

# The Effects of Firm-Specific Factors on the Financial Soundness by using CAMELS Framework Indicators: A Case of Non-Life Insurance Industry of Pakistan

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## Abstract

*The study is carried out to identify the relations of firm-specific factors with the financial soundness indicators of CAMELS framework for the non-life insurance industry, by using a panel data set of 22 non-life insurance companies of Pakistan from 2007 to the year 2016. This study is established on two most applicable panel data techniques (random effects as well as fixed effects models), referring to the Hausman's test. This test proves that the fixed effect model is appropriate for the analyses of firm-specific factors. Based on the highest number of relationships among variables, fixed effects model's results propose that three firm-specific factors (age of company, management competence index and operating ratios) have significant relations with the CAMELS financial soundness indicators. However, seven firm-specific factors (size of the company, equity capital, leverage, market share, investment ratio, premium growth and solvency margin) have insignificant relation with the CAMELS financial soundness indicators. According to author's best knowledge, it's the first study that identifies the relations of firm-specific factors with the CAMELS financial soundness indicators, that will assist to the scholars, managers and policymakers of the non-life insurance industry of Pakistan to consider the significant factors.*

**Keywords:** *Firm-specific factors, CAMELS FSIs, financial soundness, non-life insurance industry*

**JEL Classification:** *P34, P43, C58, F36*

## INTRODUCTION

A well-established insurance industry delivers longstanding reserves for economic progress (Ahmed, et al. 2010) and (Charumathi 2012). Precisely, insurance companies are routing funds from the savers to those who have a deficiency of funds and besides this, these insurance

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companies transmit various risks from the insurers to the insured businesses and so these insurance companies facilitate mobilization of funds, business ideas, savers and investment in an economy. Over the last decade, factors which effects on the profitability of non-life insurance companies have remained under attention in many researches that the effects of the firm-specific factors on it or financial performance (i.e. return on assets) of non life insurance companies and numerous empirical studies have been conducted by the preceding scholars which include Almajali, et al. (2012) and Mehari & Aemiro (2013). However, Dar & Thaku (2015) indicated that the insurance companies' performance can be measured by numerous indicators and they used three financial soundness indicators (FSIs) which are Earnings & Profitability, Liquidity and Management Soundness from CAMELS framework (Core set of FSIs) to analyze insurance companies' financial performance. Athawale & Fernandes (2016) also conducted an empirical study of insurance companies and indicated that the performance can be estimated by using CAMELS ratios.

### *CAMELS Framework*

The financial soundness evaluation which is based on the CAMELS framework was proposed by Das, et al. (2003), later on, it was endorsed by the IMF for the adoption of the supervisory and regulatory body as a parameter. It is a ratio-based model for assessing the insurance industry's financial performance, entitled as 'Insurance & Issues in Financial Soundness' in the working paper of IMF, it was publically disclosed in a handbook jointly published by IMF and World Bank in the year 2005.

The word 'CAMELS' came into being from 'Capital adequacy', 'Asset quality', 'Reinsurance', 'Adequacy of claims & actuarial', 'Management soundness', 'Earnings & profitability', 'Liquidity', and 'Sensitivity to market risk'. Financial soundness indicators (FSIs) of the framework were statistically tested for non-life insurance companies. Basically, these financial soundness indicators add the "Reinsurance" and "Actuarial issues" to CAMELS ('Capital adequacy', 'Asset quality', 'Reinsurance', 'Adequacy of claims & actuarial', 'Management soundness', 'Earnings & profitability', 'Liquidity', and 'Sensitivity to market risk') framework that generally use by the banks for their performance estimation. Aiming to the measurement of non-life insurance industry's financial soundness, as well as the separate insurers, the suggested financial soundness indicators have been categorized into two sets on the bases of data availability, significance and requirements. These different sets of financial soundness indicators were established in comparison with the cumulative risks connected with the non-life insurance industry, which are known as 'core set' and 'encouraged set'.

Table – 1 presents the core set of indicators which are considered as compulsory for sufficient surveillance of non-life insurance companies. However, the encouraging set consists of further indicators which are worthwhile for observing additional detailed extents of exposure. The core indicators of the financial soundness for periodic observation of non-life insurance companies are selected in the study, it shields those features which have a dynamic status for assessing the non-life insurance industry's financial soundness and its data are voluntarily obtainable. Table–1 shows the complete list of financial soundness indicators' core set which is used and omitted in this research for estimating the financial soundness of the non-life insurance industry. Nevertheless, for assessment of financial soundness under the core set of CAMELS framework, the researchers of IMF have not talked over any targets of benchmark which needs

to be maintained/achieved by the non-life insurance industry, in contradiction of these ratios. According to the IMF researchers, the financial soundness indicators are valuable and the non-life insurance companies must relate these ratios for the purposes of performance analysis with their peers.

Table 1: Core Set of CAMELS FSIs For Non-Life Insurance Companies

Variables	Measurements	
Capital adequacy	= $\frac{\text{Net premium}}{\text{Capital}}$	
	= $\frac{\text{Capital}}{\text{total assests}}$	*
Asset quality	= $\frac{\text{real estate+unquoted equity+debtors}}{\text{total asset}}$	*
	= $\frac{\text{receivables}}{\text{gross premium+re-insurance recoveries}}$	
	= $\frac{\text{equities}}{\text{total assests}}$	
Reinsurance and actuarial issues.	Risk retention ratio = $\frac{\text{net premium}}{\text{gross premium}}$	*
	= $\frac{\text{net technical reserve}}{\text{avg. net claim paid in the last three years.}}$	
Management soundness	= $\frac{\text{gross premium}}{\text{no. of employees}}$	
	Asset per employee = $\frac{\text{total asset}}{\text{no. of employees}}$	
Earnings and profitability	Loss ratio = $\frac{\text{net claims}}{\text{net premium}}$	
	Expense ratio= $\frac{\text{expense}}{\text{net premium}}$	
	Combined ratio = $\text{expense ratio} + \text{loss ratio}$	
	= $\frac{\text{investment income}}{\text{net premium}}$ Return on equity (ROE)	*
Liquidity	= $\frac{\text{liquid asset}}{\text{current liability}}$	*
Sensitivity to market risk	= $\frac{\text{net open foreign exchange position}}{\text{capital}}$	

Source: Das, et al. (2003)

\* Omitted in the study, subject to the data unavailability.

An important reason that can be found behind the great attention of empirical studies on the subject matter, is the fact that the non-life insurance industry's financial soundness effects on the potential investors, shareholders, employees, policyholders as well as other businesses

that contribute in the country's development. Therefore, the entire non-life insurance industry should be financially sound. The contributing factors that disrupt the non-life insurance industry's financial soundness have become an immense business research concern in Pakistan. In this regards, factors that broadly affects the non-life insurance industry's financial soundness may well segregate into two groups:

### *Firm-Specific Factors*

Firm-specific factors are internal factors which effects on the financial soundness and these factors are controllable for the non-life insurers. A total of ten Firm-specific factors are included in the study which are Age of the Company (AC), Equity Capital (EC), Leverage (LV), Company Size (CS), Investment Ratio (IR), Management Competence Index (MCI), Market Share (MS), Operating Ratio (OR), Premium Growth (PG) and Solvency Margin (SM)in the direction of determining their effects on financial soundness of the non life insurance industry of Pakistan. The variables included in the study were carefully taken into account, on the bases of quantitative data availability and depending upon its existing literature. Descriptions of these variables and their effects on non-life insurance industry's financial soundness are explained in this study.

Most of the empirical studies pertain to non-life insurance companies is focusing on ROA, for the performance measurement, including, Saeed & Khurram (2015)and Ana-Maria & Ghiorghe (2014). While, Das, et al. (2003) prescribed CAMELS model for assessing the insurance companies' financial soundness. Dar & Thaku (2015) and Athawale & Fernandes (2016) conducted empirical studies on the insurance industry and indicated that performance can be estimated using traditional financial ratios such as CAMELS. In this regards, a very few numbers of existing literature is available on the non-life insurance industry as well as CAMELS FSIs. This research examines the controllable and uncontrollable factors of non-life insurance companies, which affects their financial soundness. The study mainly contributes by starting comprehensive research on firm-specific factors which effects on financial performance; that can be measured by the CAMELS framework indicators, using the financial facts that have not been accomplished in the non-life insurance companies of Pakistan and consequently this research can be useful to fulfil that gap in the literature.

### *Statement of the Problem*

The non-life insurers are transmitting financial risk and promoting the investment activities by facilitating the routing funds from surplus economic entities to those who have the insufficiency, and so, the prosperous set-up of insurance companies can establish verve for the country's economic development. Therefore, the non-life insurance industry is anticipated to be financially strong. According to Das, et al. (2003), CAMELS framework indicators are considered as some of the most significant financial soundness indicators. Several empirical studies have recognized a number of these firm-specific factors that effects on non-life insurance industry's financial performance or profitability (Mehari & Aemiro (2013) and Almajali, et al. (2012)). However, whether these firm-specific factors effects on CAMELS financial soundness indicators is an important business researchable area and put forward the researcher to examine the effects. Hence, to identify the firm-specific factors' effects on CAMELS FSIs of the non-life insurance industry of Pakistan is the problem which needs to be examined.

### *Research Significance*

Existing literature demonstrates that most of the researches that pertain to the non-life insurance have been conducted by considering the return on asset (ROA) as a financial performance (or profitability) indicator of the scholars' respective countries (Mehari & Aemiro (2013) and Almajali, et al. (2012)). However, according to the author's best knowledge, there is no study that identifies the relations of firm-specific factors with the CAMELS financial soundness indicators. In view of that, this study is designed to fulfil the gap and motivate researches towards the research area, by providing the applicable recommendations, based on CAMELS financial soundness indicators. Therefore, the study identifies the factors which affect the financial soundness indicators of CAMELS Framework and it will also assist the managers and policy makers of the non-life insurance industry to consider these significant factors.

### *Research Objectives*

Precisely, the research objective is to identify the relationships of firm-specific factors with CAMELS financial soundness indicators of the non-life insurance companies of Pakistan and to deliver recommendations pertain to the fundamental drivers of the financial soundness, on the bases of the empirical findings.

### *Research Scope*

This research is encircled on firm-specific factors that affect the financial soundness of the non-life insurance industry of Pakistan. As per the statistics of the Insurance Association of Pakistan ( IAP ), there are 28 nonlife insurance companies as of December 31st, 2016. However, subject to the availability of the required data, 22 companies are incorporated in the study, from the year 2007 to 2016.

### *Research Limitations*

In this study, the non-life insurance industry is considered an overall number of non-life insurance companies (i.e.28 companies) as of December 31st, 2016 on the statistics of IAP. Focusing on the availability of the required data from IAP, Securities and Exchange Commission of Pakistan ( SECP ) and the respective annual reports, a total of 22 companies encircled as an industry in the research. Furthermore, the CAMELS framework's financial soundness indicators are incorporated, subject to the availability of required data. However, 'Sensitivity to the market', 'Liquidity', one indicator of 'Asset quality' and two indicators of 'Reinsurance and Actuarial Issues' have omitted in this research, subject to unavailability of the required data.

## **LITERATURE REVIEW**

Existing literature indicates no proofs of such research in Pakistan or in other countries which evaluates the firm-specific factors that effects on CAMELS financial soundness indicators (FSIs) for non-life insurance companies. However, relevant literature has been summarized in the literature review that have identified a number of firm-specific factors which effects on profitability (or financial performance) of the non life insurance industry (Mwangi

& Murigu (2015), Malik (2011), Ana-Maria & Ghiorghe (2014) and Chen-Ying Lee (2014).

Almajali, et al. (2012) examined factors which effects on Jordanian insurance companies' financial performance (ROA). In the study, by using the data of Amman Stock Exchange's all listed insurance companies from 2002 to 2007; results of regression analysis reveal that management competence index, leverage, liquidity and size of a company have a significant and positive effect on Jordanian insurance companies' financial performance. Outcomes also recommend, "there is no significant relation between ROA and age of the company. Mehari & Aemiro (2013) have determined the factors that effects on Ethiopian insurance industry's financial performance (ROA) and investigated the impact of firm-specific factors (tangibility of assets, size of company, age of company, leverage, writing premium growth, loss ratio and liquidity) on the financial performance of nine insurance companies of Ethiopia, from the year 2005 to 2010. The empirical outcomes demonstrate that Ethiopian insurance companies' financial performance is significantly and positively influenced by the leverage, tangibility of assets and size of the company. While liquidity, the age of the company and writing premium growth are not significantly related to financial performance. The outcomes demonstrate loss ratio has a significant and negative influence on financial performance. Sambasivam & Ayele (2013 ) identified that Liquidity, the volume of capital, size, leverage, and the growth are recognized some of the utmost important contributing factors for the profitability of insurers; and size, the volume of capital and growth are positively interconnected. On the contrary, leverage ratio and liquidity ratio are significantly and negatively interconnected with the profitability. Ana-Maria & Ghiorghe (2014) identified the determinants of Romanian insurance market's financial performance and found that solvency margin, gross written premiums growth, underwriting risk, company size and financial leverage are significant determinants of the insurance industry's profitability.

Doğan (2013) has identified the influence of firm-specific factors (age of the company, size of the company, liquidity, loss ratio and leverage ratio) on the Turkish insurance industry's profitability. This study includes the Istanbul Stock Exchange's listed insurance industry from 2005 to 2011. Outcomes of the correlation and multiple regression methods indicate that profitability is negatively and significantly influenced by current ratio, age of the company, leverage ratio and loss ratio. Conversely, there is a significant and positive relationship between the size of insurance companies and profitability. B. Charumathi (2012) conducted an empirical study that includes 23 Indian companies' data of life insurance from the year 2008-09 to 2010-11. The author regressed firm-specific factors (equity capital, underwriting risk, liquidity, premium growth and leverage, size) against profitability (ROA). The study concludes that the life insurance industry's profitability is negatively and significantly influenced by equity capital, leverage and premium growth. The liquidity and size have significantly and positively influenced the Indian life insurance companies' profitability. However, the study does not indicate a significant relationship between profitability and underwriting risk. Malik (2011) has conducted research on insurance companies' determinants of profitability in Pakistan, by using 34 insurance companies' data from 2005 to 2009. Outcomes of the empirical study indicate that size of company and volume of capital are significantly and positively related to profitability. Leverage and loss ratio shows inverse and significant relation with the profitability. However, the research does not found evidence of the relationship between profitability and age of the company. Ahmed, et al. (2011) examined the performance of insurance industry by using 5 insurance companies' panel data from the year 2001 to 2007 and investigated the relationship

between firm-specific factors (growth, tangibility, age, risk, liquidity leverage and size) and the performance of insurance industry. The researchers have found out that risk, leverage and size are important factors of the insurance companies' performance.

As the existing literature pertains to the non-life insurance companies' financial performance is generally expressed that return on assets ( ROA ) is an important indicator of financial performance or profitability. Conversely, Das, et al. (2003) proposed the CAMELS Financial Soundness Indicators (FSIs) which is a ratio based indicators of assessing the insurance companies' financial soundness and financial performance. Insurance industry's quantitative soundness indicators can be accessible within the CAMELS ('Capital adequacy', 'Asset quality', 'Reinsurance & Actuarial issues', 'Management soundness', 'Earnings & profitability', 'Liquidity' and 'Sensitivity to market risk') framework.

Dar & Thaku (2015) indicated that the insurance companies' performance can be measured by numerous indicators and they used three financial soundness indicators which are Earnings & Profitability, Management Soundness and Liquidity from the CAMELS framework (Core set of FSIs) to analyze the insurance companies' financial performance. He concluded for the first indicator of "earnings and profitability" that the first three ratios (claim ratio, expenses ratio and combined ratio) are considered to be minimal for the prolonging and positive insurance companies' performance. Whereas, the other two ratios (investment income ratio and ROE ratio) are preferred to low. The second indicator is "Management Soundness" under which ratio of operational expenditure to gross premium has been analyzed which is again preferred to be low. The last indicator is "Liquidity" under which ratio of quick asset-to-current liability has been statistically analyzed which is always preferred to be on the higher side. Alamelu (2011) has analyzed the Indian life insurance industry's financial soundness by using the CAMELS FSIs. The author found that the Indian insurance industry was ruled by state-owned General Insurance Corporation (GIC) and Life Insurance Corporation (LIC). Chakraborty (2016) assessed the financial efficiencies of 04 general insurance companies of the Indian public sector, in contradiction of the conditions of the US financial crisis of the year 2007-08. Based on CAMELS FSIs and by using data from the year 2008-09 to 2014-15, the author has concluded that the United India general insurance company is the greatest performing general insurance company of the Indian public sector. Ghimire (2013) conducted an Empirical Study on the non-life insurance industry's financial efficiency in Nepal, by using data from the year of 2006 to 2011, to assess the non-life insurers' financial soundness of the private sector, based on CAMELS model as recommended by the IMF researchers Das, et al. (2003). The author used, capital adequacy; asset quality; reinsurance & actuarial Issues; management efficiency; earnings & profitability and liquidity indicators. The empirical outcomes indicate that non-life insurance companies' financial soundness has improved gradually in Nepal.

### *Research Hypotheses*

- H1: There is a relation between firm-specific factors and capital adequacy (CA1) of the non-life insurance industry.
- H2: There is a relation between firm-specific factors and capital adequacy (CA2) of the non-life insurance industry.
- H3: There is a relation between firm-specific factors and asset quality (AQ) of the non-life

insurance industry.

H4: There is a relation between firm-specific factors and reinsurance & actuarial issues (RA) of the non-life insurance industry.

H5: There is a relation between firm-specific factors and management soundness (MS1) of the non-life insurance industry.

H6: There is a relation between firm-specific factors and management soundness (MS2) of the non-life insurance industry.

H7: There is a relation between firm-specific factors and earnings and profitability (EP1) of the non-life insurance industry.

H8: There is a relation between firm-specific factors and earnings and profitability (EP2) of the non-life insurance industry.

H9: There is a relation between firm-specific factors and earnings and profitability (EP3) of the non-life insurance industry.

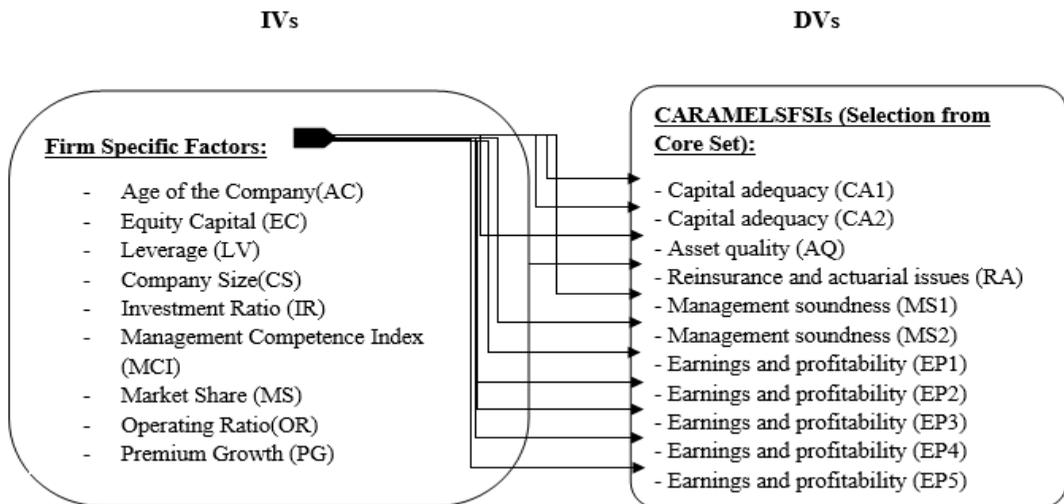
H10: There is a relation between firm-specific factors and earnings and profitability (EP4) of the non-life insurance industry.

H11: There is a relation between firm-specific factors and earnings and profitability (EP5) of life insurance industry.

### Research Design

The study primarily employed quantitative research approach, based on secondary data and entails the use of multiple regression method to test the hypotheses. In addition, panel data analysis has been conducted by using reviews 7 for concluding the results.

### Conceptual Framework



**Description of Variables**

Table 2: Description of Variables

	Variables	Measurements	Source
Dependent variables (CAR-AMELS Financial Soundness Indicators)	Capital adequacy	(CA1)= $\frac{\text{Net premium}}{\text{(CARAMELS Financial Soundness Indicators)}}$	Das, et al. (2003) and IMF & World Bank (2005)
		(CA2)= $\frac{\text{Capital}}{\text{total assests}}$	
	Asset quality	(AQ)= $\frac{\text{equities}}{\text{total assests}}$	
	Reinsurance and actuarial issues.	(RA) Risk retention ratio = $\frac{\text{net premium}}{\text{gross premium}}$	
	Management soundness	(MS1)= $\frac{\text{gross premium}}{\text{no. of employees}}$	
		(MS2) Asset per employee = $\frac{\text{total asset}}{\text{no. of employees}}$	
	Earnings and profitability	(EP1) Loss ratio = $\frac{\text{net claims}}{\text{net premium}}$	
		(EP2) Expense ratio= $\frac{\text{expense}}{\text{net premium}}$	
		(EP3) Combined ratio = $\text{expense ratio} + \text{loss ratio}$	
		(EP4) = $\frac{\text{investment income}}{\text{net premium}}$	
	(EP5)= Return on equity (ROE)		
Independent variables. (Firm-Specific)	Age of the Company	(AC)= no. of years since the commencement	Mwangi & Murigu (2015)
	Equity Capital	(EC)= log of equity capital	B. Charumathi (2012)
	Leverage	(LV)= $\frac{\text{total liability}}{\text{total asset}}$	Hailegebreal (2016)
	Company Size	(CS)= natural log. of total asset	Malik (2011)
	Investment Ratio	(IR)= $\frac{\text{investments}}{\text{total asset}}$	Ana-Maria & Ghiorghe (2014)
	Management Competence Index	(MCI)= $\frac{\text{profit}}{\text{no. of professionals}}$	Mwangi & Murigu (2015)
	Market Share	(MS)= $\frac{\text{firm premium}}{\text{total market premium}}$	Chen-Ying Lee (2014)
	Operating Ratio	(OR)= $\text{expense ratio} + \text{loss ratio}$	Chen-Ying Lee (2014)
		- $\frac{\text{inv. income}}{\text{net written premium}}$	
	Premium Growth	(PG)= $\frac{\text{GWP}_t - \text{GWP}_{(t-1)}}{\text{GWP}_{(t-1)}}$	Mehari & Aemiro (2013)

Solvency Margin

$$(SM) = \frac{\text{net asset}}{\text{net written premium}}$$

Ana - Maria & Ghiorghe  
(2014)

Note: Compiled by the Scholar Based on Previous Studies.

### Target Population

According to the IAP, there are 28 non-life insurance companies are listed as of December 31st, 2016. All of these companies are selected in the study, from the year 2007 to 2016. However, the total of 6 companies having missing data because of constitutional reason or their commencement after 2007 or some other reason has been omitted in the study.

### Collection of Data

Quantitative secondary data used in the research work, whereas, firm-specific factors<sup>1</sup> (Age of Company (AC), Equity Capital (EC), Leverage (LV), Company Size (CS), Investment Ratio (IR), Management Competence Index (MCI), Market Share (MS), Operating Ratio (OR), Premium Growth (PG), Solvency Margin (SM) and the financial soundness (selected CAMELS framework indicators ) of non life insurance industry are calculated by using available data on the statistics of IAP, the data received from the Securities & Exchange Commission of Pakistan (SECP) and their respective annual reports.

### Analysis of Data

Multiple regression models are used to find the effects of firm-specific factors ( Age of Company (AC), Equity Capital (EC), Leverage (LV), Company Size (CS), Investment Ratio (IR), Management Competence Index (MCI), Market Share (MS), Operating Ratio (OR), Premium Growth (PG) and Solvency Margin (SM)) on the financial soundness (selected CAMELS framework indicators ) of non-life insurance companies of Pakistan, by following below mentioned regression equation:

$$y = \beta_0 + \beta_1 AC_{n,t} + \beta_2 EC_{n,t} + \beta_3 LV_{n,t} + \beta_4 CS_{n,t} + \beta_5 IR_{n,t} + \beta_6 MCI_{n,t} + \beta_7 MS_{n,t} + \beta_8 OR_{n,t} + \beta_9 PG_{n,t} + \beta_{10} SM_{n,t} + \varepsilon_{n,t}$$

Here,

$\beta_0$  = Constant

$\varepsilon_{n,t}$  = Error factor for the company n at year t

$\beta_{1,2,3,\dots,12}$  = Parameters for estimation

n = number of company from 1 to 22

t = number of year from 2007 (i.e. 1) to 2016 (i.e. 10)

y = CAMELS FSIs:

<sup>1</sup> Insurance Association of Pakistan. Statistics

Retrieved from <http://www.iap.net.pk/Displaypage.aspx?ID=20> (accessed on 01/10/2017)

<sup>1</sup> Insurance Association of Pakistan ( IAP ). Year book

Retrieved from <http://www.iap.net.pk/Displaypage.aspx?ID=7> (accessed on 01/10/2017)

Capital Adequacy (CA), Asset Quality (AQ), Reinsurance & Actuarial issues (RA), Management Soundness (MS), Earnings & Profitability (EP).

All of the variables organize in a panel database of reviews 7 and the models are analyzing by applying fixed effects and random effects, referring to Hausman test results. The data consist of multiple observations of each selected non-life insurance company and the estimations are based on the panel data.

*Empirical Analysis*

Using reviews 7, the study highlights the outcomes of specific analyses methods of panel data for identifying effects of firm-specific factors on the financial soundness of Pakistan’s non-life insurance industry. At the first step, the unit root (stationarity) of all factors is tested by using the Levin, Lin & Chu category test. The perspective of economics is, stationary time series’ astonishments are short-term and with the passage of time, the astonishments effects will be absorbed. At the significance level of 5%, the unit root deficiency is estimated for the data of all factors.

Table 3: Stationarity Test (Unit Root)

Variables	Factor	Test Type	Prob.
<i>Age of the Company (AC)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	-
<i>Equity Capital (EC)</i>	<i>Firm specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Leverage (LV)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Company Size (CS)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Investment Ratio (IR)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Management Competence Index (MCI)</i>	<i>Firm specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Market Share (MS)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0219
<i>Operating Ratio (OR)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Premium Growth (PG)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Solvency Margin (SM)</i>	<i>Firm-specific</i>	<i>Levin, Lin and Chu</i>	0.0001
<i>Capital Adequacy (CA1)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Capital Adequacy (CA2)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Asset Quality (AQ)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Reinsurance and Actuarial Issues (RA)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Management Soundness (MS1)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Management Soundness (MS2)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Earnings and Profitability (EP1)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0001
<i>Earnings and Profitability (EP2)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0016
<i>Earnings and Profitability (EP3)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0003
<i>Earnings and Profitability (EP4)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000
<i>Earnings and Profitability (EP5)</i>	<i>CARAMELS FSIs</i>	<i>Levin, Lin and Chu</i>	0.0000

Note: Results computed by using panel data on eviews7.

Based on the data of 22 non-life insurance companies, from the year 2007 to the year 2016, the unit root test results demonstrate in table-3 that series in these analyses are stationary.

Table 4 represents Hausman test results; using panel data of 22 non-life insurers from the year 2007 to the year 2016; null hypothesis under which appropriate effect of the model is random.

*Table 4: Hausman Test for Firm-Specific Factors*

<b>Dependent variable (CAMELS FSIs)</b>	<b>Independent Variables</b>	<b>Hypothesis</b>	<b>Chi-Sq. d.f.</b>	<b>Prob.</b>
<i>CA1</i>	<i>Firm specific Factors</i>	<i>1</i>	<i>10</i>	<i>0.0000</i>
<i>CA2</i>	<i>Firm specific Factors</i>	<i>2</i>	<i>10</i>	<i>0.0000</i>
<i>AQ</i>	<i>Firm specific Factors</i>	<i>3</i>	<i>10</i>	<i>0.0000</i>
<i>RA</i>	<i>Firm specific Factors</i>	<i>4</i>	<i>10</i>	<i>0.0007</i>
<i>MS1</i>	<i>Firm specific Factors</i>	<i>5</i>	<i>10</i>	<i>0.0002</i>
<i>MS2</i>	<i>Firm specific Factors</i>	<i>6</i>	<i>10</i>	<i>0.0000</i>
<i>EP1</i>	<i>Firm specific Factors</i>	<i>7</i>	<i>10</i>	<i>0.0000</i>
<i>EP2</i>	<i>Firm specific Factors</i>	<i>8</i>	<i>10</i>	<i>0.0000</i>
<i>EP3</i>	<i>Firm specific Factors</i>	<i>9</i>	<i>10</i>	<i>0.0000</i>
<i>EP4</i>	<i>Firm specific Factors</i>	<i>10</i>	<i>10</i>	<i>0.0000</i>
<i>EP5</i>	<i>Firm specific Factors</i>	<i>11</i>	<i>10</i>	<i>0.0099</i>

*Note: Results computed by using panel data on reviews 7.*

At the same significance level of 5%, Table-4 shows the Hausman test results for firm-specific factors that we reject the null hypothesis. Therefore, the fixed effect cross section implicates in the multiple least square equations.

***Hypotheses Testing***

Hypotheses 1 to 11 shows the effects of firm-specific factors on CAMELS financial soundness indicators; using panel data of 22 non-life insurers from 2007 - 2016. Null hypotheses under which the firm-specific factors have no relation with the CAMELS FSIs of non-life insurance companies.

H1: There is a relation between firm-specific factors and capital adequacy (CA1) of the non-life insurance industry.

*Table - 5: Fixed Effects Model*

<b>Variables</b>	<b>Coeff.</b>	<b>Std. Err.</b>	<b>t - Stat.</b>	<b>Prob.</b>
<i>C</i>	<i>-1.341589</i>	<i>1.527800</i>	<i>-0.878118</i>	<i>0.3810</i>
<i>AC_?</i>	<i>-0.104652</i>	<i>0.019288</i>	<i>-5.425749</i>	<i>0.0000</i>
<i>EC_?</i>	<i>1.278106</i>	<i>1.290530</i>	<i>0.990373</i>	<i>0.3233</i>
<i>LV_?</i>	<i>1.543797</i>	<i>1.523776</i>	<i>1.013139</i>	<i>0.3123</i>
<i>CS_?</i>	<i>-0.404509</i>	<i>1.323702</i>	<i>-0.305589</i>	<i>0.7603</i>
<i>IR_?</i>	<i>0.240495</i>	<i>0.370901</i>	<i>0.648406</i>	<i>0.5175</i>
<i>MCI_?</i>	<i>-2.74E-05</i>	<i>3.20E-05</i>	<i>-0.856056</i>	<i>0.3931</i>
<i>MS_?</i>	<i>28.31904</i>	<i>2.868807</i>	<i>9.871364</i>	<i>0.0000</i>
<i>OR_?</i>	<i>-0.034667</i>	<i>0.035869</i>	<i>-0.966466</i>	<i>0.3351</i>
<i>PG_?</i>	<i>-0.164495</i>	<i>0.134953</i>	<i>-1.218908</i>	<i>0.2244</i>
<i>SM_?</i>	<i>-0.011391</i>	<i>0.007140</i>	<i>-1.595526</i>	<i>0.1123</i>

<i>R - Squared</i>	0.882637
<i>Adjusted R - Squared</i>	0.863181
<i>F - statistic</i>	45.36601
<i>Prob ( F - statistic)</i>	0.000000

Table 5 explains the results of fixed effects model that Equity Capital (EC), Leverage (LV) and Investment Ratio (IR) have a positive and insignificant relationship with the Capital Adequacy (CA1), as the probability value associated to respective variables are higher than the significance level of 5%. Company Size (CS), Management Competence Index (MCI), Operating Ratio (OR), Premium Growth (PG) and Solvency Margin (SM) have a negative and insignificant relationship with the capital adequacy (CA1). However, Age of the Company (AC) has a significant and negative relationship with capital adequacy (CA1) and Market Share (MS) has a significant and positive relationship with capital adequacy (CA1). The R-squared value indicates that the independent variables describe 88.26% variations independent variable (CA1). F- statistics indicate the model's validity, as value 45.37 is greater than the Prob (F - statistics) value 0.00.

H2: There are relation between-firm specific factors and capital adequacy (CA2) of the non-life insurance industry.

Table 6: Fixed Effects Model

<b>Variable</b>	<b>Coeff.</b>	<b>Std. Err.</b>	<b>t- Stat.</b>	<b>Prob.</b>
<i>C</i>	2.564322	0.270037	9.496203	0.0000
<i>AC_?</i>	0.021377	0.003409	6.270428	0.0000
<i>EC_?</i>	-0.126783	0.228099	-0.555823	0.5790
<i>LV_?</i>	-0.608894	0.269325	-2.260813	0.0249
<i>CS_?</i>	-0.332923	0.233963	-1.422975	0.1564
<i>IR_?</i>	0.005388	0.065556	0.082185	0.9346
<i>MCI_?</i>	6.92E-08	5.66E-06	0.012241	0.9902
<i>MS_?</i>	0.055413	0.507058	0.109284	0.9131
<i>OR_?</i>	0.001251	0.006340	0.197274	0.8438
<i>PG_?</i>	0.043550	0.023853	1.825775	0.0695
<i>SM_?</i>	0.001293	0.001262	1.024837	0.3068
<i>R - Squared</i>	0.859277			
<i>Adjusted R - Squared</i>	0.835948			
<i>F - statistic</i>	36.83380			
<i>Prob (F - statistic)</i>	0.000000			

Table-6 explains the results of the fixed effects model that Equity Capital (EC) and Company Size (CS) have a negative and insignificant relationship with the Capital Adequacy (CA2). Investment Ratio (IR), Management Competence Index (MCI), Operating Ratio (OR), Market Share (MS), Premium Growth (PG) and Solvency Margin (SM) have a positive and insignificant relationship with the Capital Adequacy (CA2). However, Age of Company (AC) has a significant and positive relationship with capital adequacy (CA2). Leverage (LV) has a significant and negative relationship with capital adequacy (CA2) at the significance level

of 5%. The R-squared value indicates that the independent variables describe 85.93% variations in the dependent variable (CA2). F- statistics indicate the model's validity, as value 36.83 is greater than the Prob (F - statistics) value 0.000.

H3: There is a relation between firm-specific factors and asset quality (AQ) of the non-life insurance industry.

Table 7: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
C	1.000000	8.44E-14	1.18E+13	0.0000
AC_?	3.07E-15	1.07E-15	2.878939	0.0045
EC_?	-8.43E-13	7.13E-14	-11.81721	0.0000
LV_?	-1.000000	8.42E-14	-1.19E+13	0.0000
CS_?	8.93E-13	7.31E-14	12.20689	0.0000
IR_?	-9.96E-14	2.05E-14	-4.861300	0.0000
MCI_?	2.15E-18	1.77E-18	1.216461	0.2253
MS_?	3.48E-13	1.59E-13	2.197619	0.0292
OR_?	2.86E-15	1.98E-15	1.443013	0.1507
PG_?	1.25E-14	7.46E-15	1.676674	0.0953
SM_?	8.04E-16	3.94E-16	2.038913	0.0429
R - Squared	1.000000			
Adjusted R - Squared	1.000000			
F - statistic	2.23E+26			
Prob (F - statistic)	0.000000			

Table 7 explains the results of fixed effects model that Management Competence Index (MCI), Operating Ratio (OR) and Premium Growth (PG) have a positive and insignificant relationship with the asset quality (AQ). Equity Capital (EC), Investment Ratio (IR), and Leverage (LV) have a negative and significant relationship with the asset quality (AQ) at the significance level of 5%. Age of the Company (AC), Market Share (MS), Company Size (CS) and Solvency Margin (SM) have a positive and significant relationship with the asset quality (AQ) at the significance level of 5%. However, the R-squared value indicates that the independent variables describe 100% variations in the dependent variable (AQ). F - statistics indicate the model's validity, as the value 2.23E+26 is greater than the Prob (F - statistics) value 0.000.

H4: There is a relation between firm-specific factors and reinsurance & actuarial issues (RA) of the non-life insurance industry.

Table 8: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
C	0.001166	0.262492	0.004443	0.9965
AC_?	-0.011356	0.003314	-3.426768	0.0008
EC_?	-0.505502	0.221727	-2.279841	0.0237
LV_?	-0.781254	0.261801	-2.984154	0.0032
CS_?	0.713389	0.227426	3.136796	0.0020

<i>IR_?</i>	-0.109186	0.063725	-1.713401	0.0883
<i>MCI_?</i>	-2.85E-06	5.50E-06	-0.518997	0.6044
<i>MS_?</i>	0.737153	0.492891	1.495568	0.1365
<i>OR_?</i>	-0.002975	0.006163	-0.482687	0.6299
<i>PG_?</i>	-0.139696	0.023186	-6.024949	0.0000
<i>SM_?</i>	-0.000699	0.001227	-0.569843	0.5695
<i>R - Squared</i>	0.778025			
<i>Adjusted R - Squared</i>	0.741227			
<i>F - statistic</i>	21.14314			
<i>Prob( F - statistic )</i>	0.000000			

Table 8 explains the results of fixed effects model that Premium Growth (PG), Equity Capital (EC), Leverage (LV) and Age of Company (AC) have negative and significant relation with reinsurance and actuarial issues (RA) at the significance level of 5%. Company Size (CS) has a significant and positive relationship with the reinsurance and actuarial issues (RA) at the significance level of 5%. However, Market Share (MS) has a positive and insignificant relationship with the reinsurance and actuarial issues (RA). Solvency Margin (SM), Investment Ratio (IR), Management Competence Index (MCI) and Operating Ratio (OR) have a negative and insignificant relationship with the reinsurance and actuarial issues (RA). The R-squared value indicates that the independent variables describe 77.80% variations independent variable (RA). F -statistics indicate the model's validity, as value 21.14 is greater than the Prob (F - statistics) value 0.000.

H5: There is a relation between firm-specific factors and management soundness (MS1) of the non-life insurance industry.

Table 9: Fixed Effects Model

<b>Variables</b>	<b>Coeff.</b>	<b>Std. Err.</b>	<b>t - Stat.</b>	<b>Prob.</b>
<i>C</i>	-28349.96	7797.678	-3.635692	0.0004
<i>AC_?</i>	316.5681	98.44358	3.215731	0.0015
<i>EC_?</i>	7268.895	6586.686	1.103574	0.2712
<i>LV_?</i>	13315.50	7777.139	1.712133	0.0885
<i>CS_?</i>	-4641.142	6755.993	-0.686967	0.4930
<i>IR_?</i>	-3024.649	1893.028	-1.597784	0.1118
<i>MCI_?</i>	0.479061	0.163362	2.932523	0.0038
<i>MS_?</i>	583.9661	14642.00	0.039883	0.9682
<i>OR_?</i>	476.6337	183.0723	2.603528	0.0100
<i>PG_?</i>	1507.283	688.7790	2.188341	0.0299
<i>SM_?</i>	-62.22894	36.43961	-1.707728	0.0893
<i>R - Squared</i>	0.668638			
<i>Adjusted R - Squared</i>	0.613707			
<i>F - statistic</i>	12.17220			
<i>Prob( F - statistic )</i>	0.000000			

Table 9 explains the results of fixed effects model that Premium Growth (PG), Age of the Company (AC), Management Competence Index (MCI) and Operating Ratio (OR) have positive and significant relationship with the Management soundness (MS1), as the probability value associated to respective variables are lower than 5% significance level. However, Company Size (CS), Investment Ratio (IR) and Solvency Margin (SM) have a negative and insignificant relationship with the Management soundness (MS1). Equity Capital (EC), Market Share (MS) and Leverage (LV) have a positive and insignificant relationship with the Management soundness (MS1). The R-squared value indicates that the independent variables describe 66.86% variations independent variable (MS1). F- statistics indicate the model's validity, as value 12.17 is greater than the Prob (F - statistics) value 0.000.

H6: There is a relation between firm-specific factors and management soundness (MS2) of the non-life insurance industry.

*Table 10: Fixed Effects Model*

<b>Variables</b>	<b>Coeff.</b>	<b>Std. Err.</b>	<b>t - Stat.</b>	<b>Prob.</b>
<i>C</i>	-61907.74	21808.60	-2.838684	0.0050
<i>AC_?</i>	1062.911	275.3278	3.860528	0.0002
<i>EC_?</i>	6193.680	18421.69	0.336217	0.7371
<i>LV_?</i>	24233.07	21751.16	1.114105	0.2667
<i>CS_?</i>	-3295.918	18895.21	-0.174431	0.8617
<i>IR_?</i>	-9922.583	5294.434	-1.874154	0.0625
<i>MCI_?</i>	2.456708	0.456891	5.377013	0.0000
<i>MS_?</i>	-52252.04	40950.84	-1.275970	0.2035
<i>OR_?</i>	3237.858	512.0179	6.323720	0.0000
<i>PG_?</i>	809.2324	1926.382	0.420079	0.6749
<i>SM_?</i>	1462.000	101.9146	14.34535	0.0000
<i>R - Squared</i>	0.927120			
<i>Adjusted R - Squared</i>	0.915038			
<i>F - statistic</i>	76.73763			
<i>Prob( F -statistic )</i>	0.000000			

Table 10 explains the results of the fixed effects model that Company Size (CS), Investment Ratio (IR) and Market Share (MS) have a negative and insignificant relationship with the Management soundness (MS2). Solvency Margin (SM), Age of the Company (AC), Management Competence Index (MCI) and Operating Ratio (OR) has a positive and significant relationship with the Management soundness (MS2) at the significance level of 5%. However, Equity Capital (EC), Leverage (LV) and Premium Growth (PG) have a positive and insignificant relationship with the Management soundness (MS2). The R-squared value indicates that the independent variables describe 92.71% variations in the dependent variable (MS2). F- statistics indicate the model's validity, as value 76.73 is greater than the Prob (F - statistics) value 0.000.

H7: There is a relation between firm-specific factors and earnings and profitability (EP1) of the non-life insurance industry.

Table 11: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
<i>C</i>	0.302968	0.535472	0.565797	0.5722
<i>AC_?</i>	-0.022876	0.006760	-3.383883	0.0009
<i>EC_?</i>	0.725130	0.452313	1.603161	0.1106
<i>LV_?</i>	1.361113	0.534062	2.548606	0.0116
<i>CS_?</i>	-0.639912	0.463939	-1.379301	0.1694
<i>IR_?</i>	0.046550	0.129996	0.358091	0.7207
<i>MCI_?</i>	5.19E-05	1.12E-05	4.626132	0.0000
<i>MS_?</i>	0.127309	1.005476	0.126615	0.8994
<i>OR_?</i>	0.057075	0.012572	4.539979	0.0000
<i>PG_?</i>	-0.080554	0.047299	-1.703080	0.0902
<i>SM_?</i>	0.002672	0.002502	1.067736	0.2870
<i>R - Squared</i>	0.477711			
<i>Adjusted R - Squared</i>	0.391128			
<i>F - statistic</i>	5.517393			
<i>Prob ( F- statistic )</i>	0.000000			

Table 11 explains the results of the fixed effects model that Age of Company (AC) has negative and significant relation with Earnings and profitability (EP1) at the significance level of 5%. Company Size (CS) and Premium Growth (PG) have a negative and insignificant relationship with Earnings and profitability (EP1). Leverage (LV), Management Competence Index (MCI) and Operating Ratio (OR) have a significant and positive relation with Earnings and profitability (EP1) at the significance level of 5%. However, Equity Capital (EC), Solvency Margin (SM), Investment Ratio (IR) and Market Share (MS) have an insignificant and positive relation with the Earnings and profitability (EP1). The R-squared value indicates that the independent variables describe 47.77% variations independent variable (EP1). F- statistics indicate the model's validity, as value 5.52 is greater than the Prob (F - statistics) value 0.000.

H8: There is a relation between firm-specific factors and earnings and profitability (EP2) of the non-life insurance industry.

Table 12: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
<i>C</i>	3.714952	0.706983	5.254656	0.0000
<i>AC_?</i>	0.048488	0.008925	5.432590	0.0000
<i>EC_?</i>	-2.383317	0.597187	-3.990903	0.0001
<i>LV_?</i>	-1.995549	0.705121	-2.830081	0.0052
<i>CS_?</i>	1.543540	0.612538	2.519909	0.0126
<i>IR_?</i>	0.192046	0.171633	1.118937	0.2646
<i>MCI_?</i>	3.81E-05	1.48E-05	2.574403	0.0108
<i>MS_?</i>	0.620547	1.327529	0.467445	0.6407
<i>OR_?</i>	0.058128	0.016598	3.502019	0.0006
<i>PG_?</i>	0.038405	0.062449	0.614988	0.5393

SM_?	0.032011	0.003304	9.689113	0.0000
R - Squared	0.704142			
Adjusted R - Squared	0.655096			
F - statistic	14.35675			
Prob ( F- statistic)	0.000000			

Table 12 explains the results of the fixed effects model that Equity Capital (EC) and Leverage (LV) have negative and significant relation with the Earnings and profitability (EP2). Solvency Margin (SM), Operating Ratio (OR), Management Competence Index (MCI), Company Size (CS) and Age of Company (AC) have a significant and positive relationship with Earnings and profitability (EP2), as the probability value associated to respective variables are lower than 5% significance level. However, Investment Ratio (IR), Market Share (MS) and Premium Growth (PG) have a positive and insignificant relationship with the Earnings and profitability (EP2). The R-squared value indicates that the independent variables describe 70.41% variations in the dependent variable (EP2). F- statistics indicate the model's validity, as value 14.36 is greater than the Prob (F - statistics) value 0.000.

H9: There is a relation between firm-specific factors and earnings and profitability (EP3) of the non-life insurance industry.

Table 13: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
C	4.009612	0.824986	4.860216	0.0000
AC_?	0.025708	0.010415	2.468347	0.0145
EC_?	-1.663909	0.696865	-2.387707	0.0180
LV_?	-0.637264	0.822813	-0.774493	0.4396
CS_?	0.909666	0.714777	1.272657	0.2047
IR_?	0.239321	0.200280	1.194929	0.2336
MCI_?	8.99E-05	1.73E-05	5.198769	0.0000
MS_?	0.771019	1.549108	0.497718	0.6193
OR_?	0.115006	0.019369	5.937654	0.0000
PG_?	-0.039516	0.072872	-0.542266	0.5883
SM_?	0.034674	0.003855	8.993859	0.0000
R - Squared	0.664806			
Adjusted R - Squared	0.609239			
F- statistic	11.96407			
Prob(F-statistic)	0.000000			

Table 13 explains the results of the fixed effects model that Equity Capital (EC) has a negative and significant relationship with the Earnings and profitability (EP3) at the significance level of 5%. Leverage (LV) and Premium Growth (PG) have an insignificant and negative relation with Earnings and profitability (EP3). Age of the Company (AC), Management Competence Index (MCI), Solvency Margin (SM) and Operating Ratio (OR) has a significant and positive relationship with Earnings and profitability (EP3), such as probability value associated to respective variables are lower than 5% significance level. However, Company Size (CS),

Investment Ratio (IR) and Market Share (MS) have an insignificant and positive relation with the Earnings and profitability (EP3). The R-squared value indicates that the independent variables describe 66.48% variations independent variable (EP3). F -statistics indicate the model's validity, as value 11.96 is greater than the Prob (F - statistics) value 0.000.

H10: There is a relation between firm-specific factors and earnings and profitability (EP4) of the non-life insurance industry.

Table 14: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
<i>C</i>	4.018515	0.825454	4.868250	0.0000
<i>AC_?</i>	0.025694	0.010421	2.465541	0.0146
<i>EC_?</i>	-1.668456	0.697260	-2.392876	0.0177
<i>LV_?</i>	-0.646955	0.823280	-0.785827	0.4330
<i>CS_?</i>	0.913177	0.715182	1.276845	0.2032
<i>IR_?</i>	0.242141	0.200394	1.208327	0.2284
<i>MCI_?</i>	8.97E-05	1.73E-05	5.188025	0.0000
<i>MS_?</i>	0.791801	1.549986	0.510844	0.6101
<i>OR_?</i>	-0.885072	0.019380	-45.66973	0.0000
<i>PG_?</i>	-0.040472	0.072913	-0.555072	0.5795
<i>SM_?</i>	0.034733	0.003857	9.004002	0.0000
<i>R - Squared</i>	0.999427			
<i>Adjusted R - Squared</i>	0.999332			
<i>F - statistic</i>	10519.93			
<i>Prob ( F -statistic )</i>	0.000000			

Table 14 explains the results of fixed effects model that Equity Capital (EC) and Operating Ratio (OR) have a significant and negative relationship with the Earnings and profitability (EP4) at a significance level of 5%. Leverage (LV) and Premium Growth (PG) have an insignificant and negative relationship with Earnings and profitability (EP4). Age of Company (AC), Management Competence Index (MCI), Solvency Margin (SM) have positive and significant relation with Earnings and profitability (EP4), such as probability value associated to respective variables are lower than 5% significance level. However, Company Size (CS), Investment Ratio (IR) and Market Share (MS) have an insignificant and positive relation with the Earnings and profitability (EP4). The R-squared value indicates that the independent variables describe 99.94% variations in the dependent variable (EP4). F -statistics indicate the model's validity, such as value 10519.93 is greater than the Prob (F - statistics) value 0.000.

H11: There is a relation between firm-specific factors and earnings and profitability (EP5) of the non-life insurance industry.

Table 15: Fixed Effects Model

Variables	Coeff.	Std. Err.	t - Stat.	Prob.
<i>C</i>	-0.311490	0.647323	-0.481197	0.6309
<i>AC_?</i>	-0.016004	0.008172	-1.958310	0.0517

<i>EC_?</i>	1.039001	0.546792	1.900174	0.0589
<i>LV_?</i>	0.747426	0.645618	1.157691	0.2485
<i>CS_?</i>	-0.924458	0.560847	-1.648324	0.1010
<i>IR_?</i>	0.148439	0.157149	0.944574	0.3461
<i>MCI_?</i>	9.62E-05	1.36E-05	7.096008	0.0000
<i>MS_?</i>	1.448818	1.215502	1.191950	0.2348
<i>OR_?</i>	0.097968	0.015198	6.446267	0.0000
<i>PG_?</i>	0.116876	0.057179	2.044035	0.0424
<i>SM_?</i>	0.002573	0.003025	0.850541	0.3961
<i>R -Squared</i>	0.440584			
<i>Adjusted R - Squared</i>	0.347846			
<i>F - statistic</i>	4.750870			
<i>Prob (F - statistic)</i>	0.000000			

Table 15 explains the results of the fixed effects model that Company Size (CS) and Age of Company (AC) have a negative and insignificant relationship with the Earnings and profitability (EP5). Management Competence Index (MCI), Operating Ratio (OR) and Premium Growth (PG), have a positive and significant relationship with the Earnings and profitability (EP5) at the significance level of 5%. However, Equity Capital (EC), Leverage (LV), Solvency Margin (SM), Investment Ratio (IR) and Market Share (MS) have insignificant and positive relation with the Earnings and profitability (EP5). The R-squared value indicates that the independent variables describe 44.05% variations independent variable (EP5). F- statistics indicate the model's validity, as value 4.75 is greater than the Prob (F - statistics) value 0.000.

#### 4.2. Hypotheses Assessment Summary

Table 16 comprises the results of hypotheses 1 to 11 that pertains to the relations of firm-specific factors with the CAMELS FSIs, under which the null hypothesis is no relation of firm-specific factors with the CAMELS FSIs.

Table 16: Effects of Firm-Specific Factors on CAMELS FSIs.

Hypothesis	CAMELS FSIs	Significant	Insignificant
<i>H1</i>	<i>CA1</i>	( <i>AC</i> ) ( <i>MS</i> )	( <i>EC</i> ) ( <i>LV</i> ) ( <i>CS</i> ) ( <i>IR</i> ) ( <i>MCI</i> ) ( <i>OR</i> ) ( <i>PG</i> ) ( <i>SM</i> )
<i>H2</i>	<i>CA2</i>	( <i>AC</i> ) ( <i>LV</i> )	( <i>EC</i> ) ( <i>CS</i> ) ( <i>IR</i> ) ( <i>MCI</i> ) ( <i>MS</i> ) ( <i>OR</i> ) ( <i>PG</i> ) ( <i>SM</i> )

<i>H3</i>	<i>AQ</i>	<i>(AC)</i> <i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(SM)</i>	<i>(MCI)</i> <i>(OR)</i> <i>(PG)</i>
<i>H4</i>	<i>RA</i>	<i>(AC)</i> <i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(PG)</i>	<i>(IR)</i> <i>(MCI)</i> <i>(MS)</i> <i>(OR)</i> <i>(SM)</i>
<i>H5</i>	<i>MS1</i>	<i>(AC)</i> <i>(MCI)</i> <i>(OR)</i> <i>(PG)</i>	<i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(SM)</i>
<i>H6</i>	<i>MS2</i>	<i>(AC)</i> <i>(MCI)</i> <i>(OR)</i> <i>(SM)</i>	<i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(PG)</i>
<i>H7</i>	<i>EP1</i>	<i>(AC)</i> <i>(LV)</i> <i>(MCI)</i> <i>(OR)</i>	<i>(EC)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(SM)</i> <i>(PG)</i>
<i>H8</i>	<i>EP2</i>	<i>(AC)</i> <i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(MCI)</i> <i>(OR)</i> <i>(SM)</i>	<i>(IR)</i> <i>(MS)</i> <i>(PG)</i>
<i>H9</i>	<i>EP3</i>	<i>(AC)</i> <i>(EC)</i> <i>(MCI)</i> <i>(OR)</i> <i>(SM)</i>	<i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(PG)</i>
<i>H10</i>	<i>EP4</i>	<i>(AC)</i> <i>(EC)</i> <i>(MCI)</i> <i>(OR)</i> <i>(SM)</i>	<i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(PG)</i>

<i>H11</i>	<i>EP5</i>	<i>(MCI)</i> <i>(OR)</i> <i>(PG)</i>	<i>(AC)</i> <i>(EC)</i> <i>(LV)</i> <i>(CS)</i> <i>(IR)</i> <i>(MS)</i> <i>(SM)</i>
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At 5% significance level.

Results of hypotheses 1,2, 5, 6, 7 and 11 show that most of the firm-specific factors have insignificant relations with the CA1, CA2, MS1, MS2, EP1 and EP5 of CAMELS financial soundness indicators, respectively. The hypotheses 3 and 8 shows that most of the firm-specific factors have a significant relationship with the AQ and EP2 of CAMELS financial soundness indicators, respectively. However, the hypotheses 4, 9 and 10 show that an equal number of the firm-specific factors have a significant and insignificant relationship with the RA, EP3 and EP4 of CAMELS financial soundness indicators, respectively.

### CONCLUSIONS

The hypotheses assessment summary shows the results’ overview of the tested hypotheses. These results were indicating the combined independent variables’ relationship with the individual CAMELS financial soundness indicators. However, to have an accurate relation of each independent variable with the CAMELS indicators, the author has reshaped these results of firm-specific variables (firm-specific factor vice) in the Table 17.

<b>Firm-Specific Factors</b>	<b>Significant</b>	<b>Insignificant</b>
<i>(AC)</i>	<i>(CA1)</i> <i>(CA2)</i> <i>(AQ)</i> <i>(RA)</i> <i>(MS1)</i> <i>(MS2)</i> <i>(EP1)</i> <i>(EP2)</i> <i>(EP3)</i> <i>(EP4)</i>	<i>(EP5)</i>
<i>(EC)</i>	<i>(AQ)</i> <i>(RA)</i> <i>(EP2)</i> <i>(EP3)</i> <i>(EP4)</i>	<i>(CA1)</i> <i>(CA2)</i> <i>(MS1)</i> <i>(MS2)</i> <i>(EP1)</i> <i>(EP5)</i>
<i>(LV)</i>	<i>(CA2)</i> <i>(AQ)</i> <i>(RA)</i> <i>(EP1)</i> <i>(EP2)</i>	<i>(CA1)</i> <i>(MS1)</i> <i>(MS2)</i> <i>(EP3)</i> <i>(EP4)</i> <i>(EP5)</i>

(CS)	(AQ) (RA) (EP2)	(CA1) (CA2) (MS1) (MS2) (EP1) (EP3) (EP4) (EP5)
(IR)	(AQ)	(CA1) (CA2) (RA) (MS1) (MS2) (EP1) (EP2) (EP3) (EP4) (EP5)
(MCI)	(MS1) (MS2) (EP1) (EP2) (EP3) (EP4) (EP5)	(CA1) (CA2) (AQ) (RA)
(MS)	(CA1) (AQ)	(CA2) (RA) (MS1) (MS2) (EP1) (EP2) (EP3) (EP4) (EP5)
(OR)	(MS1) (MS2) (EP1) (EP2) (EP3) (EP4) (EP5)	(CA1) (CA2) (AQ) (RA)
(PG)	(RA) (MS1) (EP5)	(CA1) (CA2) (AQ) (MS2) (EP1) (EP2) (EP3) (EP4)

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<p>(SM)</p>	<p>(AQ) (MS2) (EP2) (EP3) (EP4)</p>	<p>(CA1) (CA2) (RA) (MS1) (EP1) (EP5)</p>
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At the significance level of 5%.

Based on the highest number of relationships among the variables, the aforementioned table-17 indicates that the Age of the company (AC), Management Competence Index (MCI) and Operating Ratio (OR) have significant relations with the CAMELS financial soundness indicators. On the contrary, Equity capital (EC), Company Size (CS), Investment Ratio (IR), Market Share (MS), Leverage (LV), Premium Growth (PG) and Solvency margin (SM) have insignificant relation with the CAMELS financial soundness indicators.

## RECOMMENDATIONS

The CAMELS FSI's core set for the periodic monitoring of non-life insurance companies has dynamic importance for assessing the industry's financial soundness. The contributing factors that effect on non-life insurance industry's financial soundness of having statically identified that Age of the company (AC), Management Competence Index (MCI) and Operating Ratio (OR) have significant relation with the CAMELS financial soundness indicators. On the contrary, Company Size (CS), Equity capital (EC), Leverage (LV), Investment Ratio (IR), Market Share (MS), Premium Growth (PG) and Solvency margin (SM) have insignificant relation with the CAMELS financial soundness indicators. Therefore, it is suggested that firm-specific factors (Age of company (AC), Management Competence Index (MCI) and Operating Ratio (OR)) broadly effects on CAMELS financial soundness of non-life insurance industry.

## FURTHER RECOMMENDATIONS

Das, et al. (2003) further suggest an encouraging set of the indicators for the above categories with the intention to capture further scopes. It includes geographic and sectoral distribution of underwritten and investments business, risk-weighted capital ratio, derivative exposures, market-based indicators ( price/ gross premium, price/earnings, market/ book value) and group exposures (group companies total (Premium + claims) / business total (Premium + claims), group debts/ total assets). Therefore, it is recommended to the researchers to work on the encouraging indicators of CAMELS framework.

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