

Working capital efficiency and capital structure decisions in Egypt: the effect of foreign currency exchange risk exposure under IAS 21

Abstract

Purpose – This research aims to test the impact of working capital efficiency (WCE) on capital structure decisions (CSD) in Egypt and investigate the moderating role of foreign currency exchange risk exposure under IAS 21 in this relationship.

Design/methodology/approach – This research relies on data obtained from the financial reports of a sample consisting of 65 listed firms on the Egyptian stock exchange from 2012 to 2022, where the data is processed using the generalized method of moments (GMM).

Findings – The results reveal that the Egyptian industrial firms with higher WCE rely more on total debt finance (TDF) and long-term debt finance (LODF) and depend less on short-term debt finance (SHODF). Furthermore, the results indicated that foreign currency exchange gains (EXCG) strengthen the positive effect of the high WCE on TDF and LODF. Conversely, foreign currency exchange losses (EXCL) have had a positive effect. Furthermore, EXCL weakens the negative effect of WCE on SHODF. Moreover, the additional analysis yielded evidence regarding the influence of WCE's components on CSD.

Research limitations/implications – This research has some limitations. First, the relatively small sample size. Second, foreign currency exchange gains or losses under IAS 21 may not fully capture all aspects of currency risk exposure.

Practical implications – This research provides valuable insights for firms operating in emerging markets which face unique challenges related to financing, liquidity and foreign currency exposure. Also, it contributes to the development of more efficient and sustainable financial markets in emerging economies. Furthermore, it offers insights for policymakers and regulators in emerging markets regarding the implications of IFRS adoption, specifically IAS 21.

Originality/value – This research contributes to the limited existing literature that has explored the influence of WCE on CSD in developed economies. Additionally, it expands the body of knowledge concerning CSD in emerging markets, as the investigation of the relationship between WCE and CSD remains an under-researched area. Moreover, this research empirically analyzes the moderating impact of foreign currency exchange risk exposure under IAS 21 on the relationship between WCE and CSD, which has not been previously examined.

Keywords Working capital efficiency, Capital structure decisions, foreign currency exchange risk exposure, Egypt

Paper type Research paper

1. Introduction

Capital structure decisions (CSD) are crucial and ongoing issues in corporate finance (Prakash *et al.*, 2023; Botta, 2024). Determining the optimal mix of debt and equity is a strategic decision that influences the firms' risk and value (Modigliani and Miller, 1963; Miller, 1977). Firms operating in developing economies face distinctive challenges including macroeconomic risk, limited access to capital resources, poor corporate management and considerable agency costs (Nazarova and Budchenko, 2020). These challenges increase the

importance of considering factors that affect CSD. Examining these factors in emerging markets is crucial for understanding the distinct opportunities and risks encountered by firms in these markets. In this regard, Eldomiaty (2008) highlights the increasing significance of investigating the determinants of CSD within emerging markets, which are frequently impeded by underdeveloped financial infrastructures and information asymmetry.

Prior literature has examined various determinants of CSD such as firm size, growth opportunities, firm age, tangibility, Covid-19, assets risk and profitability (Wald, 1999; Booth *et al.*, 2001; Brailsfore *et al.*, 2002; Frank and Goyal, 2003; Deesomsak *et al.*, 2004; Eldomiaty, 2008; Qian *et al.*, 2009; Florackis and Ozken, 2009; Prakash *et al.*, 2023; Botta, 2024). However, the impact of short-term financial management practices, specifically working capital efficiency (WCE), on CSD remains a relatively unexplored area, especially in the context of emerging markets like Egypt.

WCE serves a crucial function as a financial metric for industrial firms, particularly in emerging markets (Desai and Mehta, 2024). It facilitates investments in growth opportunities, while simultaneously improving cash flow and profitability (Appuhami, 2008; Padachi *et al.*, 2012). WCE reflects how effectively a firm manages its short-term resources. By optimizing WCE, firms can enhance shareholder value and contribute to long-term stability. This alignment with wealth maximization underscores the importance of WCE in achieving overall organizational goals (Mutua *et al.*, 2023). In contrast to other financial decisions, the management of working capital necessitates ongoing adjustments in response to shifts in the business landscape (Desai and Mehta, 2024). WCE holds substantial importance within a firm's comprehensive financial strategy and can have noteworthy ramifications for its CSD. Hence, investigating the relationship between WCE and CSD can offer valuable insights into how firms can optimize their financing choices to accomplish their strategic goals.

The relationship between WCE and CSD can be analyzed from the perspectives of trade-off and pecking order theories. Based on the trade-off theory, maximizing firm value occurs when the benefits of debt outweigh its marginal cost. Accordingly, firms with high WCE may rely more on debt due to lower perceived risk and tax benefits (Modigliani and Miller, 1958; Jensen and Meckling, 1976; DeAngelo and Masulis, 1980; Myers, 2001). In contrast, the pecking order theory suggests that firms with high WCE may prefer to internally finance their operations rather than relying on external borrowing. This approach helps in reducing leverage (Myers and Majluf, 1984; Myers, 1984; Jahanzeb *et al.*, 2013).

Industrial firms operating in emerging markets, such as Egypt, encounter a distinct susceptibility to the fluctuations of foreign currency exchange rates. These fluctuations can significantly impact a firm's financial position, cash flow, performance and working capital position, as they can influence the value of assets and liabilities denominated in foreign currency. Additionally, fluctuations in exchange rates can impact the cost of imported raw materials and affect the competitiveness of a firm's exports. In the last decade, Egypt has suffered sharply from the collapse of the Egyptian pound against foreign currencies due to some main reasons. First, the flotation of Egypt's currency by the Central Bank of Egypt (CBE) specifically in November 2016, January 2023 and March 2024. The Egyptian pound depreciated significantly against the US Dollar from 8.8 pounds per dollar before November 2016 to 32 pounds per Dollar in 2023, and further to 47.2 pounds per Dollar in 2024. This represents a decrease of approximately 72.5% from 2016 to 2023, and an additional 47.5% from 2023 to 2024 (CBE, 2016, 2023, 2024). Second, the increase in key interest rates by the CBE, citing rising prices internationally. For instance, in 2017 the key interest rates were increased by 400 basis points, bringing the deposit rate to 19.75% (CBE, 2017; CBE, 2022). Third, The Covid-19 pandemic had a profound negative impact on the Egyptian economy. For example, from February to May 2020, net international reserves fell by \$9.5 billion. Moreover, the tourism sector faced a drastic decline, with tourist numbers dropping from 0.9 million in February 2020 to none in April 2020, marking a complete 100% decrease (ECPMS, 2020). Fourth, the conflict between Russia and Ukraine has destabilized global investors, prompting

the withdrawal of billions of dollars from Egypt, which heavily affected the country's economy (CBE, 2022).

The flotation of the Egyptian pound has affected the industrial firms in Egypt significantly by interrupting the global supply chain. Moreover, the conflict in Ukraine has increased the prices of commodities in the international market sharply, which has resulted in higher import costs for the same quantities of goods. This has had a significant impact on industrial firms in Egypt that rely on imported goods or materials (CBE, 2022).

Based on the guidelines of IAS 21, the financial performance and position of industrial firms are influenced by translating the foreign currency transactions involving future payment or receipt and the revaluation gain or loss of monetary items (IASB, 2001; FRA, 2016), which may affect the WCE and CSD. Accordingly, it is expected that fluctuations in foreign exchange rates can moderate the relationship between WCE and CSD. To the best of the author's knowledge, the impact of foreign currency exchange risk exposure on the association between WCE and CSD has not been investigated before, especially under IAS 21.

In light of the previous analysis, the current research mainly aims to investigate the effect of WCE on CSD in Egypt and examine the moderating role of foreign currency exchange risk exposure under IAS 21. This research builds upon the limited existing literature that has examined the impact of WCE on CSD in developed markets. Additionally, it contributes to the body of knowledge on CSD in emerging markets, where examining the relationship between WCE and CSD is a relatively unexplored field of study. Also, this research contributes to the literature review that examined the implications of IFRS adoption in emerging markets in general and specifically the implications of IAS 21, which is a rare area of research. Furthermore, this research investigates the moderating role of foreign currency exchange risk exposure under IAS 21 on the relationship between WCE and CSD, which has not been previously examined.

This research offers important implications. First, it supports sustainable financial market growth in emerging economies by understanding the relationship between WCE and CSD. This enables market participants and policymakers to implement measures for financial stability and sustainable development. Second, it provides insights for policymakers and regulators in emerging markets regarding the implications of IFRS adoption, specifically IAS 21. Third, it provides insightful information for firms operating in emerging economies; these firms often face specific challenges related to financing, liquidity and exposure to foreign currency exchange risk.

The choice of the Egyptian context is particularly distinctive for some reasons. First, Egypt as an emerging market compared to developed markets is different regarding the market infrastructure and regulatory environment. Examining the nexus between WCE and CSD in Egypt improves comprehension of financial dynamics within these markets. Second, the Egyptian stock market is among the biggest MENA region stock exchanges, offering a representative sample of diverse industries. This allows a comprehensive analysis of the WCE and CSD relationship in a varied institutional environment. Third, the Egyptian stock market is overseen by the Egyptian Financial Supervisory Authority (EFSA), offering a reliable and transparent platform for studying the WCE and CSD relationship. EFSA implements market regulations that influence listed firms' financing decisions, including the application of IFRSs. Fourth, Egypt is a suitable context within emerging markets to investigate the impact of foreign currency exchange risk exposure under IAS 21, as Egypt has suffered significantly in the last decade due to the collapse of the Egyptian pound against foreign currencies.

The rest of the research is structured as follows: the next section reviews the literature and formulates hypotheses; the third section outlines the research methodology; the fourth section analyzes the data and discusses the results and the final section concludes and provides suggestions for future research.

2. Literature review and hypotheses development

2.1 Underlying theories

The management of a firm's capital structure is typically guided by two principle theories: the trade-off and pecking order theories. These frameworks assist in strategizing the optimal mix of debt and equity financing. The trade-off theory argues that firms should strive for an optimal financial mix by balancing the tax advantages of debt financing against the potential costs associated with financial distress (Myers, 2001). This equilibrium is considered the ideal capital structure that enhances firm value, a concept originating from the influential work of Modigliani and Miller (1958). The trade-off theory recognizes that although debt can offer tax benefits, its appeal diminishes as borrowing increases due to the risk of financial distress, including bankruptcy costs (Jensen and Meckling, 1976). Nonetheless, Firms are still incentivized to use leverage due to the tax deductions provided by debt (DeAngelo and Masulis, 1980).

In contrast, the pecking order theory, formulated by Myers and Majluf (1984), advocates for a financing hierarchy that decreases transaction costs linked to asymmetric information. Based on this theory, firms generally prefer to use internal sources of funding and only turn to external financing when necessary (Myers, 1984). The pecking order theory supports the idea that highly profitable firms tend to rely on internal funding, such as retained earnings. This theoretical framework suggests that firms with significant profitability prefer to maintain a lower debt ratio (Jahanzeb *et al.*, 2013).

2.2 Working capital efficiency and capital structure decisions

The relationship between WCE and CSD is a topic of debate. Based on the perspectives of the trade-off theory, firms with higher WCE may be perceived as less risky by lenders, leading to lower interest rates on debt and encouraging greater reliance on debt financing to support growth objectives (Jensen and Meckling, 1976; DeAngelo and Masulis, 1980). This is relevant for firms in capital-intensive industries that require substantial investments in fixed assets. Additionally, firms with higher WCE may possess more liquid assets that can serve as collateral for long-term debt financing. However, the pecking order theory suggests that firms demonstrating elevated efficiency in managing working capital are often associated with increased cash flow and improved profitability. Such firms may possess greater internal resources that could be allocated toward funding investment opportunities, potentially reducing the dependency on external financing (Myers and Majluf, 1984; Myers, 1984).

Prior literature indicated that WCE positively affected the firm's profitability. In this regard, several studies revealed that firms' profit increases with an improvement in their cash conversion cycle or net trade cycle (Deloof, 2003; Raheman and Nasr, 2007; Samiloglu and Demirgunes, 2008; Eda and Mehmet, 2009; Ramachandran and Janakiraman, 2009; Raheman *et al.*, 2010; Dong and Su, 2010; Charitou *et al.*, 2010; Alipour, 2011; Ching *et al.*, 2011; Enqvist *et al.*, 2014; El-Ansary and Al-Gazzar, 2021; Sawarni *et al.*, 2022). Also, many studies showed that the firm's profitability is positively affected by reducing their average collection period (Vishnani and Shah, 2007; Gill *et al.*, 2010; Abuzayed, 2012; Vural *et al.*, 2012; Akoto *et al.*, 2013), reducing their average inventory holding period (Sharma and Kumar, 2011) and delaying payment to their suppliers (Lazaridis and Tryfonidis, 2006; Vishnani and Shah, 2007). For instance, Deloof (2003) analyzed 1,009 large Belgian non-financial firms from 1992 to 1996, finding that reduced accounts receivable and inventory durations enhance profitability. Raheman *et al.* (2010) investigated working capital management' effect on Pakistani manufacturing firms' performance from 1998 to 2007, highlighting the cash conversion cycle, net trade cycle and inventory turnover's significant influence on firm performance. Also, Sawarni *et al.* (2022) used a sample of Indian firms from 2012 to 2019. The results indicated a positive impact of WCE on Indian firm profitability. Furthermore, Umar *et al.* (2024) analyzed 56 halal food and beverage firms across Indonesia, Malaysia, Saudi Arabia, Pakistan and the United Arab Emirates from 2008 to 2021. The findings suggest that a

shorter cash conversion cycle and accounts receivable period were associated with higher profitability, while a longer inventory conversion period was linked to lower ROA. Conversely, a longer accounts payable period was found to enhance firm profitability.

Several studies revealed that profitable firms tend to use internal finance more (Hovakimian *et al.*, 2001; Booth *et al.*, 2001; Faulkender and Petersen, 2006; Utrero-Gonzalez, 2007; Antoniou *et al.*, 2008; Al-Najjar and Hussainey, 2011; Lemma and Negash, 2014). For instance, Booth *et al.* (2001) examined the factors influencing capital structure choices by analyzing data from ten developing countries from 1980 to 1990, the findings revealed an inverse relationship between a firm's profitability and its leverage. Also, Al-Najjar and Hussainey (2011) investigated the determinants of CSD using data from 379 UK firms spanning 1991 to 2002. The findings suggest that firms with higher profitability show a tendency to utilize internally generated funds over external debt options. Based on the positive relationship between WCE and profitability and according to the pecking order theory, it is expected that WCE will influence the CSD, potentially leading to a reduced dependence on debt financing, where firms with efficient working capital may depend more on internal resources to fund operations rather than using debt (Sibindi, 2016).

Contrarily, according to the trade-off theory, firms with efficient working capital may increase leverage, as profitable firms may use more debt to utilize the debt-interest tax shield and enhance the firm value. Hovakimian *et al.* (2004) suggested that a positive correlation between firm profitability and leverage could be attributed to several factors. Higher profitability may lead to increased tax savings from debt usage, a reduced likelihood of bankruptcy and potentially greater investment, all contributing to a higher optimal debt ratio. Also, Myers (2001) posited that elevated profitability indicates a greater capacity for tax shielding through taxable income and an enhanced ability to service the debt without risking financial distress, thereby implying a higher optimal debt level.

It is worth noting that exploring the effect of WCE on CSD is a rare area of research especially in emerging markets such as Egypt. In this regard, Flannery and Öztekin (2021) used data sourced from the integrated Center for Research in Security Prices (CRSP) for the 1980–2017 period, to investigate the influence of working capital balances on leverage. The findings indicated that net working capital, inventories and the liquidity, pledgeability and reversibility of receivables play a significant role in facilitating greater utilization of financial debt, particularly long-term debt, by firms. Conversely, the utilization of payables serves as a direct substitute for short-term debt and is associated with reduced levels of leverage.

Based on the above discussion and motivated by the pecking order and trade-off theories, the first hypothesis will be as follows:

H1. Working capital efficiency influences the capital structure decisions.

2.3 Working capital efficiency, capital structure decisions and foreign currency exchange risk exposure

2.3.1 Regulation of foreign currency. The International Accounting Standards Committee (IASC) initially issued IAS 21, titled “The effects of changes in foreign exchange rates”, in December 1983. Since its inception, this standard has been subject to multiple amendments aimed at enhancing its clarity and applicability in response to the dynamic economic environment (IASB, 2001). The Egyptian Society of Accountants and Auditors, through its standard committee, develops Egyptian accounting standards (EAS). These standards are closely aligned with international standards, including IAS 21, to ensure that financial reporting within Egypt meets global benchmarks. Egyptian Accounting Standard No. 13 “EAS13” (which is consistent with IAS 21) guides the accounting treatment of foreign currency transactions in the financial statements. According to the standard, foreign currency transactions should be initially recorded in the presentation currency of the firm using the transaction date's exchange rate. If a foreign currency transaction involves payment or receipt of foreign currency at a future date, the entity should use the forward exchange rate to translate

the transaction into the presentation currency. Translation differences in foreign currency transactions should be reported as gain or loss in the income statement. Also, gains or losses that arise from the revaluation of monetary items should be included in the income statement (FRA, 2016).

In response to the flotation of the Egyptian pound's exchange rate, which adversely affected the financial performance of Egyptian firms, decisions have been enacted to permit discretionary remediation as a result of the flotation of the exchange rate in November 2016, March 2022, and October 2022. These decisions included the Minister of Investment's Decision No. 16 for the year 2017, which added Annex A to EAS 13, and the Prime Minister's Decisions No. 1568 for the year 2022, 4,706 for the year 2022, and 1,847 for the year 2023, which included the addition of Annexes B, C and extending the permission to work with Annex C (Ministry of Investment, 2017; Ministry of Trade and Industry, 2022a, b, 2023). These elective treatments aim to mitigate the adverse effects on the financial performance of Egyptian firms that suffered from floating the Egyptian pound. For instance, under decision 4,706, firms that acquired fixed assets or investment properties denominated in foreign currency loans before the flotation of the exchange rate on October 27, 2022, and are still in use, are permitted to include the debit currency differences resulting from the portion of paid loans, and the translation of the remaining portion of these loans as of December 31, 2022, in the assets' costs. The revised cost of these assets should not surpass their recoverable amounts (Ministry of Trade and Industry, 2022a, b). However, the current research primarily examines the exposure to foreign currency exchange risk under IAS 21, excluding firms that apply the optional treatments due to their limited number and the presence of non-industrial firms among them.

2.3.2 The moderating role of foreign currency exchange risk exposure on the relationship between working capital efficiency and capital structure decisions. Currency fluctuations that result in foreign exchange gains or losses according to IAS 21 (IASB, 2001; FRA, 2016) can affect a firm's WCE and CSD by influencing a firm's financial performance and position. For example, if a firm has a significant amount of receivables or payables denominated in a foreign currency, a change in the exchange rate can affect its working capital cycle. Exchange rate gains may increase the firm's WCE, while exchange rate losses may decrease it. Also, currency fluctuations may influence a firm's ability to manage its cash effectively. If a firm holds cash balances in a foreign currency, fluctuations in exchange rates can impact the value of those balances. In addition, if a company needs to convert cash from one currency to another to fund working capital needs, it may be subject to transaction costs and unfavorable exchange rates.

Currency fluctuations can create uncertainty and volatility in a firm's CSD. Foreign exchange gains or losses can affect a firm's debt-to-equity ratio. If a firm has foreign currency-denominated debt, a gain in the exchange rate can lead to a decrease in its debt-to-equity ratio, making it more attractive for investors to invest in the firm and vice versa. Also, currency fluctuations may influence the cost of debt financing. If a firm raises debt in a foreign currency, fluctuations in exchange rates can influence the cost of servicing that debt. For example, if a firm borrows in a foreign currency that strengthens against its home currency, the cost of servicing that debt will increase, which may affect the firm's ability to meet its debt obligations.

Based on the perspectives of the trade-off theory (DeAngelo and Masulis, 1980; Myers, 2001), currency fluctuations under IAS 21 may influence the relationship between WCE and CSD. Specifically, exchange rate gains may increase the firm's reliance on external debt financing for the following reasons: First, the gain may augment profitability and cash flow, leading the firm to leverage the debt-interest tax shield. Second, the reduced risk perceived by lenders due to the gain may enable the firm to benefit from lower interest rates and enhance its debt servicing capacity, further incentivizing external debt financing. Third, the gain may decrease the debt-to-equity ratio for foreign currency-denominated debt and reduce the cost of servicing that debt. Conversely, a loss in the exchange rate may decrease the firm's reliance on external debt financing.

Also, according to the perspectives of the pecking order theory (Myers, 1984; Jahanzeb *et al.*, 2013), fluctuations in the exchange rate, as per the guidelines of IAS 21 (IASB, 2001; FRA, 2016), may affect the relationship between WCE and CSD. Specifically, exchange rate gains may increase the firm's profitability and cash flow, thereby positively influencing the industrial firm's WCE. This, in turn, may prompt these firms to rely more on internal resources to finance their operations. Conversely, exchange rate losses may negatively impact the industrial firms' profitability and cash flow, leading to a decrease in the reliance on internal sources of finance.

According to Gelos (2003), firms with greater size, creditworthiness and foreign currency income have an advantage in borrowing in foreign currencies. Acharya and Vij (2020) indicated that the probability of issuing debt rises with the dollar-carrying trade's return. Also, Mohapatra and Nagar (2021) showed that Indian firms with foreign currency debt exposure face higher financing constraints than other firms. Furthermore, the study by Hussein and Bakry (2022) revealed that EGP flotation had a limited impact on capital structure determinants for listed Egyptian firms. The researchers employed a binary variable to quantify the impact of EGP flotation.

It is noteworthy that examining the moderating role of foreign currency exchange risk exposure, as per the guidelines of IAS 21, on the relationship between WCE and CSD is a scarcely explored area of research. The gains or losses recognized in the profit or loss statement under IAS 21 provide a direct, consistent and standardized measure of the actual impact of currency fluctuations on the relationship between WCE and CSD.

According to the previous discussion and motivated by the pecking order and trade-off theories, the second hypothesis will be as follows:

H2. Foreign currency exchange gains or losses moderate the relationship between working capital efficiency and capital structure decisions.

3. The research method

3.1 Research design and models

This research mainly aims to investigate the impact of WCE on CSD and test the moderating role of foreign currency exchange risk exposure (FCRE) on this relationship. The WCE is the independent variable in this research; it was measured by a composite proxy, specifically the cash conversion cycle (CCCY) which means the length of time required by the firm to convert the cash invested in its operation into cash received as a result of its activity. The CCCY was calculated by adding the inventory cycle period to the receivables cycle period minus the payables cycle period (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007; Samiloglu and Demirgunes, 2008; Ramachandran and Janakiraman, 2009; Gill *et al.*, 2010; Charitou *et al.*, 2010; Dong and Su, 2010; Gill *et al.*, 2010; Alipour, 2011; Ching *et al.*, 2011; Sharma and Kumar, 2011; Vural *et al.*, 2012; Abuzayed, 2012; Akoto *et al.*, 2013; Enqvist *et al.*, 2014).

The dependent variable is the CSD; this research depends on the ratios of total debts, short-term debts and long-term debts to total assets (Abor, 2005; Dincer *et al.*, 2011; Hamid *et al.*, 2015; Javaid *et al.*, 2021; Al Amosh *et al.*, 2022) to measure the firm's preference for debt or equity financing.

The moderating variable is foreign currency exchange risk exposure (FCRE); this research relies on foreign currency exchange gains (EXCG) or losses (EXCL) reported in the income statement according to IAS 21 to measure the FCRE. This measure indicates the realized impact of exchange rate changes on a firm's foreign currency transactions during the reporting period, providing insights into the FCRE of industrial firms. Compared to potential exposure measures, EXCG or EXCL reported under IAS 21 offers a more direct measure of the actual impact of exchange rate changes on the firm's financial position and performance. Also, it offers a consistent measure of FCRE as IAS 21 provides a standardized framework for

accounting foreign currency transactions. Additionally, it is based on realized gains or losses, rather than estimates of potential future exposure. Furthermore, it can assist in identifying trends or patterns in a firm's FCRE over time and facilitate comparisons of FCRE across different firms or industries.

Based on an in-depth review of the relevant literature (Booth *et al.*, 2001; Fama and French, 2002; Brailsfore *et al.*, 2002; Frank and Goyal, 2003; Deesomsak *et al.*, 2004; Zou and Xiao, 2006; Qian *et al.*, 2009; Florackis and Ozken, 2009), this research employs a comprehensive approach by examining a variety of control variables associated with both firm characteristics and governance mechanisms such as firm size, firm age, cash holding, asset tangibility, operating cash flow, board independence, board size, CEO duality, board gender diversity, institutional ownership, managerial ownership and Covid-19.

Based on the above, the association between the research variables were formulated as the models shown further in the text:

$$\begin{aligned} CSD_{it} = & \beta_0 + \beta_1 CCCY_{it} + \beta_2 FSZ_{it} + \beta_3 FAG_{it} + \beta_4 CHL_{it} + \beta_5 ATAG_{it} + \beta_6 OCF_{it} \\ & + \beta_7 COV_{it} + \beta_8 BSZ_{it} + \beta_9 BIND_{it} + \beta_{10} BGDY_{it} + \beta_{11} DUA_{it} + \beta_{12} IOW_{it} \\ & + \beta_{13} MOW_{it} + \beta_{14} Firm_{it} + \beta_{15} Year_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} CSD_{it} = & \beta_0 + \beta_1 CCCY_{it} + \beta_2 FSZ_{it} + \beta_3 FAG_{it} + \beta_4 CHL_{it} + \beta_5 ATAG_{it} + \beta_6 OCF_{it} \\ & + \beta_7 COV_{it} + \beta_8 BSZ_{it} + \beta_9 BIND_{it} + \beta_{10} BGDY_{it} + \beta_{11} DUA_{it} + \beta_{12} IOW_{it} \\ & + \beta_{13} MOW_{it} + \beta_{15} FCRE * CCCY_{it} + \beta_{15} Firm_{it} + \beta_{16} Year_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

Table 1 presents the variables and their measurement.

3.2 Sample selection

The population of this research includes all firms listed on the Egyptian Stock Exchange (ESE) which are obligated to apply IFRSs including IAS 21. This research focuses on industrial firms listed on the ESE for several reasons; First, industrial firms typically have significant investments in inventory and accounts receivable, which ties up a large amount of capital. Second, the industrial sector is a major contributor to the Egyptian economy, accounting for a significant share of the country's GDP. Third, the listed firms in Egypt's industrial sector are subject to reporting requirements and regulatory oversight, which provide access to reliable and accurate data. Fourth, the industrial listed firms in Egypt are likely to face similar challenges and constraints when it comes to managing working capital, such as volatile currency. The research's population comprises 218 publicly listed firms, totaling 2,398 observations. After excluding banks, financial institutions, non-industrial firms and missing data, a sample of 65 firms from the period 2012 to 2022 (following the Egyptian revolution in 2011) was used for analysis, with a total of 715 observations. The data were extracted from the annual financial reports in the Thomson Reuters Eiko Database, the Mubashir Misr website and the Egyptian Stock Exchange website. The data were processed using the generalized method of moments (GMM) using STATA. Table 2 presents details of the sample selection.

4. The data analysis and discussion of results

4.1 Descriptive analysis

Table 3 presents the results of the descriptive analysis for all research variables. The total debt represents on average 16.8% of the total assets with a minimum of 0 and a maximum of 60%; this means that there is a significant variation in the extent to which industrial firms in Egypt rely on debt to finance their activities, this variation increases the importance of researching

Table 1. Variables and measures

Type of variables	Variable name	Symbol	Measures
Independent variable	<i>Working capital efficiency</i>	<i>WCE</i>	
	Cash conversion cycle	CCCY	Inventory cycle period + Receivables cycle period – payables cycle period
	Inventory cycle period	INCP	(Average of inventory/cost of goods sold) x 360
	Receivables cycle period	RECP	(Average of receivable/credit sales) x 360
Dependent variables	Payables cycle period	PACP	(Average of payable/cost of goods sold) x 360
	<i>Capital structure decisions</i>	<i>CSD</i>	
	Total debt finance	TDF	Total debt to assets
	Long-term debt finance	LODF	Long-term debt to assets
Moderating variable	Short-term debt finance	SHODF	Short-term debt to assets
	<i>Foreign currency exchange risk exposure</i>	<i>FCRE</i>	
		EXCG	Foreign exchange gains recognized in profit or loss to total assets
		EXCL	Foreign exchange losses recognized in profit or loss to total assets
Control variables	Firm size	FSZ	Log of total assets
	Firm age	FAG	The number of years in operation from a firm's inception
	Cash holding	CHL	Cash and cash equivalents to total assets
	Asset tangibility	ATAG	property, plant and equipment to total assets
	Operating cash flow	OCF	Total operating cash flow to total assets
	Covid-19	COV	A dummy variable equals (1) in years 2020, 2021 and 2022, and (0) otherwise
	Board size	BSZ	Number of board members
	Board independence	BIND	The percentage of non-executive members to total members in the board
	Board gender diversity	BGDY	The percentage of female directors to total members in the board
	CEO duality	DUA	A dummy variable equal (1) if CEO is chairman and (0) otherwise
	Institutional ownership	IOW	The percentage of institutional ownership
	Managerial ownership	MOW	The percentage of managerial ownership

Source(s): Table created by the author

Table 2. Sample selection

	No. of firms	No. of observations
Initial sample	218	2,398
Less: banks and financial firms	45	495
Less: non-industrial firms and firms with missing data	108	1,188
Final sample	65	715

Source(s): Table created by the author

the determinants of debt finance. The cash conversion cycle ranges from–134 to 745; this variation also highlights the importance of examining the implications of WCE on CSD. The results indicate that industrial firms demonstrate a moderate size, as evidenced by the logarithm of assets 23, 7, and a relatively young average age of 19 years. Their financial compositions are characterized by a conservative approach to liquidity, with cash and cash equivalents constituting 8% of total assets. Additionally, these firms exhibit modest operating

Table 3. Descriptive statistics

Variables	<i>N</i>	Minimum	Maximum	Mean	Std. Deviation
TDF	715	0	0.607	0.168	18.7
SHODF	715	0	0.40	0.15	0.13
LODF	715	0	0.43	0.12	0.11
CCCY	715	—134	745	163	139
FSZ	715	10.6	27.4	23.7	88.8
FAG	715	1	31	19	6.29
CHL	715	00,004	0.274	0.083	0.078
ATAG	715	0.220	0.58	0.440	2.17
OCF	715	9.65	10.7	0.057	0.549
COV	715	0	1	0.273	0.446
BSZ	715	4	19	8	2.86
BIND	715	0.50	1	0.875	14.9
BGDY	715	0	0.67	0.174	0.108
DUA	715	0	1	0.184	0.388
IOW	715	0	0.890	0.251	11.5
MOW	715	0	0.42	0.066	4.75

Source(s): Table created by the author

cash flow efficiency, equivalent to 5% of their total assets and significant investment in fixed assets with PP&E representing 44% of the total assets. The COVID-19 pandemic appeared in Egypt in 2020; it represents 27% of the sample observations. There is a significant variation in board sizes among firms, with a range from 4 to 19 directors. The mean of board independence is 87% which suggests that firms being analyzed have a relatively high proportion of non-executive members on their board of directors, while the mean of board gender diversity is 17% which indicates that industrial firms in Egypt have a relatively low proportion of female members on their board of directors. Also, industrial firms have a low incidence of CEO duality with a mean of 18%. Furthermore, the results indicate a significant level of institutional ownership at 25% on average, which suggests that institutions play a substantial role in the corporate governance of Egyptian firms. Meanwhile, managerial ownership at an average of 6% implies that managers have a non-negligible but relatively smaller stake in the firms' equity compared to institutional owners.

4.2 Correlation

Table 4 presents the collation matrix between all the research variables, the results indicate that debt finance in industrial firms included in the sample is correlated negatively with the CCCY. Also, debt finance is negatively correlated with each FAG and CHL. Conversely, the findings reveal that debt finance positively correlated with FSZ, BSZ and BGDY. At a 10% significance level, the results show that debt finance positively correlated with ATAG and negatively correlated with BIND, while OCF, COV, DUA, IOW and MOW are insignificantly correlated with debt finance. Furthermore, no multicollinearity among the independent variables is shown in Table 4 ($VIF < 10$).

4.3 Research technique

This research depends on Dynamic GMM panel data estimation to test the hypotheses. GMM has several benefits. It reduces endogeneity issues by accounting for the potential correlation between regressors and error terms. It is suitable for a specific data structure as acknowledged by Hansen (1982) and Arellano and Bond (1991). Additionally, it incorporates unobserved fixed panel-level effects and lagged covariates for the dependent variable.

Table 4. Correlation

	TDF	CCCY	FSZ	FAG	CHL	ATAG	OCF	COV	BSZ	BIND	BGDY	DUA	IOW	MOW	VIF
TDF	1														—
CCCY	−0.119**	1													1.18
FSZ	0.101***	−0.023***	1												1.02
FAG	−0.232***	−0.167***	0.057	1											1.38
CHL	−0.260***	−0.105***	−0.038	−0.042	1										1.09
ATAG	0.073*	−0.041	0.002	0.021	0.015***	1									2.15
OCF	−0.027	−0.049	0.003	0.043	0.107***	0.724***	1								2.18
COV	0.036	0.082**	0.067*	0.380***	−0.067*	0.057	0.000	1							1.24
BSZ	0.166***	−0.072**	0.066*	0.003**	−0.047**	0.024	0.058	0.001	1						1.12
BIND	−0.069	−0.153	−0.009	0.090	0.088	−0.015	−0.003	0.000	−0.023	1					1.05
BGDY	0.103***	0.066*	−0.066*	−0.250***	−0.058**	0.008	−0.028	0.012	−0.183***	0.042**	1				1.17
DUA	0.026	−0.087**	−0.017	0.009***	0.138	−0.021	0.019	0.000	0.150	−0.086	−0.14***	1			1.10
IOW	−0.037	0.184***	−0.004	0.12***	−0.040	−0.019	0.016	0.027	−0.059	−0.031	−0.13***	0.09**	1		1.10
MOW	0.002	0.113***	−0.005	0.052	−0.121**	−0.006	−0.011	0.006	0.182***	−0.025	−0.09**	−0.05	−0.02	1	1.09

Note(s): *** significant at 1%, ** significant at 5%; * significant at 10%

Source(s): Table created by the author

The Arellano–Bond test was conducted to check for serial correlation in dynamic panel-data models. The test results indicated that no model displayed autocorrelation. Additionally, the Sargan test was employed to determine the presence of heteroskedasticity. The findings revealed that the over-identifying restrictions were not valid in all models, as the p -value was insignificant. Consequently, none of the models exhibited heteroskedasticity.

4.4 Regression results and discussion

The main objective of this research is to answer two main questions: first, what is the impact of WCE on CSD? and second, what is the moderating role of foreign currency exchange risk exposure on this relationship? The CCCY is used to measure the WCE, the increase in the CCCY indicates a decrease in the WCE, and vice versa. Table 5 is designed to answer the first question. The coefficient of CCCY regarding TDF and LODF is negative and significant at a 1% significance level. The findings reveal that the increase in the CCCY negatively affects both TDF and LODF, this means that industrial firms with high WCE depend more on TDF and LODF. These results are consistent with Flannery and Gztekın (2021) who found that net working capital permits a firm to issue more financial debt, and especially more long-term debt. The results also can be explained by the trade-off theory, which suggests that firms optimize their capital structure by balancing the costs and benefits of debt financing. Firms with high WCE have a stronger ability to service TDF and LODF due to their efficient management of working capital. This improved debt service capacity allows these firms to increase their reliance on TDF and LODF, as the benefits of the tax shield and other advantages of debt financing outweigh the associated costs, such as bankruptcy and distress risks. Also, lenders are more willing to provide debt financing to firms with high WCE because they perceive these firms as being less risky. This, in turn, leads to benefits such as lower interest rates on debts, encouraging greater reliance on TDF and LODF to support growth endeavors. Conversely, the coefficient of CCCY regarding SHODF is positive and significant at a 1% significance level. The results show that the increase in the CCCY positively affects SHODF,

Table 5. The effect of WCE on TDF, SHODF and LODF

	TDF Z	SHODF Z	LODF Z
L1	78.2***	71.4***	86.2***
CCCY	−3.33***	14.5***	−3.31***
FSZ	−6.45***	−14.2***	−5.40***
FAG	−6.13***	1.00	−5.89***
CHL	−1.93*	−0.76	−0.78
ATAG	5.62***	3.90***	9.69***
OCF	−4.06***	−4.15***	−7.14***
COV	17.2***	−2.86***	16.4***
BSZ	20.5***	−0.56	−20.2***
BIND	4.32***	−3.58***	4.39***
BGDY	1.70*	7.98***	1.88*
DUA	1.01	0.97	1.16
IOW	−8.36***	−7.54***	−5.76***
MOW	−1.06	−13.34***	−1.35
Year-effect	Yes	Yes	Yes
Firm-effect	Yes	Yes	Yes
PROB	0.00	0.00	0.00
OBS	649	649	649
Wald χ^2	6.69	3.51	3.03

Note(s): *** significant at 1%, ** significant at 5%; * significant at 10%

Source(s): Table created by the author

this means that firms with high WCE rely less on SHODF. This result can be explained by the pecking order theory which indicates that firms with high WCE have sufficient liquid funds to meet their short-term obligations and can generate consistent cash flow, as a result, it will depend less on SHODF. Instead, these firms can rely more on LODF, as they have a lower need to frequently access external short-term debt markets.

The findings of the first hypothesis can be jointly interpreted by the trade-off theory, which elucidates the increased reliance on TDF and LODF, and the pecking order theory, which explains the decreased reliance on SHODF. This joint interpretation offers a comprehensive understanding of the financing decisions made by these firms.

The research findings regarding the impact of WCE on CSD have significant implications for industrial firms in developing economies such as Egypt. The preference for TDF and LODF, while relying less on SHODF, can be attributed to the need for stable and long-term funding. Industrial firms with high WCE prioritize funding sources that offer predictable cash flow over an extended period. Challenges in accessing SHODF in developing economies, due to volatile economic conditions and limited alternatives, contributed to this pattern. Additionally, the nature of industrial investment, which often requires significant capital expenditures, aligns with the preference for LODF. It enables firms to secure funding for long-term investments, supporting competitiveness and sustainable growth.

Regarding the control variables, the findings show that FSZ, OCF and IOW negatively affect the debt finance of Egyptian industrial firms whether TDF, SHODF or LODF at a 1% significance level. While, ATAG and BGDY positively affect the TDF, SHODF and LODF. Also, the results indicate that TDF is positively affected by COV, BSZ and BIND, while, the effect of FAG and CHL on TDF is negative. Furthermore, COV, BIND and MOW negatively affect SHODF at a 1% significance level. Additionally, the results show that LODF is negatively and significantly affected by FAG and BSZ, conversely, COV and BIND have a significant positive effect on LODF.

The findings in Table 6 answer the second question regarding the moderating role of FCRE. The coefficient of EXCG*CCCY regarding TDF and LODF is positive and significant at a 1% significance level. While the coefficient of EXCG* CCCY regarding SHODF is insignificant. The findings reveal that EXCG increases the negative effect of the CCCY on TDF and LODF.

This means that EXCG strengthens the positive effect of high WCE on TDF and LODF.

Conversely, the coefficient of EXCL* CCCY regarding TDF and LODF is negative and significant at a 1% significance level. The findings show that EXCL decreases the negative effect of the CCCY on TDF and LODF. This indicates that EXCL weakens the positive effect of high WCE on TDF and LODF. The results can be interpreted from the perspective of the trade-off theory. According to this theory, EXCG may increase a firm's utilization of TDF and LODF due to enhanced profitability, reduced perceived risk and decreased foreign currency debt burden. Conversely, EXCL may decrease the firm's reliance on external debt financing.

Also, the coefficient of EXCL* CCCY regarding SHODF in Table 6 is negative and significant at a 1% significance level. The results show that EXCL decreases the positive effect of the CCCY on SHODF. This means that EXCL weakens the negative effect of WCE on SHODF. This result can be explained from the perspective of the pecking order theory. EXCL may positively affect the firm reliance on SHODF due to its negative impact on profitability and cash flow.

The results of the second hypothesis have important implications for industrial firms operating in Egypt as an emerging market. EXCG can positively influence the financial performance and position of industrial firms. When a firm experiences EXCG, it means the value of its foreign currency assets has increased relative to the domestic currency. This increase in value can enhance WCE and provide the firm with additional financial resources, enabling it to access more LODF and TDF. EXCG act as a reinforcing factor, further strengthening the positive effect of WCE on LODF and TDF.

Conversely, EXCL can weaken the positive impact of higher WCE on LODF and TDF. When a firm faces EXCL, it implies the value of its foreign currency assets has decreased

Table 6. The moderating role of FCRE on the relationship between WCE and DF

	TDF Z	SHODF Z	LODF Z
L1	52.7***	53.8***	51.4***
CCCY	−6.38***	13.3***	−5.97***
FSZ	−0.29	−11.7***	−0.44
FAG	−5.45***	1.74*	−5.49***
CHL	−2.51**	−1.31	−2.82***
ATAG	7.00***	3.31***	6.39***
OCF	−5.30***	−3.48***	−4.78***
COV	17.9***	−2.01**	19.4***
BSZ	−8.94***	−0.35	0.00
BIND	5.97***	−3.17***	0.00
BGDY	1.32	7.82***	0.86
DUA	−0.11	0.73	−0.41
IOW	−3.86***	−6.09***	−4.18***
MOW	−1.39	−10.9***	−1.73*
EXCG*CCCY	9.56***	1.35	8.81***
EXCL*CCCY	−5.42***	−7.18***	−5.86***
Year-effect	Yes	Yes	Yes
Firm-effect	Yes	Yes	Yes
PROB	0.00	0.00	0.00
OBS	649	649	649
Wald χ^2	1.74	1.59	2.20

Note(s): *** significant at 1%, ** significant at 5%; * significant at 10%
Source(s): Table created by the author

relative to the domestic currency. This reduction in value can limit the firm's ability to access and secure additional debt financing. As a result, the positive effect of WCE on TDF and LODF is diminished by EXCL. Furthermore, EXCL can decrease the negative effect of WCE on SHODF. As WCE improves, firms can manage their short-term assets and liabilities effectively, reducing their reliance on SHODF. However, EXCL can offset this effect by reducing the financial resources available to the firm, thereby lessening the negative effect of higher WCE on SHODF.

In the context of developing economies like Egypt, foreign currency exchange dynamics significantly influence the relationship between WCE and CSD. Firms may face currency risks due to foreign-denominated debt and international trade, where EXCG can facilitate greater debt financing through WCE, while EXCL poses challenges requiring risk management. Overall, EXCG and EXCL play an essential role in the relationship between WCE and CSD, necessitating proactive currency risk management for firms in these markets.

4.5 Robustness analysis

The equity-to-assets (EQ) ratio (Hamid *et al.*, 2015; Javaid *et al.*, 2021; Al Amosh *et al.*, 2022) was employed to validate the results of the basic analysis. The EQ ratio is commonly used to determine a firm's preference for equity or debt financing. The findings in Table 7 reveal that the increase in CCCY positively affects the firm equity, this means that industrial firms with low WCE depend more on equity financing because it provides finance without the burden of required monthly payments or interest charges, as is the case with debt financing. This result confirms the main results which indicated that industrial firms with high WCE depend more on TDF and LODF.

Furthermore, the results in Table 7 also indicated that EXCL has a positive moderating effect. This means EXCL leads firms with low WCE to depend more on equity. This also

Table 7. Robustness analysis

	The effect of WCE on EQ Z	The moderating effect of FCRE on the relationship between WCE on EQ Z
L1	30.84***	32.86***
CCCY	18.03***	9.55***
FSZ	0.97	0.28
FAG	2.39**	2.26**
CHL	6.25***	3.98***
ATAG	8.89***	7.98***
OCF	-10.31	-8.57
COV	3.48***	4.52***
BSZ	2.55**	1.53
BIND	1.73**	0.76
BGDY	-7.48	-5.05
DUA	-5.92	-5.47
IOW	0.35	0.87
MOW	8.74	7.40***
EXCG*CCCY	—	1.44
EXCL*CCCY	—	7.76***
Year-effect	Yes	Yes
Firm-effect	Yes	Yes
PROB	0.00	0.00
OBS	649	649
Wald χ^2	87639.24	83435.94

Note(s): *** significant at 1%, ** significant at 5%; * significant at 10%

Source(s): Table created by the author

supports the main results which indicated that EXCL negatively affects the cash available, especially in firms with low WCE, and this makes the firms prefer to depend on equity more as they are not able to repay the debt regularly.

4.6 Additional analysis

This research used individual measures of the WCE such as inventory cycle period (ICP), receivable cycle period (RCP) and payable cycle period (PCP) to examine the effect of WCE's components on CSD (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Vishnani and Shah, 2007; Samiloglu and Demirgunes, 2008; Ramachandran and Janakiraman, 2009; Dong and Su, 2010; Charitou *et al.*, 2010; Raheman *et al.*, 2010; Alipour, 2011; Ching *et al.*, 2011; Sharma and Kumar, 2011; Abuzayed, 2012).

The coefficient of ICP in Table 8 regarding TDF, SHODF and LODF is positive and significant at a 1% significance level. The results indicate that the longer ICP can increase the firm's reliance on TDF, SHODF and LODF. These results can be explained by the following reasons. First, a longer ICP means that the firm is holding onto its inventory for a longer period before selling it. This can tie up the firm's capital in inventory, reducing its liquidity and increasing its need for SHODF to meet its operational cash flow needs. Second, a longer ICP negatively affects the firm's ability to invest in another area of the business and increases the need for LODF. Third, a longer ICP can also increase the firm's reliance on TDF as the firm may be more vulnerable to fluctuations in demand or changes in market conditions. This can increase the risk of overstocking and the need for costly inventory write-downs, which can further reduce the firm's liquidity and increase its reliance on TDF.

Also, the coefficient of RCP in Table 8 regarding TDF, SHODF and LODF is negative and significant at a 1% significance level. The results reveal that shortening the RCP increases the

Table 8. The effect of WCE's components on TDF, SHODF and LODF

	TDF Z	SHODF Z	LODF Z
L1	55.2***	50.9***	40.7***
ICP	7.08***	20.1***	7.68***
RCP	−3.78***	−3.20***	−5.18***
PCP	−4.30***	−1.51	−2.96***
FSZ	−3.20***	−10.4***	−2.43**
FAG	−2.50**	−1.10	−2.14**
CHL	−1.75*	−2.30**	−1.64
ATAG	5.29***	3.10***	5.20***
OCF	−3.65***	−3.61***	−3.62***
COV	9.32***	−0.27	11.0***
BSZ	−9.80***	−0.85	−9.43***
BIND	2.47**	−3.67***	3.62***
BGDY	1.27	10.31***	0.10
DUA	0.44 ***	0.07 ***	−0.26
IOW	−3.72	−2.68	−3.67
MOW	−1.00	−13.9***	−3.86
Year-effect	Yes	Yes	Yes
Firm-effect	Yes	Yes	Yes
PROB	0.00	0.00	0.00
OBS	649	649	649
Wald χ^2	2.31	3.07	2.72

Note(s): *** significant at 1%, ** significant at 5%; * significant at 10%
Source(s): Table created by the author

firm's reliance on TDF, SHODF and LODF. This is due to some reasons. First, reducing the RCP implies that cash is received more quickly, which in turn requires additional working capital to support ongoing operations. The firm may need to invest in increased inventory levels to meet higher sales demand and incur additional expenses to enhance the production capacity. These increased working capital requirements may necessitate additional funding, which can be obtained through debt financing. Second, reducing the RCP can create opportunities for investment in new projects, or the pursuit of strategic initiatives, and to seize these opportunities, firms may rely more on debt finance.

Furthermore, the coefficient of PCP in Table 8 regarding TDF and LODF is negative and significant at a 1% significant level, while, the coefficient of PCP regarding SHODF is insignificant. The findings reveal that reducing the PCP increases the firm's reliance on TDF and LODF. This indicates that when a firm pays its suppliers more quickly, it may have less available cash on hand to invest in other areas of the business, thereby increasing reliance on TDF and LODF to fund its operations.

5. Conclusion

This research aims to examine the impact of working capital efficiency (WCE) on capital structure decisions (CSD) and to investigate the moderating effect of foreign currency exchange risk exposure on this relationship. The research utilizes data from 65 publicly listed firms on the Egyptian stock exchange between 2012 and 2022.

The findings reveal that firms with higher WCE tend to rely more on total and long-term debt financing while depending less on short-term debt. Additionally, the study demonstrates that foreign currency exchange gains strengthen the positive effect of high WCE on total/

long-term debt financing, whereas foreign currency exchange losses weaken this positive effect. Conversely, exchange losses also diminish the negative impact of WCE on short-term debt financing.

This research expands the limited literature on the influence of WCE on CSD in developed markets and provides new evidence on the relationship between WCE and CSD in emerging markets. Also, it breaks new ground by examining the moderating role of foreign currency exchange risk exposure, as regulated by IAS 21, on the relationship between WCE and CSD, which has not been previously investigated.

Furthermore, this research provides important implications. First, it assists firms in optimizing their financial strategies, improving liquidity, reducing financing costs and enhancing overall financial performance. Second, it contributes to the development of efficient and sustainable financial markets by identifying the determinants of CSD, including WCE, which can inform policymakers and regulators in formulating appropriate policies and regulations. Third, the insights provided are particularly valuable for firms operating in emerging markets, where they can navigate the challenges related to foreign currency exposure, liquidity and financing more effectively. Fourth, it offers insights for policymakers in emerging economies on the implications of IFRS adoption, specifically IAS 21.

The research does have some limitations, including the relatively small sample size and the potential for IAS 21 to not fully capture all aspects of currency exposure, such as the impact on a firm's overall business operations and supply chain. Future research could explore how interest rate risk, credit risk and geopolitical risk moderate the relationship between WCE and CSD. Such investigations would deepen understanding of how risk factors influence this relationship, offer practical insights and extend existing academic literature.

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