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1	Determinants of Systemic Risk for Companies Listed on Nepal
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7 Abstract

6

This paper aims at advancing empirical evidences on financial factors determining systemic 8 risk in the pre-emerging stock market of Nepal as well as to identify whether preemerging 9 stock market and developed and emerging stock markets exposed to the same financial factors 10 that determine systemic risk. A priori hypothesis between relationship of the company-specific 11 financial factors and systemic risk are set based on theoretical framework and previous 12 studies, and tested on the data from 15 listed companies covering a 5-year period, 2009 to 13 2013. All regular dividend paying and actively traded companies are selected. Based on 14 cross-sectional approach it is revealed that size and profitability are positively associated with 15

¹⁶ the systemic risk, while the dividend payment is negatively related to the risk. The results

¹⁷ thus indicate that financial factors have significant predictive power for the systemic risk of a

18 stock investment in Nepal.

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20 Index terms— CAPM, financial factors, listed companies, stock market, systemic risk.

²¹ 1 Introduction

he term risk generally refers to the volatility of a particular security. Investments typically have an associated risk based upon their exposure to markets and the fluctuations within them. The risk of an investment is the chance that an actual return will be different than expected. Risk includes the possibility of receiving less than the initial investment. The more individual returns deviate from the expected return, the greater the risk and the greater the potential reward. Risk is one of the most fundamental aspects of investing and lies within the core of research.

The degree to which all returns for a particular investment deviate from the expected return of the investment 28 is a measure of its risk. A measure of the volatility of a security in comparison to the market as a whole is known 29 as beta. Beta is used in the Capital Asset Pricing Model (CAPM), a model that calculates the expected return of 30 an asset based on its beta and expected market returns. The CAPM and the concept of beta as a measurement 31 of systemic risk have a number of practical uses in portfolio management. CAPM provides a rationale for a very 32 simple passive portfolio strategy. Diversify your holding of risky assets according to the proportions of market 33 portfolio and mix this portfolio with the risk free asset achieve a desired risk reward combination. Moreover, given 34 35 the fact that the CAPM is used in the determination of the discount rate in valuation models of the firm, it is 36 not surprising that many research papers have examined the determinants of beta in the emerging and developed 37 stock markets.

Systemic risk and its determinants have been widely discussed in financial literature and are considered the most interesting issues in stock market studies (Logue and Merville (1972), Breen and Lerner (1973), Kim et al.

40 (2002)). Despite numerous studies on systemic risk and its determinants, the extant literature does not deal for

41 systemic risk in pre-emerging stock market of Nepal. The current research aims at expanding the evidence arising

42 from the existing literature by exploring the main financial determinants of systemic risk in the Nepalese stock

43 market. More specifically, present estimates are based on accounting and market panel data on Nepalese listed

companies that were publicly traded on the Nepal Stock Exchange from 2009 to 2013. Seven financial variables
are explored as possible determinants of the systemic risk of listed companies stock: (1) Size, (2) leverage, (3)
return on assets, (4) growth, (5) liquidity, (6) operating efficiency, and (7) dividend payment. The rationale for
the selection of variables is essentially based on financial theory and investors' intuition ??Beaver et al. (1970),
Rosenberg and McKibben (1973), Lev and Kunitzky (1974), Bildersee (1975), Beaver and Manegold (1975), Chen

et al. (1986), Martikainen, (1991), McMillan (2001), Hong and Sarkar (2007), Iqball and Shah (2011)). 49 Nepalese stock market is still in a pre-emerging stage of development with the structural problems-Government 50 holding in major infrastructures-Nepal Stock Exchange Ltd. (NEPSE) and central securities depository (CSD) 51 and fixed pricing system in public offerings; infrastructural deficiencies-absence of online trading system and 52 proper over-the-counter (OTC) market; and regulatory weaknesses-poor disclosure practices, dominance of banks 53 and other financial institutions in issuing and trading of securities, highly fluctuating market index, absence 54 of enforcement of legal provisions, absence of cross-border listing and trading, and low level of international 55 networking as Securities Board of Nepal (SEBON)-capital market regulator has not yet been the member of 56 International Organisation of Securities Commissions (IOSCO). During the period of mid-July 1998 to mid-July 57 2013 (inclusive), there was annual average 14.90 percent of the listed enterprises making timely disclosure, annual 58 59 average NPR 4370 million funds were raised from the stock market, and annual average 4.05 percent turnover 60 was in the secondary market. This turnover percent is below than 7.5 percent specified by World Bank for 61 emerging markets. During the same period of time, the trend of commercial banking activities as to the annual 62 average deposits was NPR 391716.26 million, annual average loans and advances was NPR 271204.79 million, and loans and advances deposits ratio was 69.24 percent (NRB ??2003, ??013)). The comparison reveals that 63 loans and advances made by commercial banks were 62.06 times higher than the funds mobilised through public 64 issue of securities in the stock market. Similarly, turnover of banking activities is 17.10 times higher than stock 65

66 market. In view of aforementioned facts, it is obvious that stock market in Nepal is in the pre-emerging stage of 67 development.

A study devoted to per-emerging stock market on systemic risk would be interesting not only to the researchers around the globe but equally to the investors and corporate managers at home country as well as stock market authorities initiating to reform and develop stock market in the country. This paper, thus, contributes another piece to the emerging puzzle by examining the determinants of systemic risk in the preemerging stock market of Nepal. The policy implication section of this paper will illuminate the implication of findings in greater detail.

The relevant literature currently available for the type of empirical research is presented in section II. Since the study on systemic risk is lacking in Nepal, the review virtually concentrates on the research evidence of stock markets other than Nepal. Section III discusses the methodology and outlines the data and hypothesised relationships of select variables with the systemic risk for empirical findings. The empirical analysis is made insection IV. The findings and conclusion constitute section V. The policy implications and research avenues are stated in section VI.

79 **2** II.

80 3 Literature Review

Most of the empirical studies used multiple regressions with beta as the dependent variable and firm financial ratios as independent variables to identify the determinants of systemic risk.

The first significant attempt to link market risk and financial variables was made by Beaveret al. ??1970). The results indicate a high degree of contemporaneous association between estimated betas and several financial variables such as dividend payout, financial leverage and earnings yield. In the case of banks, Biase and D'Apolito (2012) find that bank equity beta correlates positively with bank size and with the relative volume of loans and intangible assets, and negatively with bank profitability, liquidity levels and loan loss provisions. The available evidences clearly support the contention that accounting measures of risk are impounded in the market-price based risk measure.

Logue and Merville (1972) confirm that debt leverage, profitability, and firm size were significant beta 90 determinants. Size is often considered the most important factor when assessing the potential for systemic 91 risk. Size is also relevant when analysing financial activities, exposures to other market participants, individual 92 transactions and trading volumes. Size may be a determining factor when considering markets as well. Once 93 they attain a certain volume, markets in of themselves can pose risks, since they often serve as important pools 94 of liquidity. While size is an important consideration when assessing systemic risk, it should not be considered 95 96 in isolation from other variables. In terms of entities, activities or markets, size alone does not necessarily imply 97 systemic risk. It is prudent to establish empirically company size as a determinant of systemic risk and it is more 98 so in the context of pre-emerging stock market like that of Nepal.

Several researchers suggest a negative relationship between beta and liquidity ??Beaver et al. (1970), Logue and Merville (1972), Moyer and Chatfield (1983), Mear and Firth (1988)). This means firms with higher liquidity are expected to have less exposure to systemic risk. Studies also show a negative relationship Titman and Wessels (1988) reveal that large firms tend to have a lower beta as large firms are likely to be well diversified and therefore less prone to financial distress. Hamada (1972) verifies that financial leverage had a significant positive relationship with beta. This conclusion was further supported by Bowman (1979) as indicated that leverage, debt to equity ratio, is an important variable that have influence on the systemic risk of a firm. Numerous empirical
studies supported this notion, including Logue and Merville (1972), Mandelker and Rhee (1984), De Jong and
Collins (1985), and Marston and Perry (1996). For operating efficiency, however, Logue and Merville (1972), and
Borde (1998) suggest that it is negatively correlated with beta. The reason is firms that are highly efficient in
generating revenues with their assets will be more likely to be profitable and less likely to suffer loss, hence lower
beta.

Firms often commit to debt leverage to obtain resources for investment in growth opportunity (Roh (2002)).

¹¹² When growth is measured by assets growth or revenues growth, studies often show a positive relationship with ¹¹³ beta. As high leverage leads to higher financial risk, growth becomes positively correlated with beta. On the

other hand, when growth is measured by earnings before interest and taxes (EBIT), it usually shows anegative relationship with beta (Lee and Jang (2007), and Borde (1998)). As investor value growth opportunities, firms with high growth usually maintain high stock prices whereas firms with low growth may see their stock prices more volatile.

(1972), Mear and Firth (1988)). The reason is with higher profits, firms are less likely to face bankruptcy. 118 This is especially true for firms that are highly leveraged. Profitability is usually measured by return on asset 119 (ROA) as unlike return on equity (ROE), it is not affected by the company's capital structure. Lee and Brewer 120 121 (1985) confirm that bank market risk relates to leverage and dividend pay-out ratio. Patroet al. ??2000) expect 122 that companies with high dividend payments may be less risky. If a company has their value tied to higher future 123 growth, rather than to current dividends, it may be more sensitive to market performance, if one compares a company with high dividends against a growth company with no or few dividends, expectation is that the growth 124 company may be more sensitive to future economic performance. 125

The review of aforementioned empirical evidences reveal that the total assets, leverage, profitability, growth, liquidity, operating efficiency, and dividend payout are the major determinants of systemic risk for companies traded on stock markets. Though there are these determinants of systemic risk of publicly traded stocks, they are all the evidences of developed and emerging stock markets. Such empirical evidence is scant in the context of pre-emerging stock markets like that of Nepal. Therefore, this paper is initiated to address the extant gap in the literature relating to determinants of systemic risk for the companies listed on Nepal Stock Exchange Ltd.

132 **4 III.**

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133 5 Research Methodoloty

design is employed to analyse the data and results. This section deals with a description of the research methodology employed in addressing the research issues of the paper.

¹³⁶ 6 a) Target population, data source, and sampling procedure

The population for this study consists of the companies listed on the Nepal Stock Exchange Ltd. (NEPSE). In 137 mid-July 2013, there were 230 companies listed on NEPSE. The companies are selected based on the availability 138 of information. The criteria by which the companies are included in the sample are: (i) The companies must 139 have available data including dividend payment for all years, that is 2009-2013. (ii) The companies must have 140 been listed on NEPSE before the aforementioned period of time and must have been actively traded. A review 141 of data sources: individual annual reports-balance sheet and profit and loss statements of listed companies and 142 annual trading reports of NEPSE reveal that there were 15 listed companies having all required data including 143 144 dividend payments for the study period mid-July 2009 to mid-July 2013 (inclusive) for the purpose of the study. 145 The reason for selection for 5 years' time span is to have a large number of companies having uninterrupted 146 dividend payments and availability of other required data in the sample and that one business cycle is completed in 5-7 years (Rafique (2012)). Thus, cross-sectional data of 15 listed companies for the period with a total of 75 147 observations are used in the study as presented in Appendix 1. 148

¹⁴⁹ 7 b) Basic regression model, variables with hypothesized signs, ¹⁵⁰ and data

To examine the relationship between systemic risk and company specific financial factors, the following model developed based on empirical findings is employed with the aid of Statistical Package for Social Science (SPSS) 20? it = ? 0 + ? 1 SIZE it + ? 2 LEV it +? 3 ROA it +? 4 GROWTH it +? 5 LIQ it +? 6 OE it +? 7 DPS it + μ it

Where, the variables and hypothesized signs are as follows:

'? it ' is per share systemic risk of the stock of company 'i' in period't'; it is year-end systemic risk of the share of the company. The estimated beta is derived by regressing a company's yearly stock return against the yearly market return. A company's yearly stock return is measured by the yearly percentage change of stock prices, while yearly percentage change in the capital market index (NEPSE) represents a proxy for market return.

The monthly closing prices of the 15 companies are collected (2009-2013) to calculate returns as follows: R it = (P it -P it -1) / P it -1. Where, P it is the price level of stock (i) in month (t). Market return is calculated using NEPSE returns as follows: R mt = NEPSE t -NEPSE t-1 / NEPSE t-1. Where, NEPSE t is market return (R m

) in month (t). Based on the calculated monthly returns, the beta coefficient for each company is then estimated 163 by using the market model: R it = ? i + ? i R mt + u it . Where, R it : return for company (stock) (i) in month 164 (t), ? i: the constant term that is the expected return when R mt is zero, ?i: the beta coefficient on yearly basis, 165 R mt : the returns on the general market index (NEPSE index) in month t, and u it : the random error term 166 with zero expectation. Market models use only a supposition of linear relationship between returns of securities 167 and returns of the whole market. According to a study by Gu and Kim (1998), the systemic risk (beta) of each 168 company can be estimated based on the equation or the characteristic line. The slope of the characteristic line of 169 each company, estimated by regressing the NEPSE index return against the company's stock return, represents 170 the sensitivity of the stock's return to the market return and is the estimated beta. So through this market 171 model beta for the share of each company is calculated by the formula: $\beta i = Cov (R i, R m)/Var(R m)$ that is 172 covariance of per share return and return on market)/ market variance for the year 2009 through 2013. Where, 173 ß i is systemic risk of i th stock, R i return from i th stock and R m is market return. It is dependent variable in 174 the model. 175

¹⁷⁶ 'SIZE it ' is size of the company 'i' in period't'. The size is measured by the total assets of the company and ¹⁷⁷ total assets are converted into natural logarithm of total assets. Logarithm conversion condenses the effect of ¹⁷⁸ skewness (Iqbal and Shah (2011)). Based on Logue and Merville (1972), Breen and Lerner (1973), Titman and ¹⁷⁹ Wessels (1988), Gu and Kim (2002), and Olib et al. (2008), it is hypothesised that beta of stock is negatively ¹⁸⁰ related to the total assets of company.

'LEV it ' is the leverage of company 'i' in period't'. Leverage measures the financial health of a company 181 and help investors to determine a company's level of risk. The financial ratio selected for explaining leverage of 182 companies is debt ratio that is total debt to total assets indicates what proportion of debt a company has relative 183 to its assets along with the potential risks the company faces in terms of its debt-load. Total debt includes 184 short and long-term borrowings from financial institutions, debenture/bonds, deferred payment arrangements for 185 buying capital equipment, interest bearing public deposits, and any other interest bearing loans. Based on Amit 186 and Livnat (1988) 'ROA it ' is return on assets of company 'i' in period't' which is net income tototal assets. It 187 is the proxy for profitability of the company. High profitability can enhance companies' ability to lower financial 188 instability and thus lessen systemic risk. Based on Logue and Merville (1972), Scherrer and Mathison (1996), 189 Borde (1998), Gu and Kim (2002), Lee and Jang (2007), and Rowe and Kim (2010), it is hypothesised that there 190 is negative relationship between return on assets and beta. 191

GROWTH it is growth of company 'i' in period't'. Annual percentage change in earnings before interest and taxes is used to compute the growth of the company. Rapidly growing firms, often measured with asset growth and revenue growth, are often considered vulnerable to economic changes. Based on Borde (1998), Gu and Kim (2002), Roh (2002), and Lee and Jang (2007), it is hypothesised that there is positive relationship between systemic risk and growth of the company.

'LIQ it ' is liquidity of company 'i' in period't', that is the ratio current assetsminus inventory (sum of 197 cash, marketable securities, and accounts receivable) to current liabilities or quick ratio. Current liabilities 198 include creditors-outstanding loans, bills payables, accrued expenses, short-term bank loan, proposed and unpaid 199 dividends, income-tax liability, long-term debt maturing in current year, and interest payable deposits. Companies 200 with higher liquidity are expected to have less exposure to systemic risk. Based on ??eaver et al. (1970), Logue 201 and Merville (1972), ??oyer and Charlfield (1983), Mear and Firth (1988), ??im (1998, 2002), Lee and Jang 202 (2007), and Eldomiaty et al. (2009), the hypothesis is there is negative relationship between systemic risk (beta) 203 and liquidity. 204

'OE it ' is operating efficiency of company 'i' in period't', it is total revenue to total assets or asset turnover. 205 The operational efficiency of the analyzed companies is determined with the total assets turnover ratio which 206 determines the amount of revenue that is generated from each rupee of assets. Total revenue includes interest 207 income, commission and discount, other operating income, abnormal transaction income, non-operating income, 208 and provision refund. Companies that are highly efficient in generating revenues with their assets will be more 209 likely to be profitable and less likely to suffer loss. The empirical evidences reveal that companies which efficiently 210 utilize their assets in generating revenues are more likely to reduce possible losses and consequently could have a 211 low level of systemic risk. Based on Logue and Merville (1972), Borde (1998), ??im (1998, 2002), Eldomiaty et 212 al. (2009), the hypothesis is the negative relationship between operating efficiency and systemic risk. 213

214 'DPS it ' is dividend per share of company 'i' in period't', and it is proxy for the dividend payment of the 215 company. Agency cost can be reduced with high dividend (Ang et al. (1985)). Per share market price increases 216 with the dividend per share distributed by the company (Graham and Dodd (1951) 'µ it ' is random error term. 217 Data extracted from annual reports and trading reports were processed and transformed manually in order to 218 obtain relevant measures of the financial factors.

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222 10 IV. Empirical Analysis

Based on the time period 2009-2013, beta coefficients is estimated for total of 15 listed companies by using model set for the paper. The estimated betas are then related to their respective financial variables company size, leverage, return on assets, growth, liquidity, operating efficiency, and dividend per share. The study is attempted at three levels using the sample, viz., (1) Descriptive statistics, (2) Correlation analysis, and (3) Regression analysis. The following sub-sections present the empirical analysis of data.

²²⁸ 11 a) Descriptive statistics

Table 1 demonstrate the descriptive statistics of systemic risk (beta) and seven independent variables for 15 listed companies for five year period of 2009-2013. Mean value of beta is 0.65. This mean value of beta is less than market beta that is always consider equal to 1 and also indicates that sample of listed companies are less riskier than the market. In the same way size has mean score of 9.02 with standard deviation of 1.70 and leverage has 0.65 mean with standard deviation of 0.31. Arithmetic means of return on assets, growth, liquidity, operating efficiency, and dividend payment are 0.09, 26.22, 0.59, 0.48, and 58.41 respectively. The descriptive statistics reveal that there is high variability in the growth and dividend per share of the select listed companies of Nepal.

²³⁶ 12 b) Correlation analysis

Pearson correlation has been used for examining the relationship among all variables. Detection of correlation among explanatory variables is very useful for multicollinearity. Most researchers have mentioned that if the correlation between explanatory variables is 0.9 or more, it will cause the problem of multicollinearity. Table 2 shows the correlation among all variables and it indicates that there is high correlation between operating efficiency and liquidity, dividend per share and liquidity and dividend per share and operating efficiency, and there is problem of multicollinearity with liquidity and return on assets, operating efficiency and return on assets, and dividend per share and return on assets as they have correlation of 0.90 or more.

²⁴⁴ 13 c) Regression analysis

The results of regression analysis of systemic risk per share on size, leverage, return on assets, growth, liquidity, operating efficiency, and dividend per share for the sample companies are shown in Table 3. The results reveal that coefficients of size and return on assets or profitability have positive signs in all equations, which are contrary to priori expectation and the coefficients are significant at 1 percent level of significance for size in all equations, and 1 percent level of significance in two equations and 5 percent level of significance in another two equations for return on assets, which indicate that size and profitability are major determinants of systemic risk of stock of the sample companies.

This table shows regression results for the model as defined by equation:? it = ? 0 + ? 1 SIZE it + ? 2 LEV it +? 3 ROA it +? 4 GROWTH it +? 5 LIQ it +? 6 OE it +? 7 DPS it + μ it .

The regression analysis is based on 15 companies over 5 years of data for a total of 75 observations. ? is beta which is the per share systemic

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Volume XV Issue V Version I Year 2015 () C risk of company, which is dependent variable. The independent 257 258 variables are defined as: SIZE is the total assets, LEV is the leverage, ROA is the return on assets, GROWTH is the annual growth in earnings before interest and tax, LIQ is the liquidity, OE is the operating efficiency, and 259 DPS is the dividend per share. Dividend per share is also appeared to be an important determinant of systemic 260 risk of stock as its coefficient is significant at 1 percent level of significance in four equations and coefficient 261 of dividend per share is as per priori expectation that is inverse relationship between dividend per share and 262 systemic risk of stock of the sample companies. Hence, dividend per share affects negatively the systemic risk of 263 the stock of listed companies in Nepal. 264

To gauge robustness and sensitivity-tospecification error of the regression, each independent variable having 265 insignificant coefficient is removed from the complete model and the regressions are reestimated. These results 266 are shown in Table 3, Equations 2-5. The coefficients of the variables did not change in sign or size (regression 267 268 coefficients are not sensitive to these alterations in terms of sign and significance). In the additional four equations, 269 the explanatory power of the regression model as reflected by R2 decreased slightly. The closer tolerance (TOL) 270 is to zero of the variable, the greater the degree of collinearity of that variable with the other regressors (Gujarati 271 and Porter (2009)). The TOL of return on assets is close to zero in Equations 1-4 indicating some degree of multicollinearity between the systemic risk and return on assets. To avoid multicollinearity problem the variable 272 return on assets is removed in Equation (??), the results remain the same in terms of sign and significance of 273 coefficients of the variables, hence, indicating that muticollinearity is not a significant problem. 274

The R2, which has explained about 35 percent of cross-sectional variability in systemic risk of the stock with the independent variables used in the models, is considered as satisfactory in view of the pre-emerging stock market of the country. Similarly, F-value in all equations show that it is significant at 1 percent level of significance reflecting that regression equations provide statistically significant results.

In overall, the empirical results reveal that size and profitability influence positively and dividend payment affects negatively, and unlike in developed and emerging stock markets leverage, growth, liquidity, and operating efficiency do not affect systemic risk of the stock of sample companies in Nepal. The present inconsistent findings with the developed and emerging stock markets are attributed to idiosyncratic nature of pre-emerging stock market.

284 V.

²⁸⁵ 15 Findings And Conclusion

The results reveal that there is negative relationship between systemic risk and dividend per share, which is consistent and supportive to common intuitions of investors and previous empirical evidences of developed and emerging stock markets ??Beaver et Rowe and Kim (2010)for the relationship between systemic risk and return on assets, the relationship is found to be positive in this paper. The findings, thus, partly move in line with the theoretical aspects of finance and empirical evidences of developed and emerging stock markets.

The results demonstrate that company's size, profitability, and dividend payment are significantly related to systemic risk. The conclusion resulting from this study is that systemic risk is significantly determined by financial characteristics of the listed company.

²⁹⁴ 16 VI.

²⁹⁵ 17 Policy Implications and Future Research Avenues

It is believed that present findings provide a significant contribution to the understanding of the fundamental 296 determinants behind the systemic risk of listed companies of Nepal. Their empirical value is threefold. First, 297 present estimates allow corporate executives to better assess the consequences of different strategic options on the 298 risk profile of listed companies under their control (e.g. with regard to size, profitability, and dividend payment). 299 Second, this study may be of use to regulatory authorities, providing them with insights of the effects of their 300 regulatory choices on risk profiles of listed companies. This point is particularly noteworthy in light of the stock 301 market reform pressure created in the country from indigenous, non-resident Nepalese as well as foreign portfolio 302 investors. Third, the importance of beta is also evident from the investor's point of view. Risk is differentiated 303 from 'uncertainty' because it is measurable; therefore, investors must methodically research the securities they 304 invest in to mitigate loss. Their research and analyses are crucial in deciding what kind of position, if any, should 305 be taken. Systemic risk estimation is useful for investors in order to analyse the nature of risk associated with 306 different investment options, recognise risk-return relationships within portfolio investment strategies and most 307 importantly estimation of intrinsic value of stock as information contained in financial indicators is relevant. 308 Based on the present efforts; future research should consider the relationship between systemic risk of the 309 listed companies and major macroeconomic variables such as the ratios of exports to GDP, imports to GDP, tax 310 revenues to GDP, inflation, and GDP growth rate. This type of research should be updated and extended using 311

increased sample size and longer study period as well as including other financial factors like earnings variability and liquidity of the shares to have greater insights.

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Given the importance of CAPM and beta in financial analysis and informed investment decisions in the stock 317 markets, NEPSE as the market operator and SEBON as the regulator should promote and encourage independent 318 studies on systemic risk and its determinants. Stock market regulator has a key role to play in addressing systemic 319 risk, bringing its particular perspective as market integrity regulator. To this end, IOSCO has identified reducing 320 systemic risk as one of the three objectives of securities regulation. The financial crisis, 2007-09 has led securities 321 regulators to put greater emphasis on systemic risk and financial stability. The IOSCO principles recognised 322 the importance of systemic risk and the role of securities regulators in preventing and mitigating such risks as 323 the principle 6 of IOSCO is identifying, assessing and mitigating systemic risk. Unless one is able to measure 324 325 systemic risk objectively, quantitatively, and regularly, it is impossible to determine the appropriate trade-off 326 between such risk and its rewards and, from a policy perspective and regulatory objective, how best to contain 327 it. One of the illuminations of the present paper is how to measure the systemic risk and its determinants 328 in Nepalese stock market. Further, it raises public awareness of key issues and potential systemic risks in the pre-emerging stock markets. Stock market regulators around the globe, who are concerned with the efficient 329 functioning of markets, should try to ensure that investors are well-informed of investment risks; hence, SEBON 330 cannot be exception. SEBON should pay sufficient attention to measure systemic risk and raise risk awareness 331 based on the present paper. SEBON should also be concerned to promote transparency of financial reporting by 332 incorporating mandatory provisions in the securities regulations for the listed companies to publish information 333

about systemic risk in the financial reports that will help investors to reach a fair value of their investment and

335 ultimately stabilize overall stock prices. The highly fluctuating trend of market index illustrated in the paper

indicates that inadequate regulatory presence in the Nepalese stock market, hence, deeper structural changes are

required, including regulatory reforms. 4. Beaver, W.H., P. Kettler and Scholes, M. ??1970). The association between market determined and accounting determined risk measures. The Accounting Review, 45(3): 654-682.



Figure 1:

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Figure 2:

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	BETA	SIZE	LEV	ROA	GROWTH	LIQ	OE	DPS
Mean	0.65	9.02	0.65	0.09	26.22	0.59	0.48	58.41
SD	1.34	1.70	0.31	0.17	24.25	0.79	1.0	150.99
Max	2.80	11.20	0.91	0.69	80.77	3.97	3.99	760
Min	-4.23	5.99	0.00	0.01	-44.80	0.05	0.06	0.66
Ν	75	75	75	75	75	75	75	75

Figure 3: Table 1 :

 $\mathbf{2}$

	BETA SIZE LEV ROA G	ROWTH LIQ OE DPS			
BETA	1				
SIZE	0.48	1			
LEV	0.14	0.48	1		
ROA	-0.36	-0.51 -0.81	1		
GROWTH	0.02	-0.19 0.23 -0.07	1		
LIQ	-0.29	-0.39 -0.81 0.92	-0.14	1	
OE	-0.38	-0.53 -0.76 0.99	-0.03	0.87	1
DPS	-0.38	-0.30 -0.58 0.90	-0.07	0.86	1
				0.89	

Figure 4: Table 2 :

3

Eq.	Constar	ntSIZE	LEV	ROA	GRO	W.ICH	OE	DPS	R 2	F-
(1)	-2.64	0.49	- 1 70	10.09	0.01	-0.55	-1.19	-0.01	0.41	6.68*
	(-	(4.83)*	(-	(1.12)	(2.07))* <u>*</u> *	(-	(-1.43)		
	1.94)		1.61	· /	`	(0.98)	(1.15)	· /		
	/	((0.54))	((0.14))	4≬≬0.01))	((0.79))	9)(0.08))((0.02))	((0.08))		
(2)	-4.07	0.49	-	17.05	0.01	-0.35	-1.62	-0.01	0.39	7.19*
	(-	$(4.80)^*$		$(2.14)^{*}$	(1.63)) (-	(-	$(-3.42)^*$		
	3.94)*				· · ·	(0.62)	(1.59)	()		
	/	((0.54))		((0.01))	((0.88	3)(0.08))((0.02))	((0.15))		
(3)	-3.41	0.45	-	15.38	_	-0.39	-1.41	-0.01	0.36	7.19*
	(-	$(4.48)^*$		$(1.92)^{*}$		(-	(-	$(-3.21)^*$		
	3.55)*			()		(0.69)	(1.39)	、 ,		
	/	((0.57))		((0.01))		((0.08)))((0.02))	((0.15))		
(4)	-3.39	0.44	-	11.08	-	-	-0.96	-0.01	0.36	9.84*
	(-	$(4.45)^*$	(2.21))**			(-	(-3.30)*		
	3.54)*		`	/			1.23)			
	/	((0.57))		((0.02))			((0.03))	((0.15))		
(5)	-3.54	0.46	-	5.53	-	-	-	-0.01	0.35	12.53*
	(-	$(4.67)^*$	(2.49))**				(-3.32)*		
	3.72)*		`	, ,				· /		
	,	((0.60))		((0.12))				((0.15))		
(6)	-2.07	0.32	-	-	-	-	-	-0.01	0.29	14.63*
	(-	$(3.83)^{*}$						$(2.48)^{**}$		
	2.67)*									
		((0.91))						((0.91))		

T-statistics are shown in single parentheses under estimated values of the regression coefficients, and toleran double parentheses under estimated t-statistics.

* &** denote the significance of coefficients at 1 percent and 5 percent level of significance respectively. And

Figure 5: Table 3 :

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(1970), Logue and Merville (1972), Breen and Lerven (1973), Borde (1998), and Gu and Kim (2002)). However, contrary to financial intuition and several empirical evidences of developed and emerging stock

[Note: C]

Figure 6:

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