

# Market timing and Debt-Equity Choice of Nepalese Firms

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### Abstract

*This paper aims to analyze the multivariate discriminant analysis of debt-equity choice in Nepalese non-financial firms for the period of 1992 to 2013. It is based on pooled cross sectional data of 18 firms (263 observations) whose stocks are listed in Nepal Stock Exchange. The study finds that firm issue equity when their stock prices are high. The result further reveals that firms are strongly influenced by market conditions and the past history of security prices in issuing between equity and debt. Discriminant analysis also shows that External financing weighted average market to book ratio, market to book ratio and leverage pattern are the major determinants of issuing equity or debt. Finally, the results are consistent with the notion that market timing variables have negative impact on leverage.*

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**Key words:** Debt-equity choice, Market timing, Leverage, Market to book ratio, Stock Price

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## **I. Introduction**

The generation of fund is one of the most significant decisions of corporations. When the firm is unable to generate sufficient internal funds to invest in new project then corporation takes a decision to issue debt or equity for raising external funds. According to trade off theory, if firms seek new financing, they should issue equity when their leverage is below the target, or issue debt and equity proportionately to stay close to the target. According to pecking order hypothesis, firms prefer internal profit first, followed by external debt and equity as lending of the last resort. Firms may take “extended excursions away from their targets” because of their past profitability and financing needs (Myers, 1984).

Marsh (1982) contended that assets compositions are positively associated with debt-equity ratio while Schmidt (1976) concluded negative relationship. Ferri and Jones (1979) and Taub (1975) indicated that firm size is the determinant of firm’s debt-equity structure whereas Pandey (1985) concluded that size of firm does not appear to be the determinant of capital structure. Marsh (1982) demonstrates that companies are heavily influenced by market conditions and the past history of security prices in employing leverage structure.

Market timing implies that firms raise more external capital when market conditions are good. Previous studies generally show that firms issue equity when their firm values are high, Loughran and Ritter (1995) for firm level evidence and Beaker and Wurgler (2000) for aggregate level. A survey of 392 CFOs by Graham and Harvey (2001) documents only limited support to trade off theory and pecking order theory, but reveals that CFOs are involved actively in market timing practices. Thus, firms in markets that are developed and liberal are more likely to engage in market timing.

Fama and French (2004) assert that equity issues have been increasingly frequent and firms issue equity when they could have used internally generated funds or issue debt. In addition, firms tend to issue equity following an increase in stock prices (Ashquith and Mullins, 1986) implying that firm performs well afterward reduce their leverage.

An empirical study of Kayhan and Titman (2004) analytically split market timing theory into two components, one short term and another for long term timing measure. They do confirm that leverage changes are driven by market timing hypothesis; however they do not confirm the long term persistency of market timing effect.

Large firms tend to be more diversified and less prone to bankruptcy, have lower transaction costs, and be able to issue debt at cheaper rate than small firms (Titman and Wessels, 1988). Conversely, empirical study of Ditmar and Thakor (2007) test a new theory of security issuance that is consistent with the puzzling stylized fact that firms tend to issue

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equity when their stock prices are high.

Several studies have been conducted in developed countries in order to examine whether firm issue equity or debt but so far as researcher knows no study has been conducted in Nepalese context on equity market timing and debt-equity choice. Thus, the main objective of this study is to determine the financial characteristics that lead corporations to choose equity or debt on the consequences of market timing on capital structure. The study also examined the association between market timing characteristics and capital structure decision.

The rest of this paper is organized as follows. Section II describes the empirical evidence of previous study, section III sets up the basic model. Section IV discusses the result of debt-equity choice and finally, section V summarizes the results.

## **II. Review of Empirical works**

Modigliani and Miller (1958) theorized in a perfect world, with perfect information and no costs for financial distress, capital structure is irrelevant and changing a firm's capital structure will not impact the firm's valuation. Several studies have been conducted through adding back to this theory. Donaldson (1961) revealed that highly profitable firms tend to use retained earnings to meet their growth but less profitable firms tend to use debt financing as pecking order theory is the root of Donaldson study. This study reveals that profitability, dividend, investment plan, the capital market conditions and firm's structure are the determinants of capital structure which contradicts MM hypothesis.

The study of debt versus equity under asymmetric information reveals that when securities of any given firm are being underpriced by the market, the firm will prefer debt to external equity (Narayan, 1988).

Debt increases with fixed assets, investment opportunities and the firm size and decreases with variability, advertising expenditure, the probability of bankruptcy, profitability and uniqueness of product (Harris and Raviv, 1992). Empirical study indicates that a firm's history may play an important role in determining capital structure. For example, highly profitable firms often use their profits to pay back debt and, as a result, are usually less levered and their less profitable counterparts (Titman and Wessels, 1988). In addition, firm tends to issue equity while stock price getting higher in the market (Masulis and Korwar, 1986).

The price earnings ratio of debt issuing firms are lesser than of equity issuing firms, likewise larger the firm size issues debt and lower firm size issue equity. The firms having high sales growth and variability prefer to issue equity rather than issuing debt (Martin and Scott,

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1974). Asquith and Mullins (1986) show that there is a price run-up preceding equity issues. They report that issues of seasoned equity are interpreted as bad news by investors, with negative announcement date effects on equity prices. This result is predicted by the three capital structure models: pecking order, agency costs, and timing models. Moreover, the results are industry specific mainly because of different levels of information asymmetry. The study on equity issues with time-varying asymmetric information have revealed the effect of time varying adverse selection and costly project deferral on the market for equity issues (Korajczyk et al., 1992). They further concluded that if managers privately know that firm's assets are of sufficiently high quality, they wait for the market to become better informed before issuing equity. Even if managers have no private information, they may delay the issue until they do become informed, at which point they decide whether to wait for the public to also become informed. Firms with low asset quality always issue immediately, since they achieve nothing by delay and risk losing the project. Sheel (1994) reveals that collateral value of assets would be the most significant determinant of long-term debt in manufacturing firms. The study shows that negative relationship between debt-to-asset ratio and non-debt tax shield or/and between firm's leverage behavior and its past profitability.

Hovakimian (2003) reveals that the importance of historical average market to book in leverage is not due to past equity market timing. He opined that only equity issues may be timed to conditions in equity market, but they do not have significant long lasting effects on capital structure. Other transactions such as equity purchase, debt issues and debt reduction exhibit timing patterns that are unlikely to induce a negative relation between market to book ratio and current leverage.

Recently, Huang and Ritter (2005) find that publicly traded U.S firms fund a larger proportion of their financing deficit with external equity when the cost of equity capital is low. Alti (2006) finds that hot-market IPO firms considered as market timers issue significantly more equity than cold-market firms do. Elliot et al. (2008) find that equity market mispricing plays a significant role in security choice decision. Their results are consistent with the findings of Baker and Wurgler (2002). Firms tend to raise external equity when they perceive that their stocks are irrationally overpriced. A proxy other than the cost of capital such as the characteristics of firms and market conditions are also important (Huang and Ritter, 2005).

There is a negative effect on current leverage, change in leverage and debt versus equity issuance can be obtained using a weighted average market to book ratio based on future rather than past market to book ratios and external financing (Hovakimian, 2006). He further opined that firms with higher weighted average of past market to book ratios are

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more likely to issue equity in the current period, while firms having lower weighted average market to book ratios are more likely to issue debt in the current period. In addition, the study revealed that higher historical weighted average market to book ratios is related with higher current capital expenditures and higher current research development expenses.

An empirical study of “why do firms issue equity” results that managers use equity to finance projects when they believe that investors’ views about project payoffs are likely to be aligned with theirs, thus maximizing the likelihood of agreement with investors. Otherwise they use debt (Dittmar and Thakor, 2007). Further to these aforementioned studies, Mahajan and Tartaroglu (2008) contended that the negative relationship between leverage and the market-to-book ratio is not attributed to market timing and the evidence in their study supports the dynamic trade-off theory.

Khemaies and Jameleddine (2010) investigate the relevance of market timing considerations on the financing choice using a panel of Tunisian and French listed non-financial firms from 2000 to 2008. The sample includes 30 Tunisian and 100 French publicly traded firms. The result is consistent with market timing theory that firms tend to issue equity when their market to book ratios are relatively higher than their book counterparts after market performance improvement. Managers believe that market values are irrationally high and try to take advantages from this opportunity by issuing overpriced equity shares. They document that weighted average market to book ratio is negatively associated with leverage. Similarly, Guney and Hussain (2012) document that equity mispricing increases the likelihood of firms making security issues. In addition, undervaluation increases the probability of firms tend to issue debt instead of equity.

Recently, Mursalim, Mallisa, and Kusuma (2017) investigated the factors affecting capital structure choice of the firms in Indonesia, Malaysia and Thailand. Profitability, firm size, growth opportunity, risk, gross domestic product, inflation rate and corporate governance were used as predictive variable for firms’ financing decision. The study employed path analysis of two multiple regression consisting of 94 Indonesian, 153 Malaysian, and 74 Thai firms for the period of 2008 to 2012. The result reveals that firms’ profitability, firm size and risk have significant roles in making financing choices in those countries.

From the above, it may be seen that the effect of market timing variable on debt-equity choice has been controversial subject. Some studies indicated the statistically significant effect of market timing variables on capital structure choice while others did not. Similarly, some reported that capital structure is the cumulative outcome of past attempt to time the equity market, while others reported that historical average market to book ratios in the leverage regressions is not due to past equity market timing. In order to validate one view or the other in the Nepalese context, no study has so far been conducted. The study

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therefore examines the above hypothesis concerning debt-equity choice in Nepalese non-financial firms.

### III. Sources of data and nature of study

The study is based on secondary data. In order to estimate the models employed in this study, the required data are obtained from financial statements of listed firms available in NEPSE and SEBON data base from 1992 to 2013. Of the listed firms for the sample period, data are available for few firms that limit the sample coverage. Thirty three non-financial firms (manufacturing, hotel, hydro, trading, service and others) listed in NEPSE by the end of 2013 were considered as population of the study. This has caused the collection and analysis of data to be based on observation of pooled cross section rather than time series data. Therefore, 18 firms have been selected as sample of this study based on convenience sampling. The details of listed selected firms and periods of data used to meet objective of this study have been presented in Appendix I.

The study has employed descriptive and causal comparative research design to deal with the fundamental issues for debt-equity choice in the context of Nepalese non-financial listed firms. The descriptive research design has been adopted for fact finding and searching adequate information regarding the choice of financing either by debt or equity. An attempt has been made on identifying the capital structure decision with its relevant explanatory variables like firm size, profitability, tangibility, leverage, market to book ratio, external financing weighted average market to book ratio, selling expenses and the dummy variable of market to book ratio as important variables for the study.

### Model specification

The model is derived on the basis of previous studies on market timing and capital structure such as Altman (1968), Baker and Wurgler (2002) and Hovakimian (2006). The selected model is strongly believed to capture the need of subject matter under study.

$$\Delta LEV_t = \alpha + \beta_1 t (SIZE_{t-1}) + \beta_2 t (PRO_{it-1}) + \beta_3 t (TNG_{it-1}) + \beta_4 t DR_{t-1} + \beta_5 t (M/Bit-1) + \beta_6 t EFWAMB_{t-1} \quad (I)$$

$$Dt = \alpha + \beta_1 t (SIZE_{t-1}) + \beta_2 t (PRO_{it-1}) + \beta_3 t (TNG_{it-1}) + \beta_4 t DR_{t-1} + \beta_5 t (M/Bit-1) + \beta_6 t EFWAMB_{t-1} + \beta_7 t EXP_{it-1} + \beta_7 t DMB_{it-1} + \epsilon_{it} \text{-----} \quad (II)$$

Where,

$\Delta LEV_t$  = Current leverage minus previous year leverage scaled by total assets

$Dt$  = Choice between debt or equity – 0 for equity issuing firm and 1 for debt

Size = Log of sales

Pro = Earnings before interest, tax and depreciation scaled by total assets

TNG = Net of property, plant and equipment scaled by total assets

DR = total of short term and long term debt scaled by total assets

M/B = Market to book ratio

EFWAMB = External financing weighted average market to book ratio =

EXP = Selling and administrative expenses scaled by sales

DMB = Dummy variable of market to book ratio

The underlying hypothesis is that firms choose to issue equity when their market price becomes high. The process permits presentation of a tool to absorb a variety of sources of related financial information into a single decision criterion. The  $D_t$  is obtained as coefficient value estimate of each explanatory variable. It distinguishes each explanatory variable between two groups. To test the hypothesis in Nepalese context, the aforementioned model is estimated using non-financial firms' observations that predict a firm's choice between debt or equity issuance. The categorical variable  $D_t$  is in this regression equation is a latent continuous variable reflecting the propensity of a firm to issue debt rather than equity. Its observable counterpart is a binary indicator set to 0 for firms that issue equity and set 1 for firms that issue debt.

#### IV. Empirical Analysis

##### Descriptive statistics

Descriptive statistics summarizes the data as per the purpose of the study. The descriptive statistics used in this study comprises mean, median, standard deviation and number of observation associated with the variables under consideration. Table 1 summarizes the descriptive statistics of firm specific characteristics employed in this study during 1992 to 2013 associated with 263 firm years of non-financial firms listed in NEPSE. The table further explains the statistics of debt issuing and equity issuing firms across the nature of business.

**Table 1**  
**Descriptive statistics**

This table reports explanatory variable mean, median and standard deviation of sample of equity issuing, and debt issuing firms variable associated with 18 firms listed in NEPSE from 1992 to 2013. The variables like size, profitability, tangibility, debt ratio, market to book, external financing weighted average market to book and expenses of equity issuing and debt issuing firms. Size is the log of sales, profitability is defined as operating income before depreciation divided by assets, tangibility is the property, plant and equipment divided by total assets, leverage is defined as total liabilities divided by total assets, market to book ratio is the book value of total assets minus book value of equity plus the market value of equity divided by book value of total assets, external finance is defined as net equity issues and net debt issues. Panel A shows the sample statistics of 204 observations of equity issuing firms, panel B reveals the sample statistics of 59 observation of debt issuing firms and panel C shows the sample statistics of total (263) observations.

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Panel A: Summary statistics of Equity issuing group							
Variables	size	PRO	TNG	DR	MB	EFWAMBt	EXP
Mean	6.1166	0.1490	0.4938	0.5258	1.8624	0.7397	0.1500
Median	6.1738	0.1124	0.4739	0.5649	1.1088	0.1569	0.0853
SD	1.6109	0.1272	0.2871	0.2521	1.8754	2.5241	0.1500
N	203	204	204	204	194	188	203
Panel B: Summary statistics of Debt issuing group							
Mean	5.7470	0.1143	0.4814	0.6462	1.8825	0.2920	0.1813
Median	5.8696	0.0857	0.4260	0.6535	1.2266	0.2581	0.0963
SD	1.3817	0.1364	0.2781	0.2354	2.1860	2.7920	0.1950
N	59	59	59	59	54	53	58
Panel C: Summary statistics of whole sample							
Equity mean	6.117	0.149	0.494	0.526	1.862	0.740	0.150
Debt mean	5.747	0.114	0.481	0.646	1.883	0.292	0.181
Mean difference	0.370	0.035	0.012	-0.120	-0.020	0.448	-0.031
F-value	5.46**	7.016*	0.023	9.749*	3.96**	6.982*	1.696
Sig	0.030	0.003	0.879	0.002	0.045	0.010	0.194
N	262	263	263	263	248	241	261
* significance at 1% and ** significance at 5% level							

Table 1 presents the descriptive statistics of mean, median, standard deviation and number of observation of explanatory variables for the sample period. Panel A and B indicate the summary statistics of these variables of equity issuing and debt issuing firms. The mean of size, profitability, tangibility, EFWAMB are higher in equity issuing firm whereas debt ratio, market to book and expenses are higher in debt issuing firm. It indicates that debt issuing firms have weak managerial efficiency of utilizing the resources.

Panel C shows the summary statistics of total observations of the sample firms. The sample contains 18 non-financial firms from 1992 to 2013 listed in NEPSE. The table reveals the combined mean, median and standard deviation of explanatory variables obtained from both equity issuing and debt issuing firms. The result of means reflect that how the average value of independent variables differ from equity issuing and debt issuing firms. If there are no mean differences then it will be impossible to distinguish between equity issuing and debt issuing firms among independent variables. A univariate F statistics is employed to test the null hypothesis that the differences of group means are zero.

Determinants in change in leverage



Leverage is ranged from 0 to 1, firms with high leverage are more likely to experience declines in leverage, and firms with low leverage are more likely to increase in leverage. To see the impact of past leverage in change in leverage lagged value of leverage included in this model. Baker and Wurgler (2002) estimate a change in the leverage regression that is similar to the one presented in table 2. The result reveals that changes in leverage are negatively related to profitability, tangibility, lagged leverage and the EFWAMB. The negatively and statistically significant explanatory variables indicate that the result is supportive to market timing hypothesis. The magnitude of the effect of EFWAMB on change in leverage is relatively small. However, it is stronger than the effect of market to book ratio.

**Table2:**

<b>Determinants of incremental changes in capital structure</b>				
	Change in leverage		Debt equity choice	
Variable	Coeff.	t-Stat	Coeff	t-Stat
Intercept	0.219	4.175	0.195	4.11*
Size	-0.01	1.588	-0.02	-1.01
PRO	-0.127	1.741*	-0.246	3.22*
TNG	-0.066	2.112*	-0.104	2.961*
DR	-0.184	5.228*	0.307	2.691*
MB	-0.001	1.697*	0.026	1.979*
EFWAMB	-0.02	1.885*	-0.016	1.997*
EXP			0.307	1.72*
DMB			-0.052	-0.951
R-square	0.185		0.275	
Number of observations	220		237	

Change in leverage is the ending value of debt minus beginning value of debt scaled by total assets. Size the natural logarithm of sales, profitability is EBITDA divided by beginning value of assets, tangibility is the property, plant, equipment scaled by total assets, DR is the lagged leverage scaled by total assets. The market to book ratio is the (total assets-book value of equity +market value of equity)/total assets, the EFWAMB is the external financing weighted average market to book ratio, exp is the selling and administrative expenses scaled by sales, and DMB indicator is set to 1 when market to book ratio is greater than 1.

### Determinants of debt-equity choice

The second set of result presented in table 2 is for the following probit regression which models the choice between issuing debt and issuing equity and is estimated only using observation where either equity or debt is issued by the firm to raise external finance. The explanatory variables included in the equation (II) are taking out from previous literature of debt-equity choice. The result shows that EFWAMB is an important indicator of the current choice between issuing debt or issuing equity. Further, profitability, EFWAMB, tangibility are the predictor that indicate the issuance of equity increase while these variables decrease. The negative and statistically significant EFWAMB implies that financial executives of non-financial firms are more likely to issue equity than issue debt when they need new financing for investment.

### Discriminant analysis

Discriminant analysis uses a number of variables that are likely to influence characterization of a firm in one of the two mutually exclusive groups of interest. This analysis works by creating a new variable called discriminant function score which is used to predict to which group a case belongs. The discriminant function is similar to multivariate regression equation in which the explanatory variables are multiplied by coefficients and summed to produce a score. The study followed Altman (1968) model in order to discriminate debt-equity choice on market timing variables in the Nepalese context.

**Table 3**  
**Test of equality of group means**

This table reports of explanatory variable wilks' Lambada, F-ratio and p- value of sample of equity issuing, and debt issuing firms variable associated with 18 firms listed in NEPSE from 1992 to 2013. The variables like size, profitability, tangibility, debt ratio, market to book, external financing weighted average market to book, expenses and dummy variable of market to book of equity issuing and debt issuing firms. Size is the log of sales, profitability is defined as operating income before depreciation divided by assets, tangibility is the property, plant and equipment divided by total assets, leverage is defined as total liabilities divided by total assets, market to book ratio is the book value of total assets minus book value of equity plus the market value of equity divided by book value of total assets, external finance is defined as net equity issues and net debt issues. DMB is MB>1 indicator is set to one when market to book ratio is greater than one.

Variables	Wilks' Lambda	F	df1	df2	Sig.
Size	0.988	2.783	1	236	0.097
PRO	0.987	4.001	1	236	0.035
TNG	0.996	1.01	1	236	0.993

DR	0.964	8.753	1	236	0.003
MB	0.998	7.452	1	236	0.004
EFWAMB	0.995	8.272	1	236	0.002
EXP	0.992	3.017	1	236	0.045
DMB	0.994	1.4	1	236	0.238

Table 3 reveals the test for Wilks' Lambda for each explanatory variable if this is significant ( $<0.05$ ), it means that the respective variable, mean is different for the two groups i.e., debt issuing and equity issuing group. Any insignificant value will indicate that the explanatory variable is not different for different group or in other words, this variable does not discriminate the debt-equity choice. Here, all the explanatory variables have been found to be significant except size, tangibility and dummy market to book ratio. The result indicates that these variables do not have any impact on debt-equity choice. Wilks' Lambda of 0.988 of size, 0.996 of tangibility, and 0.994 of DMB indicate that there is no significance difference between debt issuing and equity issuing firms based on these variables. The result is not consistent with Hovakimian (2006).

From the original set of 22 variables, five variables were selected in Altman (1968) well known study of bankrupt and non-bankrupt firms. He indicated that "in order to arrive at a final profile of variables the following procedures are utilized: 1) observation of the statistical significance of various alternative functions including determination of the relative contributions of each independent variable; 2) evaluation of inter-correlations between the relevant variables; 3) observation of the predictive accuracy of the various profile; and 4) judgment of analysts" [p-594]. The five variables model ultimately employed in this study are selected as best predictor accuracy among the sample firms.

Since the coefficients are stated in terms of the specific measurement units of the related independent variable, which are not unswervingly comparable across variables, it is not possible to rank the raw coefficients to ascertain the relative contribution of each variable to the model's discriminatory power (Martin and Scott, 1974). Hence, each coefficient is multiplied with its standard deviation. Table 4 displays the rank based on these adjusted coefficients which results the relative importance of the independent variables on the discriminant function.

**Table 4**

**Discriminant coefficients and relative contributions of variables**

This table presents the results of adjusted coefficients where the dependent variable equals 0 if the firm issues equity and 1 if it issues debt. The predictor variables like size, profitability, tangibility, debt ratio, market to book, external financing weighted average market to book, expenses and dummy variable of market to book of equity issuing and

debt issuing firms. Size is the log of sales, profitability is defined as operating income before depreciation divided by assets, tangibility is the property, plant and equipment divided by total assets, leverage is defined as total liabilities divided by total assets, market to book ratio is the book value of total assets minus book value of equity plus the market value of equity divided by book value of total assets, external finance is defined as net equity issues and net debt issues. DMB is  $MB > 1$  indicator is set to one when market to book ratio is greater than one. The sample consists of this study are 263 observation of non-financial firms listed in NEPSE data base from 1992 to 2013.

Variables	Discriminant coefficient	SD	Adjusted coefficient	Rank
PRO	-2.705	0.1325	-0.3584125	2
DR	2.919	0.2529	0.7382151	1
MB	-0.087	1.9777	0.1720599	5
EFWAMB	-0.114	2.6018	-0.2966052	4
EXP	2.958	0.1635	0.483633	3

The table 3 reveals that lagged value of debt contribute most in differentiation between groups which are closely followed by profitability, selling and administrative expense, external financing weighted average market to book ratio and market to book ratio. The result indicates that firms with larger profitability and historical market price have the tendency to issue equity. The final model is developed as follows:

$$Dt = -1.438 - 2.705PRO + 2.919DR - .087MB - 0.114EFWAMB + 2.958EXP$$

The model is very useful in determining the debt-equity choice. Therefore, it will be necessary to investigate the result presented above and to attempt to extend the model more general application. The above-mentioned Dt score model provides the 18 firms result regarding debt-equity choice of non-financial firms. Based on misclassification in the initial sample, it is concluded that all firms having Dt score greater than 0.604 clearly falls into debt issuing group whereas firms having Dt score less than -0.174 falls in equity issuing firms. The region between -0.173 to 0.604 is known as zone of ignorance which indicates that all firms falling in the range are indeterminate to make debt-equity choice. The zone is declared to be gray simply because of the susceptibility to error classification (Altman, 1968).

### **Precision of classification**

Initially, firms are classified into equity issuing and debt issuing enterprises based on over or under price of equity price in market during the study period. The categorical variable

It is created which have been assigned 0 for equity and 1 for debt issuing enterprise.

**Table 5**  
**Classification of original sample**

The table reports actual outcome and predicted outcome of total sample 263 firm years from 1992 to 2013 of listed firms in NEPSE. The row represents the actual status, the column represents the prediction made of the sample firm and each cell contains the number of the firms fulfilling conditions.

The overall accuracy of discriminant classification

		Predicted group membership		
Actual membership group	Firm type	Equity	Debt	Total
	Equity	118	67	185
	Debt	16	37	53
	Total	134	104	238
Types of error	Numbers correct	Per cent correct	Per cent error	Total
Type I	118	63.8	36.2	185
Type II	37	69.8	30.2	53
Total	155	66.5	33.5	100

Table 5 reveals the group membership, predicted group membership of debt issuing and equity issuing firms. Type I error, type II error in both numbers and percentage. The initial sample of 53 debt issuing and 185 equity issuing observations is examined using average ratios of sample period of 1992 to 2013. A classification matrix based on given sample indicates that 37 of the 53 firm issues debt were correctly classified by the model whereas 118 of the 185 issued equity were correctly classified. The overall classification 66.5 per cent of the original samples was correctly classified. The type I error proved to be 36.2 per cent while type II error is 30.2 per cent. The results are therefore, encouraging but several upward biases should be kept in mind and some other validation tools are appropriate.

## V. Discussion

This study addressed market timing behavior on debt-equity choice in the context of Nepal. It examined EFWAMB, market to book ratio, profitability, size, tangibility and pattern of leverage are related to issuing debt or equity decision. The study is based on pooled cross sectional data of 18 non financial firms listed in Nepal stock Exchange. The result shows that past profitability, tangibility, debt ratio, market to book ratio and external financing weighted average market to book ratio are the important predictor of financing choice. The tendency of firms to make debt-equity choices depends on their financial characteristics especially the level of past debt they have been employed.

The result suggests that stock prices play an important role in determining a firm's financing

choice. Firms that experience stock price increases are more likely to issue equity and retire debt than are firms that experience stock price declines. The result is consistent with market timing hypothesis with the idea that stock prices increase generally associated with improved growth opportunities, which would lower a firm's optimal leverage. The negative association between external financing weighted average market to book ratio with choice of debt-equity is also consistent with Baker and Wurgler study 2002 where firms have persistent impact of equity market timing.

The results are also consistent with the idea that managers are reluctant to issue equity when they view their stock as being underpriced. Since coefficient of past debt seems strongly significant imply that past attempts to time the equity markets are unlikely to have a significant effect on change in leverage. The multivariate discriminant analysis shows good performance with a highly correct categorization factuality rate of 66.5 percent. Five characteristics were significant out of seven financial variables employed in this study to discriminate among financing choices.

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### Appendix I

Sample firms, study period and number of observations			
S.N.	Name of the company	Study period	Observations
1	Nepal Lube Oil	1993 to 2013	21
2	Nepal Bitumin and Barrel	2004 to 2013	10
3	Bottlers Nepal (Balaju)	1997 to 2013	17
4	Bottlers Nepal (Terai)	1997 to 2013	17
5	Nepal Level Limited	1996 to 2013	19
6	Nepal Khadya Udhyog	1999 to 2013	15
7	Himalayan Distillery	2000 to 2013	14
8	Shreeram Sugar Mill	2003 to 2013	11
9	Salt Trading Corporation	1992 to 2013	22
10	Bishal Bazaar Company	1985, 1992 to 2013	23
11	Chilime Hydro Power	2004 to 2013	10
12	Arun Hydro Power	2008 to 2013	6
13	Butwal Hydro Power	2003 to 2013	11
14	National Hydro Power	2003 to 2013	11
15	Hotel Soaltee	1993 to 2013	21
16	Oriental Hotel	2002 to 2013	12
17	Taragaon Regency Hotel	2002 to 2013	12
18	Nepal Dursanchar Company	2003 to 2013	11
Total observation			263

**Note:** S. N. indicates serial number for the sample companies selected for the study.

**Source:** Annual reports of the listed companies for the fiscal year mid July 1985 to mid July 2013 and Nepal Stock Exchange data base.