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# Affect of Financial Liberalization on Capital Structure Dynamics: A Study of Post Liberalization Period in India

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#### ABSTRACT

This paper attempts to provide a comparative analysis on the capital structure choice of firms during post financial liberalization period in India. The study uses data of 41 Indian listed firms excluding financial services firms on Nifty indiceson National Stock Exchange over a time frame of fourteen years. Financial services firms have been excluded from purview of this paper, as they are in the business of collecting money and investing in financial assets rather than producing goods, hence follow a unique business valuation model. The dependent variables taken for leverage are Equity to total Assets and Long term debt to Total assets. The capital structure dynamics are studied across various dimensions *viz*. profitability, tangibility, growth, age, size, ownership pattern etc. The data for 14years is analysed using descriptive statistics, correlation and stepwise regression analysis. As the paper discusses, different parameters for leverage so two different models have been constructed through stepwise regression for unique set of explanatory variables to analyse maximum number of significant factors that have an impact upon capital structure dynamics.

JEL classification: G12, G32

Keywords: Financial Liberalization, capital structure.

### **1. INTRODUCTION**

The economic liberalization took place in the developing countries in 1980's-1990 as a step ahead towards greater development of markets. It was also an answer to many specific financial factors such as costs, interest's rates control on deposit and lending, credit ceilings, subsidized credits, liquidity requirements among other widely used interventions. These factors resulted from financial repression in 1970's and

1980's. Financial liberalization consists of deregulation of foreign sector capital account, the domestic financial sector including the stock market. McKinnon (1973) argues that financial liberalization provides an incentive for domestic investors to accumulate more equity capital, thus lowering the costs of borrowing.

In 1980's, India faced severe foreign exchange crisis due to abnormal hike in petroleum prices which was stressed out by flight in NRI's deposits. So it had to take several measures of economic reforms for internal and external liberalization. Era of 1990's marked a new beginning with financial liberalization and development of markets varying in degrees across sectors. Until 1992, India has faced several problems with regard to access to corporate funding. The equity markets were governed by Controller of Capital Issues (CCI), an organization under department of company affairs which impose stringent regulations and rules with regard to equity fund raising. On the debt front, long term funding was under the purview of Development Financial Institutions (DFI), monopolizing the debt funding. Financial liberalization was part of major reliance on the private sector after the 1991 foreign exchange crisis. It was in May 1992, CCI was abolished and the access to the equity markets became less stringent. With regard to stock markets, liquidity and informational asymmetry was improved. Parallel in debt segment, interest rates were deregulated, bank regulations and supervision were strengthened and nonbank financial corporation's (NBFCs) were allowed under easier regulations (Hanson 2003a, World Bank report). The privatisation of banks started with government reducing its stake in financial institutions. But a serious threat also emerged to the public sector companies on account of governments' reluctance to fund losses, keenness to privatise them, and reduction in preferential treatment to them in government purchases etc.

According to Modigliani & Miller approach (1958), the capital structure of a firm does not affect its value. Moreover, the assumption of perfect markets leads to firm specific impediments that limit a firm from achieving a desired target leverage level. Such impediments are high transaction costs, taxes, floatation costs. With regard to financial liberalization a firm in a non liberalised economy is limited to fewer financing options, higher transaction costs to a firm operating in a liberalised economy.

The trade off theory illustrates about the trade off between the proportion of debt and equity in a firms capital structure. This trade off is required between the tax deduction on interest of debt and costs of financial distress. The pecking order theory is based on the assertion that managers are more informed about their firms than the investors. It illustrates a inverse relationship between profitability and debt ratio within the industry.

According to Harris and Raviv (1991) suggests that leverage increases with fixed assets, Non debt tax shields, growth prospects, size and decreases with volatility, advertising expenditure, research and development, profitability.

In 1980's firm's took extra leverage due to the market pressure for corporate control. In the beginning of 1990's small size firms used publicly traded equity financing. So, it is apparently essential to study these changes in financing patterns over time. It is argued that different capital structure theories apply to firms under different circumstances.<sup>1</sup>

All these radical changes affected the firm's performance and its determinants. These determinants are immensely important for all the stakeholders especially to equity shareholders. So the new environment provides a new platform for testing the existing theories of capital structure holds or not.

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<sup>1</sup> There is no universal theory of capital structure and no reason to expect one. There are useful conditional theories, however .... Each factor could be dominant for some firms or in some circumstances , yet unimportant elsewhere (Myers, 2003)

There is limited work on financing structure during post liberalization period. Therefore, incorporating the notion of financial liberalization into the capital structure of a firm provides a good framework for empirical research.

Section II of the study consists of research design including thechoice of variables. Section III defines the research objectives. Section IV consists of research methodology. Section V consists of literature review. Section VI contains analysis and findings .Finally, section VII contains the conclusions with a summary of results and limitations of the study.

### 2. RESEARCH DESIGN

This section defines the research design and choice of various dependent and explanatory variables for the study with their rationale. The capital structure for firms post financial liberalization changed magnificently. The capital structure of a firm comprises of debt (long term debt) and equity. The dynamics of capital structure are explained in terms of book value and market value. The shareholders wealth is measured in terms of book value by book value of assets. For analysis of capital structure in the study various relative measures have been undertaken such as Long Term debt to Total assets andEquity to Total assets. The dependent variables have been transformed into natural logarithm to overcome *non-linearity problem* with the data.

### 2.1. Choice of explanatory variables

### 2.1. Size

Size of a firm as an explanatory variable is positively related to the firm's capital structure. Larger firms can negotiate loans on favourable terms, as they can get longer loan amount at lower interest rates. Drobetz and Wanzenreid (2006) on the contrary larger firms have easy access to equity than smaller costs. The larger firms have less information asymmetries. So size of the firm is negatively related to the leverage. Han-Suck Song (2005) also found a strong positive correlation between size and total leverage with natural logarithm of total sales as a proxy on a sample of Chinese firms.

*Measure used:* Natural logarithm of total sales.

# 2.2.2. Profitability

As per trade off theory, the profitable firm should take more debt in order to take advantage of interest tax shields. On the contrary pecking order theory states that the first preference for raising funds should be retained earnings followed by debt (secured and unsecured loan) and lastly equity. Myers and Mujluf (1984) find a negative relationship between profitability and leverage. These studies used EBDIT to Total Assets as a proxy to measure profitability of firms. Bauer (2004) used OLS to test the effect of profitability on leverage on Czech firms and concluded a negative relationship between profitability and leverage.

Measure used: EBDIT to Total assets.

# 2.2.3. Tangibility

According to pecking order theory, a firm prefers secured debt as compared to unsecured debt. Jensen and Meckling (1976) stated the possibility of risk shifting by managers to riskier ventures at the expense of bondholders. The agency costs of debt can be mitigated with a high collateral value. So tangibility is

positively related with leverage. The trade off theory also suggests that at the time of financial distress and bankruptcy, high collateral will increase the salvage value of assets. Han- Suck Sang (2005) measured a positive relationship between tangibility and leverage for Swedish firms. Harris and Raviv (1991) observed that NDTS and firms assets as proxies for tangibility.

Measure used: Gross fixed Assets to Total Assets.

# 2.2.4. Ownership

Previous studies suggest that ownership structure has a significant effect on the desire for control which in turn influences the capital structure of a firm. Agea, Mansi (2006) suggest that the firms with high promoters control are reluctant to debt financing. Berger et al (1997) suggest that managerial entrenchments lead to debt avoidance for U.S public corporations.

*Measure Used:* Percentage share of AnIndian promoter holding (IPH) and foreign promoter holding (FPH) in a firm.

# 2.2.5. Tax rate

According to trade off theory, an optimal level of debt in a firm is which maximises the tax shield and minimises the bankruptcy costs. So the level till which the benefits of debt are more than its costs, the firm should employ debt. MacKie- Masan (1990) suggest that new research work shows that the method is to study incremental financing decisions using discrete choice analysis.

Measure used: Ratio of PBT minus PAT to EBT

### 2.2.6. Non Debt tax Shield

The existence of non-debt tax shield such as depreciation, operating losses and investment tax credits carried forward in a firm's financial statements reduces the firm's tax bill above the effective tax rate. DeAngelo and Masulis (1980) have suggested that the tax advantages of debt are lower for those inherent with opportunities to avoid tax through other related non-debt tax shelters such as depreciation, investment tax credits and tax loss carry forwards. This negative relationship has been explained by trade off theory. Ozkan et al. (2001) and Ngugi (2008) confirms that non-debt tax shields are a substitute for debt. However, Bradley et al. (1984) suggests that non-debt tax shields have a positive impact on firm leverage.

Measure used: Ratio of depreciation to Gross fixed assets.

### 2.2.7. Net Exports

The firms which are export oriented are abided by the rules and regulations of EXIM. Puliani&Puliani (2000) suggests that these firms have an access to various credit facilities and benefits covered under the sections for exporting firms by The Income Tax Act, 1961.

Measure used: Ratio of Total exports minus Total imports to total sales.

### 2.2.8. Age

Many studies suggest that age of a firm has an effect on its capital structure. Bhaduri (2005) suggests that mature firms are less information asymmetric since the outsider to a firm has more data on their creditworthiness compared to young firms. So on the basis of literature, young, small and non business

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affiliate firms have more information asymmetrical problems. Therefore their cost of raising funds is higher to mature firms. However post liberalization this scenario should change due to government intervention for promoting priority sector. The cost of raising funds is relatively lower for the priority sector (small, young firms) for industrial development as retained earnings became important.

*Measure used:* Difference between year of incorporation and the year in which the firm exists in the sample.

# 2.2.9. Working Capital ratio

Solvency position of a business group is an expression of how much in liquid assets the firm currently has to build its business, fund its growth, and produce value. Long-term solvency position of a firm is usually given by its working capital ratio (WCR). If a firm can get money to move faster around the cycle or reduce the amount of money tied up in the business, it will generate more cash. The faster a firm (or the industry in which it is working in) expands the more cash it will need for working capital and investment (Martin et al., 1991). The positive relationship of WCR with leverage has been explained by trade off theory.

Measure used: Ratio of Current assets minus current liabilities to total sales.

# 2.2.10. Marketing Expenditure

Marketing expenses allow a firm to create entry barriers for its competitors by building intangible assets (say, brands) leading to higher profitability for the firm (Aaker, 1984). This negative relationship of marketing expense has been explained by trade off theory.

*Measure used:* Marketing expenses plus advertising expenses to total sales.

# 2.2.11. Research and Development Expenditure

Firms with high research and development expenditure results in more intangible assets and consequently have less debt. Moreover, as per pecking order theory research and development expenditure increase the financing deficit. So research and development expenditures are prone to adverse asset selection problem resulting in higher debt.

*Measure used:* Research development expenditure to total sales.

# 2.2.12. International Diversification

International Diversification involves producing/procuring the same products (or services) but developing a wider geographical reach. Many authors (Slocum, 1997; Rees, 1998) stated that international diversification offers several advantages like new market possibilities.

Measure used: Ratio of total exports plus total imports to total sales.

# 2.3. Research Objective

The objectives of the study are:

- 1. To identify the capital structure of firms in post liberalization period.
- 2. To investigate the determinants that affects the capital structure of a firm during post liberalization period.
- 3. To analyse the affect of financial liberalization on capital structure dynamics of firms.

#### **3. RESEARCH METHODOLOGY**

This paper aims to study the capital structure dynamics during post liberalization period for a time series data. The time period of fourteen years (2001/02 -2014/15) has been studied. Data of 41 firmsexcluding financial service firms listed on Nifty on NSE has been studied.Nifty is a composition of 50 well diversified firms representing 11 sectors hence accurately reflecting an overall market financial condition. Financial services firms have been excluded from the purview of this paper. A financial firm is an enterprise such as a bank whose primary business and function is to collect money from the public and invest it in financial assets and it does not deal with production of goods. Financial services sector being one of the most sensitive sectors with a unique business valuation model which is unlike goods manufacturing firms.

Initially, 15 explanatory variables such as age, size, volatility, profitability, tangibility, growth, foreign promoter ownership, Indian promoter ownership, WCR (working capital ratio), marketing expenses, research and development expenses, NDTS (non debt tax shield), tax rate, net exports, international diversification were taken together for the dependent variables. However, in the multicollinearity test high correlations was found among the explanatory variables so stepwise regression is used to estimate the best fit results. Theexplanatory variable growth and volatility has been dropped from estimation due to high correlation and insignificant t value. The dependent variables (DV) have been transformed into natural logarithm to overcome *non-linearity problem* with the data. The analysis is done by using descriptive analysis, correlation and stepwise regression technique.

### **4. DATA COLLECTION**

Data collected is secondary in nature. The data for firm's financial statements has been collected from publicly available database PROWESS (an electronic database developed and maintained by Centre for Monitoring Indian Economy). The data collected is tabulated, analysed and interpreted using SPSS 20 software.

#### **5. LITERATURE REVIEW**

Financial liberalization has extracted questions to be answered for affect on capital structure dynamics. Liberalization has moved along two axes, firstly relaxation in price and quantity restrictions and secondly eases of boundaries in financial actions.

Present literature discusses the impact of liberalization on internal and external factors. These factors can also be termed as firm level and economy level factors. At economy level King (1993) and Levine (1997) found a positive impact on growth prospects and opportunities.

Krishna Kumar (2002) found that the trends for foreign trade in terms of exports and imports were not encouraging and immediate so major steps are required to meet the challenges. ChimwemweChipeta (2012) concluded that the lifting of international sanctions and the opening of the Johannesburg stock exchange to foreign investment lowers the book and market value of the debt ratio for all firms. The effect is more prominent for larger firms. This is consistent with Myers and Majluf (1984) assertion that information asymmetries are lower for larger firms; hence, it is not surprising that large firms respond more to stock market liberalization. Chiranjib and Budhadeb (2012) suggested that productivity growth and efficiency level did not enhance as per expectation during the post-reform period and the distribution of efficiency is skewed.

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Rajan and Zingales (1998) found that industries in developed economies grow faster on external finance. As liberalization eases the allocation of capital and offers a higher marginal rate of return on capital. Bhaduri (2000) presented that structural adjustments within the financial segment, widening and deepening of capital markets have presented firms in developing countries an opportunity to optimally decide their choice of capital structure. Schmukler and Vesperoni (2001) argue that globalisation of the financial markets develops the financial system and improves transparency, market discipline and financial infrastructure. This creates new investment and financing opportunities for domestic firms. These evidences suggest that the choice of capital structure has been affected by financial liberalization. These studies segregate the capital structure dynamics on the basis of certain variables (size, age, profitability, NDTS, tangibility) Bhaduri (2000), Rajan and Zingales (2005), Han- Suck Sang (2005), that are designed to measure the financial constraints faced by firms. While many of these judgements seems to be conflicting and controversial. Xue Feng.et.al (2015) study found a significantly negative relationship between capital structure and firms performance in listed Swedish firms under the recent financial crisis. Frank and Goyal (2007) states that median industry leverage (+ effect on leverage), market-to-book ratio (-), tangibility (+), profits (-), log of assets (+), and expected inflation (+). Pandey (2001) suggested that debt ratios for Malaysian capital markets shows that profitability, size, growth, risk and tangibility variables have significant influence. This results is in line with fixed effects estimation.

The study by Kakani.et.al (2002) concluded that that size, marketing expenses, and international diversification had a positive relation with a firm's market valuation. On the other side firm attributes that reflect either operating parameters of firms or strategic choice of firm managers, they also found that a firm's ownership composition, and the leverage of the firm were important factors affecting its financial performance. Maghyereh and Aktham (2004) analysed that Jordanian firms have target leverage ratios and after the financial liberalization, their speed of adjustment to debt – equity ratio have unexpectedly decreased. Baker and Wurgler (2002) suggested that previous equity valuations show a vital and persistent negative relationship with leverage. They concluded that capital structure is the result of past hard work by managers to time the equity market.

Bevan and Danbolt (2000) found leverage to be significantly positively correlated with tangibility and ln sales (for book values of gearing), and considerably negatively correlated with the market-to-book ratio and the level of profitability.

### 6. ANALYSIS AND FINDINGS

The table below explains the descriptive statistics for all the dependent variables with their respective set of explanatory variables. The time period studied is from 2001-2015. To check multicollinearity, the variance inflating factor (VIF) is calculated for each variable. From the VIF column, it can be found that none of the variable has crossed the benchmark of 5-10. The benchmark set by Gujarati and Sangeetha (2007) for VIF is 5-10, if any variable has the VIF of 5-10 then a multicollinearity problem exist. But no multicollinearity problem found in the study. All the partial correlation values are lower or negative so it not a problem of multicollinearity here after employing stepwise regression technique.

The number of observations are 543 for a time series data. As indicated in table 1, Inequity has a mean value of -388.9% to total assets with a standard deviation of 103.35%. Tangibility and NDTS have mean values of 45.66% and 7.69% respectively of total assets. Marketing expenses, research and development expenses have mean values of 2.88% and 1.07% respectively of total sales. The mean for size has the highest value of 1136% of total sales with standard deviation of 159.6%. For international diversification the standard deviation is higher than its mean value.

### 6.1. Descriptive Statistics

Table 1							
Variables	Mean	Std. Deviation	Ν	VIF	Partial Correlation		
Ln (Equity to Total Assets)	-3.8888	1.03354	543				
Tangibility	.456572	.2492837	543	1.258	.268		
Tax Rate	.2304	.13901	543	1.159	169		
Marketing Expenses	.028819	.0346682	543	1.247	.315		
Research & development Expenses	.010769	.0226939	543	1.193	318		
NDTS	.076868	.0438303	543	1.167	199		
International Diversification	.905702	10.8724338	543	1.114	120		
Indian Promoter Ownership	40.81	27.351	543	1.091	.373		
Size	11.3567	1.59642	543	1.244	515		

**DV:** ln (Equity to Total Assets)

1 able 2							
Variables	Mean	Std. Deviation	Ν	VIF	Partial Correlation		
ln (Long Term Debt to Total Assets)	-2.7265	1.92090	484				
Age	42.58	25.975	484	1.080	114		
Profitability	.190965	.0866853	484	1.151	407		
Tangibility	.470033	.2441430	484	1.341	.153		
WCR	.105	.1530	484	1.224	198		
NDTS	.072835	.0402957	484	1.294	128		
Net Exports	.001284	.2544580	484	1.300	117		

**T** 11 0

DV: ln (Long Term Debt to Total Assets)

The number of observations are 484 for a time series data. As indicated in table 2, ln (long term debt) have a mean value of -272.65% to total assets with a standard deviation of 192.09%. Profitability, tangibility and NDTS have mean values of 19.09%, 47% and 7.28% respectively of total assets. Working capital ratio and net exports have mean values of 10.5% and .1284% respectively of total sales.

### 6.2. Stepwise Regression Analysis

The stepwise regression has been designed to develop a regression model with a fewer number of explanatory variables and their maximum predictive accuracy. Stepwise multiple regressions are employed to get the best combination of the explanatory variables that can predict the dependent variable significantly. Only those variables are included that are really significant to the equation.

#### 6.3. Stepwise Regression Equation

#### 6.3.1. Equation

Ln (Equity to Total Assets) =  $bo_+ b_1$  size +  $b_2$  Marketing Expenses +  $b_3$ NDTS +  $b_4$  Tangibility +  $b_5$  R & D expenses +  $b_6$  Indian Promoter Ownership +  $b_7$  International Diversification +  $b_8$  Tax Rate + e

#### 6.3.2. Equation

Ln (Long Term Debt to Total Assets) =  $bo + b_1$  Age  $+ b_2$  Profitability  $+ b_3$  Tangibility  $+ b_4$  NDTS  $+ b_5$  WCR  $+ b_6$  Net Exports + e

			Table 3			
R	$R^2$	Adjusted $R^2$	Std. Error	Durbin-Watson	F	Sig
.717	.514	.506	.726	.782	70.490	.000

DV = ln (Equity to Total Assets)

R is .717 reflecting the degree of association among these variables.  $R^{2}$  is .514 reflecting the percentage of total variation in equity to total assets explained by the regression model with a standard error of .726. The F test value is 70.490 which are statistically significant at .000 level of significance. *Appendix I* explains the variables included the regression model. The regression coefficient (*b*) for the explanatory variables is mentioned in table 6.3. Looking at the values of regression coefficients it can be seen that explanatory variables are significant. R<sup>2</sup>herereflects the maximum predictive power and improvement in the overall model fit for given explanatory variables that are used to explain dependent variable. Tangibility and ownership shares a positive relationship as explained by trade off theory. Sizeshares a negative relationship as explained by trade off theory. Sizeshares a negative relationship as explained by trade off theory. Sizeshares a negative relationship as explained by trade off theory.

DV = ln (Long Term Debt to Total Assets)

R	R2	Adjusted R 2	Std. Error	Durbin-Watson	F	Sig
.588	.346	.338	1.56	.776	42.039	.000

R is .588 reflecting the degree of association among these variables. The  $R^2$  is .346 reflecting the percentage of total variation in equity to total assets explained by the regression model with a standard error of 1.56. The F test value is 42.039 which is statistically significant at .000 level of significance. *Appendix I* explains the variables included the regression model. The regression coefficient (*b*) for the explanatory variables is mentioned in table 6.4. Looking at the values of regression coefficients it can be seen that explanatory variables are significant.  $R^2$  here reflects the maximum predictive power and improvement in the overall model fit for given explanatory variables that are used to explain dependent variable. NDTS shares a negative relationship and tangibility shares a positive relationship as explained by trade off theory. Profitability and WCR shares a negative relationship as explained by pecking order theory. Addition of independent variables beyond this level makes the model unfit.

Table 4

### 7. CONCLUSION

This paper aims to analyse the affect of financial liberalization on capital structure dynamics for firms listed on Nifty 50 on NSE. The debt ratio was significant during global slowdown period for most of the firms. But the debt financing was supported by collateral offered by fixed assets of the firm. The empirical studies on this topic have found significant differences in the determinants of these two leverage measures. For the leverage measure ln (equity to total assets) and ln (long term debt to total assets) are positively and significantly related to tangibility whereas negatively to NDTSsupporting trade off theory. Whereas size is negatively related to leverage. Profitability and WCR is also negatively related to ln (long term debt to total assets) as explained in pecking order theory. The firms should reduce their costs in order to increase their profitability. R & D expenses are negative stating the increase in R & D expenses leads to decrease in debt ratio. Marketing expenses are positively related to debt whereas increase in exports and international diversification leads to decline in debt ratio.

### 8. LIMITATIONS AND SCOPE OF THE STUDY

The limitation of the study is that the number of firms studied here are 41. So the study can be further extended to a larger sample size. The study can be done by dividing the time period into various business cycle phases, to know the effect of global economic slowdown on capital structure dynamics.

### 9. APPENDIX

#### 9.1. Variable used

- 1. Long term Debt to Total Assets is the ratio of (loan repayable in more than one year + convertible loan + leasing finance) to total debt (Current Assets + Fixed Assets).
- 2. Equity to Total assets is the ratio of equity (equity share capital + Reserves & surplus) to Total assets (Current assets + fixed assets).

	1	able 1			
IZ ani ablas	Unstandardi	zed Coefficients	Standardized Coefficients	t	Sig.
v unuoics	В	Std. Error	Beta		
(Constant)	918	.274		-3.347	.001
Size	303	.022	469	-13.90	.000
Tangibility	1.035	.140	.250	7.374	.000
Indian Promoter Ownership	.011	.001	.289	9.161	.000
Research and Development Expense	-13.938	1.501	306	-9.284	.000
Marketing Expense	8.959	1.005	.300	8.918	.000
NDTS	-4.490	.769	190	-5.840	.000
Tax rate	865	.242	116	-3.581	.000
International Diversification	007	.003	069	-2.169	.031

Table 1

**DV:** ln (Equity to total assets)

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1/aviables	Unstandardi	zed Coefficients	Standardized Coefficients	t	Cia
v unuoies	B Std. Error Beta	Beta	L	<i>5 i</i> g.	
(Constant)	673	.324		-2.073	.039
Profitability	-8.560	.880	386	-9.723	.000
Tangibility	1.141	.337	.145	3.382	.001
WCR	-2.265	.514	180	-4.402	.000
NDTS	-5.676	2.008	119	-2.827	.005
Net Exports	818	.319	108	-2.565	.011
Age	007	.003	096	-2.506	.013

Table 2

**DV:** ln (Long term debt to total assets)

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