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## Article

# Effect of country governance on trade credit activities: Empirical evidence from Pakistan

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## FINANCIAL ECONOMICS | RESEARCH ARTICLE

# Effect of country governance on trade credit activities: Empirical evidence from Pakistan

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**Abstract:** An existence of good governance situation ensures the progress of economic sectors. The recent literature has mentioned the role of country governance in multiple business operations. However, the effect of country governance on trade credit is not yet explored in the literature. Thus, the current analysis aims to test the empirical nexus between country governance and trade credit activities. The empirical analysis was arranged on Pakistani non-financial enterprises over the period 2010–2019. The regression between variables was established by employing the generalized least square and generalized method of the moment models. The empirical analysis documents the positive effect of aggregate governance index and other proxies of governance including voice and accountability, political stability, regulatory quality, and corruption control on both trade payables and receivables. The favorable governance situation makes business operations more transparent, reduces market uncertainty, and ensures the protection of rights. All these factors positively achieve trade credit operations. We find robust evidence in the presence of both firm-specific and macroeconomic factors. The findings of the study yield an important policy regarding the role of better governance in boosting trade-credit operations. By enlightening the direct effect of country governance on trade credit, this research adds the innovative arrangement of the variable in the existing literature.

## ABOUT THE AUTHOR

Umar Farooq is a Ph.D. (applied economics) scholar at the school of Economics and Finance, Xian Jiaotong University, China. Currently, his Ph.D. is at the final stage. He has a strong research interest in the areas of corporate finance and investment, green finance, sustainable development, and macro-economic theory and practice. He has recently published papers in peer-reviewed journals including the *Borsa Istanbul Review*, *Research in International Business and Finance*, *Journal of Cleaner Production*, *International Journal of Finance and Economics*, *Energy Policy*, *Energy*, *Bulletin of Economic Research*, *International Review of Administrative Sciences*, *Environmental Science and Pollution Research*, *Resources Policy*, *Global Business Review*, and *Cogent Business and Management*. He has also won the title of “distinguished researcher” for the year 2020–2021 as his research appeared in 10 SSCI, and Scopus indexed journals. In addition, he has published several research papers in peer reviewed national HEC recognized journals. Furthermore, several research papers are under the publishing process at different stages of publication in both local and international impact factor journals. He is also working as an active reviewer in several peer-reviewed journals including *Energy Policy*, *Energy Economics*, *SN Business and Economics*, *International Journal of Finance and Economics*, and *Environment, Development, and Sustainability*. In brief, he is a young researcher with high research motivation.

**Subjects:** Political Economy; Economics; Business, Management and Accounting

**Keywords:** Country governance; control of corruption; political stability; trade-credit

**Jel classification:** G32; G38; M48

## 1. Introduction

Trade credit is a vital source of firms' short-term financing as it provides flexibility in payables (Chen et al., 2019). Corporate firms utilize trade credit to widen the sales volume and for accelerating overall business operations. Trade credit has a vital contribution to accelerates the financial efficiency of enterprises. In this essence, corporate managers try to establish efficient trade credit strategies that ensure the financial success of enterprises. In addition to firm-specific determinants of trade credit, the managerial behavior relating to trade credit depends upon various factors, e.g., national cultural traits (Moro et al., 2021), economic policy uncertainty (D'Mello & Toscano, 2020), and monetary policy (Lin & Qiao, 2021), etc. The favorable economic condition of a country positively derives the trade credit activities, i.e., payables and receivables. As likely to other macroeconomic factors, the country's governance situation can be regarded as a potential determinant of trade credit activities. A better governance situation reduces market uncertainty by ensuring the enforcement of law and governance effectiveness that further positively impinges upon the multiple business operations, e.g., trade credit activities. Moreover, good governance ensures the investor's rights, and thus firms are more likely to enhance their business operations by widening the trade credit activities (Jabbouri & Almustafa, 2021). In an alternate channel, the country's governance has a favorable impact on corporate-level governance (Jia et al., 2019) which further has a direct impact on enhancing the trade-credit operations. Given such theoretical parameters, the current analysis aims to seek the empirical link between country governance and trade-credit operations.

Trade credit involves two types of basic operations, i.e., trade payables and trade receivables. Corporate firms utilize these two channels to manage their financing, investment, and growth activities (Cao et al., 2022). Trade credit can be utilized as a source of financing as it allows enterprises to get the raw material on credit. In times of financial distress and lack of financing (both bank and equity financing), the enterprises can utilize the trade payables to purchase the goods on credit. Thereby, trade payables help enterprises to manage the purchasing of raw materials for production purposes even when enterprises have no funds for paying suppliers (Bussoli & Marino, 2018). The specific trade credit terms between supplier and company are specified according to the consent of both parties and thus trade activity occurred between both parties. Similarly, enterprises extend the trade receivables to their routine customers by selling the products on credit. In specific circumstances, the customer feels hesitation in purchasing the product from enterprises due to the limitation of funds. In this essence, the enterprises sell the products to such customers on credit and allow them to continue the purchasing firm's product (Chen et al., 2019). Certainly, enterprises invest in trade receivables as such offerings are made at relatively higher prices of products as compared to routine prices. Credit selling is conducted at higher prices and thus firms get some compensation from customers for late payments (Dary & James, 2019). Moreover, the enterprises offer credit sales to customers to enhance their sales volume and to capture a large market. Most often, the customers are unable to pay the cash and thus are reluctant to purchase industrial products. In this essence, the credit offerings by enterprises can diminish the hesitation of customers regarding the purchase of products which further enhances the profitability of a company (Dary & James, 2019). By keeping transparency in trade credit activities, the overall governance situation of a country can play a vital role in making business activities smooth.

The governance situation of a country can be measured by six underlying factors including rule of law, control of corruption, government effectiveness, political stability, voice and accountability,

and regulatory quality. A country with good governance reflects a better situation in terms of the aforementioned factors. Good governance yields multiple advantages in the shape of a favorable economic environment, and protection of investor's rights which further accelerates business activities. Specifically, good governance leads to mitigating the agency problem and information asymmetric between supplier and buyer and thus has a positive impact on trade operations. In this essence, the analysis of Agyei et al. (2022) shows that good governance enhances institutional efficiency and attracts more foreign investors to invest within the country. This positive effect of good governance on foreign investment eventually enhances the trade credit activities in the host country. In addition, better governance quality has a favorable impact on other business decisions, e.g., capital structure and investment efficiency (Çam & Özer, 2022). Such positive influence of country governance on business decisions urges us to explore the impact on other business decisions, i.e., trade credit activities. The link between country governance and trade credit activities can be developed by reviewing the individual impact of various governance indicators on trade-credit operations. For instance, the work of Cai et al. (2022) reveals that the control of corruption (CC) which is an important indicator of governance quality enhances the trade credit activities within a country. This positive effect of CC on trade credit is stronger across enterprises with weak internal governance. Similarly, D'Mello and Toscano (2020) show that political stability augments trade credit activities as a stable political situation accelerates the overall business operations that eventually lead to enhancing trade credit activities.

This study proposes that better governance quality has a significant impact on trade-credit activities. To test the proposed relationship between governance and trade credit, we arrange the empirical analysis on the dataset of Pakistani non-financial sector enterprises. We employ the panel generalized least square (GLS) and system generalized method of moments (GMM) methods to establish the regression. The selection of econometric techniques is subjected to the incorporation of heteroscedasticity and endogeneity issues in data. The empirical analysis reveals the positive and statistically significant relationship between the aggregate governance index and overall trade activities (both trade payables and receivables). This positive impact of governance on trade activities is found robust even in the case of other proxies of governance, i.e., voice and accountability, political stability, corruption control, and regulatory quality. Better governance reduces the period regarding receivables and payables and thus urges enterprises to involve in more trade-credit operations. In addition, the empirical interpretation exhibits the dynamic impact of both firm-specific control variables including the ratio of debt, size of the firm, and the ratio of sales growth, and macroeconomic control variables, i.e., real interest rate, inflation rate, and financial development.

The current study contributes in the following ways: first, the extant literature checks the individual impact of governance indicators on trade credit, e.g., Cai et al. (2022) investigated the impact of corruption on trade credit, and D'Mello and Toscano (2020) documented the relationship between economic uncertainty and trade credit financing, and Mansha et al. (2022) establish the empirical relationship between political connectedness and trade credit. However, whether and how the accumulated governance quality of a country affects the trade credit activities of enterprises is not yet well explored in the literature. Thus, the current analysis meets this demand of growing literature by seeking the empirical connection between country governance and trade-credit operations. This study expands the literature by adding the logical discussion between country governance and trade-credit operations. Second, this empirical analysis can be regarded as unbiased as it incorporates the common issues that arise in panel data estimations, i.e., heteroskedasticity and endogeneity. By employing the GLS and GMM and a list of both firm-specific and macroeconomic control variables, this study offers an unbiased and policy-oriented regression analysis. To see the consistency in results, the current study employs both front-end (trade receivables) and back-end (trade payables) proxies of trade credit activities, and detailed proxies of country governance. The empirical analysis offers robust evidence across all proxies of governance. Third, the empirical analysis yields practical implications regarding the role of governance in determining trade credit activities. The economies that are characterized by bad

governance should better focus on enhancing the governance quality as it limits the undue delay in both payables and receivables. Corporate managers should establish trade credit policies according to company characteristics as mentioned by the effect of company-specific variables on trade credit.

The body of the paper is organized as follows: Section 2 reviews the literature and develops the hypothesis for testing, and Section 3 describes the research design containing the discussion of the sample, variables, and adopted methodology. In Section 4, we present the empirical analysis of the study and discuss the results in Section 5. Section 6 is the conclusion and policy recommendations.

## 2. Literature review

### 2.1. Country governance and trade credit

Governance matters at the domestic and national levels. It works as a backbone of an economy because it decides the direction of an economy either negative or positive. Governance indicators e.g., voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption measure governance. The enterprises stipulate their directions by observing governance because it affects their decisions, e.g., financing decisions. High corruption index in an economy discourages business corporations because of giving priorities to individual interest instead of collective interest (Toader et al., 2018). Corruption hits corporation decisions regarding financing, cash holdings, and growth of the firm (Ayaydin & Hayaloglu, 2014; Wei & Kong, 2017). The study of Cai et al. (2022) mentioned the negative impact of corruption on trade credit. They further noted that a high corruption index creates a more uncertain situation and unsecure the rights of property which lose the confidence of firms towards trade-credit financing. There are different notions regarding the corruption index because some scholars, e.g., Bahoo et al. (2020) and Hoang et al. (2022) observed that corruption brings a fruitful environment for business and some scholars noted that high corruption devastates businesses by creating an uncertain situation (Breen & Gillanders, 2012). The work of Fan et al. (2012) and Fungáčová et al. (2015) described that there is a positive connection between corruption and credit receipt by banks. In brief, the high corruption index encourages firms to have financing through the bank because it considers a secure source of financing during high corruption, and it discourages financing through trade credit. Based on above discussed works, we may hypothesize that there is a significant link between governance and account receivable. In summary, these studies documented the individual role of governance indicators, e.g., corruption, governance effectiveness, etc., in multiple business decisions. However, the literature does not provide sufficient evidence on the relevant role of governance situation in determining trade credit activities. Thus, the current study fulfills this gap by exploring the relevant role of various governance indicators including voice and accountability, corruption control, political stability, and regulatory quality in trade credit activities of enterprises. Given such discussion, the following hypothesis can be developed:

**H<sub>1</sub>:** *A good country governance situation has a statistically significant and positive relationship with trade credit activities.*

### 2.2. Control variables and trade credit

By reducing transaction costs, and good governance the utilization of trade credit is rampant around the globe. The study of Levine et al. (2018) described that finance literature is mainly concerned with the utilization of trade-credit that why corporations use trade credit widely while specialized financial institutions are available for financing, e.g., banks. When business corporations face difficulty with bank loans then they move towards trade credit. Love et al. (2007) mentioned in their study that firms prefer trade-credit financing more in crisis times. Yang (2011) also documented that U.S. firms expedite the utilization of trade-credit financing during the financial crisis of 2007 and 2008. The study of Kestens et al. (2012) noted that Belgian firms



minimize their ratio of trade-credit financing during crisis time. Some other studies suggested that trade credit is higher than bank credit which reveals that the assumption of pecking order must be invalid (Bussoli & Marino, 2018). In brief, firms in crisis prefer to use trade-credit financing because this type of financing is cheaper than other sources of financing. Moreover, when uncertainty prevails, and firms feel hesitation while adopting other sources of financing then they prefer to finance their assets through trade-credit financing. This reveals that there is a negative connection between bank credit and trade credit.

The size of the business corporations varies in nature. Different studies measure the size of the business corporations through various ways, e.g., total sales and total assets. Enormous businesses do not face hurdles while financing their assets because they have enough capacity to pay back their dues in time. The business firms are intended to take decisions through their assets volume and sales volume. Large firms may enhance their account receivable and accounts payable. This shows that the size of the business corporations has a positive connection with trade credit financing. Different researchers have worked to find the link between the size of the firms and trade credit and their statistical outcomes showed that an increment in the sales and assets brings trade credit more easily (Lawrenz & Oberndorfer, 2018; Pattnaik et al., 2020). An increment in sales increases revenue volume. This increasing ratio of sales makes managers and other financial institutions confident, and they may rely on business performance. Financial institutions relax terms and conditions of lending for a well-reputed firm and in this way, firms do not face stringent covenant problems. This reveals that the sales growth ratio may affect trade credit financing negatively. Moreover, an upward movement in sales may help firms in generating accounts payable and accounts receivable which unveils a positive connection between the sales growth ratio and trade-credit financing (Afrifa & Gyapong, 2017; Ahmed et al., 2014; García-Teruel & Martínez-Solano, 2010).

The real interest rate is also known as the policy rate which is fixed by the central bank. It matters for the financing institutions and non-financial institutions, e.g., banks and corporate firms. Due to high real interest rate within the country, the external financing becomes costlier and thus enterprises either reduce the acquisition of external financing or fully defer their interest for debt financing. Business corporations consider alternate sources of financing and that is trade credit (Altunok et al., 2020; Lawrenz & Oberndorfer, 2018). This shows a positive link between real interest rates and trade credit. Many scholars have worked to find the link between the real rate of interest and trade credit (Barbosa et al., 2017). Financial institutions decide their interest rate based on the inflation rate because they consider the inflation-adjusted rate of return. An upward and downward movement of the inflation rate also matters for the business corporations while making different decisions, e.g., financing decisions. An increasing rate of inflation creates hurdles between firms and other financial institutions which means that the business firms do not consider costly financing to finance their assets. They further find substitutes for financing, e.g., trade credit financing (Bussoli & Marino, 2018). This also shows that an increasing rate of inflation invites firms towards trade credit financing which shows a positive connection between inflation rate and trade credit. In case of decreasing an inflation rate encourages banks to set their appropriate rate of interest. A low rate of inflation is appropriate for business firms, and they consider financial institutions for financing.

Development in the financial sector grants risk payment to other institutions under easy and lax conditions. The debate regarding financial development significantly working as a determinant of trade credit started (Meltzer, 1960). He further suggested in his study that the firms may go ahead towards trade credit which is substituting primary sources of financing. Another work conducted by Jaffee and Russell (1976) also described a similar notion regarding trade credit. The research of Nilsen (2002) documented that large and small corporations expand their trade-credit operations under the regulations of fierce credit. The corporations go towards trade credit financing instead of other sources of financing due to less access to financial institutions. Agency cost theory describes that the trade-credit is a more suitable and appropriate financing to resolve the error between

lenders and borrowers. Supplier corporations may acquire more advantages to minimize agency error by monitoring and assessing the financial soundness of borrower's corporations (Feghali et al., 2021). Another research conducted by Coulibaly et al. (2013) noted that corporations relied on more trade-credit financing in strict economic contraction from 2008 to 2009. Based on the above-mentioned studies, there is an inverse link between financial development and trade-credit financing. The study of Ahmed and Farooq (2020) has noted a negative connection between financial development and trade-credit financing. The works of Molina and Preve (2012) and Levine et al. (2018) also revealed a negative link between financial development and trade-credit financing.

### **2.3. Theoretical background**

Theoretically, institutional theory vows that a better governance situation enhances the efficiency of institutions which further accelerates the business operations within the country. Moreover, good governance enhances the smooth functioning of business activities, e.g., trade credit activities (Liu et al., 2020). Similarly, the theoretical underpinnings of information asymmetric theory support the positive link between better governance and trade credit activities. Good governance ensures the timely flow of correct information and thus reduces the chances of information asymmetric between both parties (buyer and seller). It builds the confidence of both parties and thus boosts trade credit activities (Ahmad et al., 2018). Another theory named transaction costs theory of trade credit conjectured the positive relationship between good country governance and trade credit activities. In a good governance system, there are fewer chances of credit defaults as both parties are enforced to follow the trade credit terms. Such protection alternatively enhances the frequency of trade credit activities which further reduces transaction costs (D'Mello & Toscano, 2020).

## **3. Research design**

### **3.1. Data and sample**

For empirical analysis, we sample the 10 years of annual data (2010–2019) of 342 non-financial sector enterprises listed on the Pakistan Stock Exchange (PSX). To reduce the outlier effect, we exclude the firms having missed financial information for 5 years or more, belonging to the financial sector (having SIC code 6000–6999), and having extreme values. The implication of such data cleaning techniques makes the data more result oriented. In the final sample, only 211 (the initial sample contains 324 enterprises) firms were able to pass this scrutiny of data mining. The undergoing analysis was conducted in the case of Pakistan as it is suffering from bad governance and therefore enterprises may experience high volatility due to such bad situation. Moreover, the financial sector in Pakistan is not yet too developed and unable to meet the funding needs of the industrial sector. Therefore, the enterprises in this region rely on trade credit for meeting their credit needs (Ahmed & Farooq, 2020). Given such facts, it is useful to conduct the current settings of study in the case of Pakistan. The data of firm-specific financial variables were collected from FSA (financial statement analysis), published by The State Bank of Pakistan. However, the governance data were collected from WGI (world governance indicators), The World Bank, while the data of macroeconomic variables were sourced from WDI (world development indicators), The World Bank. The data availability statement can be expressed as<sup>1</sup>

### **3.2. Variables of study**

In the current study, the trade credit is a dependent variable and was measured with two proxies i.e., accounts payable and accounts receivable. Trade payable was calculated by dividing the total account payables listed on the liability side of the balance sheet by to cost of goods sold. This ratio shows the volume of credit purchases made by enterprises to carry on the production process. Furthermore, this ratio demonstrates the liabilities owed by enterprises. Similarly, the trade receivable is calculated by dividing the total receivables by the total sales. This ratio shows the total credit sales made by a company to its customers. The enterprises offer a specific volume to credit sales to their customers owing to enhance the sales volume. Dary and James (2019), D'Mello



and Toscano (2020), and Costa and Habib (2021) have utilized these ratios as proxies of trade credit. Country-level governance is our main explanatory variable, proxied by six underlying dimensions including corruption control, governance effectiveness, rule of law, regulatory quality, political stability, and voice and accountability specified by WGI, The World Bank. The governance quality on a specific dimension can be assessed by performance scores ranging from 2.5 (good) to −2.5 (worst). In addition to the individual impact of each governance indicator, we also develop an aggregate governance index to show the overall impact of governance on trade credit. The aim to constructs the governance index is as no single indicator can show the overall impact and therefore it is necessary to develop an index to check the accumulated impact of governance indicators on trade credit. The governance index was developed by taking the accumulated average score of each governance index. Many studies have utilized the country's governance for other firm-level decisions (Almaskati et al., 2020; Çam & Özer, 2022; Jia et al., 2019).

To check the robustness, we consider several control variables both at the firm level and country level. At the firm level, the debt ratio, firm size, and sales growth ratio are working as control variables while real interest rate, inflation rate, and financial development are the key control variables at the macroeconomic level. The debt ratio demonstrates the volume of bank loans acquired to purchase the assets, while the firm size is a log value of total assets. Similarly, the sales growth ratio shows the net increase in the volume of sales as compared to the previous year. This ratio further reflects the propensity for future corporate growth. Chen et al. (2019) have utilized these firm-specific variables as potential determinants of trade credit. At the macroeconomic level, the real interest rate is the lending rate specified by the central government and is adjusted for the inflation effect. According to WDI, the real interest rate can be measured by the GDP deflator. The inflation rate shows the overall increase in the value of goods and is measured by CPI (consumer price index). The CPI reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used to calculate the CPI. Similarly, the financial development was proxied by the ratio of domestic credit to the private sector by banks. This ratio demonstrates the volume of funds offered by the banking sector to the private sector of an economy. The measurement of macroeconomic variables is specified by WDI, and these variables have been utilized by many studies (Al-Hadi & Al-Abri, 2022; D'Mello & Toscano, 2020). Table 1 displays a brief description of these variables.

### 3.3. Econometric equations and methodology discussion

The relationship among variables can be expressed in the form of the following equations:

$$APR_{it} = \beta_0 + \alpha_1 AGI_t + \alpha_2 VAA_t + \alpha_3 POS_t + \alpha_4 ROQ_t + \alpha_5 COC_t + \beta_1 DTR_{it} + \beta_2 FS_{it} + \beta_3 SGR_{it} + \gamma_1 RIR_t + \gamma_2 IFR_t + \gamma_3 DCP_t + \mu_i + \varphi_t + \varepsilon_{it} \quad (1)$$

$$ARR_{it} = \beta_0 + \alpha_1 AGI_t + \alpha_2 VAA_t + \alpha_3 POS_t + \alpha_4 ROQ_t + \alpha_5 COC_t + \beta_1 DTR_{it} + \beta_2 FS_{it} + \beta_3 SGR_{it} + \gamma_1 RIR_t + \gamma_2 IFR_t + \gamma_3 DCP_t + \mu_i + \varphi_t + \varepsilon_{it} \quad (2)$$

In equation (1), APR is an acronym for account payable ratio while AGI is aggregate governance index, VAA is voice and accountability, POS is political stability, ROQ is regulatory quality, and COC is corruption control. This equation includes some control variables, i.e. DTR (debt ratio), FS (firm size), SGR (sales growth ratio), RIR (real interest rate), IFR (inflation rate), and DCP (domestic credit to the private sector). In equation (1),  $\alpha$  is a vector of coefficients for main explanatory variables while  $\beta$  is for firm-specific control variables, and  $\gamma$  is used to show the vector of coefficients for macroeconomic variables. Meanwhile,  $\mu$  shows the cross-section fixed effect, while  $\phi$  is for the time-fixed effect. The subscripts  $i$  and  $t$  are for cross-section and time-variant variables. Equation (2) shows the effect of explanatory variables on another proxy of trade credit, i.e., ARR (account receivable ratio). Both equations carry the error term symbolized with  $\varepsilon$ .

**Table 1. Description of variables**

Acronyms	Variable	Role	Measurement	References
APR	Trade Payable	Dependent	Account payable/ cost of goods sold	Costa and Habib (2021), D'Mello and Toscano (2020) Dary & James, (2019)
ARR	Trade Receivable	Dependent	Account receivable/ total sales	Costa and Habib (2021), D'Mello and Toscano (2020) Dary & James, (2019)
AGI	Aggregate governance index	Independent	<ul style="list-style-type: none"> <li>• Voice and accountability</li> <li>• Political stability</li> <li>• Government effectiveness</li> <li>• Regulatory quality</li> <li>• Rule of law</li> <li>• Control of corruption</li> </ul>	Almaskati et al. (2020), Çam and Özer (2022), Saona and Martin (2016)
DTR	Debt ratio	Control	Total debt/total assets	Chen et al. (2019)
FS	Firm size	Control	Log (total assets)	Lawrenz and Oberndorfer (2018)
SGR	Sales growth ratio	Control	(Current year sales- last year sales)/ last year's sales	Chen et al. (2019)
RIR	Real interest rate	Control	Real interest rate (%)	Al-Hadi & Al-Abri, (2022)
IFR	Inflation rate	Control	Inflation, consumer prices (annual %)	D'Mello & Toscano (2020)
DCP	Financial development	Control	Domestic credit to the private sector by banks (% of GDP)	Ahmed & Farooq (2020)

**Source:** previous studies.

To test the designed equations, we start the estimated of equations by utilizing the baseline model i.e., ordinary least square (OLS) model with cross-section and time-fixed effect. To finalize the specific econometric technique, it is necessary to cross-check the other issues, e.g., heteroskedasticity and endogeneity, etc., faced by panel data. In the results of fixed-effect estimation, the value of Durbin–Watson state (commonly known as DW state) is less than 1.5 (the value of DW stat is hidden as we do not report the results of fixed effect), implying the existence of heteroskedasticity issue. To incorporate this issue, we apply the generalized least square test (GLS) which can overcome the relevant issue of heteroskedasticity in panel data. The GLS model is a modified form of simple OLS which was first argued by Aitken (1936). In addition, it is mandatory to identify the endogeneity error specifically when there is a combination of both firm-specific and macro-economic variables in a single analysis (Wooldridge, 2002). Other potential root causes of endogeneity issues involve but are not limited to misspecification of the model and error of measurement. In doing so, we run the Wald test to check the endogeneity issue and mention the analysis in Table 2. The probability value ( $P \leq 0.05$ ) of Wald analysis accepts the alternative hypothesis, i.e., there exists a correlation among error terms and explanatory variables of the study, implying the existence of endogeneity error. To incorporate the endogeneity issue, we run

**Table 2. Endogeneity testing**

**Wald Test**

Test Statistic	Value	df	Probability
F-statistic	9.488	(9, 970)	0.000
Chi-square	85.392	9	0.000

**Null Hypothesis Summary**

Normalized Restriction (= 0)	Value	Std. Err.
C (1)	0.631	0.145
C (2)	0.886	0.530
C (3)	0.079	0.256
C (4)	-0.168	0.145
C (5)	-0.229	0.207
C (6)	-0.029	0.023
C (7)	0.031	0.007
C (8)	-0.054	0.021
C (9)	0.002	0.001

Null hypothesis: Restrictions are linear in coefficients. Source: self-estimation.

the system generalized method of moment (GMM) model argued by Arellano and Bover (1995). By utilizing the lagged values of explanatory variables as instruments, the GMM model can reduce the probability of correlation among residual terms and independent variables and thus remove the endogeneity issue.

#### 4. Results

Table 3 displays the descriptive analysis of the variables. The mean value of APR (account payable ratio) is 0.136, indicating the percentage of account payables as compared to total production costs. Similarly, the account receivable ratio has a mean value of 0.168% or 16.8%, indicating that Pakistani enterprises hold almost 17% of account receivables. The mean value of AGI (aggregate governance index) is -1.060, implying the worst governance situation as the mean value is skewed toward a negative end. The mean value of DTR (debt ratio) is 0.338, demonstrating the percentage of bank loans acquired to finance the assets. The average log value of FS is 1.914, while SGR has a mean value of 0.031 which is the percentage of average growth experienced by Pakistani enterprises. The average RIR (real interest rate) is 2.888% with a maximum value of 7.125 (during the year 2012) and a minimum value of -4.367 (during the year 2011). The average inflation rate is 7.496% with a maximum value of 12.938 (in 2010) and a minimum value of 2.529 (in 2015). The mean value of the DCP ratio is 16.461, predicating the percentage of funds extended by banks to the private sector of an economy. Table 4 presents the correlation values. Most values are less than 0.700, confirming the no issue of multicollinearity in data.

##### 4.1. Regression analysis

To test the equations (1,2), we apply the GLS (generalized least square) test and GMM (generalized method of moments) model and present the analysis in Tables 5 and 6 relatively. In Table 5, the coefficient value of AGI is 0.182 which is significant at the 1% level, exhibiting the negative and statistically significant impact of the aggregate governance index on account payables. This positive impact of AGI on account payables is found consistent even across the other proxies of governance including voice and accountability, political stability, regulatory quality, and corruption control. Meanwhile, the AGI shows a negative and statistically significant impact on the account receivables ratio (as shown in Table 6). As for the control variable relationship, DTR and SGR have a negative while FS has a positive relationship with account payables (as shown in Table 5). Similarly, IFR (inflation rate) and DCP (financial sector development) have an inverse, while RIR

**Table 3. Descriptive analysis**

	Mean	Median	Std. Dev.	Maximum	Minimum	Observation
APR	0.136	0.100	0.123	0.853	0.010	2110
ARR	0.168	0.129	0.143	0.879	0.010	2110
AGI	-1.060	-1.030	0.075	-0.970	-1.180	2110
DTR	0.338	0.330	0.187	0.886	0.010	2110
FS	1.914	1.802	0.107	3.568	0.060	2110
SGR	0.031	0.026	0.121	0.899	-0.686	2110
RIR	2.888	4.020	0.171	7.125	-4.367	2110
IFR	7.496	7.189	0.137	12.938	2.529	2110
DCP	16.461	15.570	0.110	21.288	14.579	2110

Acronyms: APR = account payable ratio, ARR=account receivable ratio, AGI=aggregate governance index, DTR= debt ratio, FS= firm size, SGR=sales growth ratio, RIR= real interest rate, IFR=inflation rate, DCP=financial development. Source: own estimation.

**Table 4. Correlation analysis**

	APR	ARR	AGI	DTR	FS	SGR	RIR	IFR	DCP
APR	1.000								
ARR	0.304 <sup>a</sup>	1.000							
AGI	.173 <sup>a</sup>	0.157 <sup>a</sup>	1.000						
DTR	-.100	-0.059 <sup>a</sup>	-0.030 <sup>c</sup>	1.000					
FS	-.046 <sup>b</sup>	0.163 <sup>a</sup>	0.078 <sup>a</sup>	-0.023 <sup>b</sup>	1.000				
SGR	-.183 <sup>a</sup>	-0.114 <sup>b</sup>	-0.197 <sup>a</sup>	0.007 <sup>a</sup>	0.015 <sup>a</sup>	1.000			
RIR	-.014 <sup>a</sup>	0.046 <sup>a</sup>	0.070 <sup>a</sup>	-0.002 <sup>a</sup>	0.005 <sup>a</sup>	-0.152 <sup>c</sup>	1.000		
IFR	-.122 <sup>a</sup>	-0.070 <sup>a</sup>	-0.602 <sup>a</sup>	0.081 <sup>a</sup>	-0.056 <sup>a</sup>	0.129 <sup>b</sup>	-0.170 <sup>a</sup>	1.000	
DCP	-.124 <sup>c</sup>	-0.089 <sup>a</sup>	-0.470 <sup>b</sup>	0.081 <sup>c</sup>	-0.051 <sup>b</sup>	0.222 <sup>a</sup>	-0.064 <sup>a</sup>	0.741 <sup>a</sup>	1.000

Acronyms: APR = account payable ratio, ARR=account receivable ratio, AGI=aggregate governance index, DTR= debt ratio, FS= firm size, SGR=sales growth ratio, RIR= real interest rate, IFR=inflation rate, DCP=financial development. Source: own estimation. Notes: a, b, and c reveal the significance level at 1%, 5%, and 10% levels.

**Table 5. Effect of country governance on account payables**

	Account payables as a dependent variable (Testing Equation 1)			
	Generalized least square (GLS)		Generalized Method of Moments (GMM)	
	Coefficients	Probability	Coefficients	Probability
C	0.457***	0.000	-1.444***	0.022
APR (-1)	-	-	0.816***	0.000
AGI	0.373***	0.016	0.182***	0.026
VAA	0.102	0.364	0.832***	0.024
POS	0.044**	0.051	1.059***	0.024
ROQ	0.013	0.918	0.192***	0.009
COC	-0.078***	0.042	-0.745***	0.033
DTR	-0.050***	0.000	0.037	0.128
FS	0.013***	0.000	-0.002	0.714
SGR	-0.062***	0.000	-0.340***	0.014
RIR	-0.007	0.415	0.008***	0.012
IFR	0.001	0.444	-0.033***	0.020
DCP	-0.001	0.683	-0.038***	0.022
Adjusted R-square		0.426		0.448
S.E of regression		0.116		0.095
Prob. (F-statistics)		0.000		-
J-statistics		-		0.495

Acronyms: APR = account payable ratio, AGI=aggregate governance index, VAA= voice, and accountability, POS= political stability, ROQ= regulatory quality, COC= corruption control, RIR= real interest rate, IFR=inflation rate, DCP=financial development Note: \*\*\*, \*\*, \* reveal the significance level at 1%, 5%, and 10% level. Source: self-estimation.

(real interest rate) shows a direct relationship with account payables (as shown in Table 5). Table A1 shows the regression outputs for the fixed effect model.

## 5. Discussion

In the current analysis, we examine the effect of country governance on the trade credit activities of enterprises. In Table 5, the estimated coefficient values reveal that the aggregate governance

**Table 6. Effect of country governance on account receivables**

	Account receivables as a dependent variable (Testing equation 1)			
	Generalized least square (GLS)		Generalized Method of Moments (GMM)	
	Coefficients	Probability	Coefficients	Probability
C	0.498***	0.000	−0.624***	0.000
ARR (−1)	−	−	0.987***	0.000
AGI	1.299***	0.000	1.783***	0.027
VAA	0.032	0.781	1.549***	0.030
POS	0.208***	0.001	0.745	0.225
ROQ	0.405***	0.001	0.212***	0.000
COC	0.294***	0.002	0.563***	0.029
DTR	0.009	0.411	−0.019	0.338
FS	0.033***	0.000	0.005	0.352
SGR	0.028***	0.009	0.255*	0.101
RIR	0.001	0.866	0.002**	0.056
IFR	−0.004***	0.011	−0.015	0.390
DCP	−0.008***	0.004	0.006***	0.017
Adjusted R-square		0.302	0.662	
S.E of regression		0.135	0.082	
Prob. (F-statistics)		0.000	−	
J-statistics		−	0.178	

Acronyms: ARR = account receivable ratio, AGI=aggregate governance index, VAA= voice, and accountability, POS= political stability, ROQ= regulatory quality, COC= corruption control, RIR= real interest rate, IFR=inflation rate, DCP=financial development Note: \*\*\*, \*\*, \* reveal the significance level at 1%, 5%, and 10% level. Source: self-estimation.

index (AGI) has a coefficient value of 0.182 which is significant at the 1% level and demonstrates the direct relationship between country governance and account payables ratio (APR). This positive relationship between AGI and APR was found consistent even in the case of other proxies of governance including VAA (voice and accountability), POS (political stability), ROQ (regulatory quality), and COC (corruption control). Taking a collective effect, good governance can inhibit the unnecessary delay for payables by reducing the information asymmetric and thus can lead to urging the corporate managers on more trade credit activities. A better governance system induces business smoothness and enhances institutional efficiency (Agyei et al., 2022) which further accelerates overall business activities. In addition, enterprises limit their business activities during bad governance due to the risk of default and non-enforcement of business regulations. Both factors eventually decrease the trade activities of enterprises. In the literature, no study explores the empirical relationship between governance and trade credit activities. However, the analysis of Cai et al. (2022) can be utilized to support the possible link between governance and trade credit. In their analysis, they have vowed the inverse relationship between good governance and leverage volume which may enhance the dependency of enterprises on a secondary source of financing, i.e., trade credit financing. Specifically, their analysis documents the inverse relationship between good governance and short-term bank financing of enterprises, leading to the transfer of the financing needs of enterprises to alternate short-term financing, i.e., trade credit financing. The enterprises may get short-term financing by enhancing the payables as more trade payables enhance the financial flexibility of enterprises (Chen et al., 2019).

As likely to account payables, good governance has a positive relationship with the account receivables ratio. A high volume of account receivables depicts the enterprise's behavior regarding



the increase in sales volume even through credit sales (Bussoli & Marino, 2018). During a good governance situation, the enterprises are less likely to bear the credit risk stemming from high bad debts and non-payment of dues by customers. This proximity regarding the low credit risk further accelerates the sales volume of enterprises and account receivables relatively. The protection of creditors' rights and enforcement of law are the key factors that generate optimistic thoughts regarding credit sales and firms may be interested to enhance their sales volume even through credit sales in such a situation. Moreover, the control of corruption mitigates market uncertainty which further enhances the trade volume of enterprises (D'Mello & Toscano, 2020). In brief, a better governance situation can enhance the likelihood of a sales ratio which further leads to more trade volume. Explaining the effect of control variables, the debt ratio has an inverse relationship with trade payables, demonstrating that the enterprises reduce the financing through trade payables in the presence of more bank financing and vice versa. In the presence of enough primary financing i.e., bank loans, the enterprises are less interested to enhance their financing volume through a secondary type of financing, i.e., trade financing. Supporting this, Chen et al. (2019) have documented the inverse relationship between bank credit and trade credit. The size of the firm has a direct relationship with both trade payables and receivables. Larger firms are more interested to expedite their sales volume even through credit sales and thus hold more balance of trade receivables on their balance sheet. Due to high financial immunity, the larger firms have more capacity to offer credit sales to their financial distress customers. Meanwhile, larger firms enjoy more credit purchases due to a good market reputation and creditworthiness the market. The suppliers of raw materials are more interested to provide the raw material even on credit to larger firms due to a good market image (Lawrenz & Oberndorfer, 2018).

The sales growth ratio is negatively connected with trade payables, while positively connected with trade receivables. A sales growth rate enhances the cash flow ratio of enterprises and thus firms are in good capacity to timely fulfill their trade liabilities. Moreover, the sales growth ratio requires the voluminous purchase of raw materials which is only possible when enterprises have a good credit reputation. On the other hand, the sales growth ratio positively determines the trade receivables, demonstrating the sales accelerating behavior of enterprises even through credit sales which further enhances the trade receivables of enterprises (Cao et al., 2022). At the macro level, the real interest rate demonstrates a positive link with trade payables and receivables. During high-interest rates, bank financing becomes costlier and enterprises bend their financing preferences to more trade activities. High-interest rate commonly known as a policy rate enhances the cost of bank financing and limits managerial behavior regarding the acquisition of bank loans (Altunok et al., 2020). Similarly, the inflation rate has a negative coefficient value with both trade payables and receivables. A high inflation rate creates market uncertainty and thus limits the trade activities of enterprises. During high inflation rates, the suppliers are less interested to offer credit purchases due to high price volatility stemming from high inflation rates. Similarly, the high inflation rate limits the purchasing capacity of customers due to increments in retail prices which further impedes the sales volume and trade receivables relatively (Musarat et al., 2020). Lastly, financial development has a negative coefficient sign, demonstrating the fewer preferences of enterprises for secondary financing in financially developed countries. The developed financial sector offers voluminous loans to the real sector of an economy even at low financing rates and thus firms are less interested in trade financing (Ahmed & Farooq, 2020). In summary, a good governance system enhances the trade credit activities of enterprises.

## 6. Conclusion, limitations, and implications

The literature has explored the firm-specific and macroeconomic determinants of trade credit and has enlisted the dynamic impact of such factors on the overall trade credit operations of enterprises. However, how the country's governance situation relates to trade credit activities is not yet well explored in the literature. In this vein, the recent literature has mentioned the role of country governance in other corporate-level decisions including ownership concentration (Saona & Martín, 2016), capital structure and capital investment (Cai et al., 2022), and firm innovation (Jia et al., 2019), etc. To extend the current literature, the current analysis aimed to seek the empirical nexus among country governance and trade-credit operations of non-financial sector enterprises of Pakistan. We

sample the 10-year data (2010–2019) and employ the generalized least square (GLS) and generalized method of moments (GMM) models to investigate the regression among variables. The empirical analysis implies that the aggregate governance index in coalition with other governance proxies including voice and accountability, political stability, regulatory quality, and corruption control has a direct and statistically favorable impact on both trade payables and receivables. A better governance situation enhances the likelihood of trade-credit operations by mitigating market uncertainty, protecting both creditors' and debtors' rights and ensuring transparency in business operations. The control of corruption reduces the misallocation of resources and enhances the quality of financial reporting by enterprises which further reduces the issue of information asymmetric between suppliers and buyers. Similarly, the enforcement of law and regulatory quality makes business transactions more transparent and enhances the volume of trade. Political stability is the key factor that has a direct impact on trade credit activities as it ensures the long-term validity of policies related to business activities and thus managers are more optimistic to involve in trade-credit operations. This interpretation analysis offers robust evidence after controlling the effect of leverage, the size of the firm, and the ratio of sales growth at the corporate level and real interest rate, inflation rate, and financial development at the macroeconomic level.

Based on interpretation of empirical results, following policies can be suggested. The positive effect of a country's governance situation on trade credit activities suggests to corporate managers enhance their trade credit activities in a good governance situation. During a good governance situation, corporate managers should accelerate trade credit activities as it reduces the likelihood of trade failures and ensures the protection of rights. Thus, enhancing the trade credit during good governance can lead to many positive outcomes in the shape of high sales volume, reduction in production costs due to economies of scale in production volume, and acceleration of overall business activities. In addition, the current analysis vows that the larger firm should enhance the trade credit volume as it has a direct impact on trade-credit operations. Larger firms ensure the provisions of credit both for suppliers and company points of view due to high financial immunity. Government officials from Pakistan should enhance the probability of good governance by establishing various efforts, e.g., control on corruption activities and ensuring political stability.

Despite many policy outcomes, the current analysis is limited by not including the other factors e.g., aid dependency that has a close link with governance and can moderate the overall relationship. Many studies have documented the correlation between country governance and foreign aid. The aid-dependent countries must follow the instructions given by donor agencies and thus such economies have volatile governance situations. The future analysis can be conducted by including the moderating effect of foreign aid and other potential factors in the nexus between country governance and trade credit activities.

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#### Note

1. Data that support the findings of current study are available on FSA (financial statement analysis), The State Bank of Pakistan, WDI, WGI, The World Bank. Data will be made available on request.

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## Appendix

**Table A1. Robustness analysis effect of country governance on trade credit**

	Fixed effect Model			
	Account Receivables		Account Payables	
	Coefficients	Probability	Coefficients	Probability
C	0.403***	0.000	0.556***	0.000
AGI	1.230***	0.000	0.908***	0.025
VAA	-0.052	0.688	0.047	0.786
POS	0.198***	0.009	-0.160	0.112
ROQ	-0.221	0.112	-0.167	0.363
COC	0.365***	0.000	-0.184*	0.098
DTR	0.053***	0.008	-0.087***	0.001
FS	0.101***	0.000	0.015	0.604
SGR	0.048***	0.000	-0.068***	0.000
RIR	0.003	0.718	-0.001	0.192
IFR	0.003***	0.040	0.002	0.321
DCP	-0.011***	0.001	-0.006	0.154
<i>Adjusted R-square</i>		0.768	0.512	
<i>S.E of regression</i>		0.068	0.089	
<i>Prob. (F-statistics)</i>		0.000	0.000	

**Acronyms:** ARR = account receivable ratio, AGI=aggregate governance index, VAA= voice, and accountability, POS= political stability, ROQ= regulatory quality, COC= corruption control, RIR= real interest rate, IFR=inflation rate, DCP=financial development **Notes:** \*\*\*, \*\*, \* reveal the significance level at 1%, 5%, and 10% level. **Source:** self-estimation.