WORKING CAPITAL MANAGEMENT AND PERFORMANCE IN FINANCIALLY DEPENDENT FIRMS: EVIDENCE FROM DEVELOPING ASIAN ECONOMIES

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ABSTRACT

This paper examines the impact of working capital management on firm performance in nine developing economies in Asia. Specifically, the study focuses on two critical aspects: the management of trade credit and inventory. The empirical findings reveal that effective management of these components significantly enhances the performance of financially dependent firms. In fact, during critical periods such as the 2008 financial crisis, these management strategies helped to boost performance considerably. However, no comparable association was observed in other firms within the sample. These results suggest that appropriate handling of trade credit and inventory can yield a significant performance advantage.

KEY WORDS

corporate performance, financial dependence, financing constraint, profitability, trade credit

JEL CODES

G30, G32, L26

1 INTRODUCTION

The substitutionary role of trade credit (hereafter referred to as TC) has been widely recognized in the literature (e.g., Schwartz, 1974; Ferris, 1981; Fisman and Love, 2003; Goto et al., 2015; Abdulla et al., 2017; Karakoç, 2022a). It suggests that delayed payment for inventory purchased from a supplier serves as a source of liquidity. Firms reliant on external financing, particularly those with significant growth opportunities but insufficient funding, tend to take advantage of this payment arrangement to finance physical investments (Rajan and Zingales, 1998; Fisman and Love, 2003; Aktas et al., 2012; Carbó-Valverde et al., 2016). Despite its benefits, credit purchases may be excessively costly (e.g., Cuñat, 2007; Yang and Birge, 2018), and borrowers must contend with inventory-related costs such as storage, ship-

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ment, and insurance. These drawbacks make borrowing from suppliers less attractive. Nevertheless, according to the data used in this study, trade debt accounts for an average of 13 percent of total assets. Therefore, interfirm credit and related inventory policies can have a significant impact on performance, particularly, in firms that rely on alternative financing instruments.

Rajan and Zingales (1998) use a company's capability to finance investment expenditures using cash flow as a criterion for identifying external dependence. They contend that if the cash flow is inadequate to cover the investment expenditures, then the firm can be classified as reliant on external financing to meet the shortfall. This statement highlights two factors: the first being investment expenditures, i.e., growth opportunities, and the second being insufficient cash flow. Although many firms use external resources to sustain their operations, the issue of external dependence in financing investment opportunities is closely linked to various fields of literature, such as financial and economic development (Diallo and Al-Titi, 2017; Osei-Tutu and Weill, 2022) capital structure and firm performance (Avcı, 2016; Dao and Ta, 2020; Islam and Iqbal, 2022). This matter is also closely associated with the notion of financing constraints[1], which has been extensively researched (see, for instance, Kerr and Nanda, 2011). A company's dependence on alternative financing instruments is largely determined by its reliance on external sources and the underdevelopment of the economy in which the firm operates (Fisman and Love, 2003). Therefore, in economies where investment opportunities are abundant, but funds to finance those opportunities are limited, trade credit as a financing instrument and its impact on corporate performance naturally become significant (e.g., Harris et al., 2019).

We explore this subject with a specific focus on externally financially dependent (EFD) firms. These firms are characterized by inadequate internal revenues to finance investment opportunities, which is likely to affect their ability to supply TC while simultaneously driving demand for borrowing more. Consequently, we examine both sides of the transaction. Building on previous literature (Avcı, 2016; Harris et al., 2019; Afrifa et al., 2020) on corporate performance, we include several control variables in our empirical model, specifically to account for corporate growth, growth opportunities, and access to traditional funding. To enhance the robustness of the analysis, we also investigate the effects of inventory management. Notably, when firms receive (offer) TC, they effectively borrow (lend) inventory, meaning that both transactions directly impact inventory levels. A strong correlation between TC and inventory levels provides an opportunity to scrutinize the relationship further and obtain more robust findings. In addition, we examine the 2008 financial crisis era due to its specific impact on corporate financing channels. During such times, alongside a decline in corporate income, access to traditional financing was substantially weakened, potentially motivating firms to seek alternative financing channels. As such, it is justified to study the effects of financing policies during such turbulent periods.

In econometric analysis, we use publicly traded firm data from nine developing economies (the full list of countries is in Tab. 5 in the Annex) and the difference GMM methodology, which controls for firm-level heterogeneity and allows for dealing with endogeneity issues.

This study makes the following contributions to the literature on trade credit. The majority of previous research has been conducted in Western countries (Dary and James, 2019; Bussoli and Jonte, 2020) or large Asian countries such as China and Korea (Hyun, 2017; Yano and Shiraishi, 2020). However, there has been a lack of investigation into the consequences of borrowing for financial reasons in the wider Asian context. Despite some similarities between those countries, there are significant variations in the level of their financial development. As a result, the study fills an important gap in the literature by examining the role of trade credit in countries with underdeveloped financial systems, where financing constraints

[1]The term "constraint" is utilized here to emphasize that cash flow is inadequate, and the process of obtaining external funding is not straightforward.

often lead to demand for alternative sources such as credit from suppliers.

Moreover, this study contributes to the literature by documenting the empirical evidence on the impact of TC activity on the performance of EFD firms, which has not been extensively explored before. Prior research has shown that business partners possess reliable knowledge of each other's prospects, and this informational advantage is reflected in the TC provided to profitable and growing firms (Fabbri and Menichini, 2010; Agostino and Trivieri, 2014). Therefore, it is argued that firms receiving more TC exhibit better performance. However, an important detail that has not been addressed in this literature is the dependency of certain firms on TC as a source of financing, which can significantly influence their financing policies. Furthermore, our findings do not completely support the conclusions drawn in previous studies (e.g., Aktas et al., 2012; Goto et al., 2015; Dary and James, 2019; Bussoli and Jonte, 2020). The common conclusion offered in these studies is that TC is positively associated with performance measures. Given that the cost of TC varies according to the quality of the borrower (Brennan et al., 1988; Murfin and Njoroge, 2015) and informationally efficient partners are well aware of each other's financial situations, the cost of borrowing and its effect on profitability is likely to vary based on the borrower's financial situation, favoring those firms that invest and grow more rapidly as suggested by the findings of this study.

2 HYPOTHESIS DEVELOPMENT

2.1 The Substitutionary Nature of Trade Credit and Performance

The redistribution hypothesis posits that financially sound firms offer TC to their financially constrained customers (Schwartz, 1974). While delayed payment for timely received goods and services provides a valuable source of liquidity, borrowing from suppliers can come at a high cost (see for example Aktas et al., 2012; Abdulla et al., 2017; Yang and Birge, 2018). If firms demand more credit than they normally would for financial reasons, sellers may be willing to provide additional TC, but at a higher cost that could drive profitability down (Cuñat, 2007). Moreover, when firms borrow TC, they borrow inventory, which incurs additional costs. However, after the liquidation of the borrowed inventory, the funds can be allocated to other value-adding operations. According to the working data of this study, which pertains to professionally managed publicly traded firms, inventories constitute, on average, 16 percent of all assets, with a median of 13 percent. These statistics indicate that firms invest significant portions of their funds in inventories and TC from suppliers may have enabled those resources to be allocated to profitable ventures. Additionally, by allowing the payment for several deliveries of goods to be made at once, TC reduces the cost of transactions and alleviates the need to carry large amounts of cash (Schwartz, 1974; Ferris, 1981), thereby facilitating efficient management of working capital.

The use of TC from suppliers in the form of inventory may seem to limit its benefits; however, it can lead to various ways in which borrowed TC can affect firm performance. For example, it can be used to finance TC supply, which ultimately increases sales and profitability (Abuhommous, 2017). By financing receivables, borrowed TC supports sales and enables firms to offset the excessive cost of borrowing by offering the same discount and duration to their buyers that they are offered. Therefore, firms that require TC for operational reasons are likely to experience a positive influence on performance because borrowing TC in the form of inventory provides them with the necessary tools to promote sales and profitability while eliminating the high costs associated with borrowing from suppliers.

Goto et al. (2015) assert that suppliers possess better information about the growth prospects of their clients and aim to cap-

ture their future profitable business, granting them an informational advantage that provides borrowers with access to supplier finance. Consequently, borrowers may either borrow cash from a financial institution or borrow inventory and make delayed payments to their suppliers. The authors further argue that the amount of TC may be regarded as a sign of suppliers' confidence in the future of the borrower. Aktas et al. (2012) contend that managers focused on wealth maximization finance capital investment with trade credit because replacing bank financing with TC curbs the use of firm resources for private benefits. Therefore, some studies have demonstrated that borrowed TC is actually utilized in financing long-term assets. For instance, Fisman and Love (2003) demonstrate that in poorly developed financial systems, companies with significant growth opportunities rely on TC, compensating for the lack of institutional funding required to finance capital investment. Carbó-Valverde et al. (2016) report similar findings, indicating that credit-constrained Spanish small and medium-sized enterprises (SMEs) rely on trade credit to finance physical investment, and this reliance intensified during the credit crisis. In addition, Yano and Shiraishi (2020) find empirical evidence showing that trade credit plays a crucial role in financing capital expenditures of financially constrained Chinese firms.

Unlike financial institutions, business partners hold an informational advantage. Through the frequency and volume of orders, or by paying visits in person, suppliers can reliably judge the quality of a buyer. Operating in the same industry, the supplier is aware of existing growth opportunities and can assess the quality of investment projects that the borrower undertakes[2]. Hence, a business partner that invests and displays signs of noteworthy growth is likely to receive better-termed trade credit contracts because of aligned interests. In recognition of this, the supplier considers offering trade credit to its partners as an investment in a long-term relationship (Wilson and Summers, 2002) and generously respond to partners' needs for financing (Love and Zaidi, 2010). One of the defining characteristics of EFD firms is the capital investment they undertake, which contributes to their bargaining power and possibly enables them to negotiate better terms in trade credit arrangements.

2.2 Macro Variables and Trade Credit Activity

External financing is a key element that affects firm growth, and it is influenced by a variety of macro and micro variables (Anton, 2016). Firms' access to traditional sources of financing can also have a significant impact on their reliance on alternative sources (Carbó-Valverde et al., 2016; McGuinness et al., 2018). In less developed economies, the availability of external financing options may be limited due to a range of macro and micro variables, such as political instability, economic volatility, and regulatory constraints (Allen et al., 2005). The need for resources triggered by development initiatives and limited access to bank loans and other capital market products can prompt firms to seek out alternative financing options, including crowdfunding, peer-to-peer lending, and other non-bank financing options. Therefore, when studying the financing of firms, it is essential to consider the country's financial system as one of the key factors.

The private debt-to-GDP ratio, which is utilized as a measure of financial development in some studies such as Demirgüç-Kunt and Maksimovic (2001), Fisman and Love (2003), and El Ghoul and Zheng (2016), is approximately 30 percent for Indonesia and Pakistan, whereas it is approximately 160 percent for China and Korea during the 2010–2020 period. A firm operating in a country where the debt-to-GDP ratio is considerably low is more likely to rely on alternative financing instruments.

Furthermore, access to formal financing is expected to be more convenient in countries where creditors' rights are protected rigorously in the event of default (La Porta et al., 1997). Financial institutions are likely to reject

[2]See Agostino and Trivieri (2014) and Karakoç (2022a) for discussions on seller's information advantage in business-to-business relationships.

fewer loan applications, knowing that they will be able to limit their losses, and therefore, better judicial enforcement systems and strong creditor protection will enhance firms' access to formal financing (Moro et al., 2018). In the case of developing countries, the rule of law index values ranges from 62 in Indonesia to 117 in Pakistan as of 2019.[3] In countries with low rule of law scores, indicating weak formal regulatory and judicial frameworks, firms may face enforcement-related problems that can significantly impede their ability to borrow from traditional sources or capital markets (Hermes et al., 2016).

Some of the developing countries have demonstrated remarkable growth performance in the last two decades, with growth rates ranging from approximately 4% in Korea to 8% in China (Lin and Chou, 2015). However, as is typical of less developed countries, inadequate contract enforcement and property rights can pose significant challenges to firms seeking traditional credit (Lin and Chou, 2015). Consequently, firms in underdeveloped economies often rely on alternative financial sources to support their investments, as observed in previous studies (e.g., Carbó-Valverde et al., 2016; Yano and Shiraishi, 2020).

Therefore, we hypothesize:

H_1: Working capital policies have a positive effect on the performance of financially dependent firms in developing economies.

3 DATA AND METHODOLOGY

3.1 Data

The dataset employed in this study encompasses nearly 7,000 firms from nine different countries (a detailed description of the data is provided in Tab. 5 in the Annex). This dataset is of significant interest to researchers for several reasons, which are explained as follows:

Tab. 1 displays the countries included in the sample data and provides the averages of the key variables. To facilitate comparisons, the average of the entire financial debt, encompassing both long and short-term debt securities and bank loans, is also presented. In all instances, the TC borrowed from suppliers constitutes not less than one-third of the total financial debt, placing it as the second most significant source of external funding. Every dollar borrowed from suppliers through TC is used to finance inventory or is kept in inventory awaiting liquidation, as documented in the works of Bougheas et al. (2008), Afrifa et al. (2020), and Karakoç (2022b). Collectively, these three working capital components account for a substantial portion of funds and assets in firms operating in developing economies.

Both the supply of TC and inventory levels have a significant association with the utilization of borrowed TC. Moreover, the latter is closely related to financial debt, as firms often resort to borrowing from their business partners when they face restricted access to financial sources (Abdulla et al., 2017). This trend is more pronounced in developing economies, where firms frequently encounter difficulties in obtaining bank loans or capital from financial markets (Fisman and Love, 2003; Lin and Zhang, 2020). Consequently, they are inclined towards leveraging TC as a financing option.

The sample countries have demonstrated remarkable growth performance in the last two decades, but as is typical of less developed countries, inadequate contract enforcement and property rights can pose significant challenges to firms seeking traditional credit (Lin and Chou, 2015). Moreover, access to formal financing is expected to be more convenient in countries where creditors' rights are protected rigorously in the event of default (La Porta et al., 1997). The sample countries lack strong formal regulatory and judicial frameworks, which may result in enforcement-related problems (Hermes et al., 2016). These factors make the

[3] A lower score indicates lower corruption, more press freedom, and strong rule of law. South Korea is not listed here due to its exceptionally low score.

Tab. 1: The sample countries and some key statistics

Countries	Trade credit borrowed	Trade credit supplied	Inventories	Total financial debt
China	0.093	0.153	0.149	0.268
India	0.137	0.239	0.183	0.329
Indonesia	0.222	0.169	0.175	0.318
Korea[4]	0.099	0.202	0.123	0.262
Malaysia	0.086	0.195	0.150	0.237
Pakistan	0.101	0.152	0.198	0.377
Philippines	0.083	0.143	0.103	0.279
Thailand	0.096	0.168	0.176	0.292
Vietnam	0.110	0.221	0.234	0.304

Note: All series presented in the table have been scaled by the contemporaneous assets. Specifically, the variable 'Trade credit borrowed' refers to trade payables, while 'Trade credit supplied' pertains to account receivables. The variable 'Inventories' reflects the total amount of inventory, and 'Total financial debt' comprises long and short-term bank loans and debt securities.

selected countries highly suitable for the study of firms' access to financing and their use of alternative financial sources (Carbó-Valverde et al., 2016; Yano and Shiraishi, 2020). The rich and comprehensive nature of the dataset, combined with the significant variability in financial development and regulatory environments across the sample countries, provides a unique opportunity to contribute to the existing literature on this topic.

Although the sample comprises developing economies, which tend to exhibit similarities in legal and financial regulations, there is significant variation in the average TC-to-total asset ratios, ranging from 25 percent in the Philippines to 47 percent in Indonesia, with a general average of about 32 percent (please refer to Tab. 6 in the Annex). The inventory-to-total asset ratio also displays similar variation, ranging from 10 percent in the Philippines to 24 percent in Vietnam.

Initially, the dataset contained 270,871 firm-year observations with a large number of missing values. To clean the data, extreme values at each end of the variables were removed, and negative observations in size, fixed assets, debt, and sales were dropped. Balance sheet variables that exceeded total assets and firms with fewer than four observations were removed. No restriction was enforced regarding firm entry and exit to avoid selection bias. Consequently, at the end of the data-cleaning process, an unbalanced panel data of 6,907 firms and 68,826 observations remained.

3.2 Methodology and Variables

Eq. 1 represents the regression equation and the variables used in the analysis.

$$\begin{aligned} \text{Perf}_{ijt} = \alpha_i + \beta_0\, \text{Perf}_{ijt-1} + \\ + \beta_1\, \text{TC}^{\text{SUM}}_{ijt-1} + \\ + \beta_n\, X_{ijt-1} + \\ + \mu_i + \delta_t + \varepsilon_{it} \end{aligned} \tag{1}$$

In Eq. 1, Perf_{ijt} represents the return on total assets in firm i from country j at time t.

$$\text{ROA} = \frac{\text{EBITDA}}{\text{Total Assets}}$$

Return on assets (ROA) is widely used as a measure of how much income is earned per unit

[4]South Korea is included in the sample of developing economies in Asia because it is still considered a developing country by some international organizations, such as the MSCI. Additionally, South Korea is a significant contributor to the region's economy, with almost a quarter of the firms in the sample based in South Korea. This makes it important to include South Korea in the sample to ensure the generalizability of the results. Additional analyses were conducted by excluding South Korea from the sample to address its classification as a developing country, and the results were compared to the analysis of the full sample. The inclusion or exclusion of South Korea had an insignificant impact on the coefficients in terms of their sign and magnitude.

of asset in previous literature (e.g., Kestens et al., 2012; Grau and Reig, 2018; Islam and Iqbal, 2022). Although the market-to-book ratio is also utilized (e.g., Dary and James, 2019), it is more forward-looking and likely to reflect relevant performance-related information that is unknown to parties who rely on reported financial statements. Therefore, we include it as an essential explanatory variable in our empirical analysis.

Instead of examining individual borrowed and received TCs, we focus on their sum, denoted as TC_{ijt}^{SUM}. There are at least two reasons for this approach. Firstly, prior research (e.g., Abuhommous, 2017; Afrifa et al., 2020) has demonstrated that both borrowing and offering TCs can enhance corporate performance in different ways. While borrowing TC creates liquidity and increases operational efficiency, offering it contributes to performance by expanding market share and enhancing business-to-business relationships. However, field evidence suggests a high correlation between borrowing and offering TCs. Thus, to account for the effects of both sides and to avoid multicollinearity issues, it is necessary to consider TC activity as a whole by using the sum of TC supplied and borrowed. Secondly, both sides of the transaction are both integral components of efficient inventory management policies that serve the goal of wealth maximization, functioning separately yet harmoniously.

To ensure robustness, we also examine the current inventory level as a proxy variable for total TC. When firms receive or offer TC, they effectively borrow or lend inventory, respectively, so both transactions directly affect inventory levels. The relationship between trade credit activity and inventory management was first recognized by Emery (1987), who argued that firms could offer more TC to buyers in response to variable demand, leading to increased sales and reduced inventory costs. Subsequent studies by Daripa and Nilsen (2005) and Bougheas et al. (2008) have also highlighted how TC can be effectively used to manage inventory-related costs. More recently, Afrifa et al. (2020) examined the role of TC in inventory management and found that firms use it to mitigate the effects of abnormally low or high inventory levels, thereby keeping them at optimal levels for performance improvement. Given the high correlation between TCs and inventory, exploring this relationship offers an opportunity to obtain robust results.

The remaining explanatory variables, namely sales growth, capital expenditure, fixed assets, financial debt, and growth opportunities, are denoted by the symbol X_{ijt}. For a comprehensive review of these variables, please refer to Tab. 7 in the Annex. Additionally, X_{ijt} encompasses Rajan and Zingales' dependence measure, which is employed to distinguish firms that depend on external resources to finance their investment opportunities. The underlying rationale behind this measure is that firms, which are unable to fully finance their capital investments through internal funds (net income + depreciation + inventories)[5], rely on financial credit from financial institutions, as well as borrow inventory and postpone payments to their suppliers (Goto et al., 2015). Unlike the original measure that considers cash flow, changes in inventory, and trade credits (TCs), we include inventory while excluding TC. This is because the existing inventory prior to borrowing TC may discourage firms from borrowing further. In fact, firms may even contemplate increasing the supply of TC to shift inventory-related expenses onto buyers (Bougheas et al., 2008). Hence, the dependence variable accounts for the potential limiting effects of the current inventory level on how much more a firm can borrow from its suppliers. To control for endogeneity, the identification strategy uses a once-lagged indicator of dependence, whereby firms that have cash flow (as defined above) less than capital expenditures (Capex) are classified as dependent in the year $t-1$.

The productivity level of a firm is a consequence of efficient resource management and is likely to exhibit a continuous structure. However, the inclusion of a once-lagged dependent variable as an explanatory variable in an em-

[5]A firm is considered financially dependent if its net income plus depreciation and inventories is less than its capital expenditures in a given year.

pirical design can capture this persistence while also giving rise to the problem of endogeneity. This issue arises due to the correlation between error terms and explanatory variables, as well as once-lagged performance (Anderson and Hsiao, 1981):

$$E\left[\text{Perf}_{it-1}\varepsilon_{it}\right] \neq 0.$$

The first-difference panel GMM methodology[6] can be taken advantage of to overcome this problem. The model controls for the endogeneity problem by employing instruments derived from the lags and lagged differences of endogenous variables. While these instruments are uncorrelated with error terms, they are correlated with the original variables (Arellano and Bond, 1991). Furthermore, by taking the difference with previous values, the model accounts for firm heterogeneity, i.e., it eliminates μ_i, the unobserved firm effect. Therefore, the difference GMM model is appropriate for analyzing the sample data, which exhibit a dynamic structure in the dependent variable, large N small T panels, independent variables that are not strictly exogenous, and heteroskedasticity and autocorrelation only within panels. For detailed information on the methodology, please refer to Roodman (2009).

The GMM estimation requires the orthogonality of the instruments, which can be tested via the Hansen test with the null of instrument validity. The choice of lags for determining the instruments, specifically the number of lags and the type of the equation, whether it is the level or the difference, is based on the information obtained from the Hansen and AR(2) tests. Therefore, the selected instruments satisfy the stated validity conditions. While selecting the lag, one should ideally opt for the closest lag available, such as $t-2$ instead of $t-3$ if both meet the required conditions. This is because the former is more likely to have a stronger correlation with the instrumented variable. Additionally, the set of instruments may differ from one estimation to another. For instance, the set of instruments that satisfies the validity conditions for total TC may not be suitable for inventory, or adding another variable to the equation may necessitate the use of a different set of instruments.

4 EMPIRICAL FINDINGS

4.1 Trade Credit-Performance Relationship in EFD Firms

The outcomes of the base regression analysis are presented in Tab. 2, with robust standard errors displayed in parentheses. The results show that TC^{SUM} and Inv have negative statistically significant coefficients, i.e., -10.3 percent and -12.3 percent, respectively, in the first and third columns of the table. These findings indicate a decrease in profitability as TC increases. A dummy variable, D_{depend}, which identifies dependent firms is interacted with TC^{SUM} and Inv. In the second and third columns, the new variables exhibit positive and statistically significant coefficients. Specifically, $\text{TC}^{\text{SUM}}_{\text{depend}}$ and $\text{Inv}_{\text{depend}}$ have coefficients of 19.3 percent and 28.5 percent, respectively, demonstrating the sensitivity of profitability to TC in EFD firms.

Regression estimations with TC^{SUM} and Inv variables produce similar results. The coefficients for both variables are statistically significant and negative, whereas the same coefficients for EFD firms are both significant and positive. A comparison of the magnitudes of the coefficient[7] for these variables in the second column of Tab. 1 indicates that the overall effect is positive. For example, in the case of TC the coefficient for TC^{SUM} is -0.106, and the

[6] All estimations are conducted in Stata using "xtabond2" code developed by Roodman (2009) This methodology has been commonly preferred in performance-related studies e.g., Grau and Reig (2018); Afrifa et al. (2020); Bussoli and Jonte (2020).

[7] Please note that in GMM estimation, the lag structure specified for endogenous variables can significantly affect the coefficients. To ensure a valid comparison, we used the same lag structure, specifically $t-5$, in our estimations.

Tab. 2: Trade credit and corporate performance in EFD firms

Dependent variable	**EBITDA/Assets**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Perf, $t-1$	0.363***	0.354***	0.383***	0.373***	0.363***	0.363***	0.363***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
TC^{SUM}	−0.103***	−0.106***		−0.103***	−0.061***	−0.055***	−0.058***
	(0.014)	(0.014)		(0.014)	(0.014)	(0.014)	(0.012)
TC^{SUM}_{depend}		0.193***			0.106***		0.053***
		(0.041)			(0.034)		(0.019)
Inv			−0.123***	−0.112***	−0.128***	−0.133***	−0.128***
			(0.019)	(0.008)	(0.020)	(0.020)	(0.020)
Inv_{depend}			0.285***			0.400***	0.284**
			(0.080)			(0.117)	(0.080)
Capex	−0.026	−0.023	0.008	−0.025*	0.006	0.004	0.008
	(0.005)	(0.005)	(0.005)	(0.015)	(0.005)	(0.005)	(0.005)
Growth	0.015***	0.015***	0.013***	0.013***	0.013***	0.013***	0.013***
	(0.005)	(0.001)	(0.001)	(0.003)	(0.003)	(0.001)	(0.001)
Size	−0.118***	−0.118***	−0.080***	−0.072***	−0.072***	−0.073***	−0.073***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
PPE	−0.054***	−0.054***	−0.059***	−0.057***	−0.056***	−0.056***	−0.056***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Debt	−0.025***	−0.025***	−0.029***	−0.024***	−0.024***	−0.024***	−0.024***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Q measure	0.007***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.858	0.780	0.630	0.803	0.724	0.706	0.699
Hansen	0.575	0.574	0.504	0.503	0.508	0.403	0.496
# obs	48,886	48,886	48,886	48,886	48,886	48,886	48,886
# firm	6,616	6,616	6,616	6,616	6,616	6,616	6,616

Notes: The table presents the output from the estimation of Equation 1 using the first difference GMM estimator with robust standard errors. The independent variables are included as predetermined instruments. ***, **, * denote significance levels of 1%, 5%, and 10%, respectively. All specifications are estimated with constant and time dummies. AR(2) reports the p-values for the second-order serial correlation in the residuals with the null of no correlation. P-values for the Hansen test are presented for overidentifying restrictions of the instruments, with the null of instrument validity. TC^{SUM} is the sum of received and supplied trade credit. Perf is EBITDA/$assets_{t-1}$, debt represents interest-bearing debt, PPE is net plant property and equipment, the Q measure is the market cap divided by the book value, growth is growth in sales, size is the natural logarithm of total assets, Inv is the stock of inventories, and capex is capital expenditure. $TC^{SUM}_{depend} = TC^{SUM} \cdot D_{depend}$; $Inv_{depend} = Inv \cdot D_{depend}$. For a detailed description of the variables, see Tab. 7 in the Annex.

coefficient for TC^{SUM}_{depend} is 0.193, which yields an 8.7 percent net increase in profitability for EFD firms. As for Inv, the coefficients in the third column of the table are −0.123 for Inv, and 0.285 percent for Inv_{depend}. They indicate a net positive effect of 16.5 percent on EFD firms.

On the other hand, both sales growth and the Q measure, which respectively reflect accounting and market growth, have coefficients of 1.5 percent and 8 per thousand, indicating a positive impact on performance. Capex, which represents the level of investment, exhibits positive but statistically insignificant coefficients. Size and leverage, on the other hand, demonstrate coefficients of −11.8 percent and −2.5 percent, respectively, which quantify their adverse influence on performance. Lastly, the coefficient for PPE stands at approximately 5.4 percent and is statistically significant at the 1 percent level.

Tab. 3: Trade credit and corporate performance in EFD firms: Robustness check with an alternative measure of dependence

	EBITDA/Assets					
Dependent variable	**1**	**2**	**3**	**4**	**5**	**6**
Perf, $t-1$	0.363***	0.363***	0.363***	0.363***	0.363***	0.363***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
TC^{SUM}	−0.101***		−0.103***	−0.061***	−0.055***	−0.058***
	(0.012)		(0.014)	(0.014)	(0.014)	(0.012)
$2TC^{SUM}_{depend}$	0.157***			0.195***		0.109***
	(0.023)			(0.023)		(0.023)
Inv		−0.109***	−0.112***	−0.112***	−0.109***	−0.102***
		(0.019)	(0.009)	(0.009)	(0.020)	(0.008)
$2Inv_{depend}$		0.234***			0.236***	0.265**
		(0.094)			(0.095)	(0.138)
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.780	0.630	0.803	0.724	0.706	0.699
Hansen	0.574	0.504	0.503	0.508	0.403	0.496
# obs	48,886	48,886	48,886	48,886	48,886	48,886
# firm	6,616	6,616	6,616	6,616	6,616	6,616

Notes: The table presents the output from the estimation of Equation 1 using the first difference GMM estimator with robust standard errors. The independent variables are included as predetermined instruments. ***, **, * denote significance levels of 1%, 5%, and 10%, respectively. All specifications are estimated with constant and time dummies. AR(2) reports the p-values for the second-order serial correlation in the residuals with the null of no correlation. P-values for the Hansen test are presented for overidentifying restrictions of the instruments, with the null of instrument validity. TC^{SUM} is the sum of received and supplied trade credit. Perf is $EBITDA/assets_{t-1}$, debt represents interest-bearing debt, PPE is net plant property and equipment, the Q measure is the market cap divided by the book value, growth is growth in sales, size is the natural logarithm of total assets, Inv is the stock of inventories, and capex is capital expenditure. $2TC^{SUM}_{depend} = TC^{SUM} \cdot 2D_{depend}$; $2Inv_{depend} = Inv \cdot 2D_{depend}$. For a detailed description of the variables, see Tab. 7 in the Annex.

4.2 Robustness Check with an Alternative Measure of Dependence

The previous section employed a dependence measure to demonstrate the effects of working capital in firms that are more likely to resort to external sources of funding if their capital expenditure exceeds their internal revenues (net income + depreciation + inventories). The empirical analysis yielded results that are both statistically and economically significant and suggest that overall TC activity enhances the performance of financially dependent firms. However, the current level of liquid assets (i.e., cash and cash equivalents) is also an important factor in determining a firm's TC policies (Garcia-Appendini and Montoriol-Garriga, 2013; Zhang, 2020), as it may influence the amount of external borrowing required to finance capital expenditures. The current data indicate that the average liquid assets for all firms account for about 17 percent[8] of total assets, which implies that a considerable amount of funds is available to management for financing growth. Therefore, for robustness purposes, the dependence measure used in the previous section has been restructured to account for liquid assets.

To identify dependent firms, a $2D_{depend}$ dummy variable is created. This time, a firm is classified as dependent if, in a given year, its ratio of (net income + depreciation + cash and cash equivalents) / capex is less than 1. This ratio indicates that firms lack internal funding to finance their capital expenditure and may need to rely on external sources such as trade credit offered by suppliers. The $2TC^{SUM}_{depend}$ and $2Inv_{depend}$ variables are constructed by interacting $2D_{depend}$ with TC^{SUM} and Inv, respectively.

[8] All relevant variables are scaled by previous year's total assets.

Tab. 4: Trade credit and corporate performance: the 2008 crisis

Dependent variable	**1**	**2**	**3**	**4**
Perf, $t-1$	0.350	0.130	0.357	0.387*
	(0.224)	(0.084)	(0.227)	(0.237)
TC^{SUM}	−0.054***	−0.061***	−0.056***	−0.056***
	(0.013)	(0.013)	(0.013)	(0.013)
TC^{SUM}_{depend}		0.105**		
		(0.032)		
$TC^{SUM}_{dependCris}$	0.077**	0.012		
	(0.029)	(0.007)		
Inv	−0.140***	−0.140***	−0.140***	−0.132***
	(0.023)	(0.023)	(0.023)	(0.023)
Inv_{depend}				0.389***
				(0.012)
$Inv_{dependCris}$			0.328***	0.037
			(0.110)	(0.047)
D_{cris}	−0.032***	−0.032***	−0.032***	−0.032***
	(0.007)	(0.007)	(0.007)	(0.007)
AR(1)	0.000	0.000	0.000	0.000
AR(2)	0.790	0.731	0.787	0.712
Hansen	0.494	0.503	0.491	0.489
# obs	48,886	48,886	48,886	48,886
# firm	6,616	6,616	6,616	6,616

Notes: The table presents the output from the estimation of Equation 1 using the first difference GMM estimator with robust standard errors. The independent variables are included as predetermined instruments. ***, **, * denote significance levels of 1%, 5%, and 10%, respectively. All specifications are estimated with constant and time dummies. AR(2) reports the p-values for the second-order serial correlation in the residuals with the null of no correlation. P-values for the Hansen test are presented for overidentifying restrictions of the instruments, with the null of instrument validity. TC^{SUM} is the sum of received and supplied trade credit. Perf is EBITDA/$assets_{t-1}$, and Inv is the stock of inventories. $TC^{SUM}_{depend} = TC^{SUM} \cdot D_{depend}$; $Inv_{depend} = Inv \cdot D_{depend}$. $TC^{SUM}_{dependCris} = TC^{SUM}_{depend} \cdot D_{cris}$; $Inv_{dependCris} = Inv_{depend} \cdot D_{cris}$.

The output from the estimation of Eq. 1 is reported in Tab. 3, showing that both coefficients are statistically significant. The coefficient for $2TC^{SUM}_{depend}$ in the first column of the table is 15.7 percent and significant at the 1 percent level. Similarly, the coefficient for $2Inv_{depend}$ in the third column of the table is 23.4 percent and also significant at the 1 percent level.

4.3 Trade Credit and Performance in EFD Firms: The 2008 Crisis

In this part of the study, the analysis is focused on the 2008 financial crisis era due to its unique impact on corporate financing channels, specifically debt financing from financial institutions and internal revenues from own operations. Negative shocks in credit supply in the aftermath of the global financial crisis in 2008 weakened the real sector's access to debt financing (Garcia-Appendini and Montoriol-Garriga, 2013) and hurt revenues. Consequently, periods of contraction, such as this one, emphasize the significance of alternative financing instruments, such as TC. Therefore, examining the effects of current working capital components on performance in firms that rely on external sources during an adverse macroeconomic environment provides an opportunity to test the robustness of the earlier findings.

Tab. 4 displays the results of the estimation of Eq. 1, which incorporates a crisis dummy variable for the years 2008 and 2009. The negative and significant coefficient for the crisis dummy implies a decline in corporate profitability for the period. This dummy is interacted with key variables to create $TC^{SUM}_{dependCris}$ and $Inv_{dependCris}$, whose coefficients demonstrate

the effect of TC on performance in EFD firms. In the first and second columns of the table, the positive and significant coefficients for $TC^{SUM}_{dependCris}$ indicate that asset profitability in EFD firms increases with TC activity. This suggests that firms benefited from the TC they received/offered during such critical times. The positive effect of TC is further confirmed by the inventory variable. In column three, the coefficient for $Inv_{dependCris}$ is positive and statistically significant, which becomes insignificant but still positive in the fourth column.

5 DISCUSSION

Existing studies have primarily focused on the effects of either borrowed TC (Kestens et al., 2012; Aktas et al., 2016; Grau and Reig, 2018) or supplied TC (Abuhommous, 2017). The current findings are consistent with some of these studies, suggesting that overall TC activity in externally financially dependent firms positively affects performance. However, our analysis does not reveal any positive effect of TC on performance in the remaining firms in the sample. A negative association between TC activity and profitability is not new to the literature (see for example Lin and Zhang, 2020; Mahmud et al., 2022). While the contrasting results may be due to differences in empirical design and/or methodology, both of which in this study are determined based on the statistical requirements of the data and the nature of the empirical analysis. Therefore, the results demonstrate both statistical and economic significance.

One of the noteworthy aspects of this study is the utilization of the sum of both supplied and received trade credit (TC) in the empirical analysis due to their strong correlation. As outlined in Section 3.2, most firms tend to rely on borrowed TC to fund their supply, and both sides of the transaction are likely to positively affect performance. Using the sum of TCs a holistic approach is adopted to evaluate the consequences of working capital management.

Previous studies have employed several measures such as the level of cash (Garcia-Appendini and Montoriol-Garriga, 2013), asset size (McGuinness et al., 2018), listing status (Abdulla et al., 2017), and the level of short-term debt (Kestens et al., 2012) to identify firms that rely on TC for financing. While these measures suggest that firms tend to prefer TC in specific cases, the current approach accounts for the short-term reliance that arises in firms with insufficient funding when undertaking significant investment projects. The sample examined in this article comprises large, publicly traded firms with access to capital markets. Given that they maintain stable access to institutional finance, their reliance on TC is more likely to be temporary, resulting from a lack of primary funds and/or disruptions in credit channels. Hence, an appropriate measure should consider such temporary fluctuations in firms' current financial position. Therefore, a modified version of the financial dependency measure of Rajan and Zingales (1998), which considers the gap between cash flow and capital expenditure, is used. This modified measure suggests that firms lacking the necessary funding to fully finance their capital investment are likely to rely on external sources, including TC from suppliers (see Fisman and Love, 2003). The results are consistent with this intuition by indicating a positive and significant impact on performance in EFD firms.

Business partners are known to be well-informed about each other's businesses (see Burkart and Ellingsen, 2004; Agostino and Trivieri, 2014). Therefore, it is reasonable to assume that when they invest in receivables, they prefer to invest in companies that are financially solid and profitable, as opposed to those that are unprofitable and financially fragile. This is because they seek to establish long-term partnerships and collect the returns on their investment over the lifetime of the partnership (Wilson and Summers, 2002; Garcia-Appendini and Montoriol-Garriga, 2013). However, what happens when buyers are not financially sound? The financial situation of both buyers and

sellers, as well as their competitive powers, are among the factors that determine the conditions of TC contracts. For example, firms with strong competitive power, large market shares, and profitability are likely to obtain more favorable TC conditions from suppliers (see Giannetti et al., 2011; Murfin and Njoroge, 2015).

As such, the terms and conditions of TC contracts are likely to vary depending on the specific circumstances (Klapper et al., 2012), and TC is often used as a tool to favor certain buyers (Brennan et al., 1988). Therefore, it is not surprising that the impact of TC on borrowers' performance may differ. EFD firms, by definition, lack the necessary funding to fully finance their capital investments, and thus rely on external sources such as TC, while at the same time adding to their market power through investment in physical assets. As discussed in the literature (see, for example, Fabbri and Menichini, 2010; Karakoç, 2022a), stronger support from suppliers and enhanced TC terms are expected due to the shared future and increased market power of the borrower, as confirmed by the regression output in Tab. 2 and 3.

The preferences of firms for TC during economic fluctuations have been widely examined in the literature (e.g., Tsuruta, 2013; Hyun, 2017; Harris et al., 2019). This is mostly because TC is considered an alternative and easily accessible source of financing when traditional lending channels are no longer viable. In particular, the 2008 crisis caused a significant contraction in economic activity in most developed countries. Although developing economies were not directly affected by the crisis, the major Asian economies initially appeared to be immune to these developments, but the idea of Asia "decoupling" quickly disappeared. This was due to the transmission of the crisis to Asian economies through both financial and trade channels (Glick and Spiegel, 2009). As the western economies had been important business partners, the contraction was reflected in the volume of trade with them. However, the impact of the crisis varied across economies, depending on their degree of reliance on external demand and credit. For instance, export-dependent countries such as China, Korea, Thailand, Malaysia, and the Philippines experienced sharp declines in growth rates in the second half of 2008 and the first half of 2009 (Brunschwig et al., 2011). The transmission of the crisis resulted in economic vulnerability, reversing the capital flows, which dried up both domestic and international liquidity, especially in those countries with strong ties to global financial markets. Consequently, exchange rate depreciation and economic contraction also occurred in these countries, as indicated by the negative coefficient for the crisis dummy variable.

Our study suggests that trade credit (TC) played a significant role in financially dependent firms' survival during the crisis, despite a substantial decline in profitability. This finding supports the idea of supplier firms having an information advantage, as the credit used for profitable investment opportunities contributed to firms' performance. Moreover, it is worth noting that the mutual knowledge of trade partners about each other's businesses and the seller firm's competence in evaluating investment opportunities may have contributed to this outcome. In the crisis conditions, when firms struggled to obtain loans from licensed financial institutions, the fact that EFD firms could obtain loans from their trade partners and increase their profitability through such loans underscores this conclusion.

6 CONCLUSION AND LIMITATIONS

In this study, we examined the relationship between working capital and corporate performance in EFD firms in developing Asian economies. Our findings suggest that engaging in TC has a strong positive impact on company performance, and EFD firms that utilized TC during the 2008 crisis experienced higher returns on their TC policies. To ensure the robustness of our results, we used the current level of inventory as a proxy for total TC, as

policies related to borrowing from suppliers and lending to buyers can directly affect the level of inventory, resulting in a high correlation. The analysis with the inventory variable yielded largely consistent results.

During the global financial crisis, financial institutions reduced lending, and firms relied more heavily on support from their suppliers (Carbó-Valverde et al., 2016). Our study demonstrates that TC activity mitigates the majority of the adverse effects of the crisis, highlighting the importance of partnership among firms. Thus, Our findings contribute to the existing literature by providing significant empirical evidence of TC's contribution to performance in EFD firms during critical times.

While our findings have significant implications for authorities and firm managers in designing more efficient policies, the study is not without limitations. As previously explained, the positive marginal effect of TC activity is considered to be a result of a joint decision made by both buyers and sellers to maintain their business relationships, yet we only have access to data from one side. Therefore, the analysis could have been significantly improved by taking supplier firm data into account. Additionally, macro variables such as financial development and legal order have been shown to affect a firm's borrowing capacity in previous studies (Demirgüç-Kunt and Maksimovic, 2001; Fisman and Love, 2003; Moro et al., 2018; Hermes et al., 2016). As trade credits are often preferred as an alternative financing instrument, they too may be influenced by these variables. However, we do not directly include these macro-level variables in our analysis because retrospective data on legal order is not available to us, and the explanatory power of the financial development variable is weak when used in conjunction with other firm variables. We recommend that these issues be addressed in future studies with more in-depth analyses.

In conclusion, despite the limitations, the study provides significant empirical evidence of the positive impact of TC on performance in EFD firms, which demonstrates the importance of partnership among firms.

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8 ANNEX

Tab. 5: Descriptive statistics by country

Variable	# obs	Mean	Std. Dev.	Min	Max
CHINA					
Perf	21,413	0.0939949	0.076872	−0.2923848	0.6176968
Total TC	21,413	0.2834009	0.1982376	0.0147689	1.412917
Inventories	21,413	0.1698047	0.146336	2.62e−07	0.8427349
Sales growth	21,413	0.1564943	0.3020514	−0.6398277	1.913087
Size	21,413	14.99446	1.342321	11.15213	21.59476
PPE, net	21,413	0.3630139	0.2280386	0.0070535	1.111819
Debt	21,413	0.3063266	0.1989758	2.56e−06	1.164398
Capex	21,401	0.0695899	0.0757637	0.0000285	1.125951
Tobin	21,413	2.083299	1.177563	0.4430544	7.301784
INDIA					
Perf	15,174	0.1194889	0.0954134	−0.2898704	0.6163717
Total TC	15,174	0.3954459	0.2375083	0.0155392	1.424774
Inventories	15,174	0.1924128	0.14474	0.0000153	0.8414803
Sales growth	15,174	0.1324804	0.2818535	−0.6427712	1.886954
Size	15,174	15.22762	1.786659	11.0468	22.24613
PPE, net	15,174	0.4191797	0.2321938	0.0071024	1.112018
Debt	15,174	0.3663548	0.2257886	8.26e−07	1.17291
Capex	14,903	0.0799723	0.095943	0.000125	1.296918
Tobin	15,174	1.345511	0.8805323	0.4378046	7.264511
INDONESIA					
Perf	3,002	0.1223063	0.1004317	−0.2874549	0.6136189
Total TC	3,002	0.4438304	0.3184144	0.0158625	1.430591
Inventories	3,002	0.1852222	0.1537733	0.0000292	0.8288033
Sales growth	3,002	0.1240036	0.2591819	−0.6331237	1.911525
Size	3,002	21.04462	1.418293	16.77918	23.71536
PPE, net	3,002	0.4540882	0.2462791	0.0074964	1.109397
Debt	3,002	0.3303814	0.2175216	0.0000509	1.14444
Capex	2,993	0.0668508	0.0770837	0.0005672	0.6846429
Tobin	3,002	1.337385	0.8509981	0.4384968	7.153394
KOREA					
Perf	12,615	0.0831425	0.0970357	−0.2927265	0.6034412
Total TC	12,615	0.3234476	0.1963526	0.0147202	1.43109
Inventories	12,615	0.1339661	0.0986964	0.0000134	0.8324803
Sales growth	12,615	0.0958712	0.2774679	−0.64132	1.911223
Size	12,615	19.11698	1.463272	12.14993	23.70693
PPE, net	12,615	0.3796376	0.2057981	0.0071243	1.109738
Debt	12,615	0.2794027	0.1903808	4.72e−06	1.164946
Capex	12,546	0.062093	0.1353957	0.000171	1.277512
Tobin	12,615	1.147879	0.6636816	0.438066	7.289185
MALAYSIA					
Perf	6,302	0.0896397	0.0881007	−0.2916959	0.6143905
Total TC	6,302	0.2955452	0.2006806	0.0150251	1.425305
Inventories	6,302	0.1589661	0.1396964	0.0000117	0.8351703
Sales growth	6,302	0.0838238	0.2829663	−0.6359339	1.870187
Size	6,302	13.03933	1.421157	11.04529	18.35248
PPE, net	6,302	0.3894195	0.2268561	0.0070729	1.105433
Debt	6,302	0.2486314	0.1743629	5.14e−06	1.121013
Capex	6,301	0.0474894	0.0606835	0.0000696	0.7811031
Tobin	6,302	1.048588	0.674973	0.4383819	7.291541

Variable	# obs	Mean	Std. Dev.	Min	Max
PAKISTAN					
Perf	2,104	0.1258875	0.1046168	−0.2834562	0.5978506
Total TC	2,104	0.2647296	0.206627	0.0153872	1.276757
Inventories	2,104	0.2058647	0.140916	0.0001521	0.8235619
Sales growth	2,104	0.1336995	0.2922954	−0.6282113	1.894831
Size	2,104	15.68971	1.476875	11.25268	19.97608
PPE, net	2,104	0.5694412	0.2117618	0.0108876	1.111535
Debt	2,104	0.4179365	0.228988	0.0004667	1.14761
Capex	2,067	0.0722515	0.0887395	3.58e−06	0.7633569
Tobin	2,104	1.169997	0.6842016	0.438423	7.065823
PHILIPPINES					
Perf	1,253	0.1253402	0.0914853	−0.2796146	0.546282
Total TC	1,253	0.2405807	0.1608562	0.0203406	1.077249
Inventories	1,253	0.1121150	0.115401	0.0001787	0.7468693
Sales growth	1,253	0.1079137	0.2477618	−0.5694306	1.58035
Size	1,253	16.46973	1.815304	11.8527	21.29511
PPE, net	1,253	0.4212623	0.2343739	0.0080431	1.095375
Debt	1,253	0.299439	0.2045172	0.0009607	1.074457
Capex	1,250	0.0649943	0.0689132	0.0000535	0.6107208
Tobin	1,253	1.333665	0.8117846	0.4379889	6.811156
THAILAND					
Perf	4,017	0.1229374	0.1043865	−0.2819639	0.6160618
Total TC	4,017	0.2869816	0.2200819	0.0146923	1.407947
Inventories	4,017	0.190927	0.175872	3.06e−06	0.836038
Sales growth	4,017	0.0833211	0.2458588	−0.6303743	1.830961
Size	4,017	15.15827	1.584205	11.13076	21.52156
PPE, net	4,017	0.4166763	0.2488785	0.0073751	1.108218
Debt	4,017	0.300038	0.2167065	1.95e−06	1.173726
Capex	4,014	0.0608835	0.071935	0.0000509	0.7053141
Tobin	4,017	1.425585	0.8423478	0.4376372	7.257525
VIETNAM					
Perf	3,793	0.1273359	0.0917552	−0.2755453	0.5938115
Total TC	3,793	0.348983	0.2291533	0.0154545	1.425638
Inventories	3,793	0.244624	0.179207	5.79e−07	0.837641
Sales growth	3,793	0.1288757	0.3337238	−0.6372656	1.90722
Size	3,793	20.0795	1.3074	16.55811	23.69828
PPE, net	3,793	0.3243085	0.2405806	0.0070933	1.106708
Debt	3,793	0.343511	0.2188412	0.0000696	1.163347
Capex	3,713	0.069782	0.1002073	0.0004667	0.8454422
Tobin	3,793	1.079935	0.5177559	0.4392767	6.641725

Note: All relevant variables are scaled by once-lagged total assets EBITDA, Sales, TCs and Inventories are adjusted for inflation.

Tab. 6: Descriptive statistics: all countries

Variable	# obs	Mean	Std. Dev.	Min	Max
Perf	69,673	0.1034188	0.0920566	−0.2927265	0.6176968
Total TC	69,673	0.3255076	0.2222781	0.0146923	1.43109
Inventories	69,673	0.1732756	0.1443513	2.62e−07	0.8427349
Sales growth	69,673	0.1250305	0.2887442	−0.6427712	1.913087
Size	69,673	16.2093	2.695874	11.04529	23.71536
PPE, net	69,673	0.3928367	0.2314782	0.0070535	1.112018
Debt	69,673	0.3152514	0.209486	8.26e−07	1.173726
Capex	69,188	0.0678373	0.0944153	−0.4643502	1.277512
Tobin	69,673	1.493914	0.9970322	0.4376372	7.301784

Note: All relevant variables are scaled by once-lagged total assets EBITDA, Sales, TCs and Inventories are adjusted for inflation.

Tab. 7: Descriptive statistics: all countries

Acronym	Variable	Measurement
Perf	Performance	EBITDA_{ijt} / Total assets_{ijt-1}
TC^{SUM}	Total trade credit	(Received TC + supplied TC) / Total assets_{ijt-1}
PPE	Plant property and equipment (Net)	PPE_{ijt} / Total assets_{ijt-1}
Inv	Total stock of inventory	Inventories_{ijt} / Total assets_{ijt-1}
Debt	Bank loans and debt securities	Debt_{ijt} / Total assets_{ijt-1}
Capex	Capital expenditures	Capex_{ijt} / Total assets_{ijt-1}
Size	Total assets	$\log(\text{total asset})_{ijt-1}$
Q measure	Market cap. divided by book value of equity	MarketCap_{ijt} / Equity_{ijt}
Growth	Growth in sales	$(\text{Sales}_{ijt} - \text{Sales}_{ijt-1}$ / Sales_{ijt-1}
D_{cris}	A dummy variable for the 2008 crisis	1 if year is 2008 or 2009, otherwise it is 0
D_{depend}	A dummy variable for dependent firms	1 if in $t-1$ (net income + depreciation + inventories) / (capital expenditure) < 1, otherwise 0
$2\text{D}_{\text{depend}}$	A dummy variable for dependent firms	1 if in $t-1$ (net incomde + depreciation + cash + cash equivalents) / (capital expenditure) < 1, otherwise 0

Note: All dummy variables are interacted with TC^{SUM} and Inv. All relevant variables are scaled by once-lagged total assets.

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