

Investigating the corporate debt and real investment nexus: dynamics and challenges in a shifting financial landscape

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Abstract. *This paper studies the interrelationship between corporate debt and Real Investment in view of the pivotal role played by private debt in economic growth and development. With a focus on the financial intricacies and upcoming challenges faced by emerging markets, this paper investigates how corporate debt influences and shapes gross capital formation within emerging economies. The study finds a negative relation between the two variables with a one per cent increase in corporate debt to GDP ratio resulting in about 4 per cent decline in real investment in the short run and long run. Trade openness however has a positive coefficient, indicating that it has a stimulating impact on real investment within the economy. Through a comprehensive analysis, the study not only contributes to the existing body of knowledge but also offers valuable insights for crafting effective financial policies tailored to the unique challenges of these evolving markets.*

Keywords: corporate debt, gross capital formation, investment, trade openness, emerging economies.

JEL Classification: D25, G3, G1, G32, O16.

1. Introduction

The role of corporate debt as a catalyst for growth and a determinant of economic resilience has been vastly studied. Accordingly, the role of corporate debt in promoting investment has been a subject of intrigue for scholars and policymakers alike, with past research delving into the nuanced mechanism that connects the firm's capital structure to the investments made in the real economy. Bernanke et al., (1988) note the three main reasons for the use of debt in corporate finance; "the costliness of making claims contingent upon firms' condition, the incentive effects of debt, and the use of debt as a risk-sharing instrument." Corporate debt increases the access to capital to fund the operations and expansion projects that the firm might undertake in anticipation of generating higher returns than the underlying cost of capital. It also allows corporates to leverage their equity, thereby allowing them to undertake larger investment projects, and providing enhanced shareholder value (López-de-Foronda et al., 2019). In normal times, the impact of increased corporate debt on investment is positive (Snaije & Bassem, 2017; Yamarthy, 2016). There is a positive link between business cycles and long-term debt share, as the total non-financial corporate liabilities ratio is significantly correlated to GDP and aggregate investment growth. Thus, the proponents of leverage contend that the use of debt by firms results in increased investment (Grossman & Hart, 1982)(Jensen & Meckling, 1976).

However, given the intricacies of the relationship and the evolving financial landscape, the relationship needs to be revisited to verify the validity of the past discourse. While the previous literature and government policies provide evidence of the stimulating role of corporate debt on investment, contemporary research, particularly the ones originating in emerging economies reveals a negative impact. Hence, before framing the final opinion in this regard there needs to be an analysis of the problems associated with high corporate debt on investment from multiple perspectives. Another interesting perspective is from Jordà et al., (2020), who argues that business credit booms do not have a lasting impact on the macro-economy and do not affect the economy's tail risks.

Consequently, this paper aims to shed light on existing theories and empirical evidence but also seeks to offer insights that contribute to the development of robust financial policies and strategic corporate policies.

The paper is organized as follows. Section 2 provides an extensive review of the literature and followed by research methodology in Section 3. Section 4 presents the results and discussion followed by conclusion in Section 5.

2. Review of Literature

The current expansion of corporate credit can be attributed to the accommodative monetary policy with low interest rates and the availability of cross-border borrowing. Globally, the level of corporate debt has witnessed a surge reaching a record of US \$90 trillion at the end of the last quarter of 2023. This level of corporate debt is nearly 97 per cent of the global

GDP compared to 72 per cent in 2008. The corporate debt has also expanded faster than GDP in several systemically important economies and there are signs that this credit cycle is maturing (IMF, 2019). The ongoing trend in corporate debt growth has resulted in a weak tail of companies characterized by high leverage and weak earnings prospects.

In Emerging economies, the corporate sector is witnessing a sharp increase in the levels of debt particularly from external sources, though from a low base. Corporate debt in Emerging economies has more than doubled in the past decade reaching a high of 126 per cent of GDP by the end of 2022 (IMF, 2023). Although in most developing countries the ratio of corporate debt to GDP is still less than in advanced economies but countries like China, Chile, Peru, the Philippines, Turkey, and Vietnam have experienced significant rises in corporate debt. What remains concerning is that the debt is disproportionately concentrated in China which makes up a third of global corporate debt and more than half of emerging markets corporate debt, standing at 27.7 trillion US Dollars (Dyvik, 2023).

At the same time, the vulnerabilities such as leverage maturity transformation and currency mismatch on the balance sheet of corporate and financial sectors are slow-moving but pose a potential amplification mechanism in case of bad shocks, generating more downside risks (Adrian, 2019; Ravalo, 2017). As per (Chan & Dimitrijevic, 2023), the global markets lie in the third to sixth sextiles of relative leverage risk, with two of the seven emerging markets lying in the highest risk sextile. The United Nations, (2019) report had raised concerns over the sustainability of growth in countries with high corporate debt, which may constrain future investment. According to Kalemli-Özcan et al., (2019), about 60 per cent of the decline in aggregate corporate investment after a crisis can be attributed to firms with excessive leverage and a higher share of short-term debt linked to weak banks, as they face high rollover risk. In (Jordà et al., 2020), the author concluded that a firm with a leverage ratio of 50 per cent invested about four percentage points more than a firm with a leverage ratio of 100 per cent for the manufacturing sector. Similarly, Gebauer et al., (2018) postulate a non-linear relationship with leverage having a negative and significant impact on investment even at moderate levels of debt. An over-leveraged firm with a debt-to-asset ratio of 90 per cent, has to forgo a 0.7 percentage point investment per year compared with a firm with a debt-to-asset ratio of 80 per cent, *ceteris paribus*. This relationship persists across sectors and for both profitable and non-profitable firms.

Hence, before framing the final opinion in this regard there needs to be an analysis of the problems associated with high corporate debt on investment from multiple perspectives. Hyman Minsky gave an interesting perspective on corporate finance by categorizing corporate financing into three types: hedge financing, speculative financing, and Ponzi financing. In a Minsky world, financial stability or instability depends on a mix of these three types of financing. Consequent to the market expectations, the given mix is defined as sustainable or unsustainable, where a higher proportion of hedge financing results in a stable system. If speculative and Ponzi finance dominates, the economy is volatile- what Minsky calls “a deviation amplifying system” (Minsky et al., 1977).

The excess debt accelerates the speed of speculative collapse; it also results in loss of public confidence, curtailment of corporate investment, restricted lending by troubled banks, and job losses for workers, corporate executives and bureaucrats (Galbraith, 1994). From a theoretical perspective, the trade-off and pecking order theories are also critical for analyzing corporate indebtedness and its relation with the real economy. The pecking order theory by Donaldson, (1961) popularized by Myers & Majluf, (1984) states that a firm in need of funds will prefer internal financing over debt over equity issuance. Debt issuance by the firm signals the board's confidence in investment opportunities and an under-valued stock while equity issuance signals an overvalued firm. Similarly, in trade-off theory, the optimal capital structure of the firm will be determined by the tax savings from tax deductions on debt and the dead weight loss in the event of bankruptcy. In other words, increased leverage increases tax savings but also gives rise to financial distress (Kraus & Litzenberger, 1973). As such firms have to ensure a balance between the two conflicting objectives.

Regarding the source of the debt, it has been noticed that the financial liberalization and crisis recovery measures increased access to more bank loans but also debt securities. A shift from bank financing to bond financing has been noticed after the 2008 GFC. In Q1 1990, the ratio of the value of debt securities to loans among non-financial corporates was 0.9; by Q3 2018, this ratio had risen to 1.9 (Buckley, 2019). In the bond market, the outstanding global stock has reached an all-time high of US \$13.5 trillion in real terms, accounting for unprecedented build-up in corporate bond debt since 2008. The expansionary monetary policies have resulted in a further US \$ 2.1 trillion rise (Çelik et al., 2020). Though bond financing is on the rise, the overwhelming majority of corporate debt is in the form of loans.

For other emerging economies, most of the debt is financed in foreign currency, predominantly in USD, with a significant portion of the debt unhedged, despite the efforts of central banks. The external refinancing risks are somewhat mitigated by support of large official reserves, which can cover the refinancing needs of the economy, in event of adversary. Given that there are major cross-country differences in fiscal reserve and financial buffers, the ability to safeguard the economy varies between countries. Another major issue concerning corporate debt is sectoral distribution. Between sectors, the balance-sheet position of sectors like infrastructure (including power, telecommunications and roads) and metals (including iron and steel) is significantly worse than others and are more vulnerable to downfalls in case of economic shocks (Das & Tulin, 2017). It makes the developing economies more vulnerable to economic shocks. As Eichengreen & Hausmann, (2005) write, "*It is as if emerging markets suffer from an inherited burden, almost irrespective of the policies of their governments*".

3. Methodology

In order to estimate the relationship between corporate debt and investment, this research employs the Generalized Moment of Methods. The technique was developed as a

generalization of Karl Pearson's (1895) method of moments, which was later formalized by Hansen (1982). This model's fundamental idea is analogy, which states that a parameter can be estimated by substituting its sample analogue for the population moment conditions. GMM determines the parameter values that come closest to satisfying the sample moment conditions.

GMM has certain advantages over the traditional OLS or the MLE principle being consistent, asymptotically normal, efficient and computationally inexpensive. GMM is able to generate estimates that have uniformly smaller standard errors compared to OLS. Also contrary to the Maximum likelihood principle which requires a fully specified data-generating process, the GMM requires information only on the moment's conditions while ignoring the error component structure of the disturbances and estimating a general variance covariance matrix, thereby being less restrictive. In other words, GMM is more resilient as it makes assumptions about particular moments of the random variables rather than the distribution as a whole.

This paper used the most popular estimator called the System GMM or the Blundell-Bond estimator (Wooldridge, 2009). The inclusion of more instruments in the Blundell-Bond estimation significantly enhances the model's efficiency. This leads to a two-step GMM approach, incorporating the original equation (in levels) and the modified equation (in differences). GMM estimates this system of equations simultaneously, with the selection of instruments being critical for obtaining consistent and efficient model parameter estimates. For a variable to qualify as an instrumental variable, it must meet two conditions: It must be correlated with the endogenous variables but uncorrelated with the error process. In other words, while the instrumental variable should be associated with the independent variable, it should not be associated with the dependent variable. The selection can be based on the prior knowledge of the relationship between endogenous and exogenous variables as evident in economic theory or past empirical studies. Another approach is to use statistical criteria to select an instrument; such as (Hansen, 1982)- (Sargan, 1988) over-identification test or Anderson & Rubin (1949, 1950) test. While the former tests the over-identifying restrictions implied by moment conditions the latter checks whether instrumental variables satisfy the exclusion restriction which holds that instrumental variables affect the outcome variable only through their effect on the endogenous explanatory variables.

4. Results and Discussion

4.1. Initial testing

As a precursor to GMM modelling certain basic tests are also conducted to check for multicollinearity, heteroscedasticity and autocorrelation, results of which are presented in Table 2.

Table 1. Tests for GMM Model Study

Multicollinearity Test		Modified Wald Test	Wooldridge Test for Autocorrelation in Panel Data
Variables	VIF	Group-wise Heteroskedasticity Ho: $\sigma(i)^2 = \sigma^2$ for all i chi2 (37) = 997.34 Prob>chi2 = 0.0000	H ₀ : No First-order Autocorrelation F(1, 36) = 61.461 Prob > F = 0.0000
CorporateDebt (CPDEBT)	10.21	White's Test Ho: Homoskedasticity chi2(90) = 233.84 Prob > chi2 = 0.0000	
InteractionCorporateDebt- ReallInvestment (ICPDRINV)	12.56		
TotalGovExports (TGOVEX)	4.01		
GovRevGDP (GRGDP)	4.26		
NLGrossSavings (NLGSAVGDP)	2.92		
L.ReallInvestment (L. NLRINV)	2.69		
Education (EDU)	1.25		
BroadMoneyGDP (BRMGDP)	2.46		
IndustryValueAdded (INVADD)	1.98		
TradeOpeness (TROPEN)	1.80		
LendingRate (LENRATE)	1.42		
Mean VIF	3.90		

Source: Scholars Elaboration Using STATA-14

The mean VIF value of 3.90 is within the acceptable range ($VIF < 4$) indicating the absence of high multicollinearity. The results from both Wald and White tests indicate that the null hypothesis of homoscedasticity is rejected at a high level of statistical significance, indicating heteroscedasticity in the residuals of the regression model. The results of Woolridge's Test suggest that the null hypothesis of no first-order autocorrelation is rejected at a high level of statistical significance. Given the issue of heteroscedasticity and autocorrelation, GMM is found to be the most appropriate model.

From Table 3 we find that from the coefficients of the estimators of pooled OLS, Fixed effects, one-step-difference GMM, and two-step system GMM shows the coefficients for GMM are lower suggesting that GMM estimators may perform better than OLS and Fixed Effects.

Table 2. Difference/System GMM Selection Criteria

Estimators	Coefficients
Pooled OLS	.6706068 ***
Fixed Effects	.463782 ***
One-Step Difference GMM	.6184325 **
Two-Step Difference GMM	.4603984*

Note: ***, ** and * are Statistical Significance at the 1% and 5% levels respectively

Source: Scholars Elaboration Using STATA-14

4.2. GMM results: Short and Long run

The results of a two-step system GMM estimation with the dependent variable being Real Investment and the main independent variables being corporate debt are reported in Table 4. Other endogenous variables included are Trade Openness, Education, Broad Money to GDP and total government exports. This model also uses the interaction of corporate debt and real GDP as well as year dummies. The estimation is based on 703 observations from 37 countries, with year dummies included to control for time-specific effects

The result of the two-step system GMM estimates reveals that corporate debt has a negative impact on the investment with one unit change in corporate debt resulting in decline in investment by 4 percent approximately (-.0395953). Moreover, Trade Openness also has a positive impact on the Real Investment (.0020451) in the presence of control variables namely EDU, BRMGDP, TGOVEX.

Table 3. *Effect of Corporate Debt on Real Investment-Two Step System GMM Estimates*

Dependent Variable: NLRealInvestment (NLRINV)	Two-Step System GMM Estimates
L.NLRealInvestment (L. NLRINV)	.4652833 * (1.81)
CorporateDebt (CPDEBT)	-.0395953 * (-1.86)
TradeOpeness (TROPEN)	.0020451** (2.14)
Education (EDU)	.0032339 (0.59)
BroadMoneyGDP (BRMGDP)	.0010742 (0.28)
TotalGovExports (TGOVEX)	.0047017 (0.89)
Year	.0016248 (0.65)
Constant	-2.04869 (-0.37)
Year Dummies	Yes
Instruments	26
F-Statistics	27.22***
Hansen J-Test	0.177
Sargan Test	0.000
Arellano-Bond Test for AR(1)	0.391
Arellano-Bond Test for AR(2)	0.148
Observations	703
Countries	37

Note: *** p<.01, ** p<.05 and *p<.10 are Statistical Significance at the 1%, 5% and 10% levels respectively

Source: Scholars Elaboration Using STATA-14

In the long run, we find that both corporate debt and the interaction have statistically significant coefficients at the 1% level, with a negative coefficient for corporate debt and a positive for the interaction term Table 5. This means that for countries that have high initial capital formation the impact of debt growth will be positive, indicating possible threshold impact. For other variables, the long-run coefficients are insignificant.

Table 4. *Long Run Estimates-Two Step System GMM*

	Dependent Variable:	Coefficient	Z-value	P-value
1	NLRealInvestment (NLRINV)			
	CorporateDebt (CPDEBT)	-.0384425 ***	-3.56	0.000
2	NLRealInvestment (NLRINV)			
	InteractionCorporateDebtRealInvestment (ICPDRINV)	.0011181***	4.40	0.000
3	NLRealInvestment (NLRINV)			
	TradeOpeness (TROPEN)	.0038246	1.26	0.207

Note: *** p<.01, ** p<.05 and *p<.10 are Statistical Significance at the 1%, 5% and 10% levels respectively

Source: Scholars Elaboration Using STATA-14

4.4. Discussion

This results are in line with the observations of (Kalemli-Özcan et al., 2019) (Jordà et al., 2020) (Gebauer et al., 2018) (Heresi & Powell, 2022). The negative effect of high corporate leverage plays out through debt overhang, a situation in which new investment gets deterred as any benefit accruing from it will be diverted to the existing creditors rather than to new investors. This linkage, however, depends on the economic situation; in a booming economy, the debt overhang effects are not stronger, while a stagnating or recessionary economy will witness a significant fall in investment (Lamont, 1995). The results from many studies show a negative relation between the debt service capacity (inverse of debt overhang) and investment activity. The high interest expenses mean that less cash is available for investment in new projects, research and development or expansion. This relationship was found to be true irrespective of the firm's size, with coefficients for larger firms more significant than for small firms (Lu & Chen, 2018). Another factor can be the decline in the creditworthiness of the corporates or sectors which makes it difficult to secure additional financing or issue bonds at favourable interest rates (Fender et al., 2008; Matthies, 2013). Excessive debt leads to negative market perception and reduced investor confidence further limiting companies' ability to raise and fund new projects (Bernanke et al., 2018; Lemmon et al., 2010).

In this analysis, though the interaction term is significant and positive, the coefficient is weak in the short run. However, in the long run, we may witness the positive impact of corporate debt allowing them to expand and innovate through the additional capital provided, tax advantages of using debt and offering strategic flexibility (Modigliani & Miller, 1958; Atesagaoglu, 2012; Hanlon & Heitzman, 2022). As a control variable, Trade Openness plays a significant and positive role towards investment growth. This difference can be explained on account of the wider access to bank credit and bond markets and exposure to the international financial and goods market (Kumari et al., 2021).

5. Conclusions

A thread of past and recent theoretical literature points out that the financial conditions of the firms have a role to play in the initiation and continuation of business cycle fluctuations. The empirical evidence presented in this paper is robust in both estimation methods and concludes that the increase in corporate debt hurts the investment or gross capital formation of the sample economies. The interaction term though positive has a small coefficient which can indicate a dampening effect of debt at higher levels of investment. Also, trade openness remains a crucial determinant of the investment variable, which is seen to positively impact real investment as greater trade openness brings inflows of foreign investment, both direct and portfolio. For other variables, the long-run coefficients are insignificant.

Since borrowing in the emerging economies emerges from the banking system (83 per cent). The central bank's macro-prudential policies will have a major role in limiting

excessive credit booms to ensure stable economic growth. For instance, by setting mortgage lending conditions, debt service to income ratios, capital adequacy, and loan loss provisioning the central bank can ease pressure on both Banks and the borrowers. The misallocation of capital is evident due to the negative relation of corporate debt and investment needs to be rectified. It is also worthwhile for the policymakers to remember that past financial crisis had its roots in the expansive monetary policy with low interest rates. As such credit extension to the economy through accommodative monetary policy needs to be standard and subject to regulation to ensure that any unexpected shock and its negative impact can be controlled.

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