Analyzing the Effect of Credit Facilities on Firm Growth: Evidence from Emerging Market

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Abstract: Although, the importance of credit facilities in relation to economic performance has been investigated in many previous studies mainly focusing on developed countries, this study explores the effect of credit facilities on firm growth in Jordan, a developing country albeit with a developed banking system. The study sample comprised 87 Jordanian firms investigated from 2007-2016 using panel data regression. Analysis results indicated a significant and positive relationship between both assets and employment growth and firm size indicators and credit facilities indicating that the study sample was comprised of mainly large firms without financial constraints. The results of this research have an important implication for the banking industry, business sector and policy makers in Jordan.

Key words: Credit facilities, firm growth, panel data, Jordan, sample, banking industry

INTRODUCTION

It is commonly accepted that banks are important financial institutions providing external financing and promoting both business and economic growth, a view supported in many studies including those by Goldsmith (1955), Shaw (1973) and King and Levine (1993). The importance of credit facilities provided by banks is an acknowledged vital source of external funds, identified as the strongest external determinant of firm growth (Ayyagari *et al.*, 2007; Klapper *et al.*, 2006; Levine and Warusawitharana, 2014).

Access to credit facilities provides necessary funding, obviating exposure to moral hazard and adverse selection costs while offering the additional advantage of ease of renegotiation (Berndt and Gupta, 2009; Chemmanur and Fulghieri, 1994). The positive effects on firm growth of these credit facilities are in permitting firms to address their liquidity constraints and thereby increase profitability. Previous studies investigating the relationship between access to credit facilities and firm growth have however, shown diverse results with studies by Girma and Vencappa (2015), Moore *et al.* (2005) and Ayyagari *et al.* (2010) indicating that in some countries firms grow faster with access to credit facilities while the reverse is found by Allen *et al.* (2012) and Beck *et al.* (2015). A possible explanation for such contradictory results, according to Beck and Levine (2004), Cetorelli and Gambera (2001) and Odedokun (1998) lie in the strength or weakness of legislation concerning regulation of financial institutions such an explanation is consistent with the evidence that developed and organized banking sectors lead to increased financial resources whereas in countries with weak regulation firm's access to credit facilities does not promote growth. In developed countries with a well-organized banking sector, credit is used productively to improve asset allocation efficiency, contributing to firm growth and consequently improving economic growth.

According to, the 2017 report of the International Monetary Fund, the well developed banking sector in Jordan has over the last 5 years, contributed an average of 23.4% of the country's GDP while total credit facilities from the banking system to the private sector increased at a compound annual growth rate of 7.8% between 2007 and 2015, reaching US$2.7 billion. In their study, Ayyagari *et al.* (2012) argue that for firms in developing countries, credit facilities are among the most important and widely used sources of external funds. Despite this proven maxim, however, scant research attention has previously been paid to developing countries like Jordan, an omission the present study aims to rectify by analyzing the effect of credit facilities in safeguarding their asset value and continued growth of Jordanian firms.

Literature review: Important factors contributing to firm growth vary in relation to both size and economic, geographical and cultural differences. Although, some

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studies (Davidsson and Delmar, 2003; Gallagher and Miller, 1991) concluded that firm growth is related to specific industries and firm size, the literature provides ample evidence of many more have been contradicted by Gibrat's Law which states that firm size is independent of firm growth. Despite validation by some empirical studies (Audretsch *et al.*, 2004; Becchetti and Trovato, 2002; Henrekson and Johansson, 2010) a number of recent empirical studies have argued conversely that firm size is inversely proportional to firm growth (Delmar *et al.*, 2013; Garcia-Manjon and Romero-Merino, 2012; Mudambi and Swift, 2011).

Nevertheless and Levine (2005) purports that firm growth is influenced by a combination of factors that concern the characteristics of the firm and its environment, one of which is financial resources, especially external finance, a view supported by scholars including Saeed (2009) Levine and Warusawitharana (2014) and Beck *et al.* (2008) investigating the nexus between firm growth and the financial system, state that lack of internal finance forces firms to search for external finance from financial intermediaries, a view confirmed by Ayyagari *et al.* (2012) that a financial system providing access to credit boosts the growth of firms using external financing. From a study that addressed the effects of financing sources on firm growth in the UK and Ireland during 1991-2001, credit facilities comprise the most important and widely used source of external financing among firms, Rahaman (2011) in his study indicated that firms rely on credit facilities as the primary source of financing for growth and confirmed a decreased effect of internal financing on firm growth when the firm's access to credit facilities increased. Similar results emerged from a large study by Brown *et al.* (2011), covering 8,387 firms in 20 European countries where 70% of firms need credit facilities for development. Ullah and Wei (2017) also, found faster growth in firms using credit facilities compared with those financed sourced internally. The results of a study by Volk and Trefalt (2014) investigating 75,854 Slovenian firms during 1995-2011 substantiated the view that those firms not reliant for financing on internal sources achieved higher growth rates due to access to credit facilities. Hamouri *et al.* (2018) studied the Jordanian market and found a significantly positive correlation for the growth of sales and employment with firm's financial leverage.

In their studies, many researchers including Ayyagari *et al.* (2007) Claessens and Laeven (2003) and Klapper *et al.* (2006) have pointed out that the impact of credit facility access can be a positive influence on firm growth when relieved of liquidity constraint, thereby, facilitating development and subsequent increased

profitability. While studies by Brown *et al.* (2011), Chemmanur and Fulghieri (1994) and Hoshi *et al.* (1993), support the significant positive effect of credit facility access not only in facilitating growth of existing firms but also, the establishment and development of new firms, there by creating a more comprehensive level of growth. In addition, several potential benefits accrue from credit availability including, if necessary due to unforeseen financial difficulties, straightforward renegotiation of loans as well as low risk of moral hazard exposure.

Easy access credit facilities are offered by well-established financial institutions to enable firm growth, however, given the imperfection of the capital market, firms needing to raise funds from external sources through debt financing in order to secure the various associated benefits, may well be exposed to a variety of complications. Hadlock and James (2002) using a sample of 500 firms through the period 1980-1993 investigated external finance providers and the choice of some firms to negotiate bank debt rather than use public securities access. The basis for making this sensitive choice is often relative to information problems, since, elevated variable measurements estimating asymmetric information problems are likely to encourage the choice of the bank loan option, particularly, so when the firm has no outstanding public debt. Thus, these findings validate the hypothesis that asymmetric information problems are alleviated by access to bank facilities and that firms opt for bank financing after evaluating available alternatives against information benefits.

Aghion *et al.* (2007) in a study carried out in 16 industrialized and emerging economies, researched the impact on both the entry and growth of successful newcomers with regard to access and implementation of financial development. Their results clearly indicated that in areas where mostly external financing was the norm, the entry and financial development of small firms was positively promoted and in addition, exerted a confident influence on these firm's post-entry growth. The relationship between financial institutions and firm growth was also, the subject of a study by Saeed (2009), the focus of which was the influence of different sources of external finance across firm size and their growth perspective. Results indicated that factors including banks, the equity market, trade credit and leasing, augmented both sales growth and employment whereas informal lending decreased firm growth.

In a survey of Indian manufacturing industry firms during 1997-2006, Bas and Berthou (2012) focused their study on financial development and economic growth as affected by microeconomics, specifically its effect on firm's value and production capital with regard to changes

in credit level over GDP in Indian states. Results indicated not only that the growth of firms was improved by financial development but that this growth was diverse through industries and firms with credit expansion showing a beneficial effect not limited solely to small firms but also, showing an advantageous influence on well-established, large, productive and profitable firms. However, their results also indicated that in certain sectors where firms relied on external finance, there was evidence that heterogeneity was reduced.

The variances in financial and legal systems and their influence on growth funding through external financing is the focus of a study by Demirguc-Kunt and Maksimovic (1998) which illustrates that external long-term financing was the preferred source of development funding used by a considerable proportion of firms where well-organized effective legal systems were in place. A further result of their study showed that in addition, externally financed firm grow is related to both the stock market and the banking sector. About 4 years later these researchers (Demirguc-Kunt and Maksimovic, 2002) turned their attention to investigating whether or not there was a difference in growth between firm's access to external financing, based on whether they were bank or market-based financial systems. In a wide-ranging study comprising data on firms from 40 countries, the researcher's aim was to gather data from each country, compute, examine and discover the proportion in each country of firms relying on external finance as well as discovering how different financial systems exhibit differing proportions of these firms. Their results indicated that the development of the banking system and the securities market had a definite impact on the future of large numbers of firms developing too rapidly for the self-financing option. This result is consistent with that of their 1998 study which found a close link between the country's prevailing contracting environment and the influence of the development level in both the stock market and the banking system on firm growth as well as their influence on short-term and long-term financing.

The numerous empirical studies on the subject of credit facilities and their impact on firm growth, however, present a less than clear picture of the relationship. As observed above, some studies such as those by Ayyagari *et al.* (2007), Brown *et al.* (2011), Claessens and Laeven (2003), Klapper *et al.* (2006), Rahaman (2011) and Volk and Trefalt (2014), report a positive effect of access to credit facilities in helping firm growth while Levine *et al.* (2000) and Beck *et al.* (2000), for example, consider as ambiguous the impact of credit facility access on firm development indicating that others found that internally generated financing was the main factor in firm growth. This was supported by Guariglia *et al.* (2011),

stating that in China, for instance, internal financing was the main source for private Chinese firms achieving high growth rates. A variety of factors may contribute to encouraging firms to favor one source of financing over another, so ultimately these ambivalent results may have been due to factors prevailing in some countries such as the economic climate, specific legalities and firm's policies regarding the acquisition of financing. Valverde and Del Paso (2009), for example, examined whether the relationship between firm's liquidity holdings and their financing behavior impacts on their usage of credit facilities. The results of the Sufi (2007) study are consistent with those of Valverde and Del Paso (2009) who found that alternative funding resources may be substituted by credit facilities in the case of high liquid asset holdings by the firm. A further study by Demirguc-Kunt and Maksimovic (1998) examined how firm growth funded by external financing can be affected by variances in financial systems and legal requirements. The study illustrated the association of a number of diverse factors with firm development financed from external sources, noting the extensive use of long-term external financing by a large proportion of firms in countries with highly efficient legal systems, active if moderately-sized stock markets and a large banking sector.

As illustrated above, many previous studies have resulted in ambivalent findings but the majority indicates a positive impact associated with credit facility access and firm growth. A basic idea promoted by economic and finance literature, however, provides a rational justification of such results. It has long been maintained in numerous academic research studies into economics and finance arenas that provision of credit facilities for business sectors is one of the principal roles of the banking system in order to stimulate and support economic growth and facilitate firm development. Within the framework of the present study, recognition of the banking sector's part in the provision for diverse business sectors of a wide range of facilities to assist in development and growth of these sectors. In the present study, therefore, the researchers are encouraged to suggest two hypothesis as follows:

- H_1: access to credit facilities positively affects asset growth in Jordanian firms
- H_2: access to credit facilities positively affects employment growth in Jordanian firms

MATERIALS AND METHODS

Research design: In this particular study, the investigation is concentrated on the correlation between credit facilities and firm growth in Jordan, focusing on

firms listed on the Amman Stock Exchange (ASE). This is due to its position as one of the biggest Middle Eastern Stock Exchanges. It should be noted that, Law No. 12 in 1964 was the first Company Law in Jordan with the pioneering implementation of the first Commercial Law being upheld in 1966. Jordan's central role in the Middle Eastern economy can also be attributed to its strategic and important geographical location with the region as well as its position as an economic channel to markets housing more than one billion customers. However, the Jordanian non-financial sector has been negatively impacted by various issues and obstacles (e.g., the Arab Spring, the shortages in gas movements from Egypt and the civil war in Syria), yielding unfavorable performance in the past few years despite their role as an emerging economy (Al-Rdaydeh *et al.*, 2018). Thus, this study has opted for a sample of a non-financial sector consisting of service and industrial division both, specifically of Jordanian firms that have been listed between 2007 and 2016. The data utilized in the current study has been sourced from the data stream of ASE and subsequently analyzed using panel data regression to allow a look into the effect of credit facility access on Jordanian firm growth. The sample has been inclusive of firms that have observed ground rules of ensuring the availability of their complete data during the specified duration. The omission of financial institutions and firms yielding incomplete data has resulted in a final sample made up of 87 firms.

Variable measurement: The dependent variable in the present study is Jordanian firm growth while employment and total asset growth are the indicators, derived from previous literature (Delmar *et al.*, 2003, 2013; Guariglia *et al.*, 2011; Saeed, 2009). Using the following equation, the log-differences were taken for these indicators:

$$Log\left(ASG_{i,t}\right) = Log\left(TS_{i,t}\right) - Log\left(TS_{i,t-1}\right) \qquad (1)$$

Where:
Log differences were derived:
ASG = Asset Growth
TS = Total Assets
i   = The firm
t   = The year

Firm asset growth equals the change in asset value percentage over study period:

Total assets value = tangible+intangible assets

$$Log\left(EMG_{i,t}\right) = Log\left(EM_{i,t}\right) - Log\left(EM_{i,t-1}\right) \qquad (2)$$

Where:
EMG = Employment Growth
EM = Total full-time employees

i = The firm
t = Year

EMG, therefore, equal the percentage increase of full-time permanent employees over study period, credit facilities being the independent variable.

The independent variable is credit facilities. In accordance with past studies, the present research used the ratio of debt to total assets to measure a firm's access to the credit facilities (Dittmar, 2004; Iqbal *et al.*, 2012; Lyn *et al.*, 2013). In particular, access to the credit facilities is computed as follows:

$$CF_{(i,t)} = SLO_{(i,t)} / TA_{(i,t)} \qquad (3)$$

Where:
CF = Credit Facilities
SLO = Short and Long-term bank loans and Overdraft
TA = Total Assets
i   = The firm
t   = The year

In this study, 5 control variables were used. Firm size, the first control variable is considered as one of the important determinants of firm's financing structures. According to Beck *et al.* (2008), there is more dependence on informal financing by small rather than by large firms and also tend to depend less on external financing, particularly credit facilities. However, according to previous studies (Evans, 1987; Storey, 1994; Wiklund, 1998) there is no consensus as to correlation of firm growth and size, also, results by Audretsch and Elston (2002) and Oliveira and Fortunato (2006) indicated that funding availability could negatively impact firm growth, citing monetary restraints on small firms. While Katsikeas and Piercy (1993) and Wiklund (1998), agree that the link between firm size and growth may be positive (Katsikeas and Piercy, 1993) demonstrate faster growth in smaller firms. As a point of interest, firm size is used as a control variable in the present study in order to diminish outlier's impact in the regression method of analysis, explicitly in taking as a measurement for this variable, natural total asset logarithms.

The age of the firm is the second and important control variable because younger firms in contrast to older ones, generally have faster growth rates. Nevertheless as mentioned previously, the literature presents great divergence in research results regarding the correlation between firm's growth and their age (Das, 1995; Elston, 1993), for example, found firm age to have a positive effect on growth whereas results of studies by Becchetti and Trovato (2002) and Hobdari *et al.* (2009) were the opposite and negative. One possible explanation for this disagreement in the literature is the complexity and

multidimensionality of the firm growth concept and model which appears to suggest dichotomy between theoretical and empirical findings, given the 'access to financial resources will improve as firms mature' resource-based hypothesis and the expectation of firm age leading to growth. Nonetheless, Yasuda (2005) indicated strong correlation between firm size and age, thus, not surprisingly there are reports of age reflecting negatively on growth. In this study, firm age was calculated at the end of 2015 on the basis of the date on which it was founded and legally licensed to operate. Reduction of outlier's influence on regression analysis results were achieved by using natural firm age logarithms. The industry sector is the final control variable.

The third control variable is industry. The literature indicates that one of the determinants of its growth is the industry's affiliation of a firm (Delmar *et al.*, 2003; Wiklund *et al.*, 1997). A pulling effect is likely to be seen on the growth of the industry sector member firms due to the links and associations between firms operating in any specific industry or business group (Gilbert *et al.*, 2006). Another variable shown to impact significantly on firm growth is the development stage of the industry (Gilbert *et al.*, 2006). Additionally, firm growth may also, be influenced by its position on the grid. As demonstrated in a study by Beck *et al.* (2008) the selected firms were classified into industrial and service sectors and as control for firm's particular attributes, dummy industrial and dummy services variables were added.

Moving on, profitability of firm was chosen as the fourth control variable due to its importance as a firm growth pointer (Demirguc-Kunt and Maksimovic, 1998; Hamouri *et al.*, 2018). Thus, ROA was applied as a locus to determine firm profitability. Lastly, level of liquidity was selected as the final control variable, if firms hold a sustained level of short-term liquidity, then they will be able to pay their short-term liabilities which could lead to faster growth. This variable was measured by the current ratio (current assets divided on current liabilities) as in Mateev and Anastasov (2010).

Data analysis technique and empirical model: Panel data analysis was used to test the relationship between variables. According to Hsiao (1986) and Yaffee (2016), this analysis tool in global use by researchers, depends principally on a set of data collected over various time points, for a specified observation of individual variables. Panel data analysis is more beneficial and valuable than time series or cross-section analysis because of its ability

to offer more degrees of freedom, alleviate multicollinearity among variables, eliminate unobserved heterogeneity in each observation in the sample and reduce bias (Baltagi, 2005).

The following models contain mathematical explanations that are considered in this study to achieve the study objective. The multiple regression technique was applied on the full sample based on the equations below:

$$ASG_{it} = a + \beta_1 CF_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_4 TI_{it} + \beta_5 ROA_{it} + \beta_6 CR_{it} + \varepsilon_{it} \quad (4)$$

$$EMG_{it} = a + \beta_1 CF_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_4 TI_{it} + \beta_5 ROA_{it} + \beta_6 CR_{it} + \varepsilon_{it} \quad (5)$$

Where:

ASG and EMG	=	The Jordanian firm growth expressed by Assets Growth and Employment Growth, respectively
CF	=	The Credit Facilities used by firm
SIZE	=	The Size of firm
AGE	=	The firm age
TI	=	A dummy variable for the Type of Industry of firms
ROA	=	The Return on Assets
CR	=	The Current Ratio

RESULTS AND DISCUSSION

Descriptive statistics: One categorical variable, type of industry was used in this study. This variable was used to classify the sample of the study in accordance with the classification of the ASE for listed firms. Of the total 870 observations industrial firms represent 57.4% of the sample with 500 observations. The remaining 370 observations are service firms representing about 42.6% of the sample.

Means, minimum and maximum and standard deviations of continuous variables are presented as descriptive statistics in Table 1. Two indicators: Asset Growth (AG) and Employment Growth (EG) measure the dependent variable firm growth. As shown in Table 2

Table 1: The descriptive statistic of the variables

Variables	Observation	Mean	SD	Maximum	Minimum
ASG	850	0.081	0.258	3.652	-0.905
EMG	840	0.063	0.273	3.738	-2.398
CF	854	0.201	0.182	1.705	0.000
SIZE	852	17.157	1.330	21.310	13.495
AGE	852	2.948	0.733	4.357	0.693
ROA	870	0.024	0.098	0.494	-0.601
CR	784	2.130	2.612	28.090	0.001

Table 2: The correlation between variables

Variables	ASG	EMG	CF	SIZE	AGE	TI	ROA	CR
ASG	1	-	-	-	-	-	-	-
EMG	0.3733**	1	-	-	-	-	-	-
CF	0.1015**	0.0946**	1	-	-	-	-	-
SIZE	0.0544	-0.0612*	-0.0399	1	-	-	-	-
AGE	-0.1391**	-0.1059**	-0.0226	0.1091**	1	-	-	-
TI	0.0223	0.0540	0.1964**	-0.2693**	0.1458**	1	-	-
ROA	0.0867**	0.0262	-0.3581**	0.2607**	0.0713**	-0.0902**	1	-
CR	0.0565	0.0054	-0.2537**	-0.0757**	-0.0148	0.1414**	0.1994**	1

Level of significance $*p<0.10$, $**p<0.05$

the variable of asset growth has an average of approximately 8.5% with a variation of -90-365%. Employment growth has a lower average than asset growth at approximately 6.2 and maximum of 373%.

When discussing growth inconsistencies illustrated in some very high values at particular times and very low at others are not out of the ordinary. Diversification into new products is one method by which firms seek to promote growth and in order to accomplish this, use one of two strategies, either acquisition of or merger with another company, since, these tactics are faster and less costly means by which to achieve growth (Hitt *et al.*, 2001; Papadakis, 2007). Using such a growth strategy at a specific time point causes high levels of growth indicators such as asset growth, employment growth and sales growth. In contrast, firms may also face a variety of problems necessitating owners to put a large sector of the firm on the market. Such a decision at a specific time point leads to low levels of growth indicators such as asset and employment growth. Descriptive statistics of illustrative variables are also shown in Table 1.

In the present study, the influence of credit facilities was examined in relation to firm growth with firm's credit access measured by debt ratio. The mean ratio for the variable of Credit Facilities (CF) is approximately 20% with a variation of 0-170%. This percentage indicates that the use of credit facilities by some firms at a specific time point comprises 170% of their total assets indicating the high reliance of these firms on the availability of external financing. This result supports those of several researchers including (Ayyagari *et al.*, 2012) who argued that the most widely used sources of external funds in developing countries are credit facilities.

The two variables remaining were used as control variables, the first is firm Size (SIZE), illustrated by the total assets logarithm. This variable is found to be 13.5-21.3 with a mean ratio of 17. The second control variable is the Age of firms (AGE). Using the natural logarithm, we find that the age range is 0.69-4.35 with a mean ratio of 2.94 (Table 2).

Panel data analysis: This study employed the panel regression model in accordance to the findings obtained

Table 3: The panel regression results of Model 1

Independent variables	Dependent variable; Assets growth-regression with Driscoll-Kraay standard errors			
	β	SE	p-values	VIF
CF	0.1899	0.0668	0.019	1.27
SIZE	0.1105	0.0496	0.053	1.19
AGE	-0.2913	0.0688	0.002	1.05
TI	0.0271	0.0256	0.160	1.21
ROA	0.2808	0.0902	0.013	1.27
CR	0.0104	0.0055	0.093	1.15
Constant	-1.0256	0.7207	0.188	-

$R^2 =0.10$; F-statistic = 0.001

from the Hausman test. Besides, to determine the robustness of the results, several diagnostics tests were implemented such as autocorrelation, heteroscedasticity, panel unit root and multicollinearity tests. The said tests ensured the reliability of regression models and addressed issues related to econometric. As a result, the data were ascertained to have no multicollinearity or stationary issues but some problems related to cross-sectional dependence, heteroscedasticity and autocorrelation were present. Therefore in the attempt to overcome the mentioned issue, the fixed and random effects robust standard errors approach were performed.

Table 3 presents the panel regression results of testing H_1 which deals with the analysis of the effect on asset growth of credit facilities access. A significant F-statistic suitability is acceptable for the model and only 9% of variation in the regression model can be explained by the independent variable. The result of R^2 is consistent with results illustrated in previous studies, positing a set of factors as determinants of firm growth. Credit facilities are thus, considered as one of these factors. However, regression results support the notion of a significant and positive relationship (at 5%) of asset growth and credit facilities in Jordanian firms indicating that the greater the use of credit accessibility, the greater the increase in asset growth such results are consistent with those of Rahaman (2011) and Ullah and Wei (2017).

Table 4 shows the panel regression model findings of testing H_2 which deals with the analysis of the effect of credit facilities on employment growth. Model fit is accepted in the form of a significant F-statistic and the

Table 4: The panel regression results of Model 2

Independent variables	Dependent variable; Employment growth-regression with robust standard errors			
	β	SE	p-values	VIF
CF	0.1602	0.0477	0.001	1.27
SIZE	-0.0128	0.0068	0.060	1.19
AGE	-0.0422	0.0190	0.027	1.05
TI	0.0225	0.0210	0.284	1.21
ROA	0.2662	0.1138	0.019	1.27
CR	-0.0012	0.0016	0.922	1.15
Constant	-0.3580	0.1192	0.003	-

$R^2 = 0.13$; F-statistic = 0.000

independent variable explains only approximately 3% of variations in the dependent variable. Results of the regression model provide evidence that credit facilities have a strong relationship with employment growth in Jordanian firms, specifically, this significant and positive relationship with employment growth is at 1%. Therefore, a firm's manpower level is dictated largely by its access to credit. Such results are consistent with those of Volk and Trefalt (2014).

Overall, results provide evidence that firm's utilization of credit facilities can lead to their asset and employment growth. Moreover, Table 3 and 4 show that the panel regression results of control variables in both models are similar because the size of firms has a significant and positive relationship with asset and employment growth. These results, along with the regression result of credit facilities indicate that the majority of the sample belongs to large-sized firms that are not financially constrained. This result contradicts those of previous works including those by Audretsch and Elston (2002) and Oliveira and Fortunato (2006) who pointed out that the negative effect of finance on growth seen in small firms may be due to shortage of funds.

Finally, the result for the age of firms indicates that this variable has a significant and negative relationship with asset and employment growth. This result refutes the resource-based hypothesis which asserts that firm's greater age improves their access to financial resources, leading to the expectation of a positive relationship between firm age and growth. Nonetheless, the results for the age variable in both models are consistent with those presented by Yasuda (2005) who indicated a strong correlation between firm size and age, noting specifically that age impacts negatively on firm growth. For the last control variable which is the industry sector, results in both regression models confirmed no differences between industry types for the growth of firms.

CONCLUSION

The main objective of this research was analysis of credit facilities impact on firm growth in Jordan. Unlike

surrounding countries (e.g., Iraq, Syria and Palestine), Jordan is politically stable which enhances the stability of other aspects of the country. Moreover, the banking system in Jordan is developed as indicated by the IMF. These aspects in addition to the positive results presented in the literature regarding the relationship between credit facilities and firm growth have motivated this study to hypothesize that credit facilities are significantly related to indicators of firm growth. As firm's access to credit facilities improves, the growth of these firms is also, expected to intensify. Results indicate a significant and positive relationship linking various independent credit facilities with growth in both assets and employment, thus, supporting the hypothesis. These are positive indications of the ability of Jordanian firms to utilize credit to facilitate growth of assets and employment, thus supporting the findings of previous researchers including Ayyagari *et al.* (2007), Volk and Trefalt (2014) and Ullah and Wei (2017).

Effective management in Jordanian firms may be a contributory factor in the positive association between firm growth indicators and credit facilities. The data collected for the present study illustrated that overdrafts and long-term loans are the most popular forms of credit used by Jordanian firms. Usually, firms using such type of credit facilities try to manage and exploit them in an efficient way to enhance their financial position which in turn shall be reflected on their reputation in the market, so, firms have the options of either renegotiating loans or accessing credit from a different bank. These facilities help firms towards improved performance, thereby enhancing their growth indicators. In developing countries such as Jordan, access to credit facilities is extremely important and may possibly explain the findings of this study. In fact, according to Ayyagari *et al.* (2012), firms in developing countries rely heavily on credit facilities which are considered the most important source of external financing.

IMPLICATIONS

Implications of results in the present study are that Jordanian firms deal positively with financing issues and avail themselves of credit access to promote development. Results of the study by Volk and Trefalt (2014) support the premise that credit facilities assist firm growth, reduce their reliance on internal financing and generally stimulate higher rates of growth. The findings of this study are therefore sustained by the results of many other studies including those by Goldsmith (1955), McKinnon (1973), King and Levine (1993) and Levine (1997), purporting that higher growth and output are positively linked to an

active and developed banking system. Banking is one of the major contributors to the Jordanian economy and according to an International Monetary Fund report in 2017 the banking system is well organized and developed. Studies by Alkhazaleh (2017), Beck and Levine (2004), Bencivenga and Smith (1991), Cetorelli and Gambera (2001) and Rajan and Zingales (1998), all confirmed that the increased financial resources resulting from a well-organized banking industry which provides efficient allocation of funding, thus, becomes a major factor in firm development and increased growth of the economy. This present study, therefore, vindicates the ability of the Jordanian banking industry to be a driving force of Jordan's economic growth.

Given that the majority of previous studies have been conducted in developed countries, therefore, investigation of the link and outcome of credit facilities and firm growth in Jordan and other emerging economies is important for the following reasons: many basic tenets of political and corporate structure and governance, taxation law and many other legal and judicial differences indicate the necessity of treating emerging economies as separate and distinct entities. The present study, therefore, contributes important insight and implications for policy makers, the banking industry and business sectors in Jordan.

The results of this research have an important implication for the banking industry, business sector and policy makers in Jordan. The banking system can develop a long-term plan to provide more credit facilities to economic sectors. For example, the positively significant relationship of firm growth and credit facilities may encourage mangers and stakeholders of banks to offer more credit facilities to firms with affordable interest rates which will ultimately increase the profit of the banking sector. Moreover, findings of the present study may well provide useful information for the Central Bank of Jordan, ASE or other regulatory bodies and relevant authorities involved in future planning and policy design in Jordan, using the assessments in this study when evaluating current trends in the banking and business sectors and their contribution to Jordan's economic growth.

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