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Juan Gallegos Mardones

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Working capital management and business performance: evidence from Latin American companies

Juan Gallegos Mardones (ORCID)

Department of Audit and Information Systems, Faculty of Economic and Administrative Sciences, Universidad Católica de la Santísima Concepción, Concepción, Chile

ABSTRACT

Working capital management is one of the most important decisions that affect an organisation's financial performance. Despite the importance of this topic, the empirical evidence for emerging economies is scarce; therefore, this research attempts to estimate and compare how investment in working capital impacts the financial performance of companies listed on the stock exchanges in Chile, Mexico, Peru, and Brazil for the years 2000 to 2018. This study uses panel data methodology, and the results show the existence of a positive and significant but non-linear relationship between investments in working capital and firm performance. However, there are mixed results for different countries and industries that could be explained by macroeconomic variables that favour access to financing for such investments. Furthermore, the results show that investments in working capital perform better for larger companies than smaller companies.

1. Introduction

Research on working capital management has found that efficient investment in and management of working capital can enhance profitability and increase firm value (AlShubiri, 2011; Boïoc & Anton, 2017; Jeng-Ren & Han-Wen, 2006; Le, 2019). In other words, efficient management of working capital contributes to developing and maintaining a competitive advantage (Aktas et al., 2015; Baños-Caballero et al., 2014; Boisjoly et al., 2020; Deloof, 2003; Padachi, 2006; Reason, 2002). Thus, working capital management is relevant due to the sustained increase in competitive pressure (Baños-Caballero et al., 2012).

Consequently, this topic is one of the most important topics in corporate finance (Baños-Caballero et al., 2012) because of the effect on firm liquidity (Enqvist et al., 2014). Thus, the challenge for companies in terms of managing working capital is to develop a culture that allows them to increase profitability (Anton & Afloarei Nucu, 2020). There is evidence of a positive and significant relationship between working

CONTACT Juan Gallegos Mardones ✉ jgallegos@ucsc.cl

capital and financial performance because working capital supports increases in sales (Aktas et al., 2015; Baños-Caballero et al., 2020; Mun & Jang, 2015). An increase in sales permits better management of commercial credit and inventories and helps firms avoid immobilisation of resources and price fluctuations (Mahmood et al., 2019).

Seth et al. (2021) and Li et al. and (2014) recognise that investments in working capital increase a company's negotiating power with its providers, allowing it to obtain larger discounts for bulk and down payments, thus increasing an organisation's value (Aktas et al., 2015; Deloof, 2003; García-Teruel & Martínez-Solano, 2007). However, over-investment in working capital increases financing costs, reducing an organisation's value (Baños-Caballero et al., 2014; Chang, 2018; Zeidan & Shapir, 2017). Research has made it possible to assume the existence of an optimal level of investment in working capital (Aktas et al., 2015; Baños-Caballero et al., 2012; 2014; Khan & Ghazi, 2013), as studies have identified a non-linear relationship between investment in working capital and financial performance (Ding et al., 2013; Seth et al., 2021). This non-linear relationship suggests the existence of an optimum investment in working capital (Mahmood et al., 2019)

Numerous studies have been conducted in developed economies to estimate the true relationship between investment in working capital and financial performance, but it is possible that these results cannot be extrapolated to emerging economies due to their different social, political, and economic contexts (Seth et al., 2021). Mielcarz et al. (2018) find evidence confirming that the existence of restrictions on financing markets in developing countries can significantly affect decisions about investment in and financing of working capital, as well as the fluctuations. In this vein, Latin American companies face a greater level of uncertainty than companies in developed countries in terms of determining their investment in working capital and its components (Bellouma, 2011; Li et al., 2014; Mongrut & Wong, 2005; Seth et al., 2021).

In spite of the importance of the topic, the evidence from emerging economies, especially Latin American economies, is inconsistent due to exposure to certain macroeconomic variables in Latin American countries, such as interest rates, economic growth, and exchange rates (Pérez Artica et al., 2018). This combination of scarce evidence and the presence of inconclusive results (Le, 2019) motivates this research. This study's goal is to estimate and compare the effects of investment in working capital on financial performance for a sample of Latin American companies. In addition, it provides updated and relevant literature on managing working capital in emerging economies, while considering the importance of macroeconomic factors such as exposure to exchange rates, gross domestic product (GDP) growth, balance of payments, and active interest rates.

Using a dataset of Latin American countries and panel data methodology, our main empirical finding indicates that there is a true relationship between working capital and financial performance. Furthermore, the relationship is non-linear, which is congruent with the literature. The remainder of this paper is organised into five sections. An introduction is provided in section one, while a review of literature and the development of hypotheses is presented in section two. The data and methods are described in section three, and the descriptive statistics and results are reported in section four. Finally, the conclusions are discussed in section five.

2. Review of the literature

Latin American companies face riskier macroeconomic surroundings than companies in developed economies, and this affects investment in working capital (Baum et al., 2006; López Pérez et al., 2018). The evidence shows that, in countries with restrictions in their balance of payments, commercial surpluses, and capital inflow, companies have greater access to credit, which encourages economic growth, and drives new investment opportunities (Médici & Panigo, 2015).

All organisations must maintain a level of investment in working capital that allows them to adequately manage their operations while balancing their decisions between liquidity and financial performance (García-Teruel & Martínez-Solano, 2007; Pass & Pike, 1984). Because of the flexibility of this type of investment and its low cost of transformation into cash (Mielcarz et al., 2018), adequate management of working capital permits a company to have liquidity available in case of cash deficits or, on the contrary, reduce its level of investment (Bates et al., 2009; Belghitar & Khan, 2013; Fazzari & Petersen, 1993; Opler et al., 1999).

We define working capital as the excess of current assets over current liabilities; its components include cash, accounts receivable, inventories, accounts payable, and current debt (García-Teruel & Martínez-Solano, 2007; Mun & Jang, 2015). Other measures of working capital refer to the cycle of cash conversion and assess the time it takes to convert the net investment in accounts receivable, inventories, and accounts payable into cash. This measure is related to a business's operations (Baños-Caballero et al., 2012; Chang, 2018; Raheman & Nasr, 2007) and is associated with a firm's level of operational efficiency (Mun & Jang, 2015).

Over-investment in working capital can generate adverse effects and diminish company performance, as investments in working capital require additional financing and greater opportunity cost. Deloof (2003), García-Teruel and Martínez-Solano (2007), Ebben and Johnson (2011), Baños-Caballero et al. (2012), Kieschnick et al. (2013), and Afrifa and Padachi (2016) find a negative relationship between investment in working capital and company performance, as larger investments increase the probability of bankruptcy (Baños-Caballero et al., 2014; Humphrey, 2017; Le, 2019; Maheshwari, 2014).

Li et al. (2014) and Panigrahi (2017) recognise that investment in working capital increases a company's negotiating power with its providers, allowing it to obtain greater discounts, reduce supply costs, provide a hedge against input price fluctuations, and minimise loss of sales due to potential stock-outs, thus increasing the organisation's value (Aktas et al., 2015; Baños-Caballero et al., 2020; Deloof, 2003; García-Teruel & Martínez-Solano, 2007). Therefore, maintaining an adequate investment in working capital allows for better company performance (Ukaegbu, 2014). Based on this discussion, we expect a negative relationship between investment in working capital and company performance and formulate our first hypothesis as follows:

Hypothesis 1. There is a positive relationship between investment in working capital and company performance.

The literature shows that larger companies with solid market reputations and more assets to invest can enjoy better access to and lower cost of financing (Fazzari &

Petersen, 1993; Mahmood et al., 2019). As a result, larger companies use short-term financing to fund their investments in working capital due to its advantages (Fazzari & Petersen, 1993; Niskanen & Niskanen, 2006) and thus have lower risk of bankruptcy (Baños-Caballero et al., 2010; Mahmood et al., 2019). This indicates that firm size has a moderating and differentiating effect. This discussion suggests there is a positive relationship between investment in working capital and firm size, leading to the following hypothesis:

> Hypothesis 2. There is a positive relationship between investment in working capital and firm size.

In terms of financing working capital, the literature recognises two strategies: conservative and aggressive (Baños-Caballero et al., 2016). Financing the investment in working capital with long-term debt is considered a conservative strategy, while primarily using short-term debt to finance the investment is considered an aggressive strategy (Baños-Caballero et al., 2016).

Companies that use conservative financing strategies show an inverted U-shaped relationship between investment in working capital and financial performance, while companies that adopt aggressive strategies show a U-shaped relationship, as short-term financing is more flexible and cheaper than long-term financing (Baños-Caballero et al., 2016; Jun & Jen, 2003).

Another advantage of short-term financing is its easy adaptation to new financing needs, facilitating control between the company and those who finance its operations and diminishing agency problems; however, evidence shows that these benefits grow to a maximum level and later disappear (Jun & Jen, 2003). Baños-Caballero et al. (2016) find an inverted U-shaped relationship for a group of Spanish companies when a conservative financing strategy is utilised. In accordance with this, it is possible to observe a U-shaped non-linear relationship between investment in working capital and a company's performance (Afrifa & Padachi, 2016; Altaf & Shah, 2018; Baños-Caballero et al., 2014; Boīoc & Anton, 2017; Mun & Jang, 2015). From this discussion, we expect companies will have an inverted U-shaped relationship between working capital and financial performance, leading to the following hypothesis:

> Hypothesis 3. There is an inverted U-shaped relationship between working capital and financial performance with a break-even point.

3. Data and methodology

3.1. Data base, variables, and methodology

The sample for the current study was obtained from Thomson Reuters Eikon, which provides information about non-financial 461 companies; 80 Mexican, 120 Chilean, 78 Peruvian, and 183 Brazilian companies were selected for this research. We used the World Bank database for macroeconomic variables and examined the years from 2000 to 2018. The data collected correspond to consolidated financial statements for these companies and years.

The data were entered into and tabulated using STATA 14 statistical software. To validate our research hypotheses, we used panel data methodology, including firm,

industry, and year fixed effects. Finally, to estimate the relationship between company performance and working capital investment, we propose Eq. (1).

$$
\begin{aligned}
DES_{i,t} = \ & \alpha + \beta_1 LEV_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 TANG_{i,t} + \beta_4 INV_{i,t} + \beta_5 \ CASH_{i,t} + \beta_6 LIQ_{i,t} \\
& + \beta_7 \ DIV_{i,t} + \beta_8 GROW_{i,t} + \beta_9 GDP_{i,t} + \beta_{10} INT_{i,t} + \beta_{11} BP_{i,t} + \beta_{12} WK_{i,t} \\
& + \ \varepsilon_{i,t}
\end{aligned}
$$

$$(1)$$

To estimate the possible interaction between investments in working capital and firm size, we propose Eq. (2).

$$
\begin{aligned}
DES_{i,t} = \ & \alpha + \beta_1 LEV_{i,t} + \beta_2 TANG_{i,t} + \beta_3 INV_{i,t} + \beta_4 \ CASH_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 \ DIV_{i,t} \\
& + \beta_7 GROW_{i,t} + \beta_8 GDP_{i,t} + \beta_9 INT_{i,t} + \beta_{10} BP_{i,t} + \beta_{11} WK_{i,t} * SIZE_{small} \\
& + \beta_{12} WK_{i,t} * SIZE_{large} + \ \varepsilon_{i,t}
\end{aligned}
$$

$$(2)$$

To estimate the possible non-linear relationship between investment in working capital and company performance, we propose Eq. (3).

$$
\begin{aligned}
DES_{i,t} = \ & \alpha + + \beta_1 LEV_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 TANG_{i,t} + \beta_4 INV_{i,t} + \beta_5 \ CASH_{i,t} \\
& + \beta_6 LIQ_{i,t} + \beta_7 \ DIV_{i,t} + \beta_8 GROW_{i,t} + \beta_9 GDP_{i,t} + \beta_{10} INT_{i,t} + \ \beta_{11} BP_{i,t} \\
& + \ \beta_{12} WK^2_{i,t} + \ \varepsilon_{i,t}
\end{aligned}
$$

$$(3)$$

3.2 Measurement of variables and descriptive statistics

To reduce bias in the estimation of the relationship between investment in working capital and company performance, we propose the following control variables: leverage (LEV), company size (SIZE), tangible assets (TANG), capital expenditures (INV), operational cash flow (CASH), company liquidity and dividends (LIQ and DIV), and finally, company growth (GROW) (Ahmed & Hamdan, 2016; Guney et al., 2020; Jara et al., 2019; Li et al., 2020; Mardones & Cuneo, 2020).

Another aspect to consider and one that can induce errors in inferences relates to endogeneity problems that arise when one or more of the independent variables are determined simultaneously with the dependent variable or when the independent variable correlates with the error term. Because the literature recognises endogeneity problems between performance variables and the proposed control variables, we use lagged variables as valid instruments (Arias et al., 2014; Blundell & Bond, 1998; Bond, 2002). We also use a fixed effects model, as it allows us to further reduce endogeneity problems (Li, 2016). To classify the firms as large or small, the sample was divided into two subsamples, with those larger than the average classified as large

Table 1. Variable definitions.

Variables	Abbreviation	Detail
Return on equity	ROE	Net income after taxes divided by equity
Tobin's Q	Q	Accounting value of total liabilities plus stock capitalization divided by total assets
Leverage	LEV	Total debt divided by total assets
Company size	SIZE	Natural logarithm of total assets
Tangible assets	TANG	Property, plant, and equipment divided by total assets
Capital expenditure	INV	Capital expenditures divided by total assets
Operational cash flow	CASH	Earnings after tax plus annual depreciation divided by total assets
Liquidity	LIQ	Cash and cash equivalents divided by total assets
Dividends	DIV	Dividends per share divided by closing price
Sales growth	GROW	Percentage of change in sales with respect to the previous year
Gross domestic product growth	GDP	Annual percentage growth rate of GDP.
Lending interest rate	INT	Lending rate is the bank rate for short- and medium-term financing
Current account balance to GDP	BP	Current account balance divided by total GDP.
Size small	$SIZE_{small}$	Variable dummy that equals 1 when a firm is small
Size large	$SIZE_{large}$	Variable dummy that equals 1 when a firm is large
Working capital invest	WKM	Working capital investment to total assets

Source: Author's elaboration.

companies and those below the average classified as smaller sized companies (Mahmood et al., 2019). Details on each of the variables are found in Table 1.

4. Descriptive statistics and results

The summary of the descriptive statistics for all variables (see Table 2) shows that the average profitability of the sample firms, measured using ROE, is 0.0310 and Tobin's Q is 1.3260. ROE is the variable with the largest standard deviation. The average leverage of the sample companies is 0.5247 (LEV), which reveals the importance of using external financing sources. The average size of the companies (SIZE) 13.3780, and, on average, tangible assets (TANG) represent 37.44% of a firm's total assets. This is explained by the fact that, on average, companies invest amounts equal to 5.66% of total assets in capital expenditures (INV).

The sample companies generate average operating cash flow equal to 8.61% of total assets (CASH), while company liquidity or the level of average investment in cash and its equivalents is 8.75% of total assets (LIQ). The mean return to shareholders (dividends divided by the closing share price) is 1.8547 (DIV), and we observe negative growth in sales (GROW) for companies of 33.88%. Finally, our variable of interest, the average investment in working capital, represents, on average, 14.99% of a company's total assets, revealing the magnitude and importance of this investment for company operations. Gross domestic product growth of 3.11% was observed for the countries of the companies included in the study. We also observe an average active interest rate of 22.5% and an average deficit or surplus of −1.6855 for gross domestic product. Finally, there are no significant statistical differences between the countries.

In terms of the behaviour of our variable of interest, we observe a positive correlation between WKM and ROE of 0.07 and Tobin's Q of 0.05. Mixed correlations are observed between the control variables and the proposed performance variables.

Table 2. Descriptive statistics.

Variable	Mean	Standard deviation	Minimum	Maximum
ROE	0.0310	1.5357	−63.5742	17.9096
Q	1.3260	0.9602	0.1149	14.1128
LEV	0.5247	0.2045	0.0016	0.9990
SIZE	13.3780	1.8424	6.2004	19.6047
TAN	0.3744	0.2316	0.0000	1.0000
INV	−0.0560	0.0524	−0.4731	0.0007
CASH	0.0861	0.0992	−0.1608	2.1324
LIQ	0.0875	0.1833	−0.0474	9.9770
DIV	1.8547	25.0225	−1.9449	616.9415
GROW	−0.3388	19.1723	−1182.8080	1.0000
GDP	3.1123	2.7295	5.2857	9.1265
INT	22.7539	17.3465	3.4391	67.0833
BP	−1.6855	2.2263	−5.1594	4.5250
WKM	0.1499	0.1819	−0.9577	0.9358

Source: Author's computation using STATA 14 software.

Table 3. Correlation matrix.

	ROE	Q	LEV	SIZE	TANG	INV	CASH	LIQ	DIV	GROW	GDP	INT	BP	WKM
ROE	1.00													
Q	0.24	1.00												
LEV	0.00	0.05	1.00											
SIZE	0.06	0.20	0.46	1.00										
TANG	−0.09	−0.18	−0.18	−0.18	1.00									
INV	−0.08	−0.12	−0.10	−0.12	−0.31	1.00								
CASH	0.67	0.33	−0.03	0.07	−0.07	−0.19	1.00							
LIQ	0.06	0.04	0.01	0.00	−0.12	0.00	0.06	1.00						
DIV	−0.01	−0.02	−0.10	−0.08	0.09	0.02	−0.02	0.00	1.00					
GROW	0.09	0.03	0.07	0.07	0.00	−0.02	0.08	0.00	0.00	1.00				
GDP	0.10	−0.02	−0.10	−0.16	0.21	−0.06	0.07	0.03	0.02	0.07	1.00			
INT	0.04	0.11	0.08	0.21	−0.37	0.06	0.05	0.07	−0.02	0.00	−0.36	1.00		
BP	0.02	0.02	−0.12	−0.16	0.15	−0.02	−0.02	−0.02	0.03	0.10	0.29	−0.26	1.00	
WKM	0.07	0.05	−0.31	−0.15	−0.43	0.26	0.07	0.14	−0.02	0.00	0.00	0.18	0.03	1.00

Source: Author's computation using STATA 14 software.

Problems of multicollinearity between the variables are not observed, as there are low correlation coefficients between the variables (see Table 3).

We use Eq. (1) to estimate the relationship between investment in working capital and company performance, and the results are shown in Table 4. We find a positive and significant relationship between performance and ROE and Tobin's Q with coefficients of 0.2546 and 0.5371, respectively. This indicates that companies with a higher level of investment in working capital achieve better performance, suggesting this investment constitutes a competitive advantage. This is consistent with the findings of Aktas et al. (2015), Baños-Caballero et al. (2020), Deloof (2003), García-Teruel and Martínez-Solano (2007), Humphrey (2017), and Li et al. (2014). Consequently, H1 is supported.

In addition, the coefficients of economic growth (GDP) are 0.0088 and 0.0243 when the performance measures are ROE and Tobin's Q, respectively; this indicates economic growth positively affects financial performance, as it implies better opportunities for investment and greater demand for working capital (López Pérez et al., 2018). A positive and significant relationship is observed for a surplus in the net balance of payments (BP) (0.0176) when the performance measure is Tobin's Q; this

Table 4. Relationship between working capital investment and financial performance.

	ROE			Tobin's Q		
Variables	Coefficient	Standard deviation	Sig.	Coefficient	Standard deviation	Sig.
L1.LEV	−0.0172	0.0861		−0.0192	0.2508	
L1.SIZE	−0.0254	0.0134	**	−0.0185	0.0402	
L1.TANG	0.0243	0.0826		−0.0422	0.2378	
L1.INV	−0.2666	0.1408	**	−1.2049	0.4081	***
L1.CASH	0.1737	0.1404		0.8009	0.4183	***
L1.LIQ	0.0163	0.0050	***	0.0322	0.0356	
L1.DIV	0.0000	0.0059		−0.0555	0.0316	
L1.GROWH	0.0020	0.0025		0.0187	0.0157	
GDP	0.0088	0.0021	***	0.0243	0.0062	***
INT	0.0002	0.0010		−0.0077	0.0028	***
BP	0.0008	0.0020		0.0176	0.0059	***
WKM	0.2546	0.1198	**	0.5371	0.2691	**
CONS	0.3371	0.1977	*	1.4857	0.5619	***
Observations		1470			1470	
Adj. R-squared		0.08			0.1106	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Source: Author's elaboration.

Table 5. Relationship between working capital investment and ROE by country.

	MEXICO	CHILE		PERU		BRAZIL	
Variables	Coefficient	Coefficient		Coefficient		Coefficient	
L1.LEV	0.2120	−0.0430		0.2418	**	−0.1069	
	(0.4420)	(0.1069)		(0.117)		(0.230)	
L1.SIZE	−0.1449	−0.0047		−0.0863	***	−0.0699	*
	(0.1748)	(0.0150)		(0.020)		(0.041)	
L1.TANG	−0.3157	0.0110		−0.0204		0.1868	
	(0.6268)	(0.1019)		(0.065)		(0.279)	
L1.INV	0.5947	−0.1651		0.0524		−0.3623	
	(0.6240)	(0.1583)		(0.175)		(0.363)	
L1.CASH	0.0136	0.2497	*	0.1749	**	0.0690	
	(0.9541)	(0.1881)		(0.084)		(0.178)	
L1.LIQ	−0.3288	0.0252		0.0146	***	−0.1088	
	(0.4991)	(0.0772)		(0.002)		(0.183)	
L1.DIV	1.1179	−0.0034		0.0149		−0.0150	
	(1.4733)	(0.0060)		(0.020)		(0.244)	
L1.GROWH	0.1687	−0.0005		0.0774	**	0.0055	
	(0.1419)	(0.0025)		(0.034)		(0.010)	
GDP	−0.0109	0.0049	**	0.0068	**	0.0129	***
	(0.0119)	(0.0021)		(0.003)		(0.004)	
INT	0.0217	*	−0.0010		0.0058		0.0018	
	(0.0160)	(0.0027)		(0.005)		(0.002)	
BP	−0.0785	0.0030	*	0.0048		−0.0138	
	(0.0740)	(0.0019)		(0.004)		(0.014)	
WKM	0.4150	*	0.0949	*	0.3419	***	0.4674	**
	(0.2829)	(0.1338)		(0.104)		(0.250)	
CONS	2.0169	0.1150		0.9645	***	0.8636	
	(2.3464)	(0.1955)		(0.321)		(0.699)	
Adj. R-squared	0,167	0,18		0,45		0,14	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

result is consistent with those reported by Médici and Panigo (2015) and López Pérez et al. (2018). With respect to the interest rate (INT), the results show a negative relationship with financial performance of −0.0077, which can be understood as a proxy for the opportunity costs of private funding, which negatively affects the demand for working capital (López Pérez et al., 2018; Médici & Panigo, 2015).

Table 6. Relationship between working capital investment and Tobin's Q by country.

Variables	MEXICO Coefficient		CHILE Coefficient		PERU Coefficient		BRAZIL Coefficient	
L1.LEV	−2.2081	**	0.3596	*	−0.2671		−0.3604	
	(0.9594)		(0.1967)		(0.4720)		(0.6059)	
L1.SIZE	−0.1413		0.0075		−0.2240	*	−0.0461	
	(0.1889)		(0.0421)		(0.0911)		(0.1070)	
L1.TANG	1.8427		0.2214		−0.1986		−0.8857	
	(1.6023)		(0.3347)		(0.2940)		(0.7117)	
L1.INV	0.4860		−0.4234		0.5153		−2.7003	***
	(2.0789)		(0.3685)		(0.5653)		(0.8687)	
L1.CASH	−0.5261		1.2005	***	0.5856		0.2887	
	(0.8629)		(0.4365)		(0.4145)		(0.5077)	
L1.LIQ	−0.0076		0.6747		0.0419	***	−1.7150	
	(1.0552)		(0.4956)		(0.0144)		(1.0984)	
L1.DIV	0.0420		−0.0604	**	0.1074		0.0143	
	(1.6419)		(0.0348)		(0.2939)		(0.8515)	
L1.GROWH	−0.0264		0.0000		0.1369		0.0709	***
	(0.1935)		(0.0064)		(0.1013)		(0.0263)	
GDP	0.0228		0.0262	***	0.0104		0.0244	**
	(0.0157)		(0.0070)		(0.0118)		(0.0130)	
INT	−0.0763	**	−0.0020		−0.0100	*	−0.0114	**
	(0.0383)		(0.0067)		(0.0152)		(0.0051)	
BP	−0.1793	*	0.0194	***	−0.0091		0.0591	*
	(0.1291)		(0.0071)		(0.0120)		(0.0442)	
WKM	0.5663	*	0.6731	*	−0.3963	*	0.2929	*
	(0.8812)		(0.3663)		(0.2678)		(0.3632)	
CONS	4.9250		0.4813		4.3293	**	3.1013	**
	(3.3157)		(0.6190)		(1.4166)		(1.4989)	
Adj. R-squared	0,39		0,19		0,25		0,15	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

In the analysis by country, for Eq. (1), we find a positive and significant relationship for each of the countries considered in the sample when the performance variable is ROE. For Chile, a positive and significant relationship is observed for the variables GDP and BP, which can be attributed to its context of an economy that is open and dependent on the international market. Additionally, the performance of the companies from Peru and Brazil is also associated with economic growth in those countries (see Table 5).

The results show a positive and significant relationship between working capital and Tobin's Q for each country, in addition to the positive effects of the macroeconomic variables of economic growth, GDP, and the balance of payments (BP), while the negative effect of interest rates on performance persists for all countries. However, this effect was not significant for Chile (see Table 6).

To simplify and establish the relationships between company performance and investment in working capital, four types of industry were defined: IND 1, Agriculture and mining; IND 2, Construction and manufacturing, IND 3, Commerce and IND 4, Services. The results show that investment in working capital is relevant for each of these industries when the performance measure is ROE. However, in the services industry, IND 4, it is significant at the 10% level, which, consistent with their business models, illustrates that the other industries demand greater investments in working capital (see Table 7). Similar results are observed when the performance measure is Tobin's Q (see Table 8).

Table 7. Relationship between working capital investment and ROE by industry.

Variables	IND = 1 Coefficient		IND = 2 Coefficient		IND = 3 Coefficient		IND = 4 Coefficient	
L1.LEV	−0.4822		−0.1240		0.5127	***	0.0717	
	(0.8308)		(0.1414)		(0.1981)		(0.1037)	
L1.SIZE	0.0178		−0.0502	***	−0.0719	**	−0.0092	
	(0.0652)		(0.0205)		(0.0385)		(0.0235)	
L1.TANG	0.2375		−0.0054		−0.3395	*	0.1570	
	(0.2477)		(0.1033)		(0.2023)		(0.1714)	
L1.INV	0.0171		−0.2045		−0.4393	**	−0.3209	
	(0.2419)		(0.2990)		(0.1459)		(0.2237)	
L1.CASH	−0.0383		0.1443		0.6060	***	0.3306	***
	(0.3733)		(0.1724)		(0.1818)		(0.1397)	
L1.LIQ	0.0162	***	0.0388		0.0599		−0.0057	
	(0.0073)		(0.1242)		(0.2306)		(0.1357)	
L1.DIV	−0.0574		0.0034		−0.1504		−0.0439	
	(0.0773)		(0.0047)		(0.1949)		(0.0850)	
L1.GROWH	−0.0267		0.0075	**	0.0087		−0.0086	***
	(0.0952)		(0.0042)		(0.0360)		(0.0055)	
GDP	0.0135		0.0105	***	0.0100	***	0.0057	
	(0.0094)		(0.0034)		(0.0038)		(0.0041)	
INT	−0.0008		0.0022	*	−0.0016	*	−0.0020	
	(0.0043)		(0.0014)		(0.0009)		(0.0020)	
BP	0.0250		−0.0032	**	−0.0051		0.0045	*
	(0.0161)		(0.0018)		(0.0054)		(0.0028)	
WKM	1.0072	***	0.2999	**	0.2284	***	0.1084	
	(0.2554)		(0.1285)		(0.0748)		(0.2724)	
CONS	−0.0968		0.6520	**	0.8275		0.0792	
	(0.7517)		(0.3299)		(0.5758)		(0.3456)	
Adj. R-squared	0,35		0,17		0,32		0,08	

$*p < 0.1$; $**\ p < 0.05$; $***\ p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

Table 8. Relationship between working capital investment and Tobin's Q by industry.

Variables	IND = 1 Coefficient		IND = 2 Coefficient		IND = 3 Coefficient		IND = 4 Coefficient	
L1.LEV	−0.3874		−0.3928		0.2168		0.6985	**
	(0.7223)		(0.3121)		(1.2087)		(0.3998)	
L1.SIZE	0.0558		−0.0492		−0.0254		−0.0132	
	(0.1043)		(0.0516)		(0.1520)		(0.0785)	
L1.TANG	−1.7618	***	0.6025	**	−1.7742	**	−0.3851	
	(0.6071)		(0.2887)		(0.8452)		(0.3847)	
L1.INV	0.0581		−1.1616		−1.8428	*	−0.4317	
	(0.7994)		(0.6672)		(1.2577)		(0.4966)	
L1.CASH	0.8817	***	0.7438	*	3.3652	**	1.3376	***
	(0.2944)		(0.4299)		(1.7616)		(0.5707)	
L1.LIQ	−0.0050		1.3004	**	−0.9508		−2.0868	**
	(0.0212)		(0.6110)		(1.4606)		(1.1272)	
L1.DIV	0.2571		−0.0095		0.1992		−1.1559	***
	(0.2415)		(0.0136)		(0.8508)		(0.3318)	
L1.GROWH	−0.0926		0.0156	**	−0.0005		0.0584	***
	(0.1800)		(0.0071)		(0.1395)		(0.0236)	
GDP	0.0111		0.0189	***	0.0457	***	0.0318	***
	(0.0151)		(0.0069)		(0.0182)		(0.0121)	
INT	−0.0230	***	−0.0097	***	−0.0111		0.0046	
	(0.0077)		(0.0028)		(0.0085)		(0.0083)	
BP	0.0714	***	0.0081		0.0607	***	0.0126	
	(0.0275)		(0.0057)		(0.0131)		(0.01089	
WKM	0.3360	*	0.5450	***	0.3251	*	0.9926	*
	(0.7930)		(0.2312)		(0.3003)		(0.43909	
CONS	1.8643	*	1.7184	**	2.0545		1.3036	
	(1.2023)		(0.8048)		(1.9704)		(1.0603)	
Adj. R-squared	0,49		0,18		0,28		0,17	

$*p < 0.1$; $**\ p < 0.05$; $***\ p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

Table 9. Relationship between working capital investment and financial performance by effect size.

Variables	ROE Coefficient		Tobin's Q Coefficient	
LEV	−0.0640		−0.0572	
	(0.0857)		(0.2388)	
TANG	0.0460		−0.0262	
	(0.0795)		(0.2367)	
INV	−0.2596	**	−1.1923	***
	(0.1361)		(0.4071)	
CASH	0.1937		0.8191	***
	(0.1397)		(0.4167)	
LIQ	0.0150	***	0.0308	
	(0.0046)		(0.0355)	
DIV	−0.0052		−0.0605	**
	(0.0079)		(0.0328)	
GROW	0.0005		0.0176	
	(0.0024)		(0.0153)	
GDP	0.0093	***	0.0247	***
	(0.0021)		(0.0062)	
INT	0.0010		−0.0070	***
	(0.0010)		(0.0027)	
BP	0.0024		0.0189	***
	(0.0018)		(0.0057)	
WKM * SIZE_small	0.1622	*	0.4287	
	(0.1167)		(0.3682)	
WKM * SIZE_large	0.3875	***	0.6852	***
	(0.1330)		(0.2538)	
CONS	−0.0094		1.2327	***
	(0.0578)		(0.2040)	
Adj. R-squared	0,18		0,22	

$*p < 0.1$; $** p < 0.05$; $*** p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

Eq. (2) was estimated to evaluate the effects of size on investment in working capital and its relationship with company performance. The results show that company size affects investment in working capital and, therefore, its relationship with financial performance. When the performance measure is ROE, a positive and significant coefficient of 0.3874 is observed for larger companies; for smaller companies, this relationship is positive, but not significant (see Table 9). When Tobin's Q is used as the performance measure, the results are similar, as only larger companies show a positive and significant relationship (0.6852), which confirms their access to better financing. Because of this result, H2 is supported.

To estimate whether the relationship between investment in working capital and company performance is non-linear and U-shaped, we estimate Eq. (3); the results are shown in Table 10. Mixed results are observed for the proposed performance measures. In detail, a negative and significant relationship is observed when ROE is utilised as the performance measure (−0.0560). These results allow us to suggest there is an optimal level of investment in working capital, in agreement with the proposal of Altaf and Shah (2018); Baños-Caballero et al. (2014); Boïoc and Anton (2017); Mun and Jang (2015). Therefore, H3 is supported when the performance measures used is ROE.

On the other hand, when Tobin's Q is used as the performance measure, a positive and significant relationship is observed (0.9311). These results are consistent with those found by Baños-Caballero et al. (2016) and Panda and Nanda (2018), who

Table 10. Non-linear relationship between the investment in working capital and financial performance.

Variables	ROE Coefficient		Tobin's Q Coefficient	
L1.LEV	−0.0559		−0.0531	
	(0.089)		(0.2513)	
L1.SIZE	−0.0300	**	−0.0155	
	(0.013)		(0.0395)	
L1.TANG	−0.0249		−0.0604	
	(0.081)		(0.2439)	
L1.INV	−0.2200	*	−1.1468	***
	(0.135)		(0.4011)	
L1.CASH	0.2169		0.8158	**
	(0.143)		(0.4290)	
L1.LIQ	0.0199	*	0.0389	
	(0.005)		(0.0363)	
L1.DIV	−0.0021	***	−0.0535	***
	(0.006)		(0.0303)	
L1.GROWH	0.0029		0.0198	
	(0.003)		(0.0161)	
GDP	0.0092	***	0.0249	***
	(0.002)		(0.0062)	
INT	0.0000		−0.0080	***
	(0.001)		(0.0028)	
BP	0.0020		0.0189	***
	(0.002)		(0.0058)	
WKM^2	−0.0560	*	0.9311	*
	(0.180)		(0.6149)	
CONS	0.4822	***	1.5124	***
	(0.191)		(0.5560)	
Adj. R-squared	0,12		0,15	

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ and standard deviation in parentheses.
Source: Author's elaboration.

highlight the benefits of short-term financing. Short-term financing allows companies to increase their performance due to lower financing costs, greater flexibility, and lower agency costs (Mahmood et al., 2019).

To evaluate the effects of the non-linear relationship for each country, we estimate Eq. (3). The summarised results for the variables are shown in Table 11. Mixed results are observed for the proposed performance measures. Specifically, it is not possible to identify a significant non-linear relationship when analysing firms in Mexico or Brazil. However, a positive and significant relationship is observed for Chilean firms when Tobin's Q is utilised as a performance measure (1.439); however, when the proposed performance measure is ROE, the relationship is not significant.

For Peruvian companies, we observe a non-linear relationship between investment in working capital and financial performance for both measures. When ROE (Tobin's Q) is used, the effect is −0.863 (−1.158).

Conclusions

Working capital management is one of the decisions that have the greatest impact on the financial performance of organisations. The scarcity of evidence for emerging economies, specifically for Latin American companies, was the motivation for this research.

Table 11. Non-linear relationship between investment in working capital and financial performance by country.

Variables	MEXICO				CHILE				PERU		BRAZIL	
	ROE		TOBINS Q		ROE		TOBINS Q		ROE	TOBINS Q	ROE	TOBINS Q
L1.LEV	0.152		−2.287	**	−0.047		0.335	**	0.226			
	(0.419)		(0.933)		(0.112)		(0.187)		(0.111)			
L1.SIZE	−0.153		−0.150		−0.009		0.015		−0.099			
	(0.179)		(0.181)		(0.015)		(0.041)		(0.017)			
L1.TANG	−0.361		1.807		−0.011		0.201		−0.043			
	(0.664)		(1.604)		(0.102)		(0.341)		(0.065)			
L1.INV	0.736		0.668		−0.138		−0.356		0.155			
	(0.700)		(2.056)		(0.150)		(0.338)		(0.166)			
L1.CASH	0.090		−0.418		0.272	*	1.250	***	0.143			
	(0.954)		(0.888)		(0.180)		(0.429)		(0.086)			
L1.LIQ	−0.174		0.383		0.061		0.798	*	0.017			
	(0.635)		(1.038)		(0.075)		(0.488)		(0.002)			
L1.DIV	1.131		0.141		−0.005		−0.056	*	−0.008			
	(1.444)		(1.697)		(0.006)		(0.034)		(0.022)			
L1.GROWH	0.178		−0.018		0.000		0.001		0.088			
	(0.146)		(0.199)		(0.002)		(0.007)		(0.025)			
GDP	−0.013	***	0.019		0.005	***	0.027	***	0.005			
	(0.011)		(0.014)		(0.002)		(0.007)		(0.003)			
INT	0.019	**	−0.081	**	−0.001		−0.002		0.007			
	(0.015)		(0.034)		(0.003)		(0.007)		(0.005)			
BP	−0.076	*	−0.178		0.004	**	0.021	***	0.003			
	(0.074)		(0.128)		(0.002)		(0.007)		(0.004)			
WKM^2	0.277		0.069		−0.140		1.439	**	−0.863			
	(0.531)		(0.919)		(0.238)		(0.764)		(0.276)			
CONS	2.235		5.179		0.194		0.422		1.160			
	(2.452)		(3.171)		(0.189)		(0.612)		(0.273)			
Adj. R-squared	0,15		0,38		0,11		0,21		0,45	0,25	0,12	0,15

*$p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Source: Author's elaboration.

The evidence shows that investment in working capital positively and significantly affects company performance, but mixed results are observed depending on the industry, country, and size of firms. In terms of the industry effect, the greatest impact was observed in the agricultural and mining sectors, followed by the construction and manufacturing sectors, with the least effect in the service sector. This could be explained by the type of business developed in each industry. In terms of country effects, a positive and significant relationship was observed for most countries. In addition, estimations of the effect of size were incorporated, and as indicated before, there are benefits associated with company size. The results confirm that larger companies can increase their performance by making the most of scale and scope economies, as well as lower costs of financing due to greater control by their interest groups.

Specific aspects of the companies were controlled by incorporating the macroeconomic variables that characterise emerging economies, such as interest rate levels, which undoubtedly affect access to short-term or long-term financing. We also observe the existence of a non-linear relationship, which allows us to suggest the existence of an optimum investment in working capital. For future research, we propose to identify and consider a set of macroeconomic variables by country, allowing an adequate comparison between them.

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No potential conflict of interest was reported by the authors.

ORCID

Juan Gallegos Mardones ⓘD http://orcid.org/0000-0003-0178-8381

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