Financial Reforms and Corporate Financing Decisions of Indian Industries

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Abstract

This study evaluates the impact of financial reforms on the corporate financing decisions of selected 23 Indian industries for the period from 1988-2005. We used a financial reforms index that will allow a better understanding of the impact of gradual reforms on the corporate financing decisions. Our findings from the pooled regression indicate that the impact of financial reforms is negative for most of the industries. However, a significant difference is observed in the manner in which these industries reacted to counter this negative impact. The decline in the leverage ratio was offset by a corresponding increase in external equity proportion in the case of a few industries, and by an appreciation in the internal capital proportion for the remaining industries. Finally, our results do not support the hypothesis that interest rate is the main route through which the impact of macro-level financial reforms is experienced at the micro-level.

Keywords: **financial deregulations, industry changes, financial reforms, capital structure, corporate leverage, cost of debt**

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Financial reforms result in structural variations in financial systems across time periods owing to their deep impact on different facets of the financial systems such as size, competition, and efficiency. Various studies in this realm of financial literature have revealed that different institutional structures, specifically financial and legal, give rise to different capital structure decisions. This argument has been empirically examined in many studies like Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001) and Rajan and Zingales (1995) in a cross-country framework. We extend this line of research and argue that such institutional differences across different time periods arising due to financial reforms in any given country should also influence the capital structure decisions of firms. In other words, temporal changes (particularly financial) in institutional structures associated with the progression of reforms over time should be accompanied by corresponding changes in the capital structure of firms in the economy.

From the perspective of policy formulation, policy makers are generally more interested in the changes at the industry level than at the firm level since they presume that all firms in a given industry are deemed to be homogenous units. Thus, industry-level studies serve to guide policy-makers in policy decisions. An industry level study rather than a cross-country study or a firm-level study should, therefore, prove to be more informative to policy-makers. Thus, while our main objective is to examine the impact of financial reforms on capital structure changes, we focus on the differential impact of financial reforms across 23 Indian industries.

There are three main theoretical arguments which explain why the impact should be different across industries. First, as argued by Rajan and Zingales (1998), firms in a given industry operate with the same technological coefficients of production and the need for external finance depends on these technological parameters. The implications are direct: Industries that are more dependent on external finance will be affected more by financial reforms compared to industries that are financially more self-reliant. Secondly, it is well-established in finance

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literature that leverage ratios exhibit industry commonalities and ,therefore, are industry-specific (Bradley, Jarrell, & Kim, 1984 ; Rajan & Zingales, 1998). Apparently, this is because firms in a given industry operate under the same institutional framework (regulatory as well as financial) and are exposed to the same business risks. Lastly, the scope and degree of regulation was not uniform across industries in the pre-reform period. Some industries were given easy access to institutional debt (the priority sector), while others were denied the same degree of access (the non-priority sector). Such inconsistency in the scope of regulation in the pre-reforms period also influenced the manner in which financial reforms affected the corporate financing decisions of industries. Thus, all such differences across industries with respect to institutional framework, business risk, technological factors, and scope of pre-reforms regulations triggered industry-specific reactions to financial reforms. Logically, the responses of firms in a given industry would be similar, but would vary across industries.

Objectives and Hypotheses

As discussed in the previous section, the impact of financial reforms on different industries would be different for three reasons :

(1) They are different in their operations, that is, technical differences,

(2) They are exposed to different levels of business risks, and

(3) They were governed differently in the pre - reforms period.

Based on these observations, we have our first hypothesis, which is as follows :

➔ **$H0_1$: The change in the leverage ratio due to financial reforms is the same across industries.**

As aforementioned, the Indian economy witnessed stock market reforms and banking reforms in the same time frame. Major stock market reforms included: **(a)** substantial degree of transparency through higher disclosure norms, and **(b)** opening up of stock markets for foreign institutional investors. These measures made the equity markets an effective alternative source of financing for firms, which chose to reduce their debt levels with the advent of financial reforms (Khanna, 1999 ; Varma, 1998), and also, the stock markets deepened because of integration (Singh & Malik, 2007). However, given the substantial amount of information asymmetry and institutional deficiencies (absence of credit rating agencies, poor legal system, and high cost of transactions, etc.) generally persisting in stock markets, Singh (1997) was critical of the role of stock markets in developing countries and argued that stock markets will not become a real alternative for firms in a developing country to finance their investments. Consequently, financial reforms are not likely to have a significant impact on the equity ratio. If our findings are consistent with that of Singh (1997), the next question should logically then concern how these industries would finance their new investments. We argue that such industries would finance their new investments through internally generated cash flows if either debt or equity capital is not forthcoming. Thus, one should observe a positive impact of financial reforms on the internal capital proportion of these industries. The changes in the equity and the internal capital ratios should vary between industries, since each of these industries were subject to different regulations in the pre-reforms period, as mentioned in the previous section. Based on these arguments, the next two hypotheses follow thus:

➔ **$H0_2$: The impact of financial reforms on the equity ratio of industries is the same across industries.**

➔ **$H0_3$: The impact of financial reforms on the internal capital ratio of industries is the same across industries.**

The next issue that this paper addresses is the reason for change in the capital structure of industries following the reforms. In other words, this study explores the exact mechanism that caused the industries to react to these macro reforms. There are two possibilities: The regulation channel and the interest rate channel.

➔ **Regulation Hypothesis:** Regulation of a financial system comprises of a complex web of government-sponsored debt schemes. Abolition of this complex web of government schemes would cause firms to change their debt policy, thus resulting in capital structure changes.

➔ **Interest Rate Hypothesis:** On the other hand, interest rates are the major transmission channels of macro reforms. Interest rates are expected to behave differently in the post-reforms period because of two main reasons: Decontrolling of interest rates and increased competition. We assume that such macro reforms make interest rate discovery more efficient, thereby causing interest rates to behave differently. Since industries base their capital structure decisions on the cost of debt, a modification in the mechanism of determining the cost of debt should definitely cause changes in capital structure at the industry level.

The evaluation of the impact of financial reforms on the cost of debt of industries helps to decide on the likely causes for changes in the capital structure. Changes in the cost of debt and in the leverage ratio together would yield information whether to accept the interest rate hypothesis or not. If abolition of government-sponsored schemes is the main reason for changes in the leverage ratios, then we should not find a pattern where decreasing cost of debt is accompanied by increasing leverage ratios or vice versa. Thus, the second objective of this study is to determine how financial reforms impact the cost of debt for different industries and whether this change in cost of debt owing to reforms is uniform across industries. To examine this objective, we have the following hypothesis:

➔ **$H0_4$: The change in the cost of debt due to financial reforms is the same across industries.**

Methodology

➲ **Model Specification:** In India, financial reforms, tax reforms, and industrial reforms were initiated simultaneously. The main objective of tax reforms was to rationalize the tax system in order to ease the tax burden of industries and individuals. Industrial reforms were mainly aimed at deregulating the entry procedure so that firms could enter the industries. Thus, our identification strategy should extract the marginal impact of financial reforms on different industries after controlling for changes in taxation policy and industry-specific policies during the study period. By introducing suitable variables to proxy for changes in tax policy and industrial policy in the model, we control the effect of these changes.

Since changes in the industrial policy were aimed at making industries more competitive by easing entry barriers, this study uses industry concentration to represent this policy. The intuition is that as the number of firms entering an industry increase, the industry concentration (the market share of sales of the top 10 firms in a given industry) declines. We measure tax changes through actual tax paid by the industries (corporation tax as a percentage of PBT). This measure has an advantage in measuring differential tax treatment given to different industries. For example, some industries such as those in Information Technology (IT) were exempted from corporation tax and were instead subject to minimum alternative tax (MAT). To control the yearly changes in the macro-level factors like inflation, growth rate, savings rate, we introduced the dummy variables for each year.

Following prior literature, we have the following regression model as the base model for estimation:

$$LEV_{jt} = \alpha_t + \beta X_{jt} + \beta_1 Ind\_Tax + \beta_2 Ind\_Con + \gamma_j (DFRI_t * \text{Industry dummy}_j) + \varepsilon_{jt} \quad (1)$$

where,

LEV_{jt} is the dependent variable, that is, the leverage of the j^{th} industry (j = 1,2,3…..23) at time t (t =1990, 1991, 1992…….. 2005), α_t is the intercept coefficient for the t^{th} year, X_{jt} is a vector of firm level control variables (aggregated at the industry level). Following Rajan and Zingales (1995), we identified four firm level control variables, that is, industry size (average size of firms in an industry), tangibility of assets, performance, and growth opportunities. $DFRI_t$ is the domestic financial reforms index for India at time t taken from the database on

financial reforms. The interaction term, the product of DFRI term, and the industry dummy (which is equal to 1 for the j^{th} industry and 0 otherwise) is the main variable of interest as it provides us the slope coefficient for different industries. As noted, this is the base model which is appropriately modified hereafter to examine the other hypotheses. We use pooled regression OLS estimation procedure to estimate the parameters of model (1) and the standard errors were adjusted for heteroscedasticity using White's correction procedure.

Variables

➔ **Financial Reforms:** We used the index of domestic financial reforms developed by Abiad, Detragiache, and Tressel (2010) to measure financial reforms that happened in India. More specifically, the Abiad et al. (2010) index covers seven sub-systems of a financial system: Interest rate controls, credit control and reserve requirement, bank entry barriers, bank supervision, external finance control, bank privatization, and securities markets. Policy reforms in each of these sub-systems were measured using a scale that ranges from 0 to 3. For coding purposes, they divided each sub-system into different components. For instance, the credit control sub-system is divided into three components, that is, the presence of directed lending and credit ceiling, the existence of subsidized lending schemes and lastly, the extent of reserve requirements. Finally, the individual scores of the seven sub-systems are summed up to arrive at the final reforms score, which is then normalized to have a value between 0 and 1 (for a detailed description of the index, please refer to Abiad et al., 2010).

Leverage and Other Firm Specific Variables

➔ **Leverage:** Though finance literature supports the usage of market-based measures of leverage, data limitations (our sample of industries includes both listed as well as unlisted firms) dictated us to use book-value based measures of leverage. We adopted three measures of book leverage : **(a)** total leverage, defined as the ratio of total book debt (long term borrowings[1] plus current liabilities[2]) to total assets, **(b)** long-term debt, which is the ratio of total borrowings to total assets and lastly, **(c)** short-term leverage, computed as the ratio of current liabilities to total assets.

➔ **Equity Ratio and Internal Capital Ratio:** Equity ratio is defined as the ratio of total equity capital (paid-up plus preference plus equity premium reserves) to total assets, while the internal capital ratio is defined as the ratio of total reserves (excluding equity premium reserves) to total assets.

➔ **Cost of Debt :** Following Cho (1988), Ağca, De Nicoló, and Detragiache (2007), Bertrand, Schoar, and Thesmar (2007), this study uses total interest payments as a fraction of total debt as a measure of the cost of debt.

➔ **Tax Rate[3]:** It is defined as the ratio of total tax paid to profit before tax (PBT).

➔ **Industry Concentration:** This variable is measured using the market share (sales) of the top 10 firms in each industry.

➔ **Industry Size :** It is defined as the log of average firm size in a given industry, where the average firm size is computed by dividing aggregated industry sales by the number of firms in that industry. We adopted the average firm size in a given industry to proxy size because aggregated sales value of an industry is a function of the number of firms in that industry.

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[1] It covers term borrowings with more than 1 year to maturity.
[2] It covers short-term borrowings with less than 1 year to maturity.
[3] For industries which are making losses, the tax rate is taken as 0 %.

Table 1. Trends in Debt Ratio and Cost of Debt Over the Years for Indian Firms

Year	Obs	Total_Leverage		Equity_Ratio		Internal_Capital		Cost of debt	
		Mean	Diff	Mean	Diff	Mean	Diff	Mean	Diff
1989	22	0.692		0.167		0.095		0.073	
1990	22	0.699	0.007**	0.165	-0.002**	0.093	-0.002**	0.072	-0.001**
1991	23	0.701	0.002	0.154	-0.011**	0.108	0.015**	0.069	-0.003**
1992	23	0.694	-0.007**	0.137	-0.017**	0.125	0.017**	0.075	0.006**
1993	23	0.695	0.001	0.164	0.027**	0.098	-0.027**	0.074	-0.001**
1994	23	0.649	-0.046**	0.192	0.028**	0.111	0.013**	0.069	-0.005**
1995	23	0.607	-0.042**	0.207	0.015**	0.139	0.028**	0.068	-0.001**
1996	23	0.6	-0.007**	0.207	0	0.146	0.007**	0.07	0.002**
1997	23	0.607	0.007**	0.206	-0.001	0.137	-0.009**	0.076	0.006**
1998	23	0.62	0.013**	0.195	-0.011**	0.132	-0.005**	0.071	-0.005**
1999	23	0.63	0.01**	0.204	0.009**	0.115	-0.017**	0.07	-0.001
2000	23	0.619	-0.011**	0.209	0.005**	0.122	0.007**	0.071	0.001
2001	23	0.607	-0.012**	0.194	-0.015**	0.141	0.019**	0.068	-0.003**
2002	23	0.609	0.002**	0.196	0.002**	0.11	-0.031**	0.065	-0.003**
2003	23	0.605	-0.004**	0.193	-0.003**	0.1	-0.01**	0.057	-0.008**
2004	23	0.598	-0.007**	0.181	-0.012**	0.113	0.013**	0.047	-0.01**
2005	23	0.583	-0.015**	0.178	-0.003**	0.133	0.02**	0.04	-0.007**

Total leverage is total debts (total borrowings + current liabilities) upon total assets, Equity ratio is defined as the ratio of equity capital to total assets, internal capital ratio is the ratio of total reserves to total assets, cost of debt is total interest payments upon total debt.

**: significant at 1%, *: Significant at 5%

➔ **Tangibility :** This variable is represented by the ratio of industry aggregated net fixed assets to industry aggregated total assets.

➔ **Growth Opportunities:** The growth rate for each industry is the annual growth rate of the industry's aggregated total assets.

➔ **Performance***:* Return on assets (ROA), calculated as profit before interest and taxes (PBIT) upon total assets, was used to measure performance.

Data

Industry-level data for the period from 1989-2005 was obtained from the Prowess database, which is maintained by the Center for Monitoring Indian Economy (CMIE), a national level think tank on economic affairs. The end date for our analysis is dictated by the reforms index, which is available till 2005. Industry aggregated values (annual) from the Prowess database were derived by aggregating the annual firm-level data, and thus, our ratios represent weighted averages (weighted by total assets). In total, we have an unbalanced panel with 386 industry-year observations for 23 industries.

➔ **Descriptive Statistics :** The Table 1 presents the year-wise trends in the total leverage ratio, equity ratio, internal capital ratio, and the cost of debt for all industries together. Furthermore, we tested the annual changes in these ratios using paired *t*-statistics (presented in the Diff column). Interesting trends emerged. For the 1989 -1993 period, the total leverage ratio was almost stable at about 70% and then declined steadily to 58.3% by the end of

Table 2. Industry Wise Changes in the Leverage Ratio, Equity Ratio, Internal Capital Ratio, and Cost of Debt Between Pre and Post Reforms Period

Industries	Total leverage	Equity Ratio	Internal capital	Cost of debt
Air Transport	-0.072	0.052*	-0.133**	-0.041**
Automobiles	-0.168**	0.073**	0.024	-0.032**
Cement	-0.02	0.085**	-0.132**	-0.016
Chemicals	-0.115**	0.038**	-0.001	-0.02*
Communication services	-0.311**	0.107**	0.153**	-0.006
Domestic appliances	-0.109**	0.083**	-0.028*	-0.013
Electrical machinery	-0.002	0.154**	-0.205**	-0.011
Electricity generation	-0.105**	0.022	0.033	0.005
Ferrous metals	0.055	-0.044	-0.088	0.003
Food & agro products	-0.019*	0.073**	-0.057**	-0.017*
Gems & jewellery	-0.043	-0.046*	0.087*	-0.036
Hotels & tourism	-0.132**	0.062**	0.014	-0.025**
Industrial & infra Constn	-0.144**	0.08**	0.022	-0.017**
Information technology	-0.449**	0.176**	0.243**	-0.053**
Leather products	-0.112**	0.107**	-0.027	-0.039**
Mining	-0.308**	-0.274**	0.349**	-0.047**
Non-electrical machinery	-0.156**	0.051**	0.034	-0.009
Non-ferrous metals	-0.162**	-0.157**	0.232**	-0.015
Paper products	-0.1*	0.047	-0.014	-0.02**
Real estate	0.042	-0.012	-0.031	-0.012
Road transport	0.267**	-0.064	-0.179**	-0.015
Shipping transport	-0.24**	0.07**	0.132*	-0.004
Textiles	0.132	0.102**	-0.29**	-0.015*
All India	-0.10**	0.032**	0.009	-0.016**

Total Leverage is defined as the ratio of total debt (long term debt + short term debt) to total assets, equity ratio is the ratio of total equity capital (paid up plus preference plus equity premium) to total assets, internal capital is the ratio of total reserves (excluding equity premium reserves) to total assets, and the cost of debt is the ratio of total interest expenses to total debt. We considered the period from 1989 to 1992 as the pre-reforms period as reforms in the systematic sense began in 1992. The time period from 2002-05 is considered as the post reforms period. We have used the independent *t*-test to examine the significance of the differences.

**:Significant at 1%, *: Significant at 5%

2005. The paired *t*-test results show that except for two annual changes [4] (1991 and 1993), all yearly changes in the total leverage ratio are significant with 9 negative signs and 5 positive signs. The fifth column contains the trend in equity ratio. Many ups and downs in the movement of equity ratio were observed over the years and these jumps tend to closely follow the contemporaneous economic situation of the country. The decline in the equity ratio was observed for the period from 1989 to 1992 (from 16.7% in 1989 to 13.7% in 1992), which corresponds to a rough economic situation in the country. The sudden increase in the equity ratio between 1993 and 1995 corresponds to stock market reforms that began in 1992. This growth in equity ratio slowed down in the subsequent years to reach 17.8% by the end of 2005. All yearly changes in the equity ratio, except those in 1996 and 1997, are significant with 8 negative signs and 6 positive signs. The seventh column presents the trend in the internal capital ratio over the years. There appears to be wide variation in the internal capital ratio as well over the years. The average internal

[4] For the year 1989, we could not conduct paired *t*-test as there was no previous reference point. The test for 1991 was done using 22 industries.

Table 3. Industry Wise Changes in Financing Ratios due to Financial Reforms

Variables	Total_Lev	LT_Lev	ST_Lev	ER	ICR	COD
Intercept	0.624**	-0.224**	0.468**	0.306**	-0.025	0.115**
Size	-0.001	0.059**	-0.012[a]	-0.025*	0.036**	-0.008**
ROA	-0.361[a]	-0.392**	-0.25*	-0.55**	0.884**	0.141**
Tangibility	-0.116*	0.328**	-0.3**	0.11*	0.095*	0.028*
Growth	-0.014*	-0.005	-0.001*	0.005	0.011	-0.002
Ind_Con	0.219**	0.149**	-0.038	0.044	-0.307**	-0.005
Tax_Rate	0.001*	0.001[a]	0.001*	-0.001*	-0.001	-0.001
DFRI	-0.033	-0.541**	0.329**	-0.169[a]	-0.067	-0.077**
Automobiles	-0.178**	-0.371**	0.065[a]	0.148**	-0.112[a]	-0.045**
Cement	0.008	-0.144**	-0.042	0.079	-0.25**	-0.006
Chemicals	-0.258**	-0.383**	-0.001	0.083	0.028	-0.055**
Communication services	-0.511**	-0.578**	0.037	0.117	0.174*	-0.043**
Domestic appliances	-0.257**	-0.373**	0.019	0.142*	0.008	-0.015
Electrical machinery	-0.06	-0.176**	-0.029	0.187**	-0.239**	-0.02*
Electricity generation	-0.371**	-0.359**	-0.103*	0.199**	0.012	-0.012
Ferrous metals	0.106	-0.028	-0.038	0.153**	-0.419**	-0.045**
Food & agro products	-0.112	-0.235**	-0.084*	0.092[a]	-0.128[a]	-0.04**
Gems & jewellery	-0.331**	-0.483**	-0.194**	0.114[a]	0.229**	-0.023[a]
Hotels & tourism	-0.402**	-0.108*	-0.121**	0.076[a]	0.209**	-0.079**
Industrial & infra Constn	-0.099[a]	-0.306**	0.189**	0.072	-0.089	-0.081**
Information technology	-0.719**	-0.286**	-0.21**	0.486**	0.136**	-0.085**
Leather products	-0.18**	-0.437**	0.11**	0.046	0.086	-0.063**
Mining	-0.665**	-0.604**	-0.015	0.133*	0.186**	-0.091**
Non-electrical machinery	-0.196**	-0.313**	0.106**	0.051	-0.069	-0.068**
Non-ferrous metals	-0.608**	-0.449**	-0.137**	0.175**	0.307**	-0.058**
Paper products	-0.077	-0.114**	-0.085*	0.187**	-0.248**	-0.051**
Real estate	0.098[a]	0.103**	0.174**	-0.038	-0.057	-0.078**
Road transport	0.57*	0.348*	0.146**	-0.014	-0.733**	-0.037**
Shipping transport	-0.295*	-0.14*	-0.072*	0.017	0.154**	-0.071**
Textiles	0.363*	0.181*	-0.171**	0.11*	-0.616**	-0.031**
R-Square	0.8	0.87	0.79	0.6	0.78	0.7
Prob F	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Year effect	yes	Yes	yes	yes	yes	yes
Number of observations	366	366	366	366	366	366

Variables: Total leverage is total debts (total borrowings + current liabilities) upon total assets, LT_Lev is defined as the ratio of total borrowings to total assets, ST_Lev is defined as the ratio of current liabilities to total assets. Equity ratio is defined as the ratio of equity capital to total assets, internal capital ratio is the ratio of total reserves to total assets, cost of debt is the total interest payments upon total debt. Industry terms are the interaction variables involving DFRI and Industry dummies (which take value 1 for the observations of a particular industry and 0 otherwise) and DFRI is the Domestic Financial Reforms Index for India given by Abiad et al. (2010). Size is the log of average sales of industries, ROA is the return on assets, which is the ratio of EBIT to total assets, Tangibility is net fixed assets upon total assets, growth is the annual growth rate in total assets, Ind_Con proxies entry reforms in each industry, and is computed as the market share of sales of top 10 firms in a given industry. Tax rate proxies the changes in tax rate and is computed as the total corporation tax paid relative to profit before tax. Year effect controls for yearly changes in the macro variables like inflation, growth rate….etc. We have used the pooled regression estimation procedure to estimate the parameters of the models with white's correction for robust standard errors. The coefficients for all India are estimated in a separate regression.

**, significant at 1%. *, significant at 5%. [a] : significant at 10%.

capital ratio was about 9.9% for the period from 1989-1991 and 11.5% during 2003-2005, marking an increase of about 1.6% between both the periods. All yearly changes in the internal capital ratio are significant with 9 positive signs and 7 negative signs.

This preliminary analysis indicates that the leverage ratio of the Indian industries had been declining over the years (a decline by almost 11%), and this decline seems to have been partially offset by an increasing equity ratio (by about 1.1%) and by an increasing internal capital ratio (by about 3.8%)[5]. Lastly, the trend in the cost of debt for Indian industries is presented in the last column. As evident, the average cost of debt was about 7.1% for the period from 1989 to 1991, and thereafter, it decreased to 4.8% for the period from 2003-2005, with a substantial amount of variation in-between.

The Table 2 presents the comparison statistics for pre- and post-reforms values of total leverage ratio, equity ratio, internal capital ratio, and cost of debt for the 23 industries included in our study. We tested the significance of difference in values of the pre- and post-reforms periods by using the *t* - statistics. The important observations are:

(1) The differences in the pre- and post-leverage ratios of each of the 16 industries are significant (15 are negative and one is positive).

(2) The difference between pre- and post-equity ratio is significant for 18 industries (three negative while the remaining are positive).

(3) For 13 industries, the changes in the internal capital ratio are significant (seven negative and six positive).

(4) The cost of debt is significantly lower in the post-reforms period as compared to the pre-reforms period for 11 industries. Interestingly, the cost of debt has not increased in the post-reforms period for even a single industry.

The Table 2 shows the differences in the changes in leverage, equity, internal capital, and the cost of debt of different industries in the the pre- and post-reforms period. In the later sections, we econometrically establish a cause and effect relationship between financial reforms and the observed changes in these variables.

Results and Discussion

To analyze the impact of financial reforms, we regressed each of the dependent variables (leverage ratio, equity ratio, internal capital ratio, and cost of debt) on industry interaction dummies (product of DFRI and industry dummies) along with industry and firm level control variables. Yearly changes in macro-economic factors are controlled by year dummies. We used three measures of leverage, which corresponded to different sources of debt financing for industries. For example, a major portion of the long term leverage consisted of debt from institutional sources, whereas the major part of the short term debt consisted of trade credits. This classification is necessary because financial reforms are expected to act directly on the institutional sources of debt. Consequently, the impact will be more robust for the long term leverage ratio. However, the change in the accessibility for institutional debt may impact the short term leverage as well. This is because firms can shift from trade credit financing to an institutional source of financing in the light of increased access to debt institutions because of financial reforms. The results of the econometric analysis of the leverage ratio are presented in the Table 3.

The variable size is not significant for total leverage, is positive and significant for long term leverage, and is negative and significant for short term leverage. The performance variable, ROA, is negative and significant in all the three models. Tangibility is negative and significant for total and short term leverage, while the same is positive and significant for the long term leverage. Growth is negative and significant for total and short term leverage, while it is not significant for the long term leverage. The variable, industry concentration, positively affects the total leverage ratio of industries, and this effect has been observed to be from the long term portion of debt. This positive association between industry concentration and the leverage ratio was expected since firms with a higher

[5] The sum of the three does not add up to 100% because we left out some of the liability entries such as deposits accepted from the public, minority interest reserves, and so forth.

market share will have less probability of bankruptcy. The tax rate variable is positive and significant in all the three models, which is as per the prediction of the static trade-off theory.

Both the significance of the impact and the direction of the impact assume importance if we have to compare the differential impact of financial reforms. We found a significant impact of financial reforms on the total leverage ratio of 17 industries (second column of Table 3) and an insignificant impact on six [6] industries. Coming to the direction of change, we noticed that for three industries (textiles, real estate, and road transport), the impact was positive and significant, while for the other 14 industries, the impact was negative and significant. As we discussed earlier, the changes in the long term leverage ratio are more important than the changes in the total leverage ratio, as the major portion of the long term debt is from institutional sources, and financial reforms are expected to affect these institutions. In column three of Table 3, the results for the long term leverage ratio are presented. The financial reforms had a significant impact on the long term leverage ratio of 22 industries and had no significant impact on one industry[7]. Out of these 22 industries, the impact was positive for three industries (road transport, textiles, and real estate), and for the remaining 19 industries, the impact was negative.

The fourth column of Table 3 shows the results of the short term leverage analysis. The impact was significant for 16 industries. Out of these 16, seven industries experienced a positive impact and the rest experienced a negative impact. A major portion of the short term debt consisted of trade credits, which are outside the ambit of institutional source of debt, yet there was an impact of financial reforms on this informal source of debt. We conjecture that this is because of a need to reduce the overall debt as higher levels of debt increases the bankruptcy risk in a liberalized economy. Hence, firms responded to this new order by decreasing both long term as well as short term debt in their balance sheets. Important observations from the leverage analysis are as follows :

(1) For aviation, automobiles, industrial and infrastructure construction, leather, and non-electrical machinery industries, the long term leverage declined while short term leverage increased due to financial reforms. Decline in the long term debt was compensated by increase in short term leverage.

(2) For cement, chemicals, communication, domestic appliances, electrical machinery, and mining industries, only long term leverage declined in response to financial reforms.

(3) For electricity generation, food and agro, gems and jewelry, hotels and tourism, information technology, non-ferrous metals, paper products, and shipping industries, both long term as well as short term leverage declined due to reforms.

(4) For real estate and road transport industries, both short term and long term debt increased due to reforms, while for the textile industry, long term debt increased with decreasing short term debt.

These results show that the impact was different across the examined 23 industries.

We now proceed to examine what replaced the debt component. As discussed earlier, there are two possibilities. One is external equity, and the other is internal equity. The results are presented in column fifth and sixth of the Table 3. We observed that financial reforms had a significant impact on the equity ratio of 14 industries and had no impact on the remaining nine industries. Out of these 14, 13 industries have positive coefficients and one has a negative coefficient. The broader message is that, for about 57% of the industries[8], the impact of financial reforms on their equity ratio was positive, and for the other 43%, the impact was either negative or not significant. These results provide a partial support to the argument that the reforms in the stock markets provided a new avenue for industries to raise funds to meet their financing needs. The support is partial because if we ignore four industries

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[6] They are aviation (DFRI term), cement, electrical machinery, ferrous metals, food and agro, and paper products.

[7] Ferrous metals.

[8] Which includes four industries, for which the coefficients are weakly significant at the 10% level.

for which the coefficients are weakly significant at the 10% level, then the support comes down to 43%. Thus, only for about 43% of the industries, the impact was strongly positive. Also, we are not sure whether the increase in the equity ratio, observed for four industries (mentioned in point 5 below), is real because of freshly issued equity capital or because of firms capitalizing their profits through the issuance of bonus shares.

Having observed changes in the leverage and the equity ratios, we now examine the impact of financial reforms on the internal capital of the industries. Results are presented in the sixth column of the Table 3. It shows that financial reforms had a significant impact on the internal capital ratio of 15 industries. Of these 15, eight are positive and the rest are negative. If we analyze the results in the second, third, and fourth columns together, then the differential impact become clearer. The salient observations from equity ratio and internal capital ratio analysis are:

(1) For gems and jewellery, hotels and tourism, information technology, mining and non-ferrous metals, the decline in debt was compensated in parts by increase in equity and internal capital ratio.

(2) For domestic appliances and electrical generation industries, the decline in leverage was offset by increase in equity ratio only.

(3) For communications and shipping industries, the decline in leverage was compensated by increasing internal capital ratio only.

(4) For the automobile industry, both leverage and internal capital ratios declined, while the equity ratio increased.

(5) For electrical machinery, ferrous metals, food and agro, and paper products, we found no change in the leverage ratio, but found an increase in the equity ratio along with a decrease in the internal capital ratio. For this set of industries, a possibility of substitution of internal profits to equity can happen through the issue of bonus shares.

Lastly, we evaluated one of the many possible channels through which financial reforms could affect the leverage ratios of industries. We hypothesized that interest rate is the main channel through which the effect of macro reforms is transferred to the industry level, that is, financial reforms will affect the cost of debt, which in turn, will affect the leverage policy of industries. Theoretically, the relationship between the cost of debt and the leverage ratio should be inverse, that is, a high cost of debt results in low debt levels and a low cost of debt results in high debt levels. The results of this analysis are presented in the seventh column of the Table 3.

We observed a significant impact of financial reforms on the cost of debt of 20 industries. To explain changes in the leverage ratios, the direction of change of the cost of debt is more important than the change in itself. We found that for all the 20 industries, the change was negative. If we analyze the results of the leverage analysis (second column) along with the results of the cost of debt analysis (seventh column) of the Table 3, clear patterns of changes emerge. For most of the industries, the leverage ratios were declining even when their cost of debt was decreasing. This is inconsistent with the theoretically predicted association.

In general, both leverage ratios as well as the cost of debt for industries declined in response to financial reforms. This helps us to conclude that interest rate was not the channel through which the leverage ratios of the industries were affected. This is because the decreasing trend in the cost of debt should have increased the overall leverage ratio of the industries, but our results show the opposite trend. Thus, our overall conclusion, based on the evidences presented in the Table 3, is that interest rates are a less plausible reason for the observed decline in the leverage ratios for most of the industries. Thus, the regulation hypothesis explains the observed decrease in the leverage ratio of many industries in India.

Conclusion

In this study, we have evaluated the impact of financial reforms on the corporate financing decisions (i.e. leverage ratio, equity ratio, and internal capital ratio) of 23 Indian industries. The main conclusion is that the impact of

financial reforms was not uniform across industries. For a majority of the industries, there was a significant decrease in the leverage ratio. For some of these industries, this decline was compensated by a corresponding increase in the equity ratio, while for some others, it was compensated by an increase in the internal capital ratio. Our results show a mixed response to the question : Do developing equity markets provide a new alternative for industries to fund their new projects? Lastly, our results show that the changes in the cost of debt failed to explain the observed changes in the leverage ratios as many industries experienced a decreasing leverage ratio even when their cost of debt was decreasing. This helps us to conclude that the abolition of the pre-reform debt schemes is possibly the main reason behind the observed changes in the leverage ratios of the examined industries.

Research Implications

Our research provides useful insights for policy makers. It specifically answers questions like : Have the objectives of financial reforms with respect to industry behavior been met? What are the consequences in the expected direction? What are the unintended consequences of financial reforms on corporate firms? Why different industries react differently to financial reforms? What are the channels through which financial reforms affect the corporate firms? These answers would serve as policy guidance for future policy initiatives.

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References

Abiad, A., Detragiache, E., & Tressel, T. (2010). A new database of financial reforms. *IMF Staff Papers, 57* (2), 281-302. doi: http://dx.doi.org/10.1057/imfsp.2009.23

Ağca, S., De Nicoló, G., & Detragiache, E. (2007). Financial reforms, financial openness, and corporate borrowing: International evidence. *IMF Working Papers, 07(186)*. Retrieved from http://www.imf.org/external/pubs/ft/wp/2007/wp07186.pdf

Bertrand, M., Schoar, A., & Thesmar, D. (2007). Banking deregulation and industry structure: Evidence from the French banking reforms of 1985. *The Journal of Finance, 62* (2), 597-628. doi: 10.1111/j.1540-6261.2007.01218.x

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *The Journal of Finance, 56* (1), 87-130. doi: 10.1111/0022-1082.00320

Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. *The Journal of Finance, 39* (3), 857-878. doi: 10.1111/j.1540-6261.1984.tb03680.x

Cho, Y. J. (1988). The effect of financial liberalization on the efficiency of credit allocation: Some evidence from Korea. *Journal of Development Economics, 29* (1), 101-110. doi: http://dx.doi.org/10.1016/0304-3878(88)90074-0

Khanna, S. (1999). Financial reforms and industrial sector in India. *Economic and Political Weekly, 34* (45), 3231-3241. doi: 10.2307/4408603

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance, 50* (5), 1421-1460. doi: 10.2307/2329322

Rajan, R. G., & Zingales, L. (1998). Financial dependence and growth. *The American Economic Review, 88* (3), 559-586. doi: 10.2307/116849

Singh, A. (1997). Financial liberalisation, stockmarkets and economic development. *The Economic Journal, 107* (442), 771-782. doi: 10.2307/2957801

Singh, D., & Malik, G.K. (2007). Securitization: The concept and its relevance to Indian banks. *Indian Journal of Finance, 1* (2), 13-20.

Varma, J. R. (1998). Indian financial sector reforms: A corporate perspective. *Vikalpa, 23* (1), 27-38.