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Analysis of capital structure and roundaboutness. The case of colombian firms


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INTRODUCTION

The premise of conventional financial theories is that investment and financing decisions are intricately linked. Investment decisions pertain to how managers select assets that yield positive cash flows and optimize shareholder value, while financing decisions deal with determining the ideal combination of debt and equity financing to support these investments. A significant portion of empirical studies conducted in emerging markets has focused on pinpointing macroeconomic and financial variables that impact companies' capital structures. However, scrutinizing balance sheet composition and corporate investment decisions is often challenging due to the scarcity of standardized accounting data in publicly accessible databases.

The objective of this research is to evaluate the impact of capital intensity on the financial and accounting structures of manufacturing firms in Colombia. Through the examination of the balance sheets of 249 strategic business units spanning the years 2019 to 2021, this investigation addresses a void in the existing literature and offers valuable insights into the correlation between capital intensity and firms' financial and balance sheet structures.

METHODS

This study employs Canonical correlation analysis (CCA) to examine the interrelationships between balance sheet components for a sample of firms with varying degrees of roundaboutness. The CCA serves to assess linear associations between asset-side elements, such as fixed assets, current assets, and investments, and liability-side components, including short-term debt, long-term debt, and equity.

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Roundaboutness, in this context, refers to (I) the “average production period” and (II) a more capital-intensive production method. The level of roundaboutness encompasses both a time factor and the capital invested, and the EVA indicator encapsulates these dimensions. Indirect production methods that necessitate substantial capital tend to display heightened interest rate sensitivity, which is reflected in the EVA indicator.

Subsequently, the research employs Hansen’s (1999) threshold model to evaluate the impact of working capital turnover, CAPEX to operating cash flow, and throughput on Return on Invested Capital (ROIC). The threshold variable in this study is the Debt-to-EBITDA ratio, which accounts for the asymmetric effect of the exogenous variables on ROIC, depending on whether this variable falls above or below the unknown threshold.

RESULTS

The findings suggest that, on average, capital-intensive companies tend to have a lower cash-to-total-assets ratio compared to companies that are not capital-intensive. The analysis reveals that businesses with higher levels of roundaboutness generally have a higher proportion of accounts receivable relative to total assets. Companies with lower capital intensity tend to depend more on supplier credit to facilitate their regular operations. On average, companies with lower capital intensity tend to rely less on internal financing compared to companies with high capital intensity.

For non-capital-intensive structures, short-term assets are typically matched with short-term liabilities, while long-term assets are financed with long-term debt. Companies with lower roundaboutness tend to align assets with liabilities. Fixed assets are often utilized as collateral to secure long-term loans. Inventories and accounts receivable are connected to accounts payable, indicating that suppliers provide credit to partially finance these asset categories. Firms in this subgroup tend to employ less leverage and prioritize maintaining higher liquidity to minimize insolvency risk.

In contrast, companies with high roundaboutness partially fund long-term asset acquisitions using owners’ investment, which includes retained earnings. Shareholders’ capital is also utilized to finance current assets, such as inventories. This implies that these firms adopt a less-than-optimal “hedging strategy.” a threshold regression model estimated for firms with low roundaboutness. The threshold value divides high roundaboutness firms into two distinct regimes: region 1 (characterized by low indebtedness) and region 2 (characterized by high indebtedness). In both subsections of the output, the threshold value and corresponding tables of coefficients for each region are displayed. In these models, the dependent variable is Return on Invested Capital (ROIC), and the threshold variable is the Debt-to-EBITDA ratio.

For firms with low roundaboutness and low indebtedness a significant positive relationship between ROIC and three variables is verified: Throughput, Working Capital Turnover, and CAPEX to Operating Cash Flow Ratio. Increases in Throughput and Working Capital Turnover lead to positive changes in ROIC, while a higher CAPEX to Operating Cash Flow Ratio also shows a positive association with ROIC.

In Region 2, the variables analysed, including Throughput, Working Capital Turnover Ratio, and CAPEX to Operating Cash Flow Ratio, all show insignificant p-values at a 95% confidence level.

For companies with high roundaboutness and low indebtedness (Region 1), Throughput and CAPEX to Operating Cash Flow Ratio are strongly related to Return on Invested Capital (ROIC). However, the Working Capital Turnover Ratio is not statistically significant.

In Region 2, there is a positive and statistically significant relationship between Throughput and ROIC, as well as between Working Capital Turnover and ROIC. The Working Capital Turnover Ratio is associated with higher ROIC in Region 2, but only when it exceeds a specific threshold. The CAPEX to Operating Cash Flow Ratio does not show a significant impact on ROIC in this region.

For firms with high levels of indebtedness (Region 2), the relationship between various variables and ROIC differs from Region 1. Only two variables, CAPEX to Operating Cash Flow Ratio and Working Capital Turnover, exhibit a significant relationship with ROIC. For these highly indebted companies, a higher Working Capital Turnover Ratio is associated with a higher ROIC, but only when it exceeds a certain threshold value. In contrast, there is a negative relationship between ROIC and the proportion of capital expenditure (CAPEX) relative to operating cash flow.



CONCLUSIONS

The threshold model analysis reveals distinct patterns among firms with varying levels of roundaboutness. In enterprises with low capital intensity, productivity shows a significant relationship with the working capital turnover ratio, the ratio of capital expenditure to operational cash flow, and a higher Return on Invested Capital (ROIC) when debt levels are minimal. However, these relationships lose statistical significance when debt levels are substantial.

In firms with high levels of roundaboutness and low levels of indebtedness, the relationship between independent variables and Return on Invested Capital (ROIC) is more intricate. Throughput consistently shows a significant relationship with Return on Invested Capital (ROIC) regardless of the debt level. However, no significant relationship is found between working capital turnover and ROIC, and the effect of the ratio of capital expenditure to operating cash flow on ROIC depends on the level of debt.

This research has certain limitations, including potential inaccuracies in firm-level accounting data due to underreporting or the lack of standardized account information. Moreover, the study coincided with an economic recession, which could introduce distortions in the financial performance of the analysed firms. Another limitation is the relatively small sample size, which is attributed to the limited number of companies willing to provide unrestricted account information.

Further research is needed to investigate the relationships between roundaboutness and other financial factors. By employing advanced methodologies, such as time series analysis and panel data techniques, a more comprehensive understanding of the long-term effects of roundaboutness on business outcomes can be achieved.