), and Margaritis and Psillaki (2010). In light of the above, the current study uses both the debt to equity ratio (DE) and the debt to total assets ratio (DA) as indicators of leverage. Also, because the previous results related to this issue are mixed, the fifth and sixth hypotheses are formulated as follows, with no expectation regarding the sign:

H5: The debt to equity ratio has a significant effect on the profitability of Jordanian services companies.

H6: The debt to total assets ratio has a significant effect on the profitability of Jordanian services companies.

2. DATA AND METHODOLOGY

2.1. Data and variables

This study uses the financial data of all 46 services companies listed on the ASE. The data covering the five-year period from 2014 to 2018 were downloaded from the ASE website. The period 2014–2018 was chosen to avoid the impact of the global financial crisis and was also based on the availability of relevant information on these companies. The dataset was balanced panel data consisting of 228 observations.

The dependent variables are EBIT/TA, ROE, and ROA, which proxied by the ratio of operating profits to total assets, return on equity, and return on assets, respectively. The six independent variables are as follows: (1) size, given by the total assets logarithm; (2) tangibility, given by the ratio of fixed assets to total assets; (3) growth, given by the percentage change in total assets; (4) business risk, given by the standard deviation of ROA; (5) debt to equity ratio, given by the rate of total debt to total equity; and (6) debt to assets ratio, given by the rate of total debt to total assets. Table 1 presents a summary of the variables and their corresponding measurements.

Table 1. Description of the variables

Variables	Measurement
Dependent variables	
Profitability (EBIT/TA)	Earnings before Interest and Tax divided by Total Assets
Profitability (ROE)	Net Income divided by Total Equity
Profitability (ROA)	Net Income divided by Total Assets
Independent variables	
Size (SIZE)	Logarithm of Total Assets
Tangibility (TANG)	Fixed Assets divided by Total Assets
Growth (GROW)	Percentage Change in Total Assets
Business Risk (BR)	Standard Deviation of Return on Assets
Debt to Equity (DE)	Total Debt Divided by Total Equity
Debt to Assets (DA)	Total Debt Divided by Total Assets

2.2. Methodology

To estimate the results of the determinants of profitability of Jordanian services companies, the current study adapts the panel regression analyses of the following forms:

$$Y_{it} = \alpha_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \\ + \beta_4 X4_{it} + \beta_5 X5_{it} + \beta_6 X6_{it} + \varepsilon_{it}, \quad (1)$$

where Y_{it} represents operating profit (EBIT/TA), return on equity (ROE), and return on assets (ROA) for company i at time t, $X1_{it}$ represents the logarithms of total assets (SIZE) for company i at time t, $X2_{it}$ represents the asset structure ratio of fixed assets to total assets (TANG) for company i at time t, $X3_{it}$ represents the ratio of percentage change in total assets (GROW) for company i at time t, $X4_{it}$ represents the ratio of the standard deviation of return on assets (BR) for company i at time t, $X5_{it}$ represents the ratio of debt to equity (DE) for company i at time t, $X6_{it}$ represents the ratio of debt to total assets (DA) for company i at time t, $i = 1$ to 46 Jordanian services companies $t = 2014 - 2018$, ε_{it} – error term, α_0 – intercept, β_i – coefficient of each variable.

3. RESULTS

This section presents the descriptive statistics of the dependent and independent variables employed by this study (see Table 2).

As indicated by Table 2, the profitability of Jordanian services companies as proxied by EBIT/TA, ROA, and ROE, is very volatile because the standard deviation is larger than average. The services companies in Jordan earn an average profit of 4%, 3%, and 3% when proxied by EBIT/TA, ROA and ROE, respectively. As regards the independent variables, Table 2 shows that volatility is high for growth, business risk, and debt to equity because the standard deviations are higher than the respective averages. Jordanian services companies, on average, employ only a 35% debt ratio in their capital structure. This means that these companies depend on a low debt ratio. Therefore, they prefer to decrease the probability of bankruptcy by minimizing debt financing.

To determine whether the variables have a unit root or not, the LLC unit root test with intercept

Table 2. Descriptive statistics of Jordanian services companies

Variables	EBIT/TA	ROA	ROE	SIZE	TANG	GROW	BR	DE	DA
Mean	0.04	0.03	0.03	7.58	0.44	1.55	0.01	1.42	0.35
S.D.	0.09	0.09	0.22	0.64	0.31	1.76	2.97	3.65	0.26
Max.	0.39	0.39	0.42	9.25	0.31	15.03	27.84	20.56	1.04
Min.	–0.61	–0.61	–2.40	592	0.00	–0.04	–18.54	–24.35	0.00
Obs.	228	228	228	228	228	228	228	228	228

Note: The first row reports the name of each variable addressed in this study, while the second row details the average value of each variable for Jordanian services companies. The number of observations of each variable is presented in the last row.

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and with intercept and trend are applied. Table 3 provides the results of the LLC test for the level in Panel A and the first difference in Panel B of each variable. Table 2 shows that the series includes a unit root in Panel A, especially ROE, SIZE, and TANG. Therefore, the variables are non-stationary in their levels. In contrast, Panel B in Table 3 shows that the variables are stationary at the level of the first difference. This means that the series should be examined at the level of the first difference.

Table 3. Results of unit root test based on LLC test

Series	With intercept	With intercept and trend
	LLC	LLC
Panel A. Levels		
EBIT/TA	–13.6796	–120.292
	(0.0000)	(0.0000)
ROA	–9.35777	–31.7021
	(0.0000)	(0.0000)
ROE	12.1779	–4.22832
	(1.0000)	(0.0000)
SIZE	–1.62066	1.76046
	(0.0525)	(0.9608)
TANG	–3309.18	0.00045
	(0.0000)	(0.5002)
GROW	–7.08743	–46.5955
	(0.0000)	(0.0000)
BR	–24.3202	–59.5990
	(0.0000)	(0.0000)
DE	–12.2219	–17.3647
	(0.0000)	(0.0000)
DA	–8.17075	–21.9000
	(0.0000)	(0.0000)
Panel B. First difference		
EBIT	–129.960	–9.89296
	(0.0000)	(0.0000)
ROA	–33.0319	–14.2255
	(0.0000)	(0.0000)
ROE	–7.97720	–5.98128
	(0.0000)	(0.0000)
SIZE	–3.674	–13.3735
	(0.0000)	(0.0000)
TANG	–326.476	–2.55427
	(0.0000)	(0.0053)
GROW	–53.9906	–3.95691
	(0.0000)	(0.0000)
BR	–65.1289	–28.3096
	(0.0000)	(0.0000)
DE	–14.8160	–14.0411
	(0.0000)	(0.0000)
DA	–33.0638	–17.0930
	(0.0000)	(0.0000)

Table 4 presents a correlation matrix of the dependent variables (EBIT/TA, ROA, and ROE) and independent variables (SIZE, TANG, GROW, BR, DE, and DA). The results in Table 4 show that SIZE is positively related to profitability proxies. This means that SIZE plays an important role in increasing the profitability of services companies in Jordan. In general, the other variables (TANG, GROW, BR, DE, and DA) have a negative relationship with the three profitability proxies. As for the correlations between the independent variables, the values of the correlation matrix are less than 0.80, which means that these variables are not strongly correlated, and no multicollinearity is present.

Table 5 presents the results for the effects of the financial characteristics and the capital structure on profitability as measured by EBIT/TA. Six potential determinants of profitability in Jordanian services companies are considered in this study. These six factors are size, tangible assets, growth, business risk, debt to equity, and debt to total assets. This study uses the Lagrange multiplier and Hausman tests to determine the preferable set of results statistically. Based on the results shown in Table 5, the panel model is better than the pooled model because the result of Lagrange multiplier test is statistically significant. Besides, the fixed effects model is preferred over the random effects model because the Hausman test result is statistically significant.

Moreover, Table 5 shows that the value of the adjusted *R*-squared in the fixed effects model is 0.65. This indicates that the independent variables used by this model can explain 65% of the variation in profitability as proxied by EBIT/TA, while 35% of the variation in the profitability cannot be explained by the independent variables employed by this study. Furthermore, the value of the *F*-test is statistically significant, which indicates that the model is acceptable in terms of its ability to explain the effect of the independent variables on dependent variable.

From Table 5, it can also be seen that size is a significant determinant of profitability proxied by EBIT/TA. The coefficient of size is positive (0.1814) and statistically significant at 1% level. This indicates that larger Jordanian services companies

Table 4. Correlation coefficients between the variables

Variables	EBIT/TA	ROA	ROE	SIZE	TANG	GROW	BR	DE
ROA	0.74***							
ROE	0.62***	0.50***						
SIZE	0.25***	0.20***	0.24***					
TANG	−0.04	−0.1	−0.02	0.01				
GROW	−0.01	−0.03	0.02	0.29***	0.03			
BR	−0.23***	0.14**	−0.16**	−0.10	−0.01	0.02		
DE	−0.05	−0.12*	−0.15**	0.36***	−0.14**	0.15**	0.01	
DA	−0.16**	−0.21***	−0.14**	0.56***	−0.26***	0.29***	−0.04	0.59***

Note: ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

earn higher profits as compared to smaller ones. Also, the profitability of Jordanian services companies is negatively affected by tangible assets. This means that there is an inefficient use of fixed assets by Jordanian services companies. Table 5 also shows that growth has significant a positive effect on the profitability of Jordanian services companies. The coefficient of growth is positive (0.0109) and statistically significant. This result indicates that an increase in growth of 1% leads to the generation of 1.09% more profit in Jordanian services companies.

On the other hand, Table 5 shows that profitability in Jordanian services companies is negatively and significantly affected by business risk. The coefficient of business risk is −0.0063, which indicates that a 1% decrease in risk in Jordanian service companies leads to an increase in the profitability ratio of 0.66%.

Lastly, as for the last two variables, debt to equity and debt to assets, which relate to the capital structure, the results in Table 5 indicate that debt to equity does not have a statistically significant impact on profitability, while debt to total assets is significantly and negatively associated with profitability in Jordanian services companies. This means that an increase in the level of debt of 1% leads to a decrease in profitability of 12.51%.

Table 6 shows the results for the effects of the financial characteristics and capital structure on the profitability of Jordanian services companies when ROE is used as a proxy for profitability. The results of the Lagrange multiplier test result show that the panel model is suitable for explaining the determinants of profitability. On the other hand, the Hausman test result indicates that the random effects model is appropriate for explaining the profitability of Jordanian services companies.

Table 6 also shows that the value of the adjusted *R*-squared for the random effects model is 35%. This means that the independent variables used in

Table 5. Ordinary least squares regression results

Dependent variable: EBIT/TA	Pooled model		Fixed effects		Random effects	
Constant	−0.4188***	(0.0000)	−1.2464***	(0.0001)	−0.4880***	(0.0001)
SIZE	0.0726***	(0.0000)	0.1814***	(0.0000)	0.0806***	(0.0000)
TANG	−0.0513***	(0.0059)	−0.1336**	(0.0191)	−0.0635**	(0.0266)
GROW	−0.0002	(0.9669)	0.0109**	(0.0166)	0.0069*	(0.0614)
BR	−0.0064***	(0.0005)	−0.0063***	(0.0000)	−0.0062***	(0.0000)
DE	0.0014	(0.4555)	0.0001	(0.9271)	0.0004	(0.7357)
DA	−0.1899***	(0.0000)	−0.1251*	(0.0553)	−0.1795***	(0.0000)
Adjusted R^2	24%		65%		18%	
F-test (*p*-value)	12.87 (0.0000)		9.26 (0.0000)		8.99 (0.0000)	
Lagrange multiplier test	10.5166	(0.0000)				
Hausman test	14.8457	(0.0215)				
Period included	5		5		5	
Cross-section included	46		46		46	
Number of observations	228		228		228	

Note: ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

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Table 6. Ordinary least squares regression results

Dependent variable: ROE	Pooled model		Fixed effects		Random effects	
Constant	–1.0526***	(0.0000)	–2.5450***	(0.0078)	–1.1253***	(0.0000)
SIZE	0.1642***	(0.0000)	0.3807***	(0.0037)	0.1753***	(0.0000)
TANG	–0.1007**	(0.0268)	–0.3483**	(0.0474)	–0.1205**	(0.0486)
GROW	0.0024	(0.7629)	0.0001	(0.9984)	0.0027	(0.7762)
BR	–0.0095**	(0.0348)	–0.0139***	(0.0021)	–0.0117***	(0.0052)
DE	–0.0069	(0.1281)	–0.0149***	(0.0018)	–0.0112***	(0.0095)
DA	–0.3349***	(0.0000)	–0.4069**	(0.0436)	–0.3248***	(0.0006)
Adjusted R^2	29%		41%		35%	
F-test (*p*-value)	9.77 (0.0000)		4.05 (0.0000)		7.70 (0.0000)	
Lagrange multiplier test	5.1420	(0.0000)				
Hausman test	9.9258	(0.1278)				
Period included	5		5		5	
Cross-section included	46		46		46	
Number of observations	228		228		228	

Note: ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

this study can explain 35% of the variation in profitability as proxied by ROE. Moreover, the value of the *F*-test is statistically significant, which indicates that the model is acceptable in terms of its ability to explain the effect of the independent variables on the dependent variable.

Table 6 provides similar evidence to Table 5 in that profitability as proxied by ROE is positively and significantly affected by size, while tangible assets, business risk, and debt to assets have a significant negative effect on profitability. In particular, the results demonstrates that a one-unit increase in size leads to an increase of profitability proxied by ROE of 17.53, while a 1% increase in tangible assets, business risk, and debt to total assets leads to a decrease of profitability of –12.05%, –1.17%, and –32.48%, respectively. As for the effect of growth, the result shows that there is no evidence that this variable is related to the profitability of Jordanian services companies.

Lastly, Table 6 shows that debt to total equity has a negative effect on profitability.

Table 7 provides the results for the effects of the financial characteristics and capital structure on the profitability of Jordanian services companies when ROA is used as a proxy for profitability. The results of the Lagrange multiplier test and Hausman test show that the panel model and the random effects model are suitable for explaining the determinants of profitability of Jordanian services companies, respectively.

Besides, Table 7 shows that the value of the adjusted *R*-squared for the random effects model is 24%, which indicates that independent variables used by this study can explain some of the variation in profitability as proxied by ROA. Besides, the value of the *F*-test is statistically significant, which means that the model is acceptable in terms of its ability to explain the effect of the independent variables on the dependent variable.

The results in Table 7 are relatively similar to those in Tables 5 and 6 in that profitability as proxied by ROA is positively and significantly affected by size, while debt to assets has a negative and significant effect on ROA. However, business risk has a positive and significant effect on ROA. This means that an increase in business risk of 1% leads to an increase in ROA of 0.59%. This finding contradicts the results in Tables 5 and 6. As for the other independent variables (TANG, GROW, and DE), Table 7 provides no evidence that they have an effect on ROA among Jordanian services companies.

The results of the current study show that the size of Jordanian services companies has a positive and significant effect on profitability. This result is similar to the results of Zeitun and Saleh (2015) and Getahun (2016). This result also supports Hardwick (1997), Gschwandtner (2005), and Nunes et al. (2009) who argue that bigger companies have the opportunity to use economies of scale and diversification of activities, which enables such companies to be more successful in the face of market adjustments and helps them to reduce their overall costs, thereby increasing profitability. The positive effect of size in Jordanian

Table 7. Ordinary least squares regression results

Dependent variable: ROA	Pooled model		Fixed effects		Random effects	
Constant	−0.4118***	(0.0000)	−0.7453***	(0.0078)	−0.4602***	(0.0002)
SIZE	0.0693***	(0.0000)	0.1047***	(0.0063)	0.0723***	(0.0000)
TANG	−0.0419**	(0.0182)	0.0714	(0.1642)	−0.0060	(0.8286)
GROW	−0.0011	(0.7256)	0.0028	(0.5009)	0.0003	(0.9399)
BR	0.0048***	(0.0065)	0.0064***	(0.0000)	0.0059***	(0.0000)
DE	−0.0007	(0.6956)	−0.0016	(0.2506)	−0.0012	(0.3535)
DA	−0.1709***	(0.0000)	−0.1417**	(0.0167)	−0.1462***	(0.0002)
Adjusted R^2	18%		68%		24%	
F-test (*p*-value)	11.21 (0.0000)		10.31 (0.0000)		7.16 (0.0000)	
Lagrange multiplier test	12.1959	(0.0000)				
Hausman test	6.7477	(0.3448)				
Period included	5		5		5	
Cross-section included	46		46		46	
Number of observations	228		228		228	

Note: ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

services companies can reduce the negative effects identified by Jensen and Murphy (1990) and Pi and Timme (1993), namely, less control over the actions of managers by owners. Therefore, the result of the current study suggests that the agency problem between managers and owners is low in Jordanian services companies. In other words, the agency problem is not relevant in the context of the Jordanian services sector and does not pose a significant risk to profitability.

The results of the current study also indicate that the debt to assets ratio negatively and significantly affected the operational profitability of Jordanian services companies. This result confirms the result reported by Goddard, Tavakoli, and Wilson (2005) who suggested that the effort to pay debt charges does not allow firms to benefit from good investment opportunities, which may lead to low profitability. It also suggests that Jordanian services companies are following the pecking order theory, which supports the results of Myers and Majluf (1984), Bancel and Mittoo (2004), Antoniou et al. (2008), Nunes et al. (2009), Onaolapo and Kajola (2010), Olokoyo (2013), Ahmed et al. (2013), and Khan et al. (2018).

Besides, the current study shows that, in the Jordanian services sector, tangible assets have a negative and significant effect on profitability, as proxied by ROE. In contrast, profitability, as proxied by ROA, is not significantly affected by tangible assets. However, the relationship is still negative. This indicates either that Jordanian services companies are investing heavily in fixed assets that do not enhance their performance or that these companies are not using their fixed assets efficiently. Similar findings have been reported by Pushner (1995), Zeitun and Tian (2007), Weill (2008), and Nunes et al. (2009). Another explanation provided by Griliches and Lichtenberg (1984) and Nucci et al. (2005) is that companies with high-level tangible assets tend to innovate and undertake projects to improve human capital. They, therefore, have a greater potential to benefit from long-term investment opportunities (Deloof, 2003) and become more profitable.

As for growth opportunities, the profitability measures in this study are positively affected by growth. In particular, growth has a positive and significant impact on operating profits (EBIT/TA). This suggests that company growth can help to increase employee motivation, which leads to enhance the performance and profitability of a company (Greiner, 1989).

On the other hand, business risk has a negative and significant impact on the profitability of Jordanian services companies when operating profits are proxied by ROE. This implies that Jordanian services companies with high risk as measured by volatility in their ROA have less profitability, as proxied by ROE and EBIT/TA. Although business risk is indeed an integral part of the investment and business process, a high level of risk does not necessarily lead to a high level of profitability. This result, therefore, contradicts agency theory. On the other hand, when profitability is proxied by ROA, it is positively affected by business risk, and this result is consistent with agency theory. This means that Jordanian services companies with high ROA have higher volatility in their ROA.

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CONCLUSION

This study investigated the effects of financial characteristics (size, tangible assets, growth, and business risk) and capital structure (as proxied by debt to equity and debt to assets) on the profitability of Jordanian services companies. This study used panel data, including annual time series data over the period 2014–2018 and cross-sectional data from 46 service companies listed on the ASE. The fixed effects model and the random effects model were used to examine the panel data.

The results showed that size and growth have a positive and significant effect on the profitability of Jordanian services companies. The results also revealed that tangible assets, business risk, and debt to assets are important determinants of profitability for Jordanian services companies, especially when profitability is proxied by EBIT/TA and ROE. Furthermore, tangible assets, business risk, and debt to assets were found to influence profitability negatively.

In light of findings, the analysts and managers of Jordanian services companies need to evaluate performance in terms of profitability, as proxied by EBIT/TA, ROE, and ROA, and to focus on the effects of the key determinants identified in this study. This study, therefore, has some important practical implications for those who wish to understand the subject. The managers of Jordanian services companies can also utilize the results of this study to minimize risk. Besides, the current study can help managers to make appropriate financing decisions for their companies. Furthermore, based on the finding that the debt to assets ratio has a negative effect on profitability, this study suggests that managers should finance their investments with retained earnings and not use large amounts of debt in their capital structure. Moreover, managers should work to improve the capital structure of their companies to increase and maintain profitability as much as possible. Hence, the results of this study can help managers and investors to make clear decisions on the required capital structure.

Finally, as this is the first study to examine the determinants of profitability in Jordanian services companies, further researches are required to develop new hypotheses and identify new variables to reflect the company-specific factors that may affect the company's profitability consistent with financial theories such as trade-off theory and agency cost.

AUTHOR CONTRIBUTIONS

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