Impact of Select Parameters on Capital Generation in Indian Primary Capital Market: A Regression Analysis

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Abstract

Corporate finance is raised from the primary capital market through public offers, rights issues and private placement, etc. Public offer is the largest sources of funds from the primary capital market to the company. The initial and subsequent capital issue of securities like equity shares, preference shares, debentures or bonds can be made in the primary market through public issues as well as rights issues. Initial issue of securities is offered to the public through issue of prospectus and subsequently the public subscribe to them in the primary market directly. In post liberalisation era, capital raised in this market can be represented based on select parameters. They are category, issuer, instrument, sector, region and size. Each parameter has two or more elements against which capital is raised. The study analyses impact of capital generation against each element of select parameters on overall capital generation in Indian primary market during 1993-94 to 2013-14 using Multiple Linear Regression Analysis. Standardised regression coefficients for underlying elements of each parameter measure their impact on overall capital generation. Significance of the model is analysed using one way ANOVA. The study shows that each model developed for select parameters is statistically significant and capital generated against all elements under each parameter has excellent strength of association with total capital raised. Capital generated through Preference Shares and capital generated in small sizes does not have significant impact on overall resource mobilisation in Indian primary market.

 Keywords: Indian Primary Capital Market, Resource Mobilisation, Parameters of Capital Generation, Multiple Linear Regression Analysis.

JEL Classification: O160, G170

1. Introduction

Capital formation for economic growth has always been a strategic concern in Indian economy. Capital market is the driver of capital formation and an indicator of economic development. Corporate enterprises and Government raise long terms funds from this market and use it for productive purposes. The segment of the market where resources are mobilised and fresh funds are channelled is known as primary capital market (Sathasivam, 2010). Therefore, behaviour of capital generation in this market indicates savings habit of people and influence economic growth of the country (Ahuja, 2012). However, in the post independence era, conservative financial policies by the Government, credit based financial system and financial repression slackened the growth of this market. In 1991 economic reform took place in India. Liberalisation policies led to economic growth. Real savings was augmented and channelized into the primary market which helped the market to prosper. Scientific allocation of this fund reduced cost of capital and increased efficiency of investment. Deregulation, an urge for attaining global benchmark, scope of accessing global market and increased inflow of foreign capital also acted as a positive catalyst to the development of this market. With the introduction of several new concepts (e.g. book building method, IPO grading, green shoe option etc.) resource mobilisation in this market has become a simple affair. Abolition of Capital Issues Control Act, 1947 and establishment of Securities Exchange Board of India (SEBI) in 1988 as a statutory body to control operation of stock exchanges and other market intermediaries, promote development of this market and protect interest of corporate stakeholders also appealed to a huge section of middle class Indian population who once viewed this market with acute scepticism (Saha, 2013). All these factors led to a steady growth of resource mobilisation in this market. Capital generated in the Indian primary capital market can be represented by category of issue, nature of issuer, type of instruments, sector wise and region wise distribution, and size of capital generation. Data on total capital generated and capital generated under each of the select parameters in a year from 1993-94

to 2013-14 has been collected from SEBI Bulletin. SEBI in its annual handbook or monthly bulletin publishes a number of information relating to category of capital issue (public and rights); nature of issuer (listed and unlisted); type of instrument used (equity, preference and debt); sector wise capital generation (private and public); region wise capital generation (northern, eastern, western and southern); and finally size of capital generation (<Rs. 5 ,5-10, 10-50, 50-100 and >100 crore). Based on secondary data on overall capital generated in primary capital market and capital generated for each component under select parameters in post liberalisation periods, the study seeks to analyse the impact of select parameters on overall capital generation in Indian primary market.

2. Past Studies

Indian primary market has always been an important topic of research for authors and researchers all over the world. Existing structure of capital market and impact of several policy recommendations of the Government on its growth and development always received special importance in national and international literatures (Burch & Foester, 2004; Charaborti & De, 2010). Burch & Foester (2004) in their book provided special emphasis on United States (US) Initial Public Offer (IPO) market. Chakraborti & De (2010) on the other hand take an analytical approach to assess operational efficiency of Indian primary market. In Indian environment, impact of regulatory interventions and reforms in post liberation era on this market always received special attention of the researchers (Ahuja, 2012; Nagraj, 1996; Nayak, 2010). Nayak (2010) in his study also discussed common grievances in the new issue market and regulatory measures to address the same. Ahuja (2012) in his research compared Indian primary capital market with primary market of other developing countries of the world.

2.1. Research Gap

Significant gaps identified through literature survey are pointed out as follows:

♦ Studies reviewed so far, analyses impact of post liberation reforms on overall capital formation. However, studies representing overall capital generation in the post liberalisation era based on select parameters are considerably less.

♦ None of the studies consulted so far took an attempt to analyse the impact of different components under select parameters on overall capital generation in the market.

♦ Empirical studies mainly incorporate analysis of growth or trend of growth in this market. Use of multivariate statistical technique to analyse impact of select parameters on overall capital generation is rare.

3. Objectives

The major objectives of the study taken into consideration are as follows:

♦ To empirically analyse the impact of particular components of capital generation under select parameters *(category of issue, nature of issuer, nature of instrument, sector wise and region wise capital generation and size of resource mobilisation)* on overall capital generation in Indian primary market *(Refer to Table 2);*

♦ To identify the significant components under each parameter governing overall capital generation *(Refer to Table 3);*

♦ To measure strength of association between all components under each parameter and overall capital generation in the market *(Refer to Table 4);*

♦ To analyse the significance of such strength of associations for each parameter *(Refer to Table 5);*

♦ To draw a suitable conclusion of the study.

4. Limitations

This study has following limitations:

♦ This study does not consider capital generated this market prior to 1993;

♦ Analysis of growth of capital generation and trend of such growth is beyond the scope of this present study;

♦ This study only analyses impact of different components of capital generation on total capital generation. Impact of other explanatory variables like saving habit of citizens, economic growth on capital generation is not considered here.

5. Research Methodology

Nature of Research	Exploratory
Nature of Data	Secondary
Secondary Data Collection	Books, Journal Articles, SEBI Bulletin
Study Period	1993-94 to 2013-14
Nature of Data Collected during the Study Period	♦ Total capital generated in the Indian Primary Market; ♦ Capital generated based on category of issue (Public Issue and Rights Issue); ♦ Capital generated by nature of issuer (Unlisted and Listed Issuer); ♦ Capital generated based on nature of instrument (Equity, Preference and Debt); ♦ Sector wise capital generation (Private and Public Sector); ♦ Region wise capital generation (Northern, Eastern, Southern and Western Region); and ♦ Capital generated based on their size (Rs. <5, 5-10, 10-50, 50-100, and >100 crore).
Data Analysis	Multiple Linear Regression Analysis (MLRA)
a) Impact of all components under select parameters	♦ Calculation of standardised Beta (β) coefficients.
b) Significance of components	♦ Conducting t test
c) Strength of association	♦ Calculation of Adjusted Coefficient of Multiple Determination (R^2)
d) Significance of the strength of association	♦ Conducting one way Analysis of Variance (ANOVA) or F test.
Data Analysis Package	SPSS 19.0

6. Empirical Analysis using MLRA and Discussion

Data collected on overall capital generation in Indian primary capital market and capital generated based on select parameters for the period of 1993-94 to 2013-14 have been incorporated in a data sheet and Multiple Linear Regression Analysis is conducted to fulfil the stated objectives. In the study, total capital generation is represented by six distinct parameters. Multiple linear regression models are developed for each of these parameters (Malhotra, 2011). Each parameter has two or more than two components representing the Independent Variables (IVs) in each model. Total capital generated in the primary market is the Dependent Variable (DV) for all models under consideration. Let us represent DV and IVs for each model here.

Table 1. Dependent and Independent Variables for Select Parameters

Dependent Variable (DV)	Independent Variables (IVs)
Model 1: Category of Capital Generation	
Total capital generated	Capital generated based on public issue
	Capital generated based on rights issue
Model 2: Type of Issuer	
Total capital generated	Capital generated by listed issuer
	Capital generated by unlisted issuer
Model 3: Nature of Instrument	
Total capital generated	Capital generated through equity shares
	Capital generated through preference shares
	Capital generated through debt
Model 4: Sector wise capital generation	
Total capital generated	Capital generated in private sector
	Capital generated in public sector
Model 5: Region wise capital generation	
Total capital generated	Capital generated in northern region
	Capital generated in eastern region
	Capital generated in western region
	Capital generated in southern region
Model 6: Size of capital generation	
Total capital generated	Capital generated of size less than Rs. 5 crore
	Capital generated of size between Rs. 5 – 10 crore
	Capital generated of size between Rs. 10 – 50 crore
	Capital generated of size between Rs. 50 – 100 crore
	Capital generated of size more than Rs. 100 crore

6.1. Impact of Select Parameters on Total Capital Generation

6.1.1.   Calculation of standardised Beta (β) coefficients

A standard regression equation can be represented as follows:

$$\Rightarrow \quad Y = \alpha_i + \Sigma\beta_i\, X_i$$

Where, alpha (α) is the intercept of the linear equation which represents the value of DV in the absence of any IVs. Beta (β), on the other hand is known as regression coefficients. Relative magnitude and sign of a β represent the nature and direction of relationship between DV and the corresponding IV. With a view to analysing impact of underlying components of each parameter on total capital generated, we need to calculate β for each IV based on following formula:

$$\Rightarrow \quad \boldsymbol{\beta = Covariance\ [X,Y]/\ Variance\ of\ Y\ \&}$$

Now, IVs can be designated in different units. Therefore, β calculated for each X_i are un-standardised. There is a need of standardisation of regression coefficients using the following formulae:

$$\Rightarrow \quad \mathbf{B_i = \beta_i\ (Standard\ Deviation\ of\ X_i/\ Standard\ Deviation\ of\ Y)}$$

Standardised regression coefficients (B_i) calculated for each component under each parameter is shown below:

Table 2. Calculated values of Standardised Regression Coefficients

Model	Parameters	Components	B
1	Category of Capital Generation	Capital generated based on public issue	.801
		Capital generated based on rights issue	.322
2	Type of Issuer	Capital generated by listed issuer	.479
		Capital generated by unlisted issuer	.788
3	Nature of Instrument	Capital generated through equity shares	.900
		Capital generated through preference shares	.055
		Capital generated through debt	.536
4	Sector wise capital generation	Capital generated in private sector	.601
		Capital generated in public sector	.582
5	Region wise capital generation	Capital generated in northern region	.546
		Capital generated in eastern region	.139
		Capital generated in western region	.586
		Capital generated in southern region	.197
6	Size of capital generation	Capital generated of size less than Rs. 5 crore	-.239
		Capital generated of size between Rs. 5 – 10 crore	.419
		Capital generated of size between Rs. 10 – 50 crore	-.094
		Capital generated of size between Rs. 50 – 100 crore	.044
		Capital generated of size more than Rs. 100 crore	.993

(Source: Compilation of Secondary Data- SEBI Bulletin using SPSS)

Findings:

♦ Capital generated through public and rights issue positively influence total capital generation. However, impact of public issue is more than that of rights issue.

♦ Capital generated by listed or unlisted issuer positively influence total resource mobilisation. However, capital generated by the unlisted issuer in IPO route has more impact on total capital generated.

♦ Capital generated through equity, preference and debt positively impact total capital generation. However, impact of capital generation through equity share route has higher impact than the rest.

♦ In sector wise distribution, capital generation by both private and public sector positively influence total capital generation. However, capital generation by private sector companies have slightly more influence than those belonging public sector.

♦ Capital generation in all the regions in India has positive impact on overall capital generation. However, capital generated in northern and western parts of India has more impact to capital generation than that of other two regions of the country.

♦ Small sized (<Rs. 5 crore) and medium sized (Rs. 10-50 crore) capital generation negatively influence total resource mobilisation in this market. Apart from them, capital generation of any size has positive influence on overall resource mobilisation. Among them, capital generation of size more than Rs. 100 crore has highest impact.

6.2. Testing Significance of the Regression Coefficients

With a view to analysing significance of each regression coefficients for underlying components of the select parameters, following hypothesis is taken into consideration:

Hypothesis--1

> *(a) Null Hypothesis (H_0): No linear relationship exists between individual IVs and DV (i.e. Bi = 0)*
>
> *(b) Alternate Hypothesis (H_1): Linear relationship exists between individual IVs and DV (i.e. Bi not equal to 0)*

If H_0 is accepted for any particular IV, it is inferred that corresponding regression coefficient is not significant and the IV do not significantly impact the DV. In order to test the above hypothesis for each IV under select parameters, we conduct t test with n-2 degrees of freedom and 5% level of significance. Where n = number of observations i.e. 21. The test statistics t can be represented with the help of following formula:

$$\Rightarrow \quad t = \textit{Un-standardised value of } \beta i / \textit{ Standard Error (SE) of } \beta i$$

If the probability of getting the calculated value of t at n-2 degrees of freedom in the t distribution table is less than .05, H_0 is rejected and vice versa. Let us represent the calculated value t and decision to accept or reject H_0

here:

Table 3. Result of t-Test

Model	Parameters	Components	Calculated Value of t	Significance (P-Value)	Decision Rule	Decision on Acceptance of H_0
1	Category of Capital Generation	Capital generated based on public issue	41.889	.000	P value < .05	Rejected
		Capital generated based on rights issue	16.822	.000	P value < .05	Rejected
2	Type of Issuer	Capital generated by listed issuer	6.063	.000	P value < .05	Rejected
		Capital generated by unlisted issuer	9.969	.000	P value < .05	Rejected
3	Nature of Instrument	Capital generated through equity shares	18.938	.000	P value < .05	Rejected
		Capital generated through preference shares	1.177	.256	P value > .05	Accepted
		Capital generated through debt	14.848	.000	P value < .05	Rejected
4	Sector wise capital generation	Capital generated in private sector	10.675	.000	P value < .05	Rejected
		Capital generated in public sector	10.338	.000	P value < .05	Rejected
5	Region wise capital generation	Capital generated in northern region	22.446	.000	P value < .05	Rejected
		Capital generated in eastern region	5.853	.000	P value < .05	Rejected
		Capital generated in western region	25.460	.000	P value < .05	Rejected
		Capital generated in southern region	6.908	.000	P value < .05	Rejected
6	Size of capital generation	Capital generated of size less than Rs. 5 crore	-.321	.753	P value > .05	Accepted
		Capital generated of size between Rs. 5 – 10 crore	.415	.684	P value > .05	Accepted
		Capital generated of size between Rs. 10 – 50 crore	-.220	.829	P value > .05	Accepted
		Capital generated of size between Rs. 50 – 100 crore	.268	.792	P value > .05	Accepted
		Capital generated of size more than Rs. 100 crore	14.944	.000	P value < .05	Rejected

(Source: Compilation of Secondary Data- SEBI Bulletin using SPSS)

Findings:
♦ H_0 is accepted for capital generation through preference shares. Hence, capital generation through preference shares do not significantly influence overall capital generation in Indian primary market.
♦ H_0 is accepted for capital generation with any size less than Rs. 100 crore. It shows, capital generation with a size less than Rs. 100 crore do not significantly impact overall capital generation of the country.
♦ For all other parameters, capital generation against each underlying components significantly impact on total capital generated in Indian primary capital market during study period.

6.3. Measuring Strength of Association
Strength of association between DV and an individual IV is mathematically represented by coefficient of determination (r²) which measures the percentage of variance of DV explained by that individual IV. In case of linear regression, overall strength of association between DV and all the IVs are calculated by adding individual

r^2. It gives coefficient of multiple determinations (R^2). If IVs are uncorrelated, R^2 are the mathematical summation of individual r^2. However, in reality, IVs are correlated among themselves. Therefore, beyond a certain point, we cannot increase the value of R^2 just by adding more number of variables. Therefore, strength of association between IVs and DV in a model is calculated by R^2 adjusted by the number of IVs. The value of Adjusted R^2 lies between 0 and 1. More the value is close to 1, more the strength of association between DV and corresponding IVs. In our present study, we are dealing with six different models. Adjusted R^2 calculated for each model is here:

Table 4. Measure of Strength of Association (Adjusted R^2)

Model	Parameters	Adjusted R^2
1	Category of Capital Generation	.994
2	Type of Issuer	.875
3	Nature of Instrument	.975
4	Sector wise capital generation	.945
5	Region wise capital generation	.991
6	Size of capital generation	.936

(Source: Compilation of Secondary Data- SEBI Bulletin using SPSS)

Findings:

- Underlying components in each of the parameter have excellent strength of association with total capital generated.
- As per relative magnitude of Adjusted R^2 figure, capital generation based on category of issue has highest association with total capital generated followed by region wise capital generation, and instruments used.
- Capital generation subject to type of issuer has least association with the total capital generated.

6.4. Analysing Significance of Strength of Association

In the above segment, we have measured strength of association for each model based on current sample of 21 years. We take following hypothesis to analyse significance of such strength:

Hypothesis--1

   (a) **H_0: There is no association between DV and IVs (i.e. $R^2 = 0$)**
   (b) **H_1: There is significant association between DV and IVs (i.e. R^2 not equal to 0).**

In order to test aforesaid hypothesis for all the models under consideration, we conduct one way ANOVA with k-1 and n-k degrees of freedom and 5% level of significance, where k = number of IVs. If probability of getting the calculated value of F in F Distribution Table, at k-1 and n-k degrees of freedom is less than .05, H_0 is rejected and vice versa. In the study, calculated value of F and decision on accepting H_0 for each model under consideration is presented here:

Table 5. Result of F Test

Model	Parameters	Calculated value of F	Significance (P-Value)	Decision Rule	Decision on Accepting H_0
1	Category of capital generation	1780.358	.000	P-Value <.05	Rejected
2	Type of issuer	71.267	.000	P-Value <.05	Rejected
3	Nature of instrument	259.785	.000	P-Value <.05	Rejected
4	Sector wise capital generation	171.294	.000	P-Value <.05	Rejected
5	Region wise capital generation	551.002	.000	P-Value <.05	Rejected
6	Size of capital generation	59.557	.000	P-Value <.05	Rejected

(Source: Compilation of Secondary Data- SEBI Bulletin using SPSS)

Findings:

For all the models under consideration H_0 is rejected. It shows significant strength of association exist between DV and IVs of each model. Hence, underlying components of each parameter has significant strength of association with overall capital generated in the long run.

7. Final Inferences

Based on above analysis during the study period, we can now draw significant inferences and put forth a few

suggestions that are expected to improve resource mobilisation in Indian primary market in the long run. These are as follows:

♦ Companies preferred public issue over rights issue in this market. It is evident as extent and reach of public issue is more than that of rights issue.

♦ Capital generated by unlisted issuer has more contribution towards overall capital generation. It indicates more and more new entrants are increasing entering this market, and investors are also putting their bet in IPO sector.

♦ Equity is the most preferred mode of capital generation in primary market. However, fiscal benefits given to issuers or investors in other forms of instruments will improve their overall contribution in resource mobilisation.

♦ Insignificant sector wise differences exist in capital generation. It shows that, private sector companies have considerable participation in this market which is good thing in the context of economic liberalisation.

♦ Administrative influence in northern region of the country, and corporate control in the western part led to significant capital generation in these two parts of India. This result indicates that, savings habit and economic growth in eastern and western region is still lagging behind other two regions of India. Central Governments as well as respective state Governments should take appropriate actions.

♦ Capital generation with size less than Rs. 100 crore do not have significant influence on overall capital generation in the market. It indicates, most of the companies that entered the market in last 21 years were set up on a large scale. Micro, Small and Medium Enterprises (MSMEs) did not have the opportunity to raise capital from this market. However, from 27th September, 2011 Bombay Stock Exchange (BSE) provided SME sectors a platform to raise capital from this market in smaller denominations (All Indian MSME Association Report). Establishment of this market is a positive step towards recognising small values in overall capital generations in this market.

8. Conclusions

Multiple linear regression analysis is conducted on the collected data to recognize the impact of each component under select parameters on overall capital generated. It is inferred that capital generated through preference shares and capital generated in denomination less than Rs. 100 crore do not have significant influence on overall resource mobilisation. All other components significantly influence overall capital generation. Importance of public issue and equity shares in overall capital generation has been recognised. Last 21 years shows increased participation of unlisted issuers in this market. Most of the companies that reaped the benefit of this market were set up on a large scale. Sector wise disparity between private and public sector was also removed to some extent. Administrative influence and corporate control also cause regional differences in capital generation. Whatever be the mode of representing capital generation in this market, they all have significant strength of association with overall resource mobilisation. However, an exponential growth in this market is expected if due consideration is given on the recommendations of the study.

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