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**DOES CREDIT POLICY AFFECT THE PERFORMANCE  
OF SAUDI CONSTRUCTION COMPANIES?**

*This paper examines the relationship between the length of receivable conversion period as a measure of credit policy and operating profit margin as a measure of operational performance of construction firms listed at Saudi stock market. This relation is examined using the dynamic panel data two-steps robust system estimation for the period 2004–2013. The analysis is applied at the levels of the full sample and divisions of the sample into crisis and non-crisis periods, by sector and by size. The results show negative and significant relationship between receivable conversion period as a measure of credit policy and profitability for the full sample. The result of the relationship between receivable conversion period and profitability for small firms is negative and significant. The results also show negative and significant relationship between receivable conversion period and profitability of real estate companies and negative and insignificant relation for building and construction companies.*

*Keywords:* credit policy; profitability; financial crisis; Saudi stock market (Tadawul); construction company.

*JEL classification:* G30; G32; L25; O25.

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**ВПЛИВ КРЕДИТНОЇ ПОЛІТИКИ НА ПОКАЗНИКИ РОБОТИ  
БУДІВЕЛЬНИХ КОМПАНІЙ САУДІВСЬКОЇ АРАВІЇ**

*У статті досліджено взаємозв'язок між терміном повернення кредиту як міри ефективності кредитної політики та чистим операційним прибутком як показника успішності роботи будівельних підприємств, що мають котирування на фондовій біржі Саудівської Аравії. Для аналізу даних використано динамічні панельні дані за період 2004–2013 років. Аналіз проведено як для всієї вибірки, так і для підвибірок (кризові та позакризові періоди, а також за галузями та розміром підприємств). Результати аналізу вказують на стійку негативну кореляцію між тривалістю повернення кредиту та прибутковістю для повної вибірки. Аналогічний результат було отримано й окремо для малих будівельних фірм. Така сама негативна стійка взаємозалежність спостерігається і для фірм з продажу нерухомості, в той час як для великих будівельних компаній даних зв'язок не є значущим.*

*Ключові слова:* кредитна політика; прибутковість; фінансова криза; Тадавул (фондова біржа Саудівської Аравії); будівельні компанії.

*Форм. 1. Табл. 1. Літ. 28.*

Хайтам Нобані, Нейла Улд Дауд Ейлілі  
**ВЛИЯНИЕ КРЕДИТНОЙ ПОЛИТИКИ НА ПОКАЗАТЕЛИ РАБОТЫ  
СТРОИТЕЛЬНЫХ КОМПАНИЙ САУДОВСКОЙ АРАВИИ**

*В статье исследована взаимосвязь между сроком возврата кредита как меры эффективности кредитной политики и чистой операционной прибылью как показателем успешности работы строительных предприятий, которые котируются на фондовой бирже Саудовской Аравии. Для анализа данных использованы динамические панельные данные за период 2004–2013 годов. Анализ проведён как для всей выборки, так и для подвыборки (кризисный и внекризисные периоды, а также по отраслям и размеру предприятий). Результаты анализа указывают на устойчивую отрицательную корреляцию между длительностью возврата кредита и прибыльностью для полной выборки. Аналогичный результат получен и отдельно для малых строительных фирм. Такая же негативная*

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*устойчивая взаимозависимость наблюдается и для фирм по продаже недвижимости, в то время как для больших строительных компаний данная связь не является значимой.*

*Ключевые слова:* кредитная политика; прибыльность; финансовый кризис; Тадавул (фондовая биржа Саудовской Аравии); строительные компании.

**1. Introduction.** Credit policy (or collection policy) is related to the account receivables management. It is one of the most important corporate financial decisions and consists in determining the terms and conditions for selling goods on credit, customer qualification criteria, procedures of making collections, and steps to be taken in case of payment default.

In management literature, there are many studies exploring the determinants of accounts receivables and explaining the importance and usefulness of credit policy (Ferris, 1981; Emery, 1984; Deloof and Jegers, 1996; Peterson and Rajan, 1997; Wilner, 2000; Pike and Cheng, 2001; Wallis, 2002; Burkart and Ellingsen, 2003; Cheng and Pike, 2003; Fisman and Love, 2003; Pike et al., 2005; Niskanen and Niskanen, 2006). However and despite its importance, credit policy did not gain a lot the interests of researchers even after the failure of many companies caused by the financial crisis. In fact, after the crisis, there are only few researches on the impact of credit policy on corporate performance (Kontus, 2013; Martinez-Sola et al., 2013). In these studies, it has been established that credit policy is positively associated with corporate performance and so companies are advised to optimally manage their credit policy to enhance liquidity and profitability.

Although this paper has some similarities with the prior studies on the impact of credit policy on corporate performance, it examines a specific economic context of the Gulf region. This is a very attractive research opportunity because there is evidence of the optimal credit policy and its importance in stabilizing companies' liquidity and maximizing shareholders' wealth. In this study, we focus on the construction sector that plays an essential role in the development of Saudi economy and we employ the receivable conversion period as a comprehensive measure of credit policy.

Against this background, we conduct this research with the aim of examining the credit policy of Saudi construction companies. The three main research questions in the paper are as following. First, what's the impact of credit policy on corporate performance? Second, is the impact of credit policy on corporate performance affected by firm's size? Third, is the impact of credit policy on corporate performance significantly different between the crisis and the non-crisis periods?

Our findings will not only provide companies with an insight on the impact of credit policy on corporate performance but also help researchers develop new techniques and methods to improve credit policy to ensure the maximum liquidity for companies and shareholders.

To our knowledge, there has been no research conducted in the Gulf region on credit policy, nor on its impact on the corporate performance, therefore, this research provides the first insight regarding this topic.

Robust dynamic panel data regressions are used to analyze the impact of credit policy on corporate performance. The results show negative and significant relationship between receivable conversion period as a measure of credit policy and profitability for the full sample. The result of the relationship between receivable conver-

sion period and profitability for small firms is negative and significant; this indicates that small Saudi construction companies manage receivables more efficiently as compared with large firms. The results also show negative and significant relationship between receivable conversion period and profitability of Saudi construction firms during non-crisis periods and crisis periods. This indicates that Saudi construction companies are efficient in managing their working capital during crisis and non-crisis periods. The results also demonstrate negative and significant relationship between receivable conversion period and profitability of real estate companies and negative and insignificant relation for building and construction companies.

The remainder of the paper is organized as follows: Section 2 contains the literature review on credit policy and its relationship with corporate performance. Section 3 presents the economic and institutional environment of corporate finance in KSA. The data and the empirical methodology are included in Section 4. Section 5 exhibits the empirical results and finally conclusions are presented in Section 6.

**2. Literature review.** Credit policy is related to management of the receivables risk and the collection of debt within the terms of agreement (Wallis, 2002). It's considered as a particular type of short-term loan tied in both timing and value with goods exchange (Ferris, 1981). The challenge for companies is to balance between managing the accounts receivable and increasing their revenues. In fact, the restriction of the credit to marginal customers would affect negatively the revenues while the relaxation of credit terms would affect positively on revenues but lead to the increase of bad debts (Wallis, 2002). Credit policy consists of 4 variables: credit period, discounts given for early payment, credit standards and collection policy and the primary issues are around whom the credit should be extended, the terms of credit as well as the collection procedure to be used and that will have impact on firm's revenues (Chambers and Lacey, 2011).

As any other corporate choice, credit policy has benefits and costs. The use of credit policy is explained by financial, operational and commercial advantages (Martinez-Sola et al., 2013). In fact, motivations for credit policy are, among others, the reduction of transaction costs (Ferris, 1981), stimulation of sales in slack demand periods while relaxing credit terms (Emery, 1984), the reduction of information asymmetry between buyers and sellers (Pike et al., 2005) enhancing all firms' sales. However, credit policy is costly and these costs include, among others, the increase of investment in current assets which may affect profitability and liquidity of a firm (Martinez-Sola et al., 2013) and the exposure to credit risk because of payment default (Cheng and Pike, 2003). Therefore, the determination of the optimal level of accounts receivable is the result of the trade-off between benefits and costs. In fact, Emery (1984) assumes that the optimal level of accounts receivable is determined when the marginal revenue of credit policy equal to the marginal cost which produces an optimal credit period.

In the context of examining the relationship between credit policy and corporate performance, Kontus (2013) explores the accounts receivables and the changes in credit policy for 120 (60 large and 60 medium) Croatian companies in 2010. His empirical results reveal that the relationship between the credit policy measured by accounts receivables/current assets ratio and the performance measured by the return on assets, is positive and significant assuming that any increase in the accounts receiv-

ables leads to the increase of firms' profitability. To minimize bad debt losses, Kontus (2013) suggests a detailed review of customers' credit worthiness prior giving or extending credits to customers and the collection efforts should be undertaken at the very first sign of customers financial instability. Regarding credit policy management, Kontus (2013) recommends to give credit to more marginal customers and only when the net profitability occurs. Financial manager should compare the earning on the sales to the cost of receivables resulting from a greater number of bad debts and the opportunity cost of tying up funds in receivables for a longer period of time. In consequence, the optimal management of accounts receivables results in highest net earnings leading companies to earn a satisfactory profit as well as return on investment.

In the same spirit of research, Martinez-Sola et al. (2013) examine the relation between credit policy and firm value of 54 Spanish companies in the period 2001–2007. They consider the trade-off between benefit and costs of investing in trade credit and estimate a non-linear relationship between the accounts receivable and firm's value. Their empirical results indicate a positive relation between firm's value and trade policy at low level of receivables while the relation is negative at high levels. Moreover, any deviation from the desired level of accounts receivables reduces significantly firm's value.

**3. Economic and institutional environment of corporate finance in KSA.** KSA is the largest petroleum exporter and plays a leading role in the Organization of the Petroleum Exporting Countries OPEC (Brady, 2011) possessing 18% of the world's petroleum reserves and the oil and gas sector accounts for about 50% of the GDP and about 85% of export earnings (Naimi et al., 2015). It entered the World Trade Organization (WTO) in 2005 and participates in two overlapping regional trade agreements, the GCC, and the Greater Arab Free Trade Area (GAFTA) in 1997 along with other 5 GCC states (Bahrain, Oman, Qatar, Kuwait and the United Arab Emirates).

In terms of investment, KSA has one stock exchange, the Tadawul, and it's regulated by the Capital Market Authority. In the GCC region, KSA emerged as the third-largest country undertaking high-end value construction projects, after the UAE and Qatar (Kilani, 2014). Its construction sector is supported mainly by oil reserves which serve as a cushion to overcome economic difficulties.

Like in any other country, construction is one of the major industries that plays an important role in economic growth in terms of infrastructure and employment. In KSA, construction companies have attracted international investors and latest technologies, material and equipment to boost sustainable growth. This growth is supported by a stable inflation rate and low input prices (Ventures Middle East LLC, 2011). At the level of environmental sustainability, KSA is engaged in the construction of smart building to reduce pollution, moderate water consumption and improve wastes management. During 2003–2013 many services have been privatized such as: municipal water supply, electricity, telecommunications, and parts of education and healthcare, traffic control (Aluwaisheg, 2013).

The reason for studying the impact of credit policy on firm's performance in KSA as an emerging market is the adoption of several economic reforms by KSA such as privatization and liberalization. The objective of these reforms is to attract foreign investors in previously closed sectors such as telecommunications, insurance, and

power transmission/distribution, stimulate the activity of the stock market, boost economic growth and international integration.

#### 4. Data and methodology.

**4.1. Data.** The main purpose of this study is to investigate the length of receivable conversion period as a measure of credit policy and operating profit margin as an operational measure. Firm-year data were hand-collected from the annual reports of all construction companies listed at Saudi stock market (Tadawul). Annual financial reports and audited financial statements of the years 2004–2013 were acquired from Saudi construction companies' websites. Our final sample includes 230 firm-year observations.

**4.2. Hypotheses.** We hypothesize in this study a significant negative relation between the length of receivable conversion period as a measure of credit policy and operating profit margin as a measure of operational performance of construction firms listed at Saudi stock market for all our study samples.

**4.3. Methodology.** Dynamic panel data estimation methods consider the dynamic structure between dependent and independent variables (Baltagi, 1995). Furthermore, the use of panel data in estimation guarantees control for missing or unobserved variables and relationships (Arellano-Bond, 1991; Matyas and Sevestre, 1996). Dynamic panel allows dynamic effects to be incorporated into the model and allows feedback from current and past shocks (Hsiao, 1986; Gocer et al., 2014). In this study, among different dynamic panel data estimation methods, we have employed the generalized method of moment dynamic panel-data system estimation with robust standard errors. Applying this model insures more efficient estimates comparing to other estimators. Arellano and Bond argue that the Anderson-Hsiao estimator fails to consider all potential orthogonality conditions. A major feature of this model is the assumption that the necessary instruments are internal ones: that is, based on lagged values of instrumented variable(s) (Baum, 2013). The estimators of this model also allow the inclusion of external instruments as well. The majority of linear dynamic panel estimators use possible lagged values of dependent variable as instrumental variable, this could contain unobserved panel-level effects that could be fixed or random. The dynamic panel data methods are well described Arellano and Bond, but in fact they are also reflected in the work of Holtz-Eakin, Newey and Rosen (1988) see Baum (2013). Arellano and Bond (1991) derived a consistent generalized method of moments (GMM) estimator for this model. While Blundell and Bond (1998) developed a new system estimator that expanded the model for additional moment conditions with robust standard errors. We applied this estimation in this study because our dependent and independent variables are in the form of annual data, and it seemed necessary to use a dynamic specification. Furthermore, some of our independent variables could be jointly correlated with our dependent variable. Finally, there is a possibility of unobserved province specific effects correlated with our independent variables, and we find it necessary to control for such unobserved province specific effects (Nobanee et al., 2011).

This estimation approach in our model leads to the following estimation equation:

$$opm_{it} = \alpha + \beta_1 opm_{it-1} + \beta_2 tda_{it} + \beta_3 sg_{it} + \beta_4 rcp_{it} + \varepsilon_{it}, \quad (1)$$

where ( $opm_{it}$ ) is the first difference of operating profit margin measured as  $[(sales - cost\ of\ sales - depreciation) / sales]$ . The independent variables in the model include the differenced lagged dependent variable; ( $opm_{t-1}$ ) which is the differenced lagged dependent variable of operating profit margin. The independent variables in the model also include ( $rcp_{it}$ ) which is the first difference of receivable collection period which is calculated as  $[(accounts\ receivable / sales) \times 365]$ . This model also includes a control variable of total debt to total equity ratio ( $ltde_{it}$ ) and ( $sg_{it}$ ) representing sales growth  $[(this\ year's\ sales - previous\ year's\ sales) / previous\ year's\ sales]$ .

We have run this model at the levels of the full sample and divisions of the sample by crisis and non-crisis periods, by size and by sector.

**5. Empirical results.** In this section, we present the results of the relationship between length of receivable conversion period as a measure of credit policy and operating profit margin as a measure of operational performance of construction firms listed at Saudi stock market (Tadawul) for the period 2004–2013.

Table 1 reports the results of the GMM dynamic panel-data system estimation with robust standard errors for the full sample and for divisions of sample include different size levels and crisis and non-crisis periods and sectors. The results of the lagged independent variables (LD-opm) in the model show that firm's profitability in the previous period has a strong positive effect on profitability in the current period for large firms, where the coefficient of the lagged dependent variables is positive and significant. While the coefficient is negative and significant for all other samples except real estate firms, this indicates that firm's profitability in the previous period has a strong negative effect on firm's profitability in the current period. We also observe that sales growth has a negative and significant effect on the firm's profitability for small firms and crisis period, this could be explained by pessimistic expectations related to sales growth during the crisis period for small firms. The results also show that long-term debt to total assets, which represents the firm's capital structure, is significantly related to firm's profitability for non-crisis period where the coefficient is negative and significant and also for real estate where the coefficient is negative and significant. In addition, the results also reveal a negative and significant coefficient of the receivable conversion period for all study samples except for large firms and building and construction companies. The results reported in Table 1 confirm that shortening the receivable collection period improve the profitability for small Saudi construction companies and real estate companies and Saudi companies manage efficiently their receivables during both crisis and non-crisis periods.

**6. Conclusion.** This paper aims to study the relationship between the length of receivable conversion period as a measure of credit policy and operating profit margin as a measure of operational performance of construction firms listed at Saudi stock market (Tadawul). It examines a specific economic context of the Gulf region. This is a very attractive research opportunity because there is evidence of the optimal credit policy and its importance in stabilizing companies' liquidity and maximizing shareholders' wealth. In this study, we focus on the construction sector that plays an essential role in the development of Saudi economy and we employ the receivable conversion period as a comprehensive measure of credit policy. The relations between

Table 1. Results of dynamic panel-data two-steps robust system estimation, authors'

Sample/Variables	All	Small	Large	Crisis	Non-Crisis	Building - Construction	Real Estate
LD-OPM	-2.429813**	-2.533143**	.1177141**	-2.432469**	-1.135118**	.0647952	-2.487129**
TDTA	3.765845	5.023657	-4926069	4.000009	.2585679**	-.3131007	-34.44094*
SG	-2.539533	-3.184842**	-.0586514	-2.571000**	.0223536	1.378046	-1.448557*
RCP	-.0146566**	-.0151162**	.0000604	-.0146669**	-.0012582**	-0.001905	-.0154417**
CONS.	.4374591	-.6663979	.5214888**	.4443518	.3358091**	.3185275	9.186622**

Table 1 reports the results of the dynamic panel-data two-steps robust system estimation for the relationship between the receivable collection period and firm's operating profit margin for the sample of 230 firm-year observation for construction firms listed at Tadawul during 2004–2013. Dependent and independent variables are in the form of first difference. (OPM) is the operating profit margin, (RCP) is the receivable conversion period, (LD) is the lagged dependent variable, (SG) is the sale growth, (L:TDA) is long-term debt to total assets.

\* significant at 95% confidence level; \*\* significant at 99% confidence level.

the study variables were examined using dynamic panel data two-steps robust system estimation for the period 2004–2013. The analysis is applied at the levels of the full sample and divisions of the sample by crisis and non-crisis periods, sector and size. The results show negative and significant relationship between receivable conversion period as a measure of credit policy and profitability for the full sample. The result of the relationship between receivable conversion period and profitability for small firms is negative and significant; this indicates that small Saudi construction companies manage receivables more efficiently than large firms. In addition, there is a negative and significant relationship between receivable conversion period and profitability of Saudi construction firms during non-crisis and crisis periods. This indicates that Saudi construction companies are efficient in managing their working capital during both crisis and non-crisis periods. Moreover, the relationship between receivable conversion period and profitability is negative and significant for real estate companies while it's negative and insignificant for building and construction companies.

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