

Tax Policy and Corporate Investment: Evidence from Indian Firm-level Panel Data

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Abstract

India has introduced several corporate tax reforms in recent decades to encourage corporate investment. However, there is limited evidence on how resulting changes in the effective tax rate may be associated with the investment intensity in the country. To estimate this relationship, we use an unbalanced panel of Indian firms from 2000 to 2024, and apply the System Generalized Method of Moments (System GMM) and the Dynamic Fixed Effects (DFE) error-correction model to identify both short- and long-term dynamics. The findings show a significant negative elasticity of investment with respect to the effective tax rate. While the elasticity strength varies somewhat across the two estimation methods, the overall results are largely consistent. We also have some evidence that firm age may moderate the association between effective tax rates and investment behaviour. Overall, the findings provide empirical support for lower tax rates and a simpler tax structure to broaden the tax base and boost investments in the Indian manufacturing sector.

Keywords: Corporate tax reforms; Investments; India; User Cost of Capital; q theory; System GMM

JEL Classification: E22; H25; C23; O16; O53

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1. Introduction

The effect of corporate taxes on investment is a central question in public finance and development economics. This question is important not only for the appraisal of tax policy, but also for the promotion of economic growth through capital formation (Barro, 1991; Baumol et al., 2007; De Long & Summers, 1991). A vast body of literature suggests that corporate taxation influences the firms' investment by affecting the cost of capital and internal financing conditions¹. Although the existing research suggests that corporate income taxes negatively affect investment, the extent and variability of this impact remain debated across various economic settings. It may be argued that in an emerging economy such as India, investment responsiveness to changes in corporate taxes may be influenced by firm-level differences arising from financial constraints and the ability to comply with tax policy.

In India, the last few decades have witnessed several corporate tax reforms. These include a gradual reduction in tax rates, the introduction and reduction of the Minimum Alternative Tax (MAT), and the implementation of the General Anti-Avoidance Rule (GAAR). In 2019, corporate tax rates were substantially reduced for domestic firms, and a much simpler optional tax regime was introduced. The objective of these reforms is to simplify the corporate tax system and lower effective tax rates. These changes are expected to encourage capital formation by increasing investment, thereby improving the global competitiveness of Indian manufacturing firms. However, there remains limited firm-level evidence on how reductions in effective tax rates due to reforms influence corporate investment behavior in the country. This gap is particularly important given the substantial heterogeneity among Indian firms in terms of size, age, financial constraints, and access to tax incentives.

Differences in firm size and age in emerging economies are particularly important in shaping firms' investment responses to taxation. For instance, smaller and younger firms are generally financially constrained and rely heavily on internal funds to finance their investments. Therefore, their investment decisions could be more sensitive to changes in cash flow induced by tax policy (Fazzari et al., 1988). These firms are also likely to benefit more from the

¹ For review of literature, see Auerbach (2002), Auerbach et al. (1983), Auerbach & Hassett (1992), Cummins et al. (1996), Desai et al. (2004), Devereux et al. (2002), Feldstein et al. (1983), Gordon & Hines Jr. (2002), Hall & Jorgenson (1967), Hassett & Hubbard (2002), Hines Jr. (2007), Hines & Rice (1994), Jorgenson (1963), King & Fullerton (1984), Slemrod (1990) and Summers (1981).

simplified tax regime because of their limited capacity to gain from complex tax regimes. Alternatively, larger and older firms enjoy accumulated experience, lower financial constraints, and stable cash flows, leading to lower investment uncertainty. These characteristics may help them adjust more quickly to tax policy changes and effectively translate their tax-induced cost reductions to improved investment decisions. As a result, older firms may respond more strongly to tax changes, as their financial stability and lower adjustment frictions allow them to translate tax-induced cost changes into investment decisions more effectively. Given this, it is important to understand how heterogeneous Indian firms are adjusting their investment decisions in response to changes in effective tax rates resulting from reforms.

It is argued that the impact of corporate taxes on investment primarily operates through a reduction in the availability of current-period cash flow (Devereux & Griffith, 2003; Fazzari et al., 1988). To explain the relationship, most recent investment models follow the neoclassical theory, in which a representative firm maximizes its present value, *i.e.*, the discounted value of its expected profits. The two most commonly used theoretical investment models are the user cost of capital theory and q-theory. In the user cost of capital approach, it has been argued that a firm evaluates the costs and benefits of investment and decides to invest when the benefits exceed the costs (Hall & Jorgenson, 1967; Jorgenson, 1963). According to this theory, the marginal product of capital equals the user cost for a price-taking firm if capital is adjusted freely. On the other hand, according to q-theory, the firm will invest if the market value of an additional unit of capital exceeds its cost of procuring it. Hence, a firm's marginal investment decision is determined by the ratio of the market value to the replacement cost of capital, *i.e.*, the marginal q (Hayashi, 1982). Both the user cost and the q-theory can be adjusted for taxes. These tax-adjusted theories suggest an inverse relationship between corporate taxes and investment.

Given the limited research on the relationship between tax reforms and investment in emerging economies, the study aims to provide empirical evidence. As a major contribution, we also incorporate firm heterogeneity into our analysis and investigate whether firm level characteristics play moderating role in determining tax-investment linkage. A firm-level unbalanced panel dataset for India from 2000 to 2024 is used to estimate the elasticity of investment with respect to Effective Tax Rates (ETR). Moreover, we estimate the statistical impact of the major tax reforms of 2019. To assess differences in firms' investment responses across pre- and post-reform tax structures, the models are estimated using cross-sectional data

from 2018, 2019, and 2020. Our empirical strategy is based on the user cost of capital approach proposed by Hall and Jorgenson (1967) and Jorgenson (1963), which suggests that firms accumulate capital when the return to investment exceeds the cost of capital.

Our findings indicate that the corporate tax elasticity of investment ranges from -0.04 to -0.56 over the analyzed period. The magnitude of the estimates depends on model specification and estimator. Overall, the results are robust and consistent across different model specifications. Compared with studies of other developed countries, this elasticity appears relatively low. For example, the elasticity for the US, based on US firm-level data, ranges from -0.3 to 0.7 (Bond & Xing, 2015). We find consistent evidence that higher corporate tax rates significantly reduced investment intensity. Short-run effects are found to be weaker, reflecting gradual adjustment due to investment irreversibility and planning horizons. It is worth noting that the effects of the tax rate on investment reveal important differences across 2018, 2019, and 2020, when tax rates were significantly reduced. Results suggest that investment responsiveness to tax reductions strengthened during 2018-2020. Moreover, our findings reveal that age of the firm can play moderating role in determining tax-investment relationship. In contrast, firm size does not seem to systematically affect the relationship.

This paper is organized into seven sections. Section 2 reviews the literature; Section 3 examines the evaluation of Indian corporate tax system; Section 4 outlines the empirical strategy; Section 5 describes the data and variables; Section 6 presents the empirical findings; Section 7 evaluates the robustness tests. Finally, Section 8 concludes the paper.

2. Literature Review

The pioneering study by Hall and Jorgenson (1967) concluded that developments in the user cost of capital could explain aggregate investment relatively well. According to this approach, firms make investment decisions by comparing the expected returns from capital with its cost, which depends on factors such as interest rates, depreciation, and taxation. The theory suggests that corporate taxes affect investment through changes in the cost of capital.

However, this finding was later criticized by Chirinko & Eisner (1983) because the user-cost specification may capture accelerator effects. More specifically, in their original specification, the user cost variable enters the investment equation alongside output. Therefore, it becomes difficult to disentangle the effect of capital costs from those of demand conditions. This may result in overstating the role of user cost in explaining investment. The impact of user cost on

investment was found to be insignificant when the effect of the former was isolated from output. It was argued that earlier studies were based on aggregate-level analyses and were unable to identify the determinants of investment because investment and tax policy appear to move together over the business cycle (Hassett & Hubbard, 2002). Some other studies argue that the effects of tax policies on individual firms are different, and hence a disaggregate-level analysis is more pertinent (Cummins et al., 1994).

To address these issues, later studies relied on disaggregated firm-level data to estimate the effects of taxes on investment across firms. An advantage of disaggregated analysis is that the problem of measurement errors in the independent variables may be addressed using panel estimation techniques (Griliches & Hausman, 1986). The formula of the user cost of capital, as suggested by Jorgenson and Hall, was modified later by Chirinko et al. (1999) to construct an asset and industry-specific measure. The measure allowed for a more accurate representation of the cost of capital faced by different firms. Further extension of the original formula at the firm level was done by Cummins et al. (1994, 1995) to construct a firm-specific user cost of capital.

Using firm-level data, several studies have estimated the responsiveness of investment to the user cost of capital. For instance, Caballero et al. (1995) analyzed the firm-level data and found that the estimate of the elasticity of investment with respect to the user cost ranged from -0.01 to -2.0 across industries, with an average of -1.0. Using OECD firm-level data for OECD countries excluding Central and Eastern European countries from 1996 to 2004 and a difference-in-differences estimation approach, Schwellnus & Arnold (2008) found that the long-run elasticity of the investment rate with respect to the tax-adjusted user cost was -0.69. Djankov et al. (2010), using cross-country data for the period from 2003 to 2005, established that the effective corporate tax rate has a large negative impact on aggregate investment. Pombo & Galindo (2011) also observe a negative effect of corporate taxes on investment using firm-level data from 42 developing countries during 2004-2006. A similar observation comes from Bond & Xing (2015), who analyzed panel data for 14 OECD countries during 1982 -2007. Analyzing the effect of corporate taxes on investment in the Japanese manufacturing industry, Kim and Park (2021) found that tax reduction improved investment and employment. Similarly, based on the survey of various empirical studies, Hassett & Hubbard (2002) concluded that the long-run elasticity of investment to user cost lies between -0.5 and -1.0. These studies indicate that corporate tax rates negatively affect investment, although the magnitude may vary across studies.

Analyzing the German tax cut reform in 2008 and employing the difference-in-differences approach, Dobbins & Jacob (2016) found that investment increased more in domestic firms compared to foreign firms. Similarly, analyzing the effect of the Domestic Production Activities Deduction, a corporate tax incentive introduced in 2005 in the US, and using a quasi-experimental approach, Ohrn, (2018) found that for a 1 percent reduction in tax rates, the installed capital increases by 4.7 percent.

The natural experiment approach was used in some studies. They also found strong evidence of a negative effect of higher corporate tax rates on corporate investment. Using data from the US during 1953-1988 and a natural experiment approach, Cummins et al. (1994) observed a negative effect of corporate taxes on investment. Cummins et al. (1996), using firm-level data during 1982-1992, also observed similar results. Using episodes of corporate tax reforms in 2002 and 2003, a negative effect of the tax-adjusted user cost on investment was observed by House & Shapiro (2008).

It is evident from the review of empirical studies that there is a broad consensus on the adverse impact of tax rates on capital formation; a few studies suggested otherwise. For instance, using a panel data technique for the firm-level data for some Asian countries from 1990 to 2014, Cevik & Miryugin (2018) found that taxation has no adverse impact on investment. They also gauged the non-linear effect of taxation on investment by using the square of the corporate tax variable. Some studies analyzed the effect of the US Tax Cuts and Jobs Act (TCJA) of 2017 and found that it increased capital investment and, in turn, wages (Auerbach, 2018). However, according to Furman (2020), the growth rate of the fixed investment decreased in the post-TCJA period compared to the pre-TCJA period. Similarly, Sitorus & Murwaningsari (2019) found no impact of tax incentives on the investment efficiency of manufacturing firms listed on the Indonesian Stock Exchange.

As an alternative to the user cost of capital approach, there is the q-theory approach. Some studies (see Auerbach, 2002; Cummins et al., 1996; Devereux et al., 2002; Feldstein et al., 1983; Summers, 1981) apply tax policy measures that combine tax rate and tax base elements using the q-theory approach. Other studies (e.g. Chirinko et al., 1999; Dwenger, 2014; Hall & Jorgenson, 1967; Jorgenson, 1963) implement the user cost of capital approach. One weakness of the studies based on the q-approach is that it becomes difficult to separate the tax rate and tax base elements, such as depreciation allowances.

The q-theory has the advantage that it acknowledges that adjustment of the capital stock incurs costs and takes time, whereas, according to the user cost theory, adjustment is costless and occurs immediately. On the other hand, the advantage of the user cost theory is that it can be applied to all types of firms, whereas the q-theory can only be used for firms listed on stock markets. Therefore, q-theory cannot be applied to unlisted firms. Moreover, computing the average q at the industry level is rather difficult. It has been observed that small and medium-sized manufacturing firms are primarily financed by internal funds (Srinivasan, 1986). Thus, for these firms, a change in corporate tax policy that affects internal funds would have a greater effect on their investment. Moreover, it has been discussed that the cost of internal finance differs largely from external finance for those firms that face imperfect markets for external finance, and the investments of these firms depend more on cash flow (Fazzari et al., 1988). Given these drawbacks, which are more relevant to the Indian context, the empirical approach adopted in this paper relies on user cost theory.

The literature provides evidence that corporate tax policy may affect firms' investment decisions through its impact on the user cost of capital. Nonetheless, as evidenced by empirical studies, the magnitude of the estimates varies significantly and appears to depend on the methodology, firm-level characteristics, and the study context. In emerging economies such as India, firm heterogeneity becomes even more important, as it may significantly determine the firms' financial condition. Few studies have explicitly examined the role of tax reforms in improving corporate investment and how firm-specific traits in India, such as age and size, may determine the relationship. This study aims to fill these gaps by analyzing firm-level data from India in light of recent corporate tax reforms.

3. Corporate Income Tax System in India

The evolution of India's corporate income tax system reflects broader changes in the country's economic policy orientation. After independence, India adopted a mixed economic model with a focus on industrialization through public enterprises and high taxation of private profits. The Taxation Enquiry Commission (TEC), 1953, conducted the first comprehensive review of direct taxation and recommended a progressive system to mobilize resources for planned development in India (Government of India, 1953). The commission's findings and recommendations led to the enactment of the Income-tax Act of 1961, which established a sound tax system in the country. The Act consolidated various tax laws and continued to govern

India's direct tax structure in the subsequent years. However, this regime was characterized by high statutory rates, several exemptions, and investment allowances. The base rate during this period ranged from 45 percent to 65 percent and was even higher after accounting for surcharges and dividend taxes (Rao, 2005). The ETR was significantly lower due to several depreciation provisions and sector-specific incentives for firms. These distortions resulted in the emergence of *zero-tax companies*, which legally avoided tax despite reporting large profits (Guha, 2007). To address this issue, the Minimum Alternate Tax (MAT) was introduced in 1996-97 to ensure that all profitable companies contributed a minimum tax based on their profits.

Subsequently, the economic liberalization of the 1990s marked a decisive shift toward simplification and competitiveness. The Tax Reforms Committee (1991-93), chaired by Raja J. Chelliah, recommended lower tax rates, a broader base, and the removal of complex distinctions between closely and widely held companies (Government of India, 1992). Following these recommendations, the corporate tax rate was unified at 40 percent in 1993-94 and further reduced to 35 percent by 1999-2000 (Acharya, 2005; Guha, 2007).

Subsequent reforms during the 2000s focused on further base broadening while aligning with global practices. These years witnessed a gradual reduction in statutory tax rates and a change in MAT rates². The firms can also benefit by carrying forward MAT credits. The Finance Act of 2019 marked a major structural shift by reducing the corporate tax rate to 25 percent for firms with turnover up to Rs 400 crore and 30 percent for larger companies. Moreover, these reforms offered a more simplified optional regime to promote manufacturing and investment. Under this optional regime, a lower 22 percent tax rate is applicable to domestic companies that forgo specified exemptions and deductions (Section 115BAA). To encourage new businesses, the tax rate for new manufacturing firms incorporated after October 1, 2019, that commence production by March 31, 2024, is 15 percent (Section 115BAB).

Further modernization occurred through the Finance Act of 2020, which abolished the Dividend Distribution Tax (DDT), which made dividend income taxable in the hands of shareholders. This reform helped in aligning India's tax policy with international norms. A 4 percent Health and Education Cess continues to apply to the total tax liability, including

² Initially MAT rates were increased up to 18.5 percent of book profits and reduced to 15 percent in 2019. It is important to mention that MAT rates are further reduced to 14 percent in recent budget announcements in 2026. Since MAT rates are not just base rates, effective MAT burden is slightly higher than headline rates after inclusion of surcharge and health and education cess.

surcharge. The surcharge structure is progressive, i.e., 7 percent for income between Rs 1 crore and Rs 10 crore, and 12 percent for income above Rs 10 crore, with a flat 10 percent rate for firms under the concessional regimes.

These reforms have had significantly impact on tax rates. The statutory corporate tax rate in effect was approximately 38.5 percent (including the surcharge) in 2000 and was relatively lower in 2024, depending on the chosen tax regime and size or turnover. The difference is attributable to the reduced statutory tax rates and tax benefits and deductions available to companies under Indian tax law during those periods. However, our analysis shows that ETRs increased over the years, ranging from 16 percent in 2000 to 24 percent in 2024. These observations suggest that the corporate tax regime in India underwent a deliberate shift from high-rate, incentive-heavy taxation toward a low-rate, broad-base regime. This transition reflects the twin policy goals of improving investment incentives while maintaining fiscal sustainability.

4. Methodology

In order to reduce endogeneity concerns, we use dynamic panel data (DPD) models (Wintoki et al., 2012). DPD models are particularly useful when the dependent variable depends on its own past realizations (Bond, 2002). Our base model is as follows:

$$\ln\left(\frac{I}{K}\right)_{it} = \alpha_i + \beta \ln\left(\frac{I}{K}\right)_{it-1} + \delta \ln(ETR)_{it} + \gamma X_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (1)$$

where firm $i = 1, \dots, N$ and year $t = 1, \dots, T$.

In this model, X_{it} are the control variables, α_i are the firm fixed effects, and the error term ε_{it} has zero mean, constant variance and is uncorrelated across both time and firms. For estimation purposes, we remove the firm fixed effects α_i from Equation (1) by first differencing. Thus, we obtain:

$$\begin{aligned} \ln\left(\frac{I}{K}\right)_{it} - \ln\left(\frac{I}{K}\right)_{it-1} &= \beta \left(\ln\left(\frac{I}{K}\right)_{it-1} - \ln\left(\frac{I}{K}\right)_{it-2} \right) + \delta (\ln(ETR)_{it} - \ln(ETR)_{it-1}) \\ &\quad + \gamma (X_{it} - X_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) \end{aligned} \quad (2)$$

Alternatively,

$$\Delta \ln \left(\frac{I}{K} \right)_{it} = \beta \Delta \ln \left(\frac{I}{K} \right)_{it-1} + \delta \Delta \ln(1 - ETR)_{it} + \gamma \Delta X_{it} + \Delta \epsilon_{it} \quad (3)$$

In Equation (3), the variable $\Delta \ln \left(\frac{I}{K} \right)_{it-1}$ is correlated with $\Delta \ln \left(\frac{I}{K} \right)_{it}$ due to the dynamic nature of the equation. To solve this problem, Anderson and Hsiao (1982) proposed to use $\Delta \ln \left(\frac{I}{K} \right)_{it-2}$ or $\ln \left(\frac{I}{K} \right)_{it}$ as instruments for $\Delta \ln \left(\frac{I}{K} \right)_{it}$. In fact, lagged levels of the endogenous variable $\ln \left(\frac{I}{K} \right)_{it}$, three or more time periods before, can be used as instruments (Holtz-Eakin et al., 1988). Arellano & Bond (1991) proposed a method that exploits all possible instruments. Using the GMM, they obtained estimates using the moment conditions generated by lagged levels of the dependent variable ($\ln \left(\frac{I}{K} \right)_{it-1}, \ln \left(\frac{I}{K} \right)_{it-2}, \dots$), with $\Delta \ln \left(\frac{I}{K} \right)_{it}$. These are called difference GMM estimators. Furthermore, Arellano-Bover/Blundell-Bond developed another estimator which augments Arellano-Bond by making an additional assumption that first differences of instrumental variables are uncorrelated with the fixed effects. This allows the introduction of additional instruments and improves efficiency (Roodman, 2009). It develops a system of two equations, namely, the original equation and the transformed one, and is known as system GMM. In this study, we use a linear DPD method based on the Arellano and Bond (1991) and the Arellano & Bover (1995) estimators as well as a system GMM method.

It is important to note that causal identification is a key concern when estimating the relationship between corporate ETR and investment. Endogeneity could be an issue due to potential reverse causality, omitted variable bias, and dynamic persistence in firms' investment behavior. Our GMM estimator uses lagged variables as instruments to mitigate these concerns.

It is also worth noting that the corporate tax reforms in India, particularly in 2019, were anticipated to some extent. Under such circumstances, the firms may adjust their investment decisions in advance. To partially address this concern, our analysis examines investment responses to policy changes across multiple years, including pre- and post-reform periods. The use of dynamic specifications can help us capture the gradual adjustments to these changes.

To further validate the robustness of our baseline results obtained using the System GMM estimator, we estimate a Panel Dynamic Fixed Effects (DFE) model that distinguishes between short-run and long-run relationships between corporate taxation and investment. The DFE model is suitable in our context because the panel unit root tests (see Appendices A and B) indicate a mixed order of integration among the variables. While some variables are stationary

at levels, others become stationary only after first differencing. In such cases, estimating a conventional static fixed-effects model in levels risks producing spurious results, whereas the DFE error-correction model can better accommodate variables with different degrees of integration. However, the validity of the DFE error-correction specification requires that the variables be cointegrated. The results of the panel cointegration tests suggested by (Kao, 1999) confirm the presence of a stable long-run relationship among the variables (see Appendix C).

The DFE specification allows us to capture both the short-run dynamics and the long-run equilibrium relationship between investment and taxation, even when regressors do not share the same order of integration.

The DFE model allows for dynamic adjustment by including lagged dependent variables, thereby capturing the persistence in firms' investment behavior and controlling for unobserved heterogeneity. The basic dynamic fixed-effects specification of the long-term equation is given as:

$$LITK_{it} = \alpha_i + \beta_1 LITK_{i,t-1} + \beta_2 LETR_{it} + \beta_3 X_{it} + \lambda_t + \epsilon_{it} \quad (4)$$

Where $LITK_{it}$ denotes the logarithm of investment intensity of firm i at time t (investment divided by gross fixed assets), $LETR_{it}$ represents the logarithm of the effective tax rate, and X_{it} is a vector of firm-specific control variables including profitability (ROA), leverage (LEV), firm size (SIZE), firm age (AGE), depreciation to capital ratio (DTK), and interest-to-debt ratio (ITD). Firm fixed effects α_i account for time-invariant firm characteristics, and time dummies λ_t capture common macroeconomic shocks.

To account for potential dynamic adjustment, the model is also estimated in an error-correction form, separating the short-run and long-run dynamics:

$$\Delta LITK_{it} = \phi(LITK_{i,t-1} - \theta LETR_{i,t-1} - \psi X_{i,t-1}) + \sum_j \gamma_j \Delta X_{it} + \eta_i + \mu_t + \epsilon_{it} \quad (5)$$

Here, the coefficient ϕ represents the speed of adjustment towards the long-run equilibrium, while θ and ψ capture the long-run elasticities. A negative and significant ϕ indicates that deviations from the long-run equilibrium are corrected over time.

The model is estimated using panel dynamic fixed effects with robust standard errors. This ensures consistency in the presence of potential heteroskedasticity. The lagged dependent variables and firm-specific effects are included to mitigate biases arising from omitted variables and dynamic persistence. We also introduce two interaction terms, $LETR \times AGE$ and $LETR \times SIZE$, to assess whether a firm's age or size moderates the tax-investment relationship.

5. Data and variables

We use annual data on Indian manufacturing firms listed either in the Bombay Stock Exchange or the National Stock Exchange, as available from the Centre for Monitoring Indian Economy's database PROWESS. This database has been widely used in reputable studies on Indian firms (e.g., Khanna and Palepu, 1999, 2000, Padmaja and Sasidharan, 2020, Mukherjee and Chanda, 2020, and many others). Our sample is an unbalanced panel of 2155 firms for the period from 2000 to 2024.

The key variables used in the models reflect both tax-related and firm-specific determinants of investment. The dependent variable, investment intensity (LITK), is measured as the *log of investments divided by gross fixed assets*. The principal explanatory variable of interest is the log of the Effective Tax Rate (LETR), defined as *corporate tax paid divided by profit before tax*. Compared with statutory rates, this measure is expected to better reflect the actual tax burden firms face after accounting for tax rates, deductions, exemptions, and tax incentives under Indian corporate tax law. Therefore, the estimated relationship between ETR and investment reflects the combined effect of changes in statutory tax rates and MAT, as well as firm-specific tax-planning behaviour.

In line with the literature, the following firm-specific control variables are included to isolate the effect of taxation on investment:

Profitability (ROA): It is measured as *profit after tax divided by total assets*, and is an indicator of internal financing capacity. The literature suggests that the firms with higher profitability invest more in capital formation (Akyüz & Gore, 1996; Durand & Gueuder, 2018).

Leverage (LEV): It is defined as *the ratio of total debt to total assets*, and represents the firm's financial structure. A higher leverage may indicate additional financing capacity; however, excessive debt can result in reduced investments due to increased repayment obligations and higher risk premiums (Lang et al., 1996).

Firm size (SIZE): It is measured as the *natural logarithm of sales* and serves as a proxy for economies of scale. Moreover, larger firms are typically less financially constrained (Audretsch & Elston, 2002) and may therefore be relatively better positioned to invest more.

Firm age (AGE): We define firm age as the *number of years since incorporation*. Older firms are mature and benefit from their experiences. Although older firms may have limited growth opportunities, their stability and experience can enhance their responsiveness to any new investment avenues.

Depreciation-to-capital ratio (DTK): It is defined as *depreciation divided by gross fixed assets*, which proxies for the rate of capital replacement. Often, a higher depreciation intensity indicates higher investment requirements. Therefore, a high depreciation rate of capital can encourage investments in new assets.

The interest-to-debt ratio (ITD): The variable is measured as *interest expense divided by the average debt over the past two years* and captures the cost of borrowing. A high interest burden indicates a greater financial burden, which can adversely affect investments in new capital.

Cash flow (CF): It represents the internal liquidity available to firms to finance their new investments. The variable controls for internal and external financing conditions, as well as lifecycle effects.

Apart from these control variables, interactions between the tax rate and firm characteristics, namely, $LETR \times AGE$ and $LETR \times SIZE$, are incorporated in the model to test whether the sensitivity of investment to taxation differs across firm age and size.

Table 1 provides the descriptive statistics for the aforementioned variables. It can be observed that the average ETR across Indian manufacturing firms is approximately 24 percent, with a standard deviation of 0.62. This indicates significant heterogeneity in tax burden across firms. Differences in firms' access to deductions, exemptions, and investment-linked tax incentives are driving this variation. Similarly, the average investment-to-capital ratio (ITK) is 1.38, with a very high standard deviation. This suggests that there are heterogeneous investment opportunities in India, possibly due to prevailing financial constraints. There is significant variation in other control variables (such as age, size, and profitability, etc.), which underscores the diverse structure of India's corporate sector. In our study, the use of panel data analysis could help to capture both cross-sectional and temporal variations. Table 2 presents the

correlation matrix of the variables used in our model. A weak correlation between the independent variables indicates no serious issue of multicollinearity.

Table 1: Descriptive statistics

	Mean	Median	SD	Min	Max	Observations
ETR	0.24	0.24	0.62	-63.50	43.00	31,193
LEV	0.45	0.32	1.70	-0.03	100.00	40,838
ROA	0.03	0.03	0.46	-34.00	28.95	42,762
DTK	0.07	0.05	0.95	-0.01	116.22	29,791
AGE	28.17	25.00	19.59	0.00	145.00	48,190
SIZE	7.20	7.22	2.18	-2.30	16.05	41,628
ITK	1.38	0.05	84.77	-1.00	9775.00	39,711
ITD	0.18	0.09	8.96	-0.24	1676.00	36,236
LETR	-0.28	-0.27	0.22	-4.81	4.17	30,953
LITK	-2.72	-2.59	1.67	-12.61	9.19	33,308

Table 2: Correlation matrix

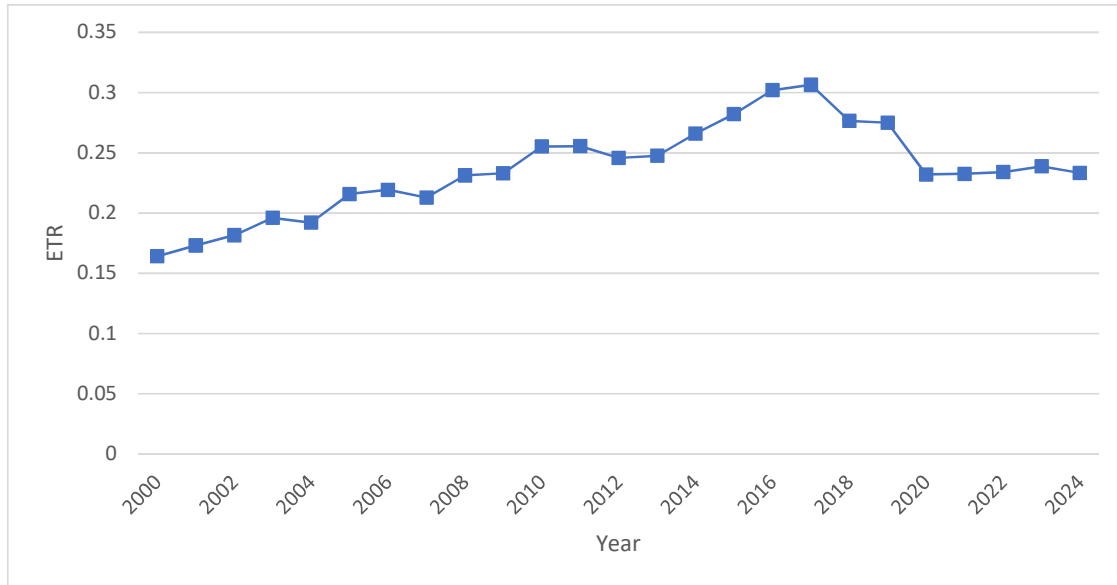
	ETR	LEV	ROA	DTK	Age	SIZE	ITK	ITD	LETR	LITK
ETR	1.000									
LEV	-0.036*	1.000								
ROA	0.001	-0.483*	1.000							
DTK	0.005	0.003	-0.021*	1.000						
AGE	0.018*	-0.025*	0.023*	0.005	1.000					
SIZE	-0.008	-0.136*	0.077*	0.004	0.340*	1.000				
ITK	0.001	-0.001	-0.002	-0.000	-0.004	0.003	1.000			
ITD	0.000	-0.004	0.003	-0.000	-0.001	0.011**	-0.000	1.000		
LETR	-0.485*	0.097*	-0.032*	-0.035*	-0.019*	0.000	-0.002	-0.001	1.000	
LITK	-0.029*	-0.141*	0.102*	0.130*	-0.097*	0.129*	0.105*	0.005	0.072*	1.000

Our analysis shows that both ETR and investments have increased over the years. Figure 1 shows a gradual upward trend in ETRs from 2000 to 2024. However, during this period, a sharp decline may be observed around 2017–2020, a period when significant corporate tax reforms were introduced. Therefore, this decline may be attributed to lower statutory tax rates and simplified tax structures for domestic firms, which were introduced in 2019 but had been anticipated well in advance. Similarly, Figure 2 displays the average trend in corporate investment over the same period. Although investments have shown a cyclical trend during this period, a noticeable increase is evident in 2016–2020 following a sharp fall in 2016³, which may be attributed to the anticipation of the reforms introduced in 2019. Overall, a simultaneous

³ The Economic Survey (2017) attributed the sharp decline in fixed capital formation in 2016–17 largely to the severe twin balance sheet problem.

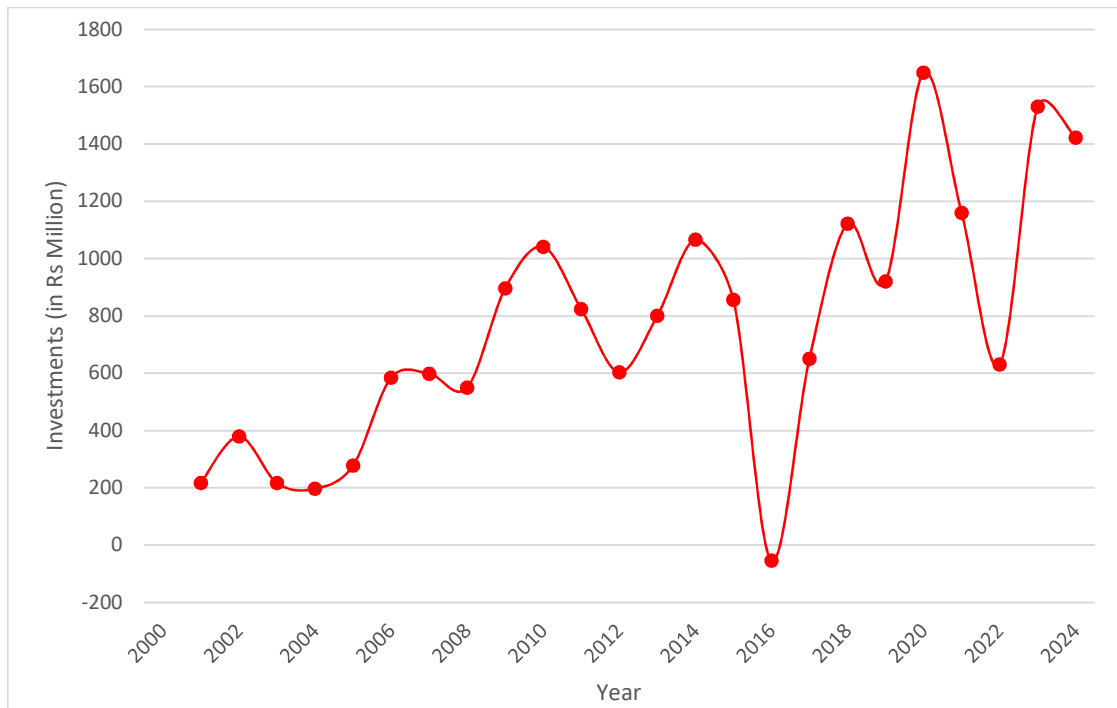
increase in ETR and corporate investments suggests a broadening base and an improving capital formation in India. Moreover, it appears that the anticipation and introduction of the 2019 reforms had a more profound impact.

Figure 1: Average trends for the effective tax rates (ETR) over time



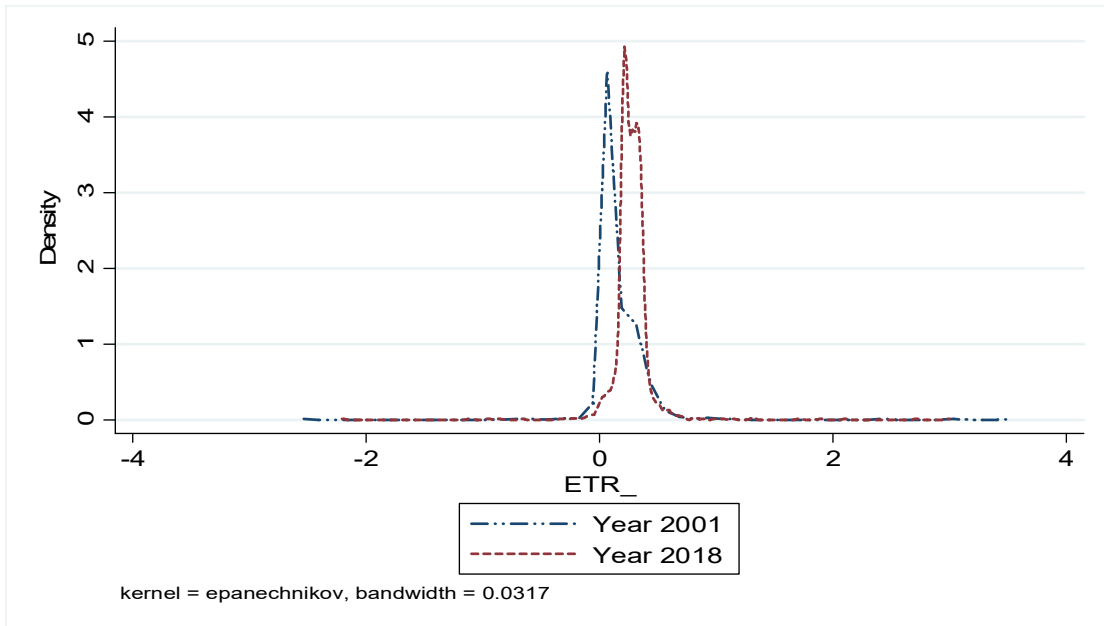
Source: Authors' own calculations using CMIE data

Figure 2: Average trends for corporate investment over time

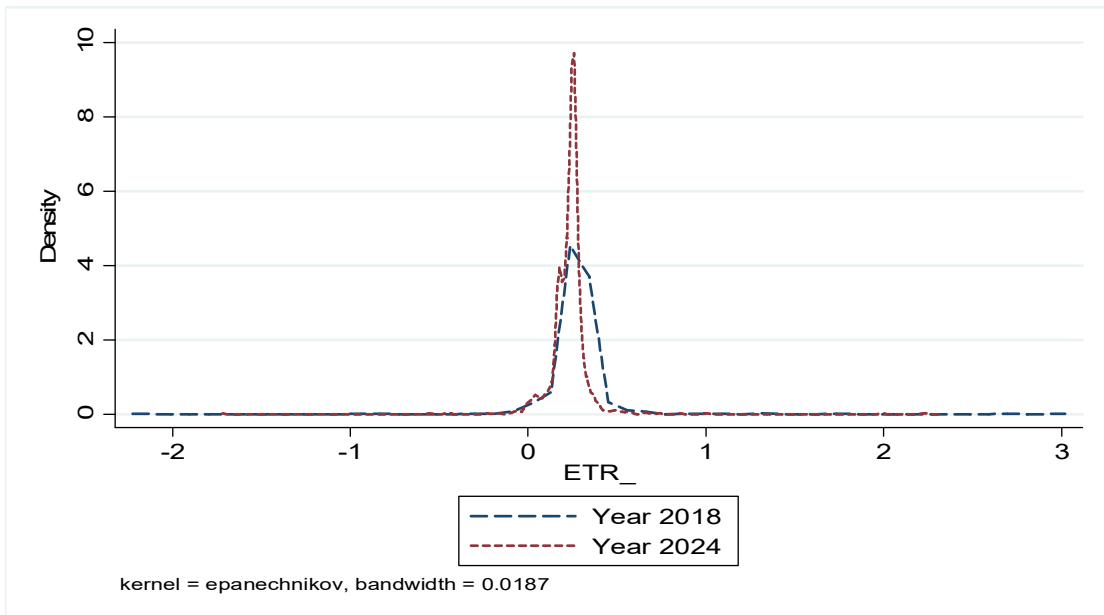


Source: Authors' own calculations using CMIE data

Figure 3: Kernel Density Estimates of ETR



(A)



(B)

Source: Authors' own calculations using CMIE data

Figure 3(A) presents kernel density estimates of the distribution of effective tax rates for the years 2001 and 2018. The distribution is right-skewed for both years, suggesting a large spread and high heterogeneity in ETR across firms. It appears that, as compared to 2001, the spread moderately reduced in 2018, with a significant increase in the average ETR. It shows that corporate tax reforms during 2001-2018 resulted in an improved tax base, with somewhat

reduced heterogeneity. Interestingly, as shown in Figure 3(B), the entire distribution shifted to the left and became significantly narrower in 2024 than in 2018. The observation indicates that ETR for most firms declined after the concessional regime was introduced in 2019. It appears that in 2024, firms' ETR depends less on firm-specific exemptions and that they face more similar tax burdens. These changes in the ETR distribution over the years reflect the simplification and standardization of the corporate tax structure through reforms. The observation lays the foundation for the subsequent section that explores the statistical relationship between ETR and corporate investment during the study period.

6. Empirical Estimation

We have estimated the system GMM dynamic panel using the `xtabond2` package, as developed by Roodman (2009), and considered two specifications: one with cash flow and one without. We employ one-step GMM estimation, as it is more robust to model misspecification. The efficiency of the GMM estimator, however, depends on the assumption that the dependent and other explanatory variables are valid instruments and the error terms do not exhibit serial correlation. To address these issues, Arellano and Bond (1991) proposed four tests. The first is to test the hypothesis that the error term has no first-order serial correlation. Under the null hypothesis of no serial correlation, the test statistic is distributed as a standard normal. The second step is to test for the absence of second-order serial autocorrelation in the error term, which is distributed as a standard normal under the null hypothesis of no serial correlation. The third is the Sargan test of over-identifying restrictions. This tests the validity of the instruments and is asymptotically distributed as χ^2 under the null of instrument validity. Another test for over-identifying restrictions is the Hansen test.

We observe from Tables 3 and 4 that the Sargan test rejects the null hypothesis of instrument validity for all model specifications of LITK. This indicates that it is not appropriate to treat firm-specific characteristics as exogenous. However, the Hansen test shows the acceptance of the null hypothesis of instrument validity for all the model specifications for LITK. When the Sargan test fails but the Hansen test does not, it suggests that while some of the over-identifying restrictions in our model are not valid, the overall model and its instruments might still be acceptable. The test statistic for first-order serial correlation, applied to the differenced residuals, shows that it is significant in all the models, which is expected (Mileva, 2007). On the other hand, the second-order serial correlation, which is more important because it detects

autocorrelation in levels, is not significant in all the models, indicating that the models are not misspecified.

Table 3: Results for System GMM regression model (Dependent variable: LITK)

	(1)	(2)	(3)	(4)	(5)	(6)
L.LITK	0.041*** (0.014)	0.041*** (0.014)	0.042*** (0.014)	0.029*** (0.014)	0.029** (0.014)	0.029** (0.014)
LETR	-0.307*** (0.046)	-0.513*** (0.095)	-0.559*** (0.192)	-0.299*** (0.046)	-0.487*** (0.096)	-0.552*** (0.190)
PBDITA	-0.0000011 (0.000)	-0.0000013 (0.000)	-0.0000014 (0.000)	-0.0000015 (0.000)	-0.0000017 (0.000)	-0.0000019 (0.000)
LEV	1.023*** (0.368)	1.014*** (0.371)	1.010*** (0.373)	1.309*** (0.370)	1.292*** (0.372)	1.291*** (0.373)
ROA	-1.321** (0.529)	-1.270** (0.528)	-1.381** (0.531)	-1.357** (0.540)	-1.312** (0.540)	-1.416*** (0.545)
Age	-0.088*** (0.015)	-0.080*** (0.016)	-0.088*** (0.015)	-0.089*** (0.016)	-0.081*** (0.017)	-0.089*** (0.016)
SIZE	0.419*** (0.115)	0.425*** (0.115)	0.464*** (0.125)	0.461*** (0.122)	0.465*** (0.122)	0.506*** (0.130)
ITD	0.006 (0.005)	0.006 (0.004)	0.006 (0.005)	0.004 (0.004)	0.004 (0.004)	0.004 (0.004)
DTK	-20.255*** (2.601)	-20.190*** (2.588)	-20.127*** (2.589)	-19.526*** (2.744)	-19.537*** (2.739)	-19.420*** (2.735)
LETR × Age		0.006*** (0.002)			0.005** (0.002)	
LETR × SIZE			0.032 (0.023)			0.031 (0.022)
CF				0.00000031 (0.000)	0.00000028 (0.000)	0.00000039 (0.000)
Observations	11094.00	11094.00	11094.00	10434.00	10434.00	10434.00
Sargan test	2389.14*** (1901)	2381.12*** (1900)	2386.91*** (1900)	2351.54*** (1860)	2344.25*** (1859)	2348.93*** (1859)
Hansen test	1726.25 (1901)	1722.64 (1900)	1721.26 (1900)	1692.73 (1860)	1695.44 (1859)	1705.92 (1859)
AR (1)	-20.01*** (0.00)	-20.02*** (0.00)	-20.06*** (0.00)	-19.51*** (0.00)	-19.51*** (0.00)	-19.57*** (0.00)
AR (2)	-1.55 (0.121)	-1.50 (0.134)	-1.54 (0.124)	-1.67** (0.094)	-1.61 (0.108)	-1.65* (0.098)
Wald chi-squared	175.55*** (8)	178.28*** (9)	177.12*** (9)	164.56*** (9)	166.86*** (10)	165.49*** (10)

Note: Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.10

In Table 3, model (1) shows that the elasticity of investment with respect to the tax rate is -0.3. Thus, as the tax rate increases by 1%, investment decreases by 0.3 percent. From model (2), we observe that the interaction term between LETR and AGE is positively significant, and LETR is negatively significant, which implies that the negative effect of tax rate on investment declines with the increase in age of the firm. However, in model (3), the interaction term between LETR and SIZE is not significant, although the coefficient of the variable LETR is

negatively significant. It indicates that the negative effect of tax rate on investment does not change with the changes in firm size. Models without cash flow are better because the Wald statistics values are higher for these models. However, AR(2) values are significant for the models with cash flow, which indicates that these models are misspecified. Thus, we focus on the findings with respect to the models without cash flow.

In Table 4, we extend the baseline System GMM estimates by introducing firm-level dummy variables, *young* and *foreign*, to control for firm heterogeneity. The variable *young* takes the value 1 if the firm's age is less than the median age of firms in our sample, and 0 otherwise. Similarly, the variable *foreign* takes the value 1 if a larger share of the promoter is held by foreigners, and 0 otherwise. The coefficient for LETR remains negative and statistically significant across all the model specifications, with estimated elasticities ranging from -0.23 to -0.28. Our results confirm that higher effective tax rates are associated with reduced investment intensity even after discrete firm characteristics are controlled. The diagnostic tests support the validity of the model used to estimate the relationship between the variables of our interest. For instance, AR(1) statistics confirm expected first-order serial correlation, whereas AR(2) tests fail to reject the null of no second-order autocorrelation. Hansen statistics also confirm instrument validity. Overall, these results support our previous findings that there is a negative tax-investment relationship.

Furthermore, to explore the short- and long-term associations between tax and investment, the Dynamic Fixed Effects (DFE) model is used. The results show that long-run coefficients on LETR are consistently negative and significant, ranging from -0.10 to -0.49 (Table 5). Unlike GMM estimates, the interaction between LETR and firm age is significantly negative in the long run, suggesting that older firms may be more responsive to tax changes over the years. There is some evidence that the responsiveness of investment to taxation varies with firm size; however, the different specifications provide inconsistent results. Negative error-correction terms across all models imply that the models adjust toward long-run equilibrium after tax changes. The results indicate that the short-run coefficients on LETR are smaller than the long-run estimates, suggesting that investment responds more strongly to taxation in the long run. The finding aligns with the adjustment-cost theories, in which capital accumulation responds gradually to persistent policy changes (A. Auerbach, 1989).

Table 4: Results for system GMM regression for Dummy variables

	(1)	(2)	(3)	(4)
L.LITK	0.109*** (0.013)	0.109*** (0.013)	0.112*** (0.013)	0.086*** (0.019)
LETR	-0.284*** (0.047)	-0.273*** (0.047)	-0.276*** (0.047)	-0.230*** (0.071)
PBDITA	-0.0000042*** (0.000)	-0.0000038*** (0.000)	-0.0000025*** (0.000)	-0.0000062* (0.000)
LEV	0.506*** (0.142)	0.583*** (0.179)	0.259 (0.178)	0.221 (0.172)
ROA	2.380*** (0.304)	2.335*** (0.317)	2.487*** (0.308)	2.895*** (0.538)
Age	-0.019*** (0.006)	-0.028*** (0.007)	-0.027*** (0.007)	-0.026*** (0.005)
SIZE	0.228*** (0.034)	0.248*** (0.040)	0.228*** (0.045)	0.159*** (0.049)
ITD	0.001 (0.002)	0.003 (0.002)	0.003 (0.002)	0.013* (0.008)
DTK	-1.122* (0.679)	-2.213*** (0.856)	-1.892** (0.836)	-1.715* (0.981)
young	-0.057 (0.131)			
HLEV		-0.200*** (0.043)		
LARGE			-0.248** (0.103)	
Foreign				0.262 (0.161)
Constant	-4.073*** (0.313)	-3.812*** (0.294)	-3.568*** (0.292)	-3.228*** (0.341)
Observations	15325	15325	15325	6481
Sargan test	2716.42*** (1779)	2704.68*** (1779)	2725.23*** (1779)	2118.48*** (1713)
Hansen test	1756.93 (1779)	1759.65 (1779)	1755.79 (1779)	921.77 (1713)
Arellano-Bond AR(1)	-23.00*** (0.00)	-22.96*** (0.00)	-22.99*** (0.00)	-16.12*** (0.00)
Arellano-Bond AR(2)	0.33 (0.739)	0.30 (0.766)	0.33 (0.741)	-0.17 (0.869)
Wald chi-squared	24623.69*** (10)	19961.07*** (10)	21454.92*** (10)	10369.37*** (10)

Note: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10

Table 5: Panel Dynamic Fixed Effects Results (Dependent Variable: LITK)

	(1)	(2)	(3)	(4)	(5)	(6)
Long-run Estimates						
LETR	-0.103*** (0.015)	-0.047*** (0.024)	-0.49*** (0.14)	-0.103*** (0.015)	-0.047** (0.024)	-0.24*** (0.057)
PBDITA	0.0000018 (0.000001)	0.0000016 (0.0000012)	-0.0000011 (0.0000012)	0.000006*** (0.000002)	0.000006*** (0.0000023)	0.000002 (0.000002)
LEV	0.012 (0.0096)	0.013 (0.0096)	1.16*** (0.15)	0.012 (0.0096)	0.013 (0.0096)	0.053*** (0.011)
ROA	0.174*** (0.035)	0.175*** (0.035)	4.76*** (0.387)	0.173*** (0.0359)	0.174*** (0.035)	0.22*** (0.043)
AGE	0.04*** (0.0018)	0.037*** (0.002)	-0.023*** (0.0046)	0.04*** (0.0018)	0.037*** (0.002)	0.028*** (0.0023)
SIZE	-0.36*** (0.0062)	-0.361*** (0.0064)	0.171*** (0.043)	-0.367*** (0.0062)	-0.362*** (0.0064)	-0.126*** (0.014)
ITD	0.00038 (0.0012)	0.0004 (0.0012)	0.015 (0.0177)	0.00037 (0.00120)	0.00039 (0.0012)	0.0002 (0.0017)
DTK	0.035** (0.016)	0.0359** (0.016)	-1.34* (0.755)	0.0353** (0.0161)	0.0356** (0.016)	0.037** (0.016)
LETR x AGE		-0.0021*** (0.00073)			-0.0021*** (0.00073)	
LETR x SIZE			0.042** (0.017)			0.0066 (0.0077)
CF				-0.000006** (0.0000028)	-0.0000062** (0.0000028)	-0.0000039 (0.0000028)
Short-run Estimates						
EC	-0.596*** (0.0039)	-0.59*** (0.003)	-0.94*** (0.009)	-0.59*** (0.0039)	-0.59*** (0.0039)	-0.64*** (0.0048)
LETR	-0.035*** (0.0104)	-0.0391** (0.017)	-0.165 (0.103)	-0.035*** (0.0104)	-0.038** (0.017)	0.115*** (0.041)
PBDITA	-0.0000012 (0.0000012)	-0.0000012 (0.0000012)	0.000002 (0.0000016)	-0.000003** (0.0000014)	-0.000003** (0.0000014)	-0.0000021 (0.0000015)
LEV	0.0035 (0.0062)	0.0031 (0.0062)	1.141*** (0.161)	0.0035 (0.0062)	0.0031 (0.0062)	-0.00261 (0.0074)
ROA	-0.0592*** (0.0169)	-0.059*** (0.016)	-4.78*** (0.325)	-0.0587*** (0.016)	-0.059*** (0.016)	-0.075*** (0.019)
SIZE	0.211*** (0.0068)	0.21*** (0.0069)	0.734*** (0.051)	0.21*** (0.0068)	0.211*** (0.0069)	0.291*** (0.0134)
ITD	-0.00026 (0.00076)	-0.00026 (0.00076)	-0.019 (0.021)	-0.00026 (0.00076)	-0.00026 (0.00076)	-0.00017 (0.00091)
DTK	-0.0084 (0.0092)	-0.0086 (0.0092)	-7.24*** (0.599)	-0.0083 (0.0092)	-0.0085 (0.0092)	-0.016 (0.011)
LETR x AGE		0.00012 (0.00051)			0.00011 (0.00051)	
LETR x SIZE			-0.0059 (0.012)			-0.019*** (0.0057)
CF				0.0000028** (0.0000011)	0.0000028** (0.0000011)	0.0000022* (0.0000012)
CONSTANT	-0.76* (0.024)	-0.75*** (0.024)	-3.73*** (0.28)	-0.768*** (0.0243)	-0.75*** (0.024)	-2.021*** (0.065)

Note: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10

As evidenced by trends in ETR and investment, the 2019 reforms likely had a greater impact. To investigate the changes in the tax-investment relationship, we estimated cross-sectional OLS for the key reform years 2018-2020 (including pre- and post-reform years). The results presented in Table 6 show that, in the pre-reform year 2018, the LETR coefficient is small and not statistically significant. However, in 2019, it became larger in magnitude and was significantly negative. By 2020, the magnitude of the coefficient becomes even larger and remains significant. This pattern indicates that the negative association between taxation and investment strengthened noticeably after the introduction of the 2019 tax regime. Overall, the results suggest that firms' investment behavior became more responsive to reduced tax rates over the year. Additionally, the estimated coefficients of the control variables are largely comparable with our previous results.

Table 6: OLS Regression Results for 2018, 2019 and 2020 (Dependent variable: LITK)

	(1) LITK-2018	(2) LITK-2019	(3) LITK-2020
LETR	-0.050 (0.109)	-0.182** (0.083)	-0.355*** (0.109)
PBDITA	0.0000017** (0.000)	-0.00000064 (0.000)	-0.0000011 (0.000)
LEV	0.030 (0.322)	0.720*** (0.297)	0.278 (0.333)
ROA	1.403 (1.343)	3.753*** (1.003)	3.355*** (0.818)
Age	-0.013*** (0.003)	-0.010*** (0.002)	-0.005** (0.002)
SIZE	0.065** (0.031)	0.074*** (0.023)	0.135*** (0.026)
ITD	-0.063 (0.078)	0.074*** (0.030)	0.000*** (0.000)
DTK	3.276*** (1.405)	6.872*** (1.438)	12.605*** (1.524)
Constant	-3.003*** (0.330)	-3.868*** (0.275)	-4.966*** (0.271)
Observations	1185.000	1207.000	1109.000
R Squared	0.038	0.079	0.145
Adjusted R Squared	0.032	0.072	0.138

Note: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10

Overall, the empirical results show robust statistical evidence that higher corporate tax rates are associated with lower investment intensity among Indian firms. The estimated long-run tax elasticity of investment lies between -0.25 and -0.55 in the preferred GMM models and between -0.10 and -0.24 in the dynamic fixed-effects models. The findings indicate that corporate tax cuts can yield economically significant investment gains. While it has been argued that only large firms have benefited from the recent tax reforms (De, 2023), our findings suggest that firm size has a limited influence on the relationship between ETR and firms' investment behavior. Nonetheless, a significant positive interaction term between LETR and AGE in the GMM models indicates that the negative effect of taxes on investment weakens with increasing firm age. In other words, the younger firms may invest more following the reduction in tax rates. In contrast, the DFE model yields different results, suggesting that, in the long run, older firms may be more responsive to tax-related changes. Moreover, we find that investment responsiveness strengthened after tax reforms were introduced in 2019. These findings collectively confirm that corporate taxation plays a central role in shaping firms' investment behavior in emerging-market settings such as India.

7. Conclusion

This paper, in the light of corporate tax reforms in India, investigates whether corporate taxation is associated with firm-level investment behavior. Its theoretical framework draws on the neoclassical user-cost theory and the existing empirical literature that provides estimates of tax-investment elasticities. Additionally, it empirically evaluates whether investment responsiveness to tax reforms strengthened during the recent major tax reforms introduced in 2019. Firm-level heterogeneity, particularly firm size and age, may also determine the magnitude of responsiveness and has been empirically tested.

For empirical analysis, we estimate System GMM and Dynamic Fixed-Effects error-correction models using an unbalanced panel data of Indian manufacturing firms for the period 2000-2024. Our analysis provides strong empirical evidence that higher effective corporate tax rates are associated with reduced investment intensity. However, the magnitude of the estimates varies across different model specifications, ranging from approximately -0.10 to -0.55. These estimates are largely comparable to the range identified in the literature but are somewhat smaller than estimates for advanced economies. This suggests that investment in developing economies may respond relatively modestly to tax changes. Among other factors, it could be due to higher financing frictions and adjustment costs.

The results also support the theoretical predictions, which are central to the user-cost framework. For instance, it may be argued that tax-induced changes in the cost of capital may affect the long-run accumulation of productive assets. Moreover, the study provides evidence that younger firms exhibit greater tax sensitivity, whereas we did not find conclusive evidence that firm size systematically affects the tax-investment relationship. This aligns with the argument that younger firms lack internal funds and face greater financial constraints than older firms. Their investment responses may be more pronounced since any reduction in tax rates can significantly affect their investment capability. The study also finds that investment responsiveness improved during the recent major reforms of 2019. Overall, the results indicate that reductions in tax rates and the simplification of tax options are associated with increased corporate investment.

These findings have significant policy implications. A corporate tax policy that broadens the tax base, lowers effective rates, and reduces reliance on exemptions can boost private capital formation and support long-run growth. This is especially important for emerging economies like India, where most firms are young and small and face significant financial constraints. Simplifying tax structures also reduces compliance costs for new firms, thereby improving their investment.

Overall, the paper provides empirical support for the existing argument that corporate tax policy, through its impact on the user cost of capital, plays a pivotal role in shaping investment behavior in emerging markets like India. The evidence suggests that simplifying and lowering corporate taxes can stimulate investments, thereby improving the growth prospects of Indian corporates.

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Appendix

Appendix A: Unit Root Tests at level (I(0))

Tests	LITK	LETR	PBDITA	LEV	ROA	AGE	SIZE	ITD	DTK	CF	LETR*AGE	LETR*SIZE
LLC												
With C and T	-35.9711 (0)	-29.86 (0)	-1.0484 (0.14)	-49.71 (0)	-35.91 (0)	64.73 (1)	-39.92 (0)	-190 (0)	-15.375 (0)	2.71 (0.99)	-9.31 (0)	-26.12 (0)
With C and no T	-40.9656 (0)	-26.19 (0)	-1.34 (0.089)	-33.13 (0)	-40.45 (0)	73.58 (1)	-26.36 (0)	-180 (0)	-22.08 (0)	2.22 (0.98)	13.19 (1)	-16.43 (0)
Without C and T	-41.4343 (0)	-30.34 (0)	-4.54 (0)	-34.441 (0)	-43.86 (0)	-0.32 (0.37)	52.81 (1)	-44.24 (0)	-18.56 (0)	-0.39 (0.34)	6.04 (1)	-17.16 (0)
Fisher-ADF Chi-square												
With C and T	11800 (0)	8629.92 (0)	8620.19 (0)	6730.84 (0)	10700 (0)	2656.27 (1)	5816.39 (0)	8343.27 (0)	5749.85 (0)	17800 (0)	6883.76 (0)	8018.03 (0)
With C and no T	12400 (0)	8760.76 (0)	6531.257 (0)	7529.57 (0)	12300 (0)	40.827 (1)	5283.92 (0)	9468.051 (0)	6209.33 (0)	15600 (0)	5842.68 (0)	7832.43 (0)
Fisher ADF Choi Z Statistic												
With C and T	-49.01 (0)	-25.6 (0)	-16.32 (0)	-7.68 (0)	-39.56 (0)	-6.81 (0)	4.51 (1)	-22.15 (0)	0.34 (0.63)	-66.31 (0)	-15.96 (0)	-22.5 (0)
With C and no T	-53.24 (0)	-28.09 (0)	12.41 (1)	-17.79 (0)	-47.67 (0)	38.06 (1)	10.19 (1)	-30.37 (0)	-11.01 (0)	-49.03 (0)	1.19 (0.88)	-19.67 (0)
Fisher PP Chi-square												
With C and T	20300 (0)	10800 (0)	9415.62 (0)	5962.7 (0)	13900 (0)	4446.33 (0.07)	6705.76 (0)	19500 (0)	6284.25 (0)	29300 (0)	8827.32 (0)	10300 (0)
With C and no T	20900 (0)	10600 (0)	7704.25 (0)	6832.1 (0)	15600 (0)	0.31 (1)	5888.07 (0)	17700 (0)	6168.12 (0)	26200 (0)	7372.82 (0)	9969.39 (0)
Fisher-PP Choi Z Statistic												
With C and T	-90.32 (0)	-39.93 (0)	-26.13 (0)	-5.73 (0)	-59.42 (0)	-24.002 (0)	3.41 (0.99)	-73.57 (0)	-8.99 (0)	-115.55 (0)	-30.13 (0)	-36.36 (0)
With C and no T	-92.07 (0)	-39.38 (0)	-0.64 (0.25)	-16.19 (0)	-66.51 (0)	33.93 (1)	10.84 (1)	-69.14 (0)	-13.48 (0)	-96.53 (0)	-12.38 (0)	-31.43 (0)

Appendix B: Unit Root Tests at level (I(1))

Tests	LITK	LETR	PBDITA	LEV	ROA	AGE	SIZE	ITD	DTK	CF	LETR*AGE	LETR*SIZE
LLC												
With C and T	-70.15	-83.14	-1.3379	-89.11	-56.77	117.04	-93.6	-160	-71.24	4.571	-64.35	-75.1
	(0)	(0)	(0.09)	(0)	(0)	(1)	(0)	(0)	(0)	(1)	(0)	(0)
With C and no T	-100	-110	-2.1	-110	-78.29	70.47	-110	-220	-94.03	3.53	-80.82	-100
	(0)	(0)	(0.02)	(0)	(0)	(1)	(0)	(0)	(0)	(0.99)	(0)	(0)
Without C and T	-200	-190	-5.07	-140	-140	-0.51	-140	-280	-160	-1.86	-150	-180
	(0)	(0)	(0)	(0)	(0)	(0.31)	(0)	(0)	(0)	(0.31)	(0)	(0)
Fisher-ADF Chi-square												
With C and T	32200	24900	29400	19200	31100	469.49	20000	26300	20300	47400	22600	23700
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
With C and no T	41100	31400	32400	24400	38600	920.98	23700	33200	26500	55500	27800	30100
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Fisher ADF Choi Z Statistic												
With C and T	-138.22	-114.14	-115.14	-90.07	-131.08	11.27	-94.34	-117.82	-98.59	-172.87	-102.86	-110.21
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
With C and no T	-166.16	-138.66	-124.359	-113.29	-155.5	4.97	-110.9	-142.27	-123.23	-194.06	-122.23	-134.58
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Fisher PP Chi-square												
With C and T	66900	49900	46100	38200	58200	582.61	35700	66000	44300	82600	46600	48600
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
With C and no T	79200	59400	52500	45900	69300	1055.82	41800	77200	-174.33	93100	54500	-184.01
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Fisher-PP Choi Z Statistic												
With C and T	-224.19	-187.54	-166.07	-154.68	-202.57	9.28	-148.44	-218.63	53500	-249.76	-175.5	58000
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
With C and no T	-250.07	-211.27	-179.86	-177.27	-227.36	4.44	-167.71	-243.09	-198.1	-270.4	-194.26	-207.32
	(0)	(0)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)

Appendix C: Kao Residual Cointegration Test

	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
Modified Dickey–Fuller t	-65.66 (0)	-67.06 (0)	-66.85 (0)	-48.17 (0)	-48.99 0	-48.99 (0)
Dickey–Fuller t	-68.12 (0)	-68.81 (0)	-68.98 (0)	-58.16 (0)	-58.65 0	-58.89 (0)
Unadjusted modified Dickey–Fuller t	-150 (0)	-150 (0)	-150 (0)	-150 (0)	-150 0	-150 (0)
Unadjusted Dickey–Fuller t	-93.16 (0)	-93.14 (0)	-93.85 (0)	-93.17 (0)	-93.16 0	-93.86 (0)

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