ISSN 234-9271

Sri Lankan Journal of Banking and Finance

An Endeavor to Share Knowledge

Volume 04, No: 01, June 2021

Published by

DEPARTMENT OF BANKING AND FINANCE
FACULTY OF BUSINESS STUDIES AND FINANCE
WAYAMBA UNIVERSITY OF SRI LANKA
KULIYAPITIYA
SRI LANKA

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

CONTENTS

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

The Sri Lankan Journal of Banking and Finance (SLJBF) is a referred Journal bi-annually published research papers and scholarly work by the Department of Banking and Finance, Wayamba University of Sri Lanka. The main objective of the SLJBF is to publish scientific research findings that address issues and developments related to economics in general and money, banking, financial markets in particular at both national and international level. All research articles submitted are double blind reviewed prior to publishing. Views expressed in the research articles are not the views of the Department of Banking and Finance, Wayamba University of Sri Lanka or the Editorial Board.

National Library of Sri Lanka- Cataloging in Publication Data
Sri Lankan Journal of Banking and Finance (SLJBF)
ISSN 234-9271

Published by
Department of Banking and Finance
Faculty of Business Studies and Finance
Wayamba University of Sri Lanka
Kuliyapitiya, Sri Lanka
Tel: +94 37 228 4216
Web: http://bsf.wyb.ac.lk

Printed by
Vidyalankara Press, Kelaniya, Sri Lanka
Telephone: +94 11 291 1382, +94 71 634 3183

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

S L J B F

Department of Banking and Finance

Faculty of Business Studies and Finance

Wayamba University of Sri Lanka

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

Editorial Preface

We are pleased to present Volume 4(1) of the Sri Lankan Journal of Banking and Finance (SLJBF), a refereed journal of Banking and Finance published by the Department of Banking and Finance, Wayamba University of Sri Lanka. SLJBF provides a unique platform for researchers, academicians, professionals, and research students to impart and share knowledge in the form of high-quality research papers to infuse innovative systems and methods to the economy and finance as a whole. In line with that SLJBF invites you to join with us by writing quality manuscripts in the discipline of economics, banking and finance.

We received a good response for the call for papers and out of the paper received seven papers selected for the publication through the rigorous blind review process. We wish to thank all the authors who contributed to this issue by submitting their novel research findings. The volume 4(1) of SLJBF deals with timely important topics, Determinants of profitability of Sri Lankan insurance companies, Factors affecting consumer impulse buying behavior in Supermarkets: Evidence from Gampaha District, Dynamic relationships between macroeconomic variables and stock market sector indices: Evidence from Colombo Stock Exchange, Identifying factors affecting inflation rate in USA under different scenarios, The impact of frequent tax reforms on construction industry in Sri Lanka, Customer satisfaction towards bank services: An empirical analysis in the perspective of transaction cost, An empirical analysis about sectoral contribution to the economic growth: Evidence from Sri Lanka. Thus, the journal has widened its scope to appeal to a wider readership with varied interest and needs.

On this occasion, I would like to extend my sincere thanks to the dedicated panel of distinguished reviewers, members of the editorial advisory board, members of the editorial board and the assistant editors for their unstinting and voluntary contribution to make this issue a success. The continued support of the governing body of the Wayamba University of Sri Lanka in this endeavor is also acknowledged.

Prof. R.A Rathanasiri
Editor in Chief
Sri Lankan Journal of Banking and Finance
Department of Banking and Finance
Wayamba University of Sri Lanka

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

Aims and Scope

The Sri Lankan Journal of Banking and Finance (SLJBF) is a refereed Journal bi-annually published research papers and scholarly work by the Department of Banking and Finance, Wayamba University of Sri Lanka. Sri Lankan Journal of Banking and Finance (SLJBF) publishes theoretical and empirical papers spanning all the major research fields in economics, banking and finance The aim of the SLJBF is to bringing the gap existing in the theory and practice of Economics, Banking and Finance by encouraging researchers, academicians, professionals, and research students to impart and share knowledge in the form of high quality research papers to infuse innovative system and methods to the economic and financial system as a whole. Thus, the journal's emphasis is on theoretical and empirical developments and policy-oriented research in economics, banking and finance.

Core Principles

- Publication in the journal of banking and finance is based upon the editorial criteria cited and the evaluation of the reviewers (each manuscript will be sent two reviewers);
- Priority is given for novelty, originality, and to the extent of contribution that would make to the particular field.
- Conceptual papers based upon current theory and empirical findings and contribute to the development of theory in the domain of Banking and Economics are also welcome.

The journal welcomes and publishes original articles, literature review articles and perspectives and book reviews describing original research in the fields of economics, banking and finance. The core focus areas of the journal include;

- Financial Intermediation
- Bank Solvency and Capital Structure
- Banking Efficiency
- Bank Failure and Financial crisis
- Behavioral Finance

- Corporate Finance
- Corporate Governance and Ethics
- Credit Rating
- Derivative Pricing and Hedging
- Financial Economics and Mathematics
- Financial Engineering
- Financial Modeling and Forecasting
- Financial Risk Management and Analysis
- Investment and Portfolio Management
- Public finance
- Financial Markets
- Financial Regulation
- Financial system
- Entrepreneurial Finance
- Treasury Management
- International trade and Finance
- Applied Economics
- Monetary Economics
- Public Finance

Chief Editor,
Sri Lankan Journal of Banking and Finance

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

Editorial Board

Assistant Editors

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

Editorial Advisory Board

.

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

Panel of Reviewers

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

DYNAMIC RELATIONSHIPS BETWEEN MACROECONOMIC VARIABLES AND STOCK MARKET SECTOR INDICES: EVIDENCE FROM COLOMBO STOCK EXCHANGE

Morawakage P S[1] and Fernando P N D[2]

Department of Finance, Faculty of Commerce and Management Studies, University of Kelaniya, Sri Lanka[1,2]

morawakageps@kln.ac.lk[1], pndfernando@kln.ac.lk[2]

ABSTRACT

This study aims to investigate the dynamic movements of sector price indices against the macroeconomic variables. Therefore, this study employs vector error correction and autoregressive models with the monthly data from January 2007 to December 2016 to examine the impacts of the exchange rate, money supply, oil prices and interest rate on sector price indices. We focused on the manufacturing, plantation, telecommunication, and trading sectors as they represent the main economic activities such as industry, agriculture and services. Our findings help to conclude that the macroeconomic influence on stock market price indices listed in Colombo Stock Exchange is dynamic as different sectors are exposed to specific macroeconomic variables with different sensitivities. These findings encourage the investors to diversify their portfolios and time their investments based on the macroeconomic conditions. Policymakers should rethink their strategies to control and encourage different sectors such as plantation and manufacturing because they have bidirectional causality with macroeconomic conditions.

Keywords – Dynamic Relationships, Macroeconomic Variables, Vector Error Correction, Colombo Stock Exchange, Sector Indices

1. INTRODUCTION

The stock market is one of the essential components of a free-market economy because it provides companies with access to capital funds in exchange for ownership. Economic activities could affect the respective stock market because specific economic policies such as monetary policy and exchange rate policy can substantially affect the stock prices (Barakat, Elgazzar & Hanafy, 2016; Hising, 2011). In contrast, stock market activities could impact the respective economy (Barakat et al., 2016). An adverse change in stock prices could have negative implications for an economy, while a favourable change in stock prices build investor and consumer confidence enabling the economy to grow (Maysami, Howe, and Hamzah, 2005).

This causal relationship is commonly observed in developing countries like Bangladesh and Malaysia (Tan, Lin & Arsad, 2006; Ahmed & Imam, 2007). The majority of the existing literature (see footnote 3) relating to the Colombo stock exchange discusses the unidirectional relationship from economic factors to the stock market. Only a few studies have investigated the bidirectional relationship between economic factors and stock market performances in Sri Lanka (Amarasinghe, 2015; Pallegedara, 2012; Athapaththu & Jayasinghe, 2010).

Colombo Stock Exchange (CSE) is the only stock market in Sri Lanka and represents nearly 20%[1] of the gross domestic production (GDP) by 2020. The Security Exchange Commission (SEC) of Sri Lanka strives to achieve 50% of the GDP ratio and emerging market status for the CSE in their road map (ADB, 2016). CSE has 290 companies representing 20 business sectors, with a market capitalisation of Rs. 2,748 Billion as of January 2020. Price indices and total return indices are also calculated for each of the 20 business sectors based on the All Share Price Index (ASPI).

Diversifying risk by investing in different securities across different business sectors is the typical investment practice. The fundamental reason for diversifying is that all industries will not be performing poorly at the same time. Stock markets worldwide classify companies into various business sectors facilitating investors to diversify their investments. A locally developed Sector Classification Framework was used by CSE that categorises listed entities under a single layer system with 20 different industries during our sample period.

[1] Central bank of Sri Lanka reports that GDP of Sri Lanka is Rs. 14,973 bn in 2020. Colombo stock exchange reports that the market capitalization is Rs. 2,748 bn in 2020.

Stocks are one of the most sensitive assets to economic conditions. The causal relationship between macroeconomic variables and stock prices is one of the most debated finance topics over a longer period (Ozbay, 2009). Many empirical studies in both developed and developing market contexts have analysed the impact of macroeconomic variables on all share returns and prices (Amarasinghe, 2015; Barakat et al., 2016; Hising, 2011). However, the dynamic relationship between macroeconomic variables and sector performances is yet to be investigated. The price of a stock is determined by the number of stocks issued and the demand for such stocks. Here, buyers and sellers consider information about the firm, industry, macro environment, and own investment goals. Therefore, identifying the dynamic relationship between different stock market sectors and macroeconomic variables will have significant implications.

Since various sectors are differently sensitive to macroeconomic variables, portfolio managers are interested in studying the dynamic relationships at more disaggregated levels. Therefore, the objective of this research is to analyse the impact of macroeconomic variables on different sector price indices in Sri Lanka rather than all share price index. Moreover, an accurate understanding of the macroeconomic determinants can benefit investors in proactively controlling specific risks in the face of macroeconomic fluctuations, where investors could alter their portfolios to mitigate the risks that the macroeconomy can have on stocks of each industry.

Specific sectors such as plantation and garments can also significantly influence the macroeconomic variables of developing countries like Sri Lanka because they represent more than 50% of the country's total exports[2]. For policymakers, understanding these causal relationships is instrumental in developing industry-wise policies to achieve economic objectives. Furthermore, there are many methodological gaps in the field of macroeconomic analysis. Employing multiple regression with OLS estimation[3] is not sufficient to analyse the cointegrated and correlated macroeconomic variables. Moreover, regression alone does not support understanding the responses to multiple shocks that emerged in the economy. This study addresses such issues relating to methodologies by employing various analytical techniques and tests such as Granger causality, impulse response function and vector error correction model.

[2] In 2020, Central Bank of Sri Lanka reports total exports as Rs. 1859 bn. The value of tea, rubber, coconut and garments is Rs. 1028 bn.

3 Many studies in Sri Lanka employ multiple regression with OLS estimation to investigate the unidirectional relationship between macroeconomic variables and stock market performance. (Amaresh, Anandasayanan & Ramesh, 2020; Nijam, Ismail & Musthafa, 2018; Badullahewage, 2018 ; Balagobei, 2017; Ullah, Islam, Alam & Khan, 2017)

The rest of the paper is organised as follows. The literature review discusses the underlying theories, empirical evidence relating to the stock market performances and macroeconomic variables. The methodology section explains the data, sample, hypotheses and econometric techniques employed in this study. Section four reports the results and discussed the findings. Section five concludes.

2. LITERATURE REVIEW

Chen, Roll, and Ross (1986) explain that economic factors determine discount rates, firms' ability to generate cash flows, and future dividend payouts. These relationships suggest that there is a long-term equilibrium between stock prices and macroeconomic variables. The economist Eugene Fama introduces the Efficient Market Hypothesis (EMH). Importantly, semi-strong form efficiency states that stock prices must contain all relevant publicly available information (Fama, 1970). This assumption implies that no investor can outperform the market by employing publicly available information and historical price movements. Stock prices reflect all historical and publicly available information. The Arbitrage Pricing Theory (APT) developed by Ross (1976) and reclaimed by Chen et al. (1986) provides evidence that macroeconomic variables significantly influence stock returns. They argue that industrial production, changes in the default risk premium and changes in the yield curve between long- and short-term interest rates are highly significant in explaining stock returns.

Mohammad et al. (2017) concluded that all exchange rate, foreign currency reserve and interest rate significantly affect the stock market performance of SAARC[4] countries using OLS multiple regression Model. Jamaludin, Ismail, & Manaf (2017) also study ASEAN[5] countries on the same topic with the panel least square regression techniques. They reveal that the exchange rate, inflation rate and money supply significantly affect the stock returns. Tripathi, Parashar & Jaiswal (2014) conclude that the crude oil prices are highly correlated with the Automobile, Bank, FMCG[6] and IT Sectors while moderately correlated with the Energy Sector of the National Stock Exchange in India.

Menike (2006) studies the effects of the exchange rate, inflation rate, money supply and interest rate on stock prices in Sri Lanka using monthly data from September 1991 to December 2002 with the multiple regression model. The results of her study indicate a negative relationship between the stock returns and the exchange rate. However, Gunasekarage, Pisedtasalasai, and Power

[4] South Asian Association for Regional Corporation

[5] Association of Southeast Asian Nations

[6] Fast Moving Consumer Goods

(2004) find no significant impact from the contemporaneous exchange rate on the stock prices though there is a mixed relationship between the lagged exchange rate and the stock prices. They employ Johansen's Vector Error Correction Model (VECM) to examine the impact of macroeconomic variables: money supply, treasury bill rate, inflation and exchange rate on all share price index in Sri Lanka from January 1985 to December 2001 monthly. *Gunasekarage* et al. (2004) also conclude that treasury bill rate has the most significant impact on changes of ASPI of CSE compared to other variables. According to the VECM estimated in their study, the lagged inflation, money supply and the Treasury bill rate significantly influence the stock market price index.

Athapaththu and Jayasinghe (2010) examine the impact of stock market performance on the economic growth of Sri Lanka from 1997 to 2008 by employing stock market indicators as independent variable and growth in national output as the dependent variable in their model. They conclude that stock market development is a crucial factor in enhancing the economic growth of Sri Lanka. Furthermore, their results are more similar to the finding of previous research of Levine and Zervos, (1988) who studied 47 countries during the period of 1976 to 1993. These studies reveal that the direction of the causal relationship from stock market performance to economic growth. Moreover, Athapaththu and Jayasinghe (2010) find a bidirectional causality between economic growth and the stock market performance. In other words, their conclusion says that both economic growth and stock market performance have impacts on each other.

Amarasinghe (2015) investigates the dynamic relationship between the interest rate and the stock returns in CSE by employing the Granger causality test. Amarasinghe (2015) finds a unidirectional relationship. This relationship shows that only the interest rate granger causes the stock returns. Pallegedara (2012) also confirms this unidirectional relationship. Employing a regression model with OLS estimation, Nijam et al. (2018) examine the impact of macroeconomic variables on stock market performances of CSE. They find that the stock market returns positively associate with the interest rate and exchange rate. Amaresh et al. (2020) show that stock market performances negatively associated with interest rate and GDP in Sri Lanka.

Balagobei (2017) examines the impact of interest rate, inflation, exchange rate, industrial production and money supply on ASPI. They find that, except money supply, other variables affect the stock market performances of Sri Lanka. Badullahewage (2018) reports that exchange rate, interest rate, GDP and balance of payment positively affect the performance of CSE. Money supply has a negative impact on the stock market performances, according to the author.

Many researchers have chosen overall stock market performances to compare with economic variables. However, each sector's exposure to macroeconomic risks are different, and existing literature has paid less attention to analyse the sector performances and macroeconomic variables. Measuring sector exposures helps to manage the risk of specific investments portfolios (Grey, Merton & Bodie, 2006) and generate above-average profits. Therefore, our study investigates the sector-wise performances and macroeconomic variables such as exchange rate, money supply, crude oil and interest rate.

3. RESEARCH METHODOLOGY

3.1 Sample and Variables

This study employs monthly time series data of selected four sector price indices in CSE and macroeconomic variables from January 2007 to December 2016. Selected four sectors are Manufacturing, Plantation, Telecommunication and Trading. Those are chosen for the study as the manufacturing sector represents the industry, plantation sector represents agriculture, telecommunication and trading sectors represent services. Industry, agriculture and service sectors are the elements of functional classification of the economic activities in Sri Lanka as identified by the Central Bank of Sri Lanka. The study considers the values of the selected sector price indices of the CSE as the target variable. The other variables of the study consist of the following macroeconomic variables.

Three months Treasury bill rate is used as a proxy for the interest rate to identify the relationship between the interest rate and the sector index performances as previously employed by Gunasekarage et al. (2004). Consumer Price Index (CPI) is used as a proxy for the inflation rate. The Sri Lankan Rupee (LKR) value per the United States Dollar (USD) is used as a proxy for the exchange rate. Tripathi et al. (2014) use the price of crude oil as USD per barrel basis. Therefore, this study also employs the average crude oil price in terms of USD per barrel as a macroeconomic variable.

3.2 Main Hypotheses

Our study considers the following hypotheses to achieve the research objectives.

H1: Money supply has a significant impact on stock prices.

Generally, an increase in the money supply stimulates the economy by reducing the level of interest. Then the businesses are expected to perform well, and the share prices will increase. However, an increase in money supply has an impact on inflation. Rising inflation reduces the value of shares

as the discounting factor rises and demand for shares decreases (Barakat et al., 2016; Mukherjee & Naka, 1995).

H2: Exchange rate (LKR/USD) has a significant impact on the stock prices.

If the currency depreciates, exports of the domestic country increases. Therefore, the cash flows to export-based companies will increase and the share price of such companies increase (Barakat et al., 2016; Mukherjee & Naka, 1995). However, companies that utilise imported materials and trade imported goods experience a significant cash outflow. Therefore, the exchange rate has positive and negative outcomes on the share prices.

H3: Oil prices have a significant impact on stock prices.

Oil prices directly affect the business as it affects transportation and manufacturing. Indirectly it raises the cost of living and reduces the buying power of consumers. Therefore, higher oil prices decrease the share performances vice versa (Eksi, Senturk & Yildirim, 2012).

H4: Interest rate (T-bill rate) has a significant impact on the stock prices.

Treasury bill rate is used as a part of the discount rate in cash flow valuations of shares. Therefore, a higher T-bill rate decreases the value of shares vice versa (Barakat et al., 2016; Mukherjee & Naka, 1995). Moreover, the higher interest rate discourages business operations and increases the cost of finance. Then the cash flows of the business decrease leading to lower share prices.

Hypotheses one to four are tested using vector autoregressive and vector error correction models. Granger causality test is also used to check the following hypotheses.

Literature suggests that there is an impact from stock market performances on the macroeconomic variables (Amarasinghe, 2015; Athapaththu and Jayasinghe, 2010; Barakat et al., 2016). Therefore, the following hypothesis is tested.

H5: Manufacturing, plantation, telecommunication, and trading sector performances affect the money supply, exchange rate, oil prices and interest rate in Sri Lanka.

3.3 Data Collection

The monthly values for each sector index have been established by obtaining an average of the daily last price traded for the period under consideration from Bloomberg market data. Data for the 91-days Treasury bill yield was collected from the weekly economic indicators published by the Central Bank

of Sri Lanka (CBSL), where an average of such weekly data gathered would constitute the monthly rate. The monthly average exchange rate (LKR/USD) data was obtained from the CBSL, while data for the nominal average spot USD per barrel of crude oil prices was collected from the Global Economic Monitor Commodities Database of the World Bank.

3.4 Analytical Techniques

When testing the long-run relationship among macroeconomic variables, recent studies (see Barakat et al., 2016; Ozbay, 2009; Maysami et al., 2005; *Gunasekarage* et al., 2004) have widely used Vector Auto-Regressive (VAR) model or Vector Error Correction Model (VECM) by Johansen and Juselius (1990). As the first step to this process, a test for stationarity should be performed to determine the order of integration of the variables. A Vector Autoregressive (VAR) Model would then be developed to identify the optimal lag length to be used when testing for cointegrating vectors. In this study, the lag order selected by the Akaike Information Criteria (AIC) is chosen as the optimal lag length of the model. Suppose the variables are known to be integrated of the same order. In that case, the Johansen Co-integration test is performed to obtain the number of cointegrating vectors. If no cointegrating equations are found, a VAR Model is estimated employing the optimal lag length for the given variables. If there are cointegrated equations, VECM model is estimated. VAR models are estimated using the ordinary least squares (OLS) estimator computed separately from each equation. Estimation and inference in cointegrating systems of VECM are based on the maximum likelihood method. The time trends in the data appear to be approximately linear, and hence, trend(constant) is specified when modelling these series.

3.5 Research Model

3.5.1 Sector Price Specification

Each sector index price is given as a function of macroeconomic variables.

$$lY_t = \int \{lms_t + lexr_t + loil_t + tbill_t\} \quad \textbf{(1)}$$

Where;

lY_t = Natural log of stock prices of each sector at time t

lms_t = Natural log of money Supply at time t

$lexr_t$ = Natural log of the exchange rate at time t

$loil_t$ = Natural log price of a Crude Oil barrel at time t

$tbill_t$ = Interest Rate at time t

Then, this study employs the following multivariate linear time series models to achieve the objectives of the research by capturing the joint dynamics of the macroeconomic variables.

3.5.2 Vector Auto-Regressive (VAR) Model in differences

$$\Delta \mathrm{Y_t} = C + A \sum_{i=1}^{p} \Delta \mathrm{Y_{t-i}} + B \sum_{i=1}^{p} \Delta \mathrm{X_{t-i}} + \varepsilon_t \quad \textbf{(2)}$$

where $\mathrm{Y_t}$ is a (m×1) vector of endogenous variables, $\mathrm{X_t}$ is an n vector of exogenous variables given in function (1) , and i is the number of lag or the order of the VAR.). p is the optimum lag length. The error term ε_t is a vector of innovations that are independent and identically distributed (Sun, Ford, & Dickinson, 2010). C, A and B are matrices of the estimated coefficients as given below (Brook, 2008).

$$C = \begin{pmatrix} c_{10} \\ \vdots \\ c_{m0} \end{pmatrix} \; A = \begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix} \; B = \begin{pmatrix} b_{11} & \cdots & b_{1n} \\ \vdots & \ddots & \vdots \\ b_{m1} & \cdots & b_{mn} \end{pmatrix} \quad \textbf{(3)}$$

VAR in differences is used as all variables are stationary at the first difference. The objective of the study is to identify the causal relationship between macroeconomic variables and stock market sector price indices.

3.5.3 Vector Error Correction Model (VECM)

Following equation represents both short-run and long-run dynamics by extending the model (2) to incorporate the long-term adjustment or error correction term (ECT).

$$\Delta \mathrm{Y_t} = C + A \sum_{i=1}^{p} \Delta \mathrm{Y_{t-i}} + B \sum_{i=i}^{p} \Delta \mathrm{X_{t-i}} + \varphi \, \mathrm{z_{t-1}} + \varepsilon_t \quad \textbf{(4)}$$

C, A and B are short-run dynamic coefficients. φ is the speed of adjustment parameter or error correction in the long-run. $\mathrm{Z_{t-1}}$ is the error correction term. It is the lagged value of the residuals obtained from the cointegrating regression of the dependent variable on the regressors. This contains the long-run information derived from the long-run cointegrating relationship.

The following cointegrating equation represents the long-run dynamics of the given model explicitly (Brook, 2008).

$$\mathrm{Z_{t-1}} = \mathrm{Y_{t-1}} - \alpha_0 - \delta_1 \mathrm{X1_{t-1}} - \cdots - \delta_n \mathrm{Xn_{t-1}} \quad \textbf{(5)}$$

Further, this study also employs impulse response functions and Granger causality to carry out further analysis. Results of the robustness checking for each model are available upon request. Stata 14 software is used to analyse the above models.

4. RESULTS AND DISCUSSION

4.1 Model Selection

Table 1: Stationarity test results (Dicky Fuller-GLS)

Lags	GLS mu Statistics							
	Manufacturing		Plantation		Trading		Telecom	
	Level	D1	Level	D1	Level	D1	Level	D1
5	0.534	1.310	1.670	3.375**	0.748	2.314**	0.934	2.987**
4	0.448	1.322	1.497	3.164**	0.828	2.788**	0.893	2.880**
3	0.283	1.524	1.328	3.710**	0.478	2.704**	0.915	3.209**
2	0.083	1.966**	1.157	4.608**	0.311	3.945**	0.641	3.449**
1	0.016	3.228**	1.246	6.120**	0.415	5.230**	0.658	5.005**

Data scales are different, and therefore, natural log values are derived for the study. Treasury bill rate is taken at its original form. Table 1 presents the results of the modified Dickey-Fuller Test known as DF-GLS performed on each variable. The values of all the variables are non-stationary at the level and stationary at the first difference. Therefore, VAR and VECM models can be fit for the sector price models.

Table 2 below demonstrates the number of cointegrating equations for each sector by employing the Johansen cointegration test. Since the plantation sector models are not cointegrated, VAR model is appropriate. The manufacturing, trading and telecommunication sectors have one cointegrating equation for each sector. Though the Manufacturing sector is cointegrated, the VECM model is not efficient and hence the VAR model is used for the analysis.

Table 2: Johansen cointegration test results

Maximum Rank	Trace Statistic			
	Manufacturing	Plantation	Trading	Telecom
0	79.840	63.550**	88.110	69.030
1	36.410**	27.320	42.530**	37.610**
2	17.460	11.700	18.640	20.680
3	5.290	4.22	4.450	8.150
4	0.015	0.008	0.000	0.220

Note: Optimum lag length for manufacturing, plantation and trading is four and for telecommunication is two according to varsoc results.

4.2 Sector-wise Analysis of Results

4.2.1 Manufacturing Sector

Table 03: Manufacturing (man) Sector - Vector Auto-regression Estimates

Independent Variable	Coefficient
Δ ln man sector price (-1)	0.285**
Δ ln Money supply (-1)	1.178*
Δ ln Money supply (-3)	-1.617**
Δ ln Oil prices (-1)	0.137**
Δ ln Oil prices (-3)	-0.109*
Δ T-bill (-3)	-2.832**

Note: ** Significant at 5% level, * Significant at 10% level. The dependent variable is Δ lman and only the significant results are reported. Lag value is given in the parentheses.

Table 03 represents the VAR estimates of the manufacturing sector. The reported adjusted R square value indicates that 37% of the variation in percentage change of the manufacturing sector price is explained by all the regressors in the model. One period lagged percentage change in the manufacturing sector index price (Δlmant-1), money supply (Δlmst-1) and oil prices (Δloilt-1) positively and three period lagged percentage change in money supply (Δlmst-3), oil prices (Δloilt-3) and three periods lagged change in T-bill rate (Δtbillt-3) negatively affect the current period percentage change in the Manufacturing Sector price (Δlman). VAR Model estimated is robust as the residuals of the model are normally distributed, model is stable, and autocorrelation of residuals is not observed.

Table 04: Manufacturing Sector - VAR Granger Causality

Equation	Excluded	Chi-sq
Δlman	Δlms	11.847**
	Δlexr	4.922
	Δloil	10.609**
	Δtbill	13.930***
	All	35.130***
Δlms	Δlman	12.94**

Note: *** Significant at 1% level, ** Significant at 5% level

Table 4 shows the results of the granger causality test for the manufacturing sector price index and the selected macroeconomic variables at first difference. Results indicate that the percentage change in money supply and percentage change in manufacturing sector prices have a bidirectional causal relationship. All other excluded variables except percentage change in exchange rate Granger-cause percentage change in manufacturing sector prices individually. Overall, all excluded variables have an impact on the percentage change in manufacturing sector prices collectively.

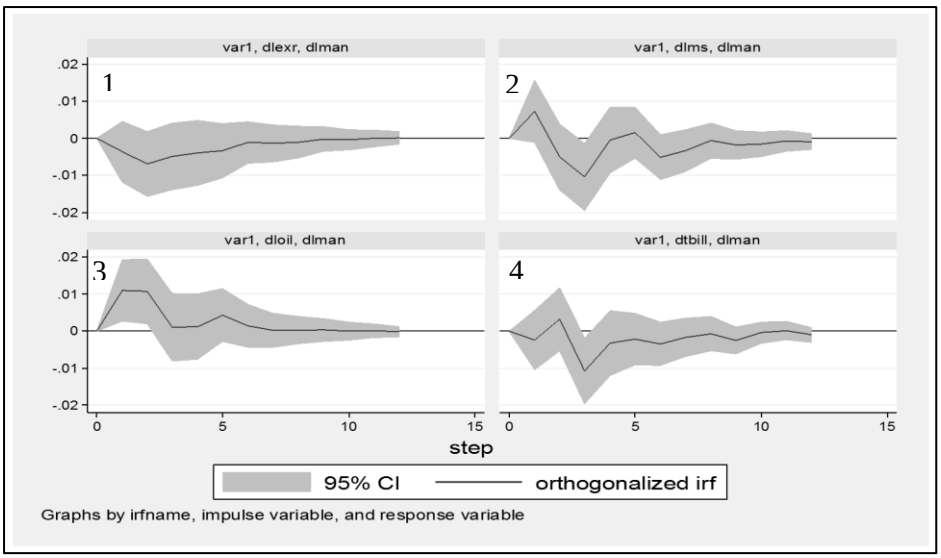


Figure 1: Response of Δlman to one SD shocks of explanatory variables

Figure 1 represents the impulse responses of the model and depicts the responses of Δlman to Δlms, Δlexr, Δloil, and Δtbill.

1 Δlman to Δlexr: One standard deviation shock of percentage change in exchange rate to percentage change in manufacturing sector prices shows no response initially. However, slight negative responses are observed from the 1st month which gradually stabilise from the 12th month into the future.

2 Δlman to Δlms: One standard deviation shock of percentage change in money supply to percentage change in manufacturing sector prices shows a bumpy response. There is a positive response at 1st month and negative response from second month to 4th month. After another positive response at 5th month, a series of small negative responses are observed. The price index gradually stabilises from the 12th month into the future.

3 Δlman to Δloil: One standard deviation shock of percentage change in oil prices to the percentage change in manufacturing sector prices demonstrates a positive response from the 1st month, which then gradually stabilise from the 10th month into the future.

4 Δlman to Δtbill: One standard deviation shock of the change in T-bill rate to percentage change in manufacturing sector prices demonstrates a slightly negative response at 1st month. Then a positive response at 2nd month and negative response thereafter till that shows a steady reaction from the 10th month into the future.

4.2.2 Plantations Sector

Table 05: Plantation (plt) Sector - Vector Auto-regression Estimates

Independent Variable	Coefficient
Δ ln plt Sector price (-1)	0.332***
Δ ln Money supply (-1)	3.034**
Δ ln Money supply (-3)	-2.895**
Δ ln Exchange rate (-1)	-1.220*
Δ ln Oil prices (-1)	0.276***
Δ T-bill (-2)	4.413***
Δ T-bill (-3)	-2.629**

Note: *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. The dependent variable is Δ lplt and only the significant results are reported. Lag value is given in the parentheses.

Table 5 represents the VAR estimates of the plantation sector. The adjusted R-squared value of the VAR Model for the plantation sector indicates that 38% of the variation in the percentage change in plantation sector prices are explained by all the explanatory variables in the model. One period lagged percentage change in the plantation sector index price ($\Delta lplt_{t-1}$), money supply (Δlms_{t-1}) and oil prices ($\Delta loil_{t-1}$), two periods lagged change in the T-bill rate ($\Delta tbill_{t-2}$) positively and three period lagged percentage change in money supply(Δlms_{t-3}), change in T-bill rate ($\Delta tbill_{t-3}$), one period lagged percentage change in the exchange rate ($\Delta lexr_{t-1}$) negatively affect the current period percentage change in the plantation sector index price.

VAR model estimated is robust as the model is stable and autocorrelation of residuals is absent. However, the residuals of the model are not normally distributed. The sample size is larger enough to overcome this issue.

Table 6 reports the Granger causality test results for the plantation sector price index and the selected macroeconomic variables at first difference.

Table 06: Plantation (plt) Sector - VAR Granger Causality

Equation	Excluded	Chi-sq
Δlplt	Δlms	19.112***
	Δlexr	6.878
	Δloil	13.850***
	Δtbill	16.380***
	All	43.479***
Δlexr	Δlplt	15.715***

Note: *** Significant at 1% level, ** Significant at 5% level

All excluded variables except percentage change in exchange rate granger-cause percentage change in plantation sector prices individually. Overall, all excluded variables have an impact on the percentage change in plantation sector prices collectively. However, the percentage change in plantation sector prices has an impact on the percentage change in the exchange rate.

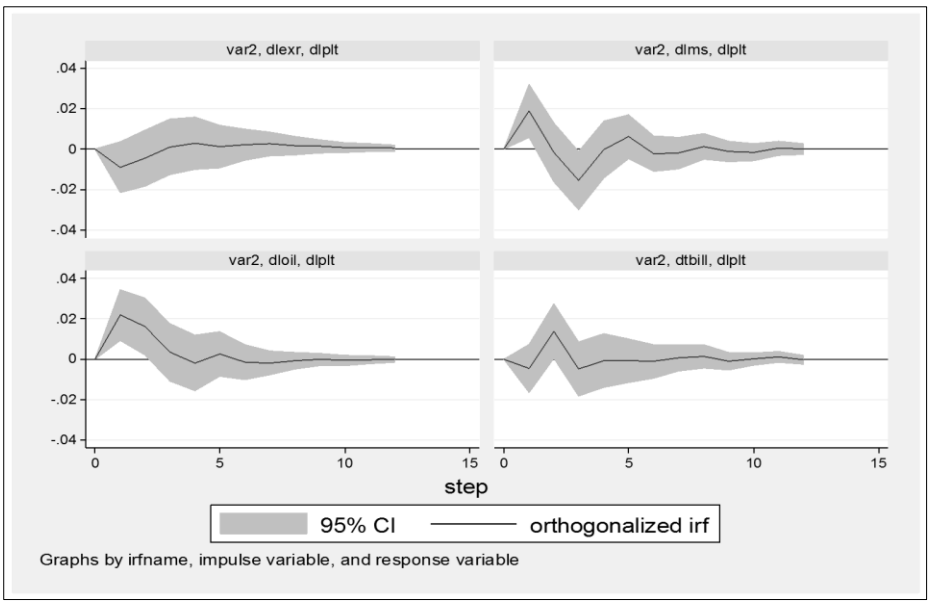


Figure 2: Response of Δlplt to one SD shocks of explanatory variables

Figure 2 demonstrates the Impulse Responses of the model and depicts the responses of Δlplt to Δlms, Δlexr, Δloil, and Δtbill.

1 Δlplt to Δlexr: One standard deviation shock of percentage change in the exchange rate to the percentage change in plantation sector prices shows a negative response at 1st and 2nd months. Then, slight positive responses are observed from the 3rd month which gradually stabilise from the 12th month into the future.

2 Δlplt to Δlms: One standard deviation shock of percentage change in money supply to the percentage change in plantation sector prices shows a bumpy response. There is a positive response at 1st month and a negative response from the second month to 4th month. Then, a positive response at 5th month followed by two negative responses at 6th and 7th months. Another positive response is observed in the 8th month and then two negative responses at 9th and 10th months. The price index gradually stabilises from the 12th month into the future.

3 Δlplt to Δloil: One standard deviation shock of percentage change in oil prices to the percentage change in plantation sector prices demonstrates a significant positive response at the 1st month, and it gradually decays till 3rd month. There is a negative response at 4th month and followed by a positive response at 5th month. After that, the price index experiences a series of negative responses until it gradually stabilise from the 12th month into the future.

4 Δlplt to Δtbill: One standard deviation shock of the change in T- bill rate to the percentage change in plantation sector prices demonstrates a slightly negative response at 1st month. Then a significant positive response at 2nd month and a negative response at 3rd month are observed. After that, it shows a steady response from the 4th month into the future.

4.2.3 Trading Sector

Table 07: Trading Sector (trd) - VECM Short-term Estimates

Independent Variable	Coefficient
ECT	0.051***
Δ ln trd sector price (-1)	0.340**
Δ ln trd sector price (-2)	-0.202*
Δ ln Money supply (-3)	-2.196**
Δ T-bill rate (-3)	-5.219***

Note:***Significant at 1% level, ** Significant at 5% level, *Significant at 10% level; The dependent variable is Δ ltrd and only the significant results are reported. Lag value is given in the parentheses.

Table 07 represents the VECM estimates of the trading sector. The adjusted R-squared value of the VECM Model for the telecommunication sector indicates that 50% of the variation in the percentage change in trading sector prices are explained by all the explanatory variables in the model.

Table 08: Trading Sector (trd) - VECM Long-term Estimates

Variable	Parameter	Coefficient
Constant	α_0	9.724
ln Money supply	δ_1	-8.209***
ln Exchange rate	δ_2	22.776***
ln Oil prices	δ_3	-1.181***
T-bill rate	δ_4	-25.570***

Note: ***Significant at 1% level, ** Significant at 5% level, *Significant at 10% level

$$\text{ECT} = Z_{t-1} = Y_{t-1} - \alpha_0 - \delta_1 \text{lms}_{t-1} - \delta_2 \text{lexr}_{t-1} - \delta_3 \text{loil}_{t-1} - \delta_4 \text{tbill}_{t-1}$$

Error correction term or the long-term adjustment parameter has a positive sign, and it is significant at 1% level. The exchange rate and interest rate growth have a substantial impact on the long-term adjustment parameter of the equation as given in Table 8. One period lagged percentage change in the trading sector index price (Δltrd_{t-1}), positively and, two periods lagged percentage change in the trading sector index price (Δltrd_{t-2}), three periods lagged percentage change in money supply (Δlms_{t-3}) and three periods lagged change in T-bill rate (Δtbill_{t-3}) negatively affect the current period percentage change in the trading sector index price. VECM model estimated is free from autocorrelation and stable. However, residuals are not normally distributed. The sample size is sufficient to overcome the residual normality problem.

Figure 3 demonstrates the impulse responses of the model and depicts the responses of lttrd to lms, lexr, loil, and tbill.

1 ltrd to lexr: One standard deviation shock of exchange rate growth to trading sector price growth demonstrates a small positive response from 1st month to 3rd month. After that there is a significant long-term positive response.

2 ltrd to lms: One standard deviation shock of money supply growth to trading sector price growth shows a small positive response at 1st month and thereafter, a significant long-term negative response.

3 ltrd to loil: One standard deviation shock of crude oil price growth to trading sector price growth shows a positive response from 1st month to 4th month. After that, there is a long-term negative response from the 5th month.

4 ltrd to tbill: One standard deviation shock of T-bill rate growth to trading sector price growth demonstrates a significant long-term negative response from 1st month

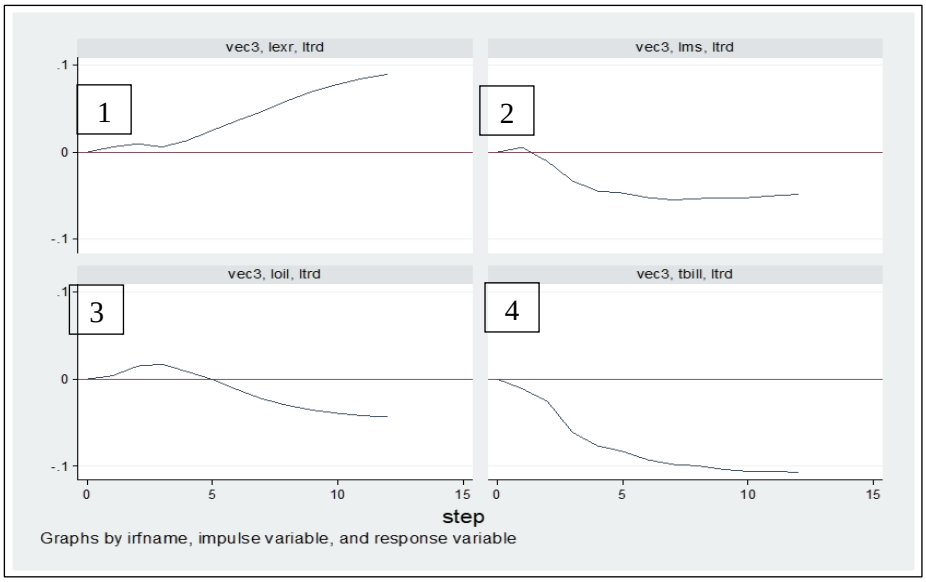


Figure 3: Response of trading sector price growth to one SD shocks of explanatory variables

4.2.4 Telecommunication Sector

Table 9 and 10 show the VECM estimates of the telecommunication sector. The adjusted R-squared value of the VECM Model for the telecommunication sector indicates that 21% of the variation in the percentage change in telecommunication sector prices are explained by all the explanatory variables in the model. Error correction term or the long-term adjustment parameter has a negative sign, but it is not significant. One period lagged percentage change in the telecommunication sector index price ($\Delta ltel_{t-1}$), money supply (Δlms_{t-1}) and oil prices ($\Delta loil_{t-1}$), positively and one period lagged percentage change in the exchange rate ($\Delta lexr_{t-1}$) negatively affect the current period percentage change in the telecommunication sector index price (ltel).

VECM Model estimated is robust as the model is free from autocorrelation and residuals are normally distributed. The model is also stable.

Table 09: Telecommunication Sector (tel)- VECM Short-term Estimates

Variable	Parameter	Coefficient
ECT	φ	-0.025
Δ ln tel Sector price (-1)	β_{11}	0.322***
Δ ln Money supply (-1)	β_{21}	1.121*
Δ ln Exchange rate (-1)	β_{31}	-0.744*
Δ ln Oil prices (-1)	β_{41}	0.109**

Note: ***Significant at 1% level, ** Significant at 5% level, *Significant at 10% level. The dependent variable is Δ ltel and Only the significant results are reported. Lag value is given in the parentheses.

Table 10: Telecommunication Sector (tel) - VECM Long-term Estimates

Variable	Parameter	Coefficient
Constant	α_0	-8.807
ln Money supply	δ_1	-1.043***
ln Exchange rate	δ_2	3.955***
ln Oil prices	δ_3	0.185
T-bill rate	δ_4	-7.690***

Note: ***Significant at 1% level, ** Significant at 5% level, *Significant at 10% level

$$\mathrm{ECT} = \mathrm{Z}_{t-1} = \mathrm{Y}_{t-1} - \alpha_0 - \delta_1 \mathrm{lms}_{t-1} - \delta_2 \mathrm{lexr}_{t-1} - \delta_3 \mathrm{loil}_{t-1} - \delta_4 \mathrm{tbill}_{t-1}$$

Figure 4 demonstrates the impulse responses of the model and depicts the responses of ltel to lms, lexr, loil, and tbill.

1 ltel to lexr: One standard deviation shock of exchange rate growth to telecommunication sector price growth demonstrates a long-term negative response from the 1st month.

2 ltel to lms: One standard deviation shock of money supply growth to telecommunication sector price growth shows a long-term positive response from the 1st month.

3 ltel to loil: One standard deviation shock of crude oil price growth to telecommunication sector price growth shows a long-term positive response from the 1st month.

4 ltel to tbill: One standard deviation shock of T-bill rate growth to telecommunication sector price growth demonstrates a small positive

response at 1st month and followed by two negative responses at 2nd and 3rd months. Thereafter, there is a long-term positive response from the 4th month.

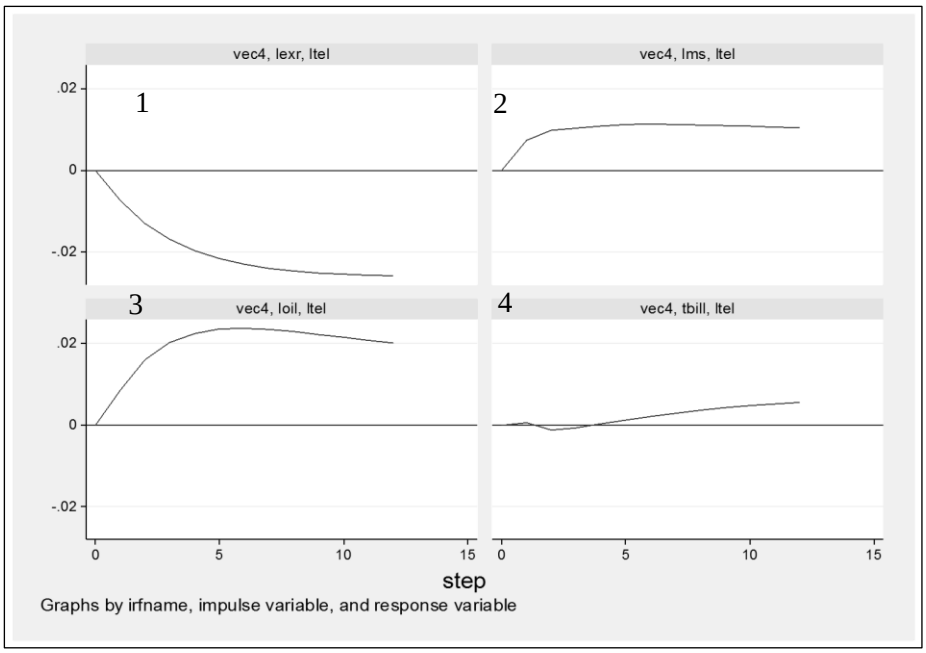


Figure 4: Response of telecommunication sector price growth to one SD shocks of explanatory variables

4.2.5 Summary of the results

Previous period percentage change in money supply and crude oil prices positively affects the percentage change in the manufacturing sector's price growth, plantation sector, and telecommunication sectors in the short run. Three periods lagged percentage change in money supply negatively affects the percentage change in price growth of manufacturing, plantation and trading sectors in the short-term. Change in the T-bill rate before three periods affects the manufacturing, plantation and trading sectors in the short-term negatively. Only the percentage changes in prices of plantation and telecommunication sector are affected by the one-period previous percentage change in the exchange rate in the short-term. Two periods lagged T-bill rate positively affects the percentage change in plantation sector prices. Three periods lagged percentage change in oil prices negatively affects the percentage change in the prices of the manufacturing sector. Moreover, the percentage change in the prices of the manufacturing sector granger causes the percentage change in the money supply. The percentage change in the prices of plantation sector granger causes the percentage in the exchange rate.

4.3 DISCUSSION

4.3.1 Money Supply

Money supply (lagged one) has a positive relationship between all the sectors except the trading sector. Generally, an increase in money supply leads to lower interest rates. A lower interest rate increases the stock performances. The plantation sector has the highest exposure to the money supply. The impact on the trading sector is negative. A rise in the money supply also increases inflation leading to lower performances in the trading sector.

Menike (2006) also finds mixed results for the relationship between money supply and performances of the Colombo Stock Exchange. She finds that the majority of the stock prices positively associates with the money supply. Our finding is consistent with Menike. However, Balagobei (2017) finds no association and Badullahewage (2018) shows a negative relationship.

4.3.2 Exchange Rate

The exchange rate (LKR/USD) negatively relates to the plantation and telecommunication sector price indices. An increase in the exchange rate depreciates the rupee (LKR) value. Foreign companies own more stake of the telecom sector companies. As the rupee depreciates, they are reluctant to take the cash away and thus reinvest in the domestic business. As a result, stock prices of the telecommunication sector increases. The plantation sector in Sri Lanka is an export-oriented industry. Therefore, when the currency depreciates, the sector performs better. Results show that plantation sector exposure to the exchange rate is very high.

Most of the previous literature documents a positive relationship between the exchange rate and the CSE performances (Balagobei, 2017; Nijam et al., 2018; Badullahewage, 2018). According to Gunasekarage et al. (2004), the exchange rate does not significantly influence the ASPI in Sri Lanka. Consistent with our finding, Menike (2006) documents a negative relationship between exchange rate and stock prices. The author identifies a highly significant negative relationship between the exchange rate and the trading sector's price index. However, this study evidence that the trading sector is not exposed to the exchange rate. Menike (2006) also confirms that there is no significant relationship between manufacturing sector prices and the exchange rate, similar to our finding.

4.3.3 Crude Oil Prices

Crude oil prices (one period lagged) positively affect all the sector price indices except the trading sector index prices. Three periods lagged crude oil prices negatively affected the manufacturing sector index prices. Companies pass the oil price burden to the customer, and hence a positive impact from

the crude oil prices on the stock prices can be observed. However, manufacturing sector prices experience a negative impact from three period lagged oil prices. Passing the burden of increased oil prices would increase the manufacturing sector costs in terms of material prices and labour costs after a few periods. This increase in the cost of living may also decrease the trading sector performances.

Eksi et al. (2012) confirm that the manufacturing sector prices are highly sensitive and negatively related to the crude oil prices. However, Tripathi et al. (2014) confirm that oil prices have a significant positive relationship with Energy, auto, FMCG, and IT sector performances in India.

4.3.4 Interest Rate

The interest rate (three periods lagged) has a negative relationship with all the sector price indices except telecommunication. Higher interest always discourages the business sectors and leads to poor performances. Since most telecommunication providers are foreign companies, they may borrow from foreign markets. Our negative relationship is consistent with Gunasekarage et al. (2004), Menike (2006) and Balagobei (2017). Menike (2006) identifies a highly significant negative relationship between the interest rate and the price indices of the manufacturing and trading sectors.

We confirm that the trading sector has the highest exposure to the interest rate and, then, the manufacturing sector. According to Menike (2006), the most significant variable influencing the manufacturing sector is the interest rate. Surprisingly, the plantation sector has a significant positive impact from the one period lagged interest rate. Nijam et al. (2018) and Badullahewage (2018) document a positive relationship between interest rate and the overall stock market performances.

4.3.5 Impact of sector performances on the economic variables

Granger causality results confirm that certain sector performances can have a significant impact on the macroeconomic variables. The manufacturing sector has a significant impact on the money supply. When the manufacturing sector performances are poor, governments increase the money supply with the purpose of increasing production.

The plantation sector has a significant impact on the exchange rate because it is a significant exporter in Sri Lanka. Barakat et al. (2016) also confirm that there is bidirectional causality between money supply and stock performances and between exchange rate and stock performances in emerging markets.

5. CONCLUSION

This study aimed to investigate the dynamic movements of sector price indices against the macroeconomic variables. Therefore, we examined the relationship between sector price indices and macroeconomic variables by employing Granger causality tests, VAR and VECM models. We selected manufacturing, plantation, telecommunication and trading sectors representing industry, agriculture and services functions of the economy. Our sample period is limited from 2007 to 2017.

Our analysis helps to conclude that the macroeconomic influence on stock market price indices in Colombo Stock Exchange (CSE) is dynamic because different sectors are exposed to specific macroeconomic variables with different sensitivities. The trading sector is more exposed to macroeconomic risks as interest rate, crude oil prices and money supply negatively affect the sector performances. The trading sector has no impact from the exchange rate. The telecommunication sector is also affected by all the macroeconomic variables selected. Interest rate, crude oil prices and money supply positively affect the sector performances while exchange rate affects negatively. Therefore, the service sector is more vulnerable to macroeconomic risks.

Interest rate and exchange rate negatively affects the plantation sector. Crude oil prices and money supply positively impact the same. Interest rate negatively impacts the manufacturing sector, while crude oil prices and money supply positively affect the sector. The exchange rate has no impact on the manufacturing sector. However, the manufacturing sector has an impact on the money supply, and the plantation sector has an impact on the exchange rate. The findings also encourage the investors to diversify their portfolios and time their investments based on the macroeconomic conditions. Policymakers should rethink their strategies to control and encourage different sectors such as plantation and manufacturing because they have bidirectional causality with macroeconomic conditions.

Future research can think about structural breaks for pre-and post-war periods with a more extensive and frequent data set (i.e. weekly data instead of monthly data for other sectors). Explanatory variables such as inflation, gross domestic product, industrial production, and per capita income could also be incorporated in future research.

REFERENCES

Ahmed, M. N., & Imam, M. O. (2007). Macroeconomic factors and Bangladesh stock market: impact analysis through cointegration approach. *International Review of Business Research Papers*, 3(5), 21-35.

Amarasinghe, A. (2015). Dynamic relationship between interest rate and stock price: Empirical evidence from colombo stock exchange. *International Journal of Business and Social Science*, 6(4).

Amaresh, M., Anandasayanan, S., & Ramesh, S. (2020). Macro-Economic Variables and Stock Market Performance: Empirical Evidence from Colombo Stock Exchange. *Vidyodaya Journal of Humanities and Social Sciences*, 05 (2). 130-144.

Asian Development Bank (ADB). (2016). Sri Lanka Capital Market Assessment. Retrieved from

https://www.adb.org/sites/default/files/project-document/202066/49365-002-tacr-01.pdf

Athapathu, A. and Jayasinghe, P. (2010). *Stock Market Performances and Economic Growth: The Case of Sri Lanka Stock Market*. Available at http://archive.cmb.ac.lk:8080/research/bitstream/70130/2288/1/10.pdf , 70130/2288. Colombo.

Badullahewage, (2018). The effects of macroeconomic factors on the performance of stock market in Sri Lanka. *International Journal of Innovation and Economic Development*, 3(6), 33-41.

Balagobei, S. (2017). Macroeconomic variables and stock market returns in Sri Lanka. Balagobei, S. (2017). Macroeconomic Variables and Stock Market Returns in Sri Lanka. *Asian Journal of Finance & Accounting*, 9(2), 206-218.

Barakat, M., Elgazzar, S. and Hanafy, K. (2016). Impact of Macroeconomic Variables on Stock Markets: Evidence from Emerging Markets. *International Journal of Economics and Finance*, 8(1), pp.195-207. https://doi.org/10.5539/ijef.v8n1p195

Brook, C. (2008). *Introductory Econometrics for Finance*. Cambridge: Cambridge University Press.

Chen, N., Roll, R. and Ross, S. (1986). Economic Forces and the Stock Market. *The Journal of Business*, 59(3), pp.383-403. https://doi.org/10.1086/296344

Eksi, H. I., Senturk, M., & Yildirim, S. H. (2012). Sensitivity of stock market indices to oil prices: Evidence from manufacturing sub-sectors in Turkey. *Panoeconomicus*, 59(4), 463-474.

Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), pp.383-417.https://doi.org/10.2307/2325486

Gray, D. F., Merton, R. C., & Bodie, Z. (2006). *A new framework for analysing and managing macro financial risks of an economy* (No.w12637). National Bureau of Economic Research. Retrieved from https://www.nber.org/system/files/working_papers/w12637/w12637.pdf

Gunasekarage, A., Pisedtasalasai, A. and Power, D. (2004). Macroeconomic Influence on the Stock Market: Evidence from an Emerging Market in South Asia. *Journal of Emerging Market Finance*, 3(3), pp.285-304. https://doi.org/10.1177/097265270400300304

Hsing, Y. (2011). The stock market and macroeconomic variables in a BRICS country and policy implications. *International Journal of Economics and Financial Issues*, 1(1), 12.

Jamaludin, N , Ismail, S , Manaf, S . (2017). Macroeconomic Variables and Stock Market Returns: Panel Analysis from Selected ASEAN Countries. *International Journal of Economics and Financial Issues*, 7 (1), 37-45. Retrieved from

http://dergipark.org.tr/ijefi/issue/32002/353153

Johansen, S. and Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration- with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52(2), pp.169-210. https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x

Levine, R., & Zervos, S. (1988). Stock Markets, Banks, and Economic Growth. *The American Economic Review*, *Vol. 88, No. 3* , 537-558. Retrieved from https://www.jstor.org/stable/pdf/116848.pdf

Maysami, R., Howe, L. and Hamazah, M. (2005). Relationship between Macroeconomic Variables and Stock Market Indices: Cointegration Evidence from Stock Exchange of Singapore's All-S Sector Indices. *Jurnal Pengurusan*, 24, pp.47-77. https://doi.org/10.17576/pengurusan-2005-24-03

Menike, L. (2006). The Effect of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market. *Sabaragamuwa University Journal*, 6(1), p.50. https://doi.org/10.4038/suslj.v6i1.1689

Mohammad, G., Ullah, W., Islam, A., Alam, S., & Khan, K. (2017). Effect of Macroeconomic Variables on Stock Market Performance of SAARC Countries. *Asian Economic and Financial Review*, 7(8), pp.770-779. https://doi.org/10.18488/journal.aefr.2017.78.770.779

Mukherjee, T. K., & Naka, A. (1995). Dynamic relations between macroeconomic variables and the Japanese stock market: an application of a vector error correction model. *Journal of Financial Research*, 18(2), 223-237. https://doi.org/10.1111/j.1475-6803.1995.tb00563.x

Nijam, H. M., Ismail, S. M. M., & Musthafa, A. M. M. (2018). The impact of macro-economic variables on stock market performance; evidence from Sri Lanka. *Journal of Emerging Trends in Economics and Management Sciences*, 9(2), 115-121.

Ozbay,E.(2009).*The Relationship between Stock Returns and Macroeconomic Factors: Evidence From Turkey*. Financial Analysis and Fund Management, University of Exeter. Retrieved from http://www.cmb.gov.tr/Sayfa/Dosya/61

Pallegedara, A. (2012). *Dynamic Relationships between Stock Market Performance and Short Term Interest Rate-Empirical Evidence from Sri Lanka*. Available at SSRN 2156150. Retrieved from https://mpra.ub.uni-muenchen.de/40773/1/MPRA_paper_40773.pdf

Ross, S. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, 13(3), pp.341-360. https://doi.org/10.1016/0022-0531(76)90046-6

Sun, L., Ford, J. L., & Dickinson, D. G. (2010). Bank loans and the effects of monetary policy in China: VAR/VECM approach. *China Economic Review*, 21(1), 65-97.

Tan, B.C., Ling, L.W. & Arsad, Z. (2006), Dynamics between Stock Price, Oil Price and Macroeconomic Activities: A VAR and Impulse Response Approach", *Proceedings of the 2nd IMTGT Regional Conference on Mathematics, Statistics and Applications*, University of Science Malaysia, pp. 167-179

Tripathi, L. K., Parashar, A., & Jaiswal, S. (2014, June). Impact of Macroeconomic Variables on Sectoral Indices in India. *Pacific Business Review International*, Vol. 6 (12), pp. 83-90. Retrieved from http://www.pbr.co.in/2014/2014_month/June/11.pdf

Ullah, G. M. W., Islam, A., Alam, M. S., & Khan, M. K. (2017). Effect of macroeconomic variables on stock market performance of SAARC countries. *Asian Economic and Financial Review*, 7(8), 770.

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

DETERMINANTS ON PROFITABILITY OF SRI LANKAN INSURANCE COMPANIES

Gamlath G R M

Vavuniya Campus of the University of Jaffna, Vavuniya, Sri Lanka

muthugamlath@vau.jfn.ac.lk

ABSTRACT

The Insurance Sector is one of the major financial services providers in Sri Lanka. This research aims to find out the impact of determinants on companies' profitability, Sri Lanka insurance companies with the empirical research findings. This research measures the independent variable (determinants) in terms of Firm Size, Leverage Ratio, Tangibility of Assets, Liquidity Ratio, Loss Ratio, Managerial Efficiency, Economic Growth and Inflation Rate, whereas, the dependent variable (profitability) is measured in terms of Return on Assets. The population of this study is considered 27 insurance companies, and 17 companies were selected based on a convenient sampling method. The secondary data was collected from the audited financial statements of the selected insurance companies published in the annual reports and analyzed through the statistical tools; Descriptive statistics, Pearson Correlation Matrix, and Multiple Regression Analysis for a period of ten years from 2010 to 2019. Findings of the study revealed that firm size and tangibility of assets have positively correlated to the profitability, while gross domestic product has negatively correlated to profitability of Sri Lankan insurance companies. Further the findings revealed that Sri Lankan insurance companies are to be in practice to implement their business strategy to maintain the optimal profitability with concentrating; keeping the sustainable firm image through proper business expansion and

effective utilization of tangible assets with concentrating the other determinants so as to emphasize the macro-economic base concerning the economic contribution to the country. In addition, this research is important to the investors, managers, stakeholders and policymakers in the Sri Lankan Insurance Industry for the purpose of overseeing the industry with a view of adopting market based strategy to improve the profitability indeed. Moreover, this study recommended conducting future research on the impact of other factors not depicted in the regression model on the profitability in a comparative manner pertaining to the Sri Lankan insurance industry.

Keywords – Determinants, insurance companies, profitability, Sri Lanka

1. INTRODUCTION

In real-world profitability for any business attached to the firm business performance. Performance is a difficult concept in terms of definition and evaluation. It is defined as an output, and the proper measure selected to assess corporate performance is considered according to the organization type and objectives of the evaluation. Research in strategic management has offered a variety of models that can be used to analyze financial performance. Profitability, defined as a proxy of financial performance, is one of the main objectives of an insurance company's management (Burca & Batrinca, 2014). Profit is a crucial prerequisite for the increasing competitiveness of a company that operates in a market. At the microeconomic level, performance is the direct result of managing various economic resources and of their efficient use within operational, investment, and financing activities. To optimize economic results, special attention should be given to the proper grounding of managerial decisions (Malik, 2011). These should be based on complex information regarding the evolution of all types of activities within the company. A synthetic picture of the company's financial position and its performance is found in the annual financial statements, which therefore become the main information sources that allow the qualitative analysis of how resources are used during the process of creating value.

As per the emphasis by Malik (2011), the profitability of private insurance companies was analyzed through micro and macroeconomic level, is determined both by internal factors represented by specific characteristics of the company which is totally under the hand of the corporate management system, and external factors regarding the connected industry and macroeconomic environment in general which also not under the hand of the corporate management. Identifying and knowing its directions and magnitude helped to develop the strategy to get the opportunity or to minimize the threat.

In a competitive marketplace, private insurance companies essentially absorb to achieve a satisfactory level of profitability (Malik, 2011).

The performance of any firm not only plays the role to increase the market value of that specific firm but also leads towards the growth of the whole industry which ultimately leads towards the overall prosperity of the economy. The financial system comprises financial institutions, financial instruments, and financial markets that provide an effective payment, credit system, and risk transfer and thereby facilitate channelizing of funds from savers to the investors of the economy. According to Mishkin and Stanley (2018), financial markets and institutions not only affect our everyday life but also involve huge flows of funds – trillions of dollars-throughout our economy, which in turn affect business profits, the production of goods and services, and even the economic well-being of countries other than the United States. Indeed, well-functioning financial markets and institutions like insurance companies are one of the most important key factors in producing high economic growth, and poorly performing financial markets and institutions is one of the reasons that many countries in the world remain desperately poor (Mishkin & Stanley, 2018). Insurance companies are not only providing the mechanism of risk transfer but also helps to channelize the funds in an appropriate way to support the business activities in the economy.

Insurance companies have importance both for businesses and individuals as they indemnify the losses and put them in the same positions as they were before the occurrence of the loss. In addition, insurers provide economic and social benefits in the society i.e. prevention of losses, reduction in anxiousness, fear, and increasing employment. Therefore, the current business world without insurance companies is unsustainable because risky businesses do not have the capacity to retain all types of risk in the current extremely uncertain environment (Insurance Board of Sri Lanka, 2018).

A study done by Lire and Tegegn (2016) explored that private insurance companies should reduce the impact of underwriting risk by improving their underwriting performance through techniques like risk and product selections with geographical and different pricing strategy, private insurance company should improve underwriting in favor of economic growth of the country via identifying the potential and priority direction of the overall economic activity and growth of the country. The private insurance companies should also increase their company assets. According to Eling et al., (2008), insurers' profitability is determined first by underwriting performance (losses and expenses, which are affected by the product pricing, risk selection, claims management, and marketing and administrative expenses); and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage. A study conducted by Ahmed (2008),

who examined the determinants of insurers' profitability indicated that size, the volume of capital, leverage & loss ratio are significant determinants of profitability. Bilal et al., (2013) investigate that leverage, size, earnings volatility, and age of the firm are significant determinants of profitability while growth opportunities and liquidity are not significant determinants of profitability. Other studies (Curak et al., 2011; Shiu, 2004) conducted in the area of insurers' profitability verified that there is a direct association between the profitability of insurance companies and it's both internal and external determinants. Even though all these and other researchers conducted studies on this area, but, the determinants of profitability have been debated for many years and unexplained issues in the insurance-finance literature.

Problem Statement

The insurance sector in Sri Lanka has progressed over the last few decades after the liberalization of the economy in 1977 and has expanded its operations. In the beginning, there were very few companies in operation; however, new companies came into operation recently. Shawar and Siddiqui (2019) emphasized that the competition among them has gained largeness as the products and services offered to its consumers have extended. In the case of expanding the firm capital with earning more benefits is the central reason for the perpetually presence of any firm or related industry. That is the reason benefit is one of the principal and vital variables of monetary administration to quantify and make future arranging and techniques of handling the basic circumstances. Shawar and Siddiqui (2019) and Hifza (2011) reiterated that a vacillation amid the period from 2005 to 2009 of the money related yearly reports of back up plans of Pakistan and base on that the investigation was directed and further proposed that it is essential to discover the variety among Insurance Company's benefit. To decide the execution of the insurer is a critical task for the strategy creators and controllers to help the insurance area in achieving the achievement and flawlessness. The pattern of the insurance segment is expanding step by step because of the basic circumstance of the nation, increment in risk, and vulnerability.

Profit is the utmost rewarding progress measurement for any business (Gamlath & Rathiranee, 2015) Therefore, profit maximization is the first objective of financial management because one and the second objective of financial management is to maximize the owner`s wealth and profitability is a very important determinant of performance (Perera, 2007). The annual reports of insurance companies in Sri Lanka show large fluctuations in profits. This variation of profits among insurance companies suggests that firm-specific factors play a crucial role in influencing insurance companies` profitability. It is therefore essential to identify what are these factors and how they help insurance companies to take actions that will increase their profitability and

investors to forecast the profitability of insurance companies in Sri Lanka. Literature shows that most of the studies conducted on the banking firms were both public and private commercial banking institutions and focused on determinants of profitability. With the expansion of the insurance industry in Sri Lanka, the whole market is segmented into the separatism that profit for each firm is competitively moved in line. At this juncture, the insurance firms in Sri Lanka have emerged to extend their profit level and keep firms sustain maximizing profit determining the various fluctuated reasons. Ultimately, this is vital to explore key determinants of Insurance firms' profitability for investors, managers, allied stakeholders, policymakers, strategy creators, re-insurers, actuarial firms, and industry experts to help the creation and implementation of the sustainable insurance industry in Sri Lanka achieving the development and hardness which eventually prompts the general achievement of the industry as well as the whole economy.

Hence, the profitability has received significant attention from researchers in various segments of businesses. Since profitability has an imperative effect on an organization's health and survival. Higher profitability reflects management effectiveness and efficiency in making use of a firm's resources and this, in turn, contributes to the country's economy at large (Hailegebreal, 2016). During the period of the study annual reports of the Sri Lankan insurance companies showed large fluctuations in profit. This variation of profits demonstrates that internal factors or company-specific factors play an essential role in influencing insurance companies' profitability. It is therefore important to determine which of these factors can help insurance companies to take action for increasing their profitability and help investors to forecast the profitability of these insurance companies. In Sri Lanka, there are some researches or studies that examined factors that affect profitability in the banking, manufacturing, and other sectors listed in the Colombo Stock Exchange. However, very few studies have been conducted particularly in the insurance sector in the past. But, there are many unfavorable economic and business impacts from the long-term civil war during a thirty years period up to 2009, so that there is a downward trend in the profitability of all listed and non-listed companies. After that, the insurance companies also made efforts to increase their profits by adopting profit-driven strategies. Thus, the present study intends to carry out this research in order to fulfill the need for such study for the identification of factors that affect the profitability and help to avoid losses.

In order to fulfill the above research gap, the aim of this research is to find out the impact of the determinants on the profitability of Sri Lankan insurance companies during the period of ten years from 2010 to 2019. This research consists of six sections. Section 3 reviews the literature relating to the research. Section 4 discusses the research methodology. Section 5 designs the

conceptual framework and to formulate hypotheses which are deduced from the literature. Section 6 presents the data analysis and interprets the findings of the study. Finally, the conclusion, implications, and directions for future research are brought in section 7.

2. LITERATURE REVIEW

The monetary system comprises monetary institution, monetary instrument and monetary market that give an effectual imbursement, praise scheme and risk move and thus make easy channelizing of money from saver to the investor of the financial system (Boadi et al., 2013). As a fraction of monetary organization, community wellbeing shaped by Indemnity Company is indisputable. A well- urbanized and evolved insurance division is a benefit for financial development as it provides long-term funds for infrastructure development at the same time intensifying the risk captivating aptitude of the country (Charumathi, 2012). Chen and Wong (2004) also suggest that a physically powerful and fit assurance subdivision is of greatest significance for every one group and sector of the financial system. Cover serves a figure of precious financial function that is alike and largely separate from other types of monetary mediators. According to Malik (2011), insurance plays a crucial role in development of commercial and infrastructural businesses. From the latter perspective, it promotes financial and social stability; mobilizes and channels savings; supports trade, commerce and entrepreneurial activity and improves the quality of the lives of individuals and the overall well being in a country. Michael Koller as cited in Abate (2012) suggests that insurance companies are playing the role of transferring risk and channeling funds from one unit to the other (financial intermediation). This implies that insurance companies are helping the economy of a country one way by transferring and sharing risk which can create confidence over the occurrences of uncertain events and in another way insurance companies like other financial institutions play the role of financial intermediation so as to channel financial resources from one to the other. Even if there are numerous types of insurances it can be divided into two broad categories based on their role to the economy. Those are general insurance companies and life insurance companies. General insurance companies and life insurance companies are different from each other in terms of operation, investment activities, vulnerability and duration of liabilities. Life insurers are said to function as financial intermediaries while general insurers function as risk takers (Chen & Wong, 2004).

Insurance profitability is influenced by both internal and external factors. Whereas internal factors focus on an insurer's specific characteristic, the external factors concern both industry features and macroeconomic variables. However, in most literature, profitability with regard to insurance companies

is frequently expressed as a function of internal determinants. Besides internal determinants, this research included a set of macroeconomic determinants (Central bank of Sri Lanka, 2019; Peleckienė et al., 2019; Derbali & Jamel, 2018; Sumaira & Amjad, 2013; Boadi et al., 2013; Jian-Shen et al., 2013; Charumathi, 2012). The relevant literature may be categorized as: the effects of firm specific factors on profitability and the effects of macroeconomics factors on profitability. The following are the variables used in research concerning profitability of insurance companies and related financial institutions. In this scenario, the empirical findings on the determinants of firm specific factors effect on profitability aligning with the research hypotheses are explained as follows.

2.1 Firm size

Several studies have been conducted to examine the effect of firm size on firm profitability (Malik, 2011). Abate (2012); Mehari and Aemiro (2013); and Sumaira and Amjad (2013) are among other researchers who investigate the effect of size on firm profitability. However, the results are inconsistent. In many literature, it has been suggested that company size is positively related to financial performance. For instance, Charumathi (2012) examined the factors determining the profitability of life insurers operating in India taking return on assets as dependent variable and the results of the study indicate that profitability of life insurers is positively and significantly influenced by size. Almajali (2012) conducts a study with the aim of investigating the factors that mostly affect financial performance of Jordanian Insurance Companies. Similarly the results showed a positive statistical effect of Size on the financial performance of Jordanian Insurance Companies. Malik (2011) also found a significantly positive association between size of the company and profitability. In the research done by Sumaira and Amjad (2013), it has suggested the firm size as a significant determinant on profitability. Additionally, Abate (2012) and Mehari and Aemiro (2013) in their study based on the regression results identified size as the most important determinant factors of profitability and it is positively related. The main reasons behind this summarized as follows. First, large insurance companies normally have greater capacity for dealing with adverse market fluctuations than small insurance companies do. Second, large insurance companies usually can relatively easily recruit able employees with professional knowledge compared with small insurance companies. Third, large insurance companies have economies of scale in terms of the labor cost, which is the most significant production factor for delivering insurance services. However, by drawing a framework from the financial economics literature and utilizing a dynamic panel data design covering 2004-2009, Olaosebikan (2012) examines the profitability of micro-life insurers in Nigeria. The results

indicate that the profitability of micro-life insurers is not influenced by factors such as size of firms.

2.2 Leverage ratio

In the trade-off theory, it suggests a positive relationship between profitability and leverage ratio and justified by taxes, agency costs and bankruptcy costs push more profitable firms towards higher leverage. Hence more profitable firms should prefer debt financing to get benefit from the tax shield. In contrast to this pecking order theory of capital structure is designed to minimize the inefficiencies in the firms' investment decisions. Due to asymmetric information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs.

The pecking order theory states that there is no optimal capital structure since debt ratio occurs as a result of cumulative external financing requirements. Insurance leverage could be defined as reserves to surplus or debt to equity. Naveed, et al., (2011) examines the impact of firm level characteristics (size, leverage, tangibility, risk, growth, liquidity and age) on performance of listed life insurance companies of Pakistan over seven years from 2001 to 2007. The results of Ordinary Least Square (OLS) regression analysis indicate, in addition to size and risk, leverage are important determinants of performance of insurance companies of Pakistan. In addition to Naveed et al., (2011) study was conducted to examine the effect of leverage on firm profitability. However, the results are inconsistent.

In the research studies of Charumathi (2012); Malik (2011) and Abate (2012), leverage has negatively and significantly influenced the insurance companies profitability. But in the study of Almajali (2012); Boadi et al., (2013) and Mehari and Aemiro (2013) the leverage has positively and significantly influenced the insurance company profitability. Although, the results of Olaosebikan (2012) with regards to leverage indicates that the profitability of micro-life insurers is not influenced by leverage.

2.3 Loss ratio

Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking. As a consequence, insurers that underwrite risky business will need to ensure that good standards of management are applied to mitigate their exposure to underwriting losses ex-ante and maximize returns on invested assets ex- post. This could improve annual operational performance by encouraging managers to increase cash flows through risk taking. On the other hand, excessive risk-taking could adversely affect the annual performance of insurers and

reinsurance companies. Furthermore, higher annual insurance losses will tend to increase the level of corporate management expenses ex-post (e.g., claims investigation and loss adjustment costs) that could further exacerbate a decline in reported operational performance. In contrast, insurers and reinsurance companies with lower than expected annual losses are likely to have better operational performance because, for example, they do not incur such high monitoring and claims handling costs (Mehari & Aemiro, 2013). Most researchers, which investigate the effect of risk on profitability, have the same opinion with negative and significant effects of risk on profitability. Jian-Shen et al (2006) provided evidence regarding the influence of capital structure and operational risk on profitability of life insurance industry in Taiwan. The finding shows that the operational risk exerts a negative and significant effect on profitability. Malik (2011) investigated firm specific factors (age of company, size of company, volume of capital, advantage ratio and loss ratio) determinants of profitability in insurance companies of Pakistan. Regarding the Loss ratio it also finds negative but significant relationship with profitability.

2.4 Tangibility of asset

Tangibility has two conflicting effects on profitability. On the one hand, according to Himmelberg and Hubbard (1999), tangibility of assets has a positive effect on profitability and they show that tangible assets are easily monitored and provide good collateral and thus they tend to mitigate agency conflicts between shareholders and creditors. On the other hand, tangibility of assets may have a negative correlation, because firms with high levels of tangible assets tend to be less profitable.

Firms with high levels of intangible assets (in form of liquidity) have more investment opportunities in the long term, innovation and research and development (Nucci et al., 2005; Deloof, 2003). Some studies have been conducted to examine the effects of Tangibility of assets on insurance companies profitability, however, the results are conflicting. The general objective of the Boadi et al., (2013) study was to find out the determinants of the profitability of insurance firms in Ghana by using Secondary data on financial reports collected from sixteen insurance firms in Ghana for the period 2005 to 2010. This study discovered a negative relationship between tangibility and profitability. On the other hand, Mehari and Aemiro (2013) conduct a study to investigate the impact of firm level characteristics on performance of insurance companies in Ethiopia and its result show statistically significant and positive relation of tangibility with return on total asset. In the study of Abate (2012), tangibility of assets is not significantly related with profitability.

2.5 Liquidity ratio

Liquidity from the context of insurance companies is the probability of an insurer to pay liabilities which include operating expenses and payments for losses/benefits under insurance policies, when due then shows us that more current assets are held and idle if the ratio becomes more which could be invested in profitable investments. For an insurer, cash flow (mainly premium and investment income) and liquidation of assets are the main sources of liquidity (Chen & Wong 2004). According to Daneiel and Tilahun (2013), companies with more liquid assets are less likely to fail because they can realize cash even in very difficult situations. It is therefore expected that insurance companies with more liquid assets will outperform those with less liquid assets. However, according to the theory of agency costs, high liquidity of assets could increase agency costs for owners because managers might take advantage of the benefits of liquid assets (Adams & Buckle, 2000). In addition, liquid assets imply high reinvestment risk since the proceeds from liquid assets would have to be reinvested after a relatively short period of time. Unquestionably, reinvestment risk would injure the profitability of a company. In this case, it is, therefore, likely that insurance companies with less liquid assets outperform those with more liquid assets. Empirical evidence with regard to liquidity revealed almost inconsistent results. For instance, Charumathi (2012) examined the factors determining the profitability of life insurers operating in India taking return on assets as the dependent variable. Their results indicate that profitability of life insurers is positively and significantly influenced by liquidity. Almajali (2012) conducts a study with the aim of investigating the factors that mostly affect financial performance of Jordanian Insurance Companies and results showed that liquidity has a positive statistical effect on the financial performance of Jordanian Insurance Companies. Boadi et al., (2013) study also found a positive relationship between liquidity and profitability of insurance firms in Ghana. On the contrary, Abate (2012) reported a negative but significant relation between liquidity ratios with profitability. On the other hand, the results of Mehari and Aemiro (2013) and Sumaira and Amjad (2013) studies revealed that liquidity has a statistically insignificant relationship with ROA.

2.6 Managerial efficiency

Almajali (2012) study aimed at investigating the factors that mostly affect financial performance of Jordanian Insurance Companies. The study population consisted of all insurance companies' enlisted at Amman stock Exchange during the period (2002-2007) which count (25) insurance companies. The results showed that the Management competence index has a positive statistical effect on the financial performance of Jordanian Insurance Companies. This is also called as the firm growth, which is measured by the percentage change in total assets of insurance companies or sometimes it is

measured by percentage change in premiums of insurance companies. Insurance companies having more and more assets over the years have also a better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities (Abate, 2012).

Derbali and Jamel (2018) examined the impact of firm-specific characteristics (size, advantage, tangibility, risk, growth, liquidity and age) on the performance of eight insurance companies in Tunisia over a period of 8 years (2005-2012). The analysis of the results from a regression on panel data indicates that the variables size, age and premium growth are the most important determinants of the performance of insurance companies measured by ROA ratio. Ayele (2012) examined the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability proxies by ROA in Ethiopia. Similar studies of Derbali and Jamel (2018), and Abate (2012) identified that the regression results predicted the managerial efficiency as the most important determinant on profitability and positively related with profitability.

2.7 Gross domestic product

In a recent research done by Peleckienė et al., (2019), they revealed that the insurance sector development is higher in economically rich countries, such as the UK, Denmark, Finland, Ireland, France and The Netherlands; a positive statistically significant relationship between insurance dispersion and economic growth has been detected in Luxembourg, Denmark, The Netherlands and Finland. Besides, a negative statistically significant relationship has been identified in Austria, Belgium, Malta, Estonia and Slovakia; Granger test has shown unidirectional causality running from gross domestic product to insurance in Luxembourg and Finland; and unidirectional causality from insurance to gross domestic product in The Netherlands, Malta and Estonia. The case of Austria has shown bidirectional causality between the variables. The analysis has presented the absence of causality between insurance and economic growth in Slovakia.

2.8 Inflation rate

Inflation rate is a key determinant used to measure the economic performance of a firm as well as a one of the major determinants in making the economic policies for the country's development. So that, the impact of this rate is affected ultimately to attain the level of profitability in the insurance sector in the country as well (Central Bank of Sri Lanka, 2019)

2.9 Profitability

Profit is what is left over from income earned after you have deducted all costs and expenses related to earning the income and it is one of the main reasons for the continued existence of every business organization and also it is expected so as to meet the required return by owners and other outsiders. Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market. According to Kaguri (2013), profitability is the ability of a given investment to earn a return from its use.

Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner` s wealth and profitability is a very important determinant of performance (Malik 2011).

Profitability ratios are an indicator for the firm's overall efficiency (Majed & Qabajeh, 2012). It's usually used as a measure for earnings generated by the company during a period of time based on its level of sales, assets, capital employed, net worth and earnings per share. Profitability ratios measure the earning capacity of the firm, and it is considered as an indicator for its growth, success and control. Accordingly, the term 'profitability' is a relative measure where profit is expressed as a ratio, generally as a percentage.

According to Majed and Qabajeh (2012), there are different ways to measure profitability such as: Return on assets (ROA) ratio, Return on owner's equity (ROE) ratio and return on investment (ROI). ROA ratio is calculated as net profit after tax divided by the total assets. This ratio measures the operating efficiency for the company based on the firm’s generated profits from its total assets whereas ROE ratio is calculated as net profit after tax divided by the total shareholders’ equity. This ratio measures the shareholders rate of return on their investment in the company.

Activity ratios are another group of ratios; it's usually used to measure the ability to optimize the use of the available resources. These ratios are other measures of operational efficiency and performance. Among this group of ratios is the turnover to capital employed or return on investment (ROI) ratio. ROI ratio is calculated as net profit after tax divided by the total paid in capital. It measures the firm's efficiency in utilizing invested capital. In other words, this ratio expresses a company's ability to generate the required return (expected return) based on using and managing the invested resources by the shareholders. Majed and Qabajeh (2012) also suggest that ROA and ROE are the most used profitability ratios in the analysis. Al-Shami (2008) similarly

argued that ROA, return on equity (ROE) and return on invested capital (ROIC) are measurements of profitability.

However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's profitability is ROA defined as the before tax profits divided by total assets. Malik (2011) are among others, who have suggested that although there are different ways to measure profitability it is better to use ROA. According to the study by Swiss Re (2008), Profits are determined first by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, and marketing and administrative expenses); and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage.

The first division of the decomposition shows that an insurer's ROE is determined by earnings after taxes realized for each unit of net premiums (or profit margin) and by the amount of capital funds used to finance and secure the risk exposure of each premium unit (solvency). That is why most researchers use ROA as a measure of profitability in financial institutions.

Conceptual Model and Hypotheses Development

Deducing from the empirical findings from the literature (which were derived from the theoretical understandings and originality of those researches) linking their implications, the following conceptual framework is formulated;

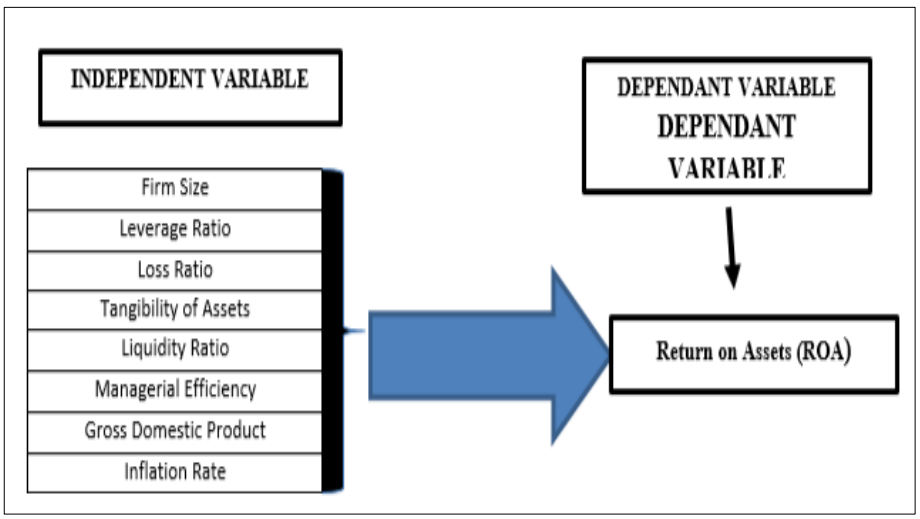


Figure 1: Conceptual model

Source: Author Developed

The conceptual framework is built-up to give details on the determinants of profitability. By abbreviation preceding study, firm size, leverage, loss ratio, tangibility of assets, liquidity, managerial efficiency, firm growth, economic growth, and inflation are selected to be incorporated as independent variables that predictable to influence insurance companies' profitability as measured by Return on Assets (ROA)

Hypothesis means a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation. Review of related literature indicates that potential variables that influence the profitability are firm size, leverage ratio, loss ratio, tangibility of assets, liquidity, managerial efficiency, gross domestic product and inflation rate. There are many various ways to measure profitability. In this study, the return on equity (net income to total assets) was used to measure profitability.

The researcher has chosen these variables constructed as per the above literature reviewed from the section.3, because they are the most suitable determinants to the Sri Lankan insurance market and can be easily measured by using data that is afforded by Sri Lankan insurance companies. Therefore, the subsequent hypotheses are formulated to be tested by the research as follows;

H1- Firm size has a significant impact on profitability of insurance companies

H2- Leverage ratio has a significant impact on profitability of insurance companies

H3- Loss Ratio has a significant impact on profitability of insurance companies

H4- Tangibility of assets has a significant impact on profitability of insurance companies

H5- Liquidity ratio has a significant impact on profitability of insurance companies

H6- Managerial Efficiency has a significant impact on profitability of insurance companies

H7- Gross Domestic Product has a significant impact on profitability of insurance companies

H8- Inflation rate has a significant impact on profitability of insurance companies

However, although determinants of profitability have been extensively studied in other sectors in the Sri Lankan context as well as global context, very few studies can be found for impact of the insurers' return on assets as a

profitability measure (Shawar & Siddiqui, 2019; Daniel & Tilahun, 2013). Literature review supports the idea that financial and non-financial factors, such as firm size, leverage ratio, loss ratio, tangibility of assets, liquidity ratio, managerial efficiency, gross domestic product, and inflation rate have an influence on firms' profitability.

The researcher has chosen these variables because they are the most appropriate factors for the Sri Lankan insurance sector and the impact of above-mentioned determinants on profitability can be measured by using the published data in the Sri Lankan insurance market.

3. METHODOLOGY

3.1 Research design

Research design refers to the strategy a researcher formulates to progress this research. It includes determining the nature of the research, along with selecting appropriate methods to approach and collect information. It also includes the specification of sample size and type while discussing the way in which that collected information is analyzed and presented in the form of results. Furthermore, it reflects on the methods and techniques used to draw a conclusion or to validate or reject the hypothesis of the research (Lewis, 2015). However, the research design is formulated after understanding the requirement of the research in order to produce results that are relevant and valid.

In this research, a dependent variable is profitability evaluated on the basis of the impact of firm size, leverage ratio, loss ratio, tangibility of assets, liquidity ratio, managerial efficiency, economic growth and inflation rate that are independent variables.

3.2 Sample size

Sample size is considered as a pool of entities that reflect an entire population. There were twenty seven (27) listed insurance companies and non-listed insurance operated in Sri Lanka. Out of these insurance companies, the sample size for this research includes seventeen (17) insurance companies by using a convenient sampling method.

Secondary data was collected through their annual reports that were presented during the last 10 years that was 2010-2019. The annual reports of these insurance companies are available on the internet (including the website of the Colombo Stock Exchange). In addition, all the relevant reports were accessed from the official websites of the companies. The Table 1 shows the selected insurance companies for the data collection.

Table 1: List of insurance companies in Sri Lanka

No	Insurance Companies	Types
01	Ceylinco Life Insurance PLC (CINS)	Life insurance
02	AIA Insurance Lanka PLC (AIA	Life insurance
03	Union Assurance PLC (UAL)	Life insurance
04	Janashakthi Insurance Company PLC (JINS)	Life insurance
05	HNB Assurance PLC (HNB)	Life insurance
06	LOLC Life Assurance Limited (LOLC)	Life insurance
07	Allianz Life Insurance Lanka Ltd (ALLI)	Life insurance
08	Amana Takaful Life PLC (AMA)	Life insurance
09	Life Insurance Corporation Lanka Ltd (LIC)	Life insurance
10	Coop life Insurance Limited (Coop life)	Life insurance
11	Ceylinco General Insurance Ltd (CINS)	General Insurance
12	National Insurance Trust Fund (NITF)	General Insurance
13	Allianz General Insurance Lanka Ltd (ALLI)	General Insurance
14	LOLC General Insurance Ltd (LOLC)	General Insurance
15	Cooperative Insurance Company Ltd (Co-op	General Insurance
16	HNB General Insurance Ltd (HNB)	General Insurance
17	Amana Takaful PLC (AMA)	General Insurance

Source: Researcher's data collection, 2020

3.3 Measurement of variables

According to Al-Shami (2008), there are three important measures of a firm's performance that are profitability, size, and survivorship. Profitability indicates the firm's ability to achieve the rate of return on a company's assets and investment funds. With regard to size, it is a firm's ability to expand its size that could be a reflection of its success as earnings are reinvested and external funding could be easily found. Whereas survivorship indicates the ability to earn sustainable development concerning competitive advantages beyond initial opportunities like an economic upturn or the early growth stage of the industry. The following indicators and measurements were used to calculate the ratios to be analyzed in this research.

Firm size

In this study business, size was on purpose by whole advantage in the log worth.

Firm size = Usual log of whole assets

Leverage ratio

Leverage is the quantity of debt used to finance a company's assets. A company with considerably more debt than equity is careful to be extremely leveraged. The leverage in this study was deliberate by total debt to total equity value of the corporation.

LEV = Total debt /Total equity

Loss ratio

This variable is measured as the ratio of incurred claims to earned premiums. It is measured as:

Loss ratio = Net claims incurred / Net Earned Premiums

Tangibility of assets

Tangibility is defined in respect to this study as the ratio of fixed assets to total assets.

Tangibility ratio = Fixed assets /Total assets

Liquidity ratio

Liquidity of the insurance companies in this study was measured by the ratio of current assets to Current liabilities.

Liquidity ratio = Current assets / Current liabilities.

Managerial efficiency (Firm growth)

In this study enlargement of the insurance company is deliberate by the percentage alter in total assets of insurance companies decision-making competence The ratio of in service expense to operating profits was used to measure managerial efficiency and the senior the ratio the inferior the managerial efficiency.

Managerial efficiency = Operating expense / Operating income

Economic growth

The yearly real Gross Domestic Product (GDP) growth rate was used.

Inflation rate

The annual inflation rate was used.

Profitability

Present are a lot of dissimilar habits to calculate profitability, as exposed in preceding studies. In this study net profits previous to tax to sum possessions (ROA) was used to gauge profitability, since the majority of the study

concerning the topic used this ratio to decide the profitability of the cover company. The ROA was calculated as a ratio of the operating results and employed (invested) capital.

ROA = Net income /Total assets

Accordingly, the operationalization of all independent and dependent variables is tabulated as follows;

Table 2 - Operationalization of variables

	Variables	Indicators	Mathematical Expression	Reference
Dependent Variable	Return on Assets (ROA)	Ratio	Net Income / Total Assets	(Masood & Ashraf, 2012)
Independent Variable	Firm Size (SIZE)	Ratio	Log of Total Assets	(Almazari, 2014)
	Leverage Ratio (LEV)	Ratio		(Charumathi, 2012)
	Loss Ratio (LOS)	Ratio	Net Claims Incurred / Net Earned Premiums	(Malik, 2011)
	Tangibility of Assets (TOA)	Ratio	Fixed Asset / Total Assets	(Abate, 2012)
	Liquidity Ratio (LR)	Ratio	Cash and Cash Equivalent / Total Assets	(Almazari, 2014)
	Managerial Efficiency (ME)	Ratio	Operating Expense / Operating Income	(Almajali, 2012)
	Gross Domestic Product (GDP)	Percentage	Growth rate of Gross Domestic Product	(Weerasinghe & Perera, 2019)
	Inflation Rate (IR)	Percentage	Consumer Price Index	(Spaseska, et al., 2017)

Source: Based on survey data

Data Analysis

Data were analyzed by using the statistical tools; Descriptive Statistics, Pearson Correlation Matrix, and Multiple Regression Analysis. The data analysis model in this research takes the following format.

$$Y_i = \beta 0 + \beta 1\ SIZE + \beta 2\ LEV + \beta 3\ LOS + \beta 4\ TOA + \beta 5\ LQ + \beta 6\ MGE + \beta 7\ GDP + \beta 8\ IR + ei$$

Where;

Y i	Dependent variable Profitability through Return on Assets (ROA)		
SIZE:	Firm Size;	LEV:	Leverage ratio
LOS:	Loss Ratio	TOA:	Tangibility of assets
LQ:	Liquidity Ratio	MGE:	Managerial efficiency
GDP:	Gross Domestic Product	IR:	Inflation Rate
ei:	Randomized error		

4. RESULTS

The following tests are related to the above data analysis model of data, which are tested in the following sections. Descriptive statistics, Correlation Matrix, and Multiple regression model specification tests were tested to make the reliable results, and make the model fit for the data. These tests were mandated to confirm the estimation technique of the data analysis model as follows.

4.1 Descriptive Statistics

This research was purely secondary in nature. In this research, the data was collected from the annual reports which are uploaded in the official websites of particular firms as well as audited financial statements presented in the annual reports in the official website of the Colombo Stock Exchange. In Table 2, the researcher presents a descriptive analysis of the concerned variables associated with Sri Lankan insurance companies. In fact, in this study, it considers ROA as a dependent variable (profitability) expressed in terms of specific determinants of insurance companies such as firm size, leverage ratio, loss ratio, tangibility of assets, liquidity ratio, managerial efficiency, gross domestic product, and inflation rate (independent variables). Mainly this analysis is helpful to identify the overall description of the variables used in the model. The summary of descriptive statistics contains the no. of observations, mean, standard deviation, minimum and maximum of the dependent variable, and eight independent variables. The mean value is the sum of the observations divided by the total number of observations. The standard deviation is the square root of the variance and furthermore, it shows how close the data is to the mean. The variance describes the spreading of the data from the mean. It is the simple mean of the squared distance from the mean. Furthermore, the above table shows the average indicators of variables computed from the financial statements and the standard deviation that shows how much dispersion exists from the average value. Brooks, (2008) revealed that a low standard deviation indicates that the data point tends to be very close to the mean, whereas a high standard deviation indicates that the data point is spread out over a large range of values.

Table 3 - Descriptive statistics

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
ROA	164	0.413	0.079	-0.384	0.488
SIZE	164	7.527	1.214	5.437	9.925
LEV	164	0.479	0.269	0.016	0.945
LOS	164	0.382	0.248	0.005	0.959
TOA	164	0.098	0.186	0.001	0.915
LQ	164	2.284	4.980	0.006	43.262
MGE	164	3.290	6.573	-31.556	40.339
GDP	164	5.334	2.163	3.209	9.145
IR	164	5.070	1.848	2.240	7.540

Source: Authors calculations based on survey data

As presented in Table 3 that, the mean values of all the variables range from a minimum of 0.097(approx.) for TOA as measured by the ratio of Tangibility of assets to a maximum of 7.53 (approx.) for SIZE as expressed by the natural logarithm of the total assets of the insurance companies. The minimum and maximum rates of return on assets of selected insurance companies are -0.38 (approx.) and 0.49 (approx.) respectively. Also, the above results show the mean values of Firm Size (SIZE), Leverage Ratio (LEV), Loss Ratio (LOS), Tangibility of Assets (TOA), Liquidity (LQ), Managerial Efficiency (MGE), Gross Domestic Product (GDP), and Inflation Rate (IR) are 7.53, .48, .38, .10, 2.28, 3.29, 5.33 and 5.07, whereas the mean value of dependent variable Return on assets (ROA) is 0.41 (approx.). This indicates on average Sri Lankan insurance companies' generated 4% profit on assets employed in the company. When observing the standard deviation on the Firm Size (SIZE), Leverage Ratio (LEV), Loss Ratio (LOS), Tangibility of Assets (TOA), Liquidity (LQ), Managerial Efficiency (MGE), Gross Domestic Product (GDP), and Inflation Rate (IR) and dependent variable ROA showed average of 0.08 (approx.), which implies that the volatility of ROA varies from the mean by 8% only.

4.2 Correlation Analysis

The researcher has used correlation analysis to measure the strength and direction of the linear relationship between the independent variables and the dependent variable. Table 4 shows the correlation analysis

Table 4 - Correlation matrix

	ROA	SIZE	LEV	LOS	TOA	LQ	MGE	GDP	IR
ROA	1.0000								
SIZE	0.140*** 0.072	1.000							
LEV	0.117 0.134	-0.495* 0.000	1.000						
LOS	0.093 0.234	0.188** 0.015	0.091 0.246	1.000					
TOA	0.132*** 0.090	-0.021 0.785	0.173** 0.026	-0.050 0.520	1.000				
LQ	-0.059 0.453	0.289* 0.0002	-0.234* 0.002	-0.037 0.633	-0.041 0.595	1.000			
MGE	0.008 0.913	0.058 0.459	-0.105 0.179	-0.043 0.579	-0.094 0.226	0.095 0.225	1.000		
GDP	-0.141 0.071***	-0.128 0.101	0.110 0.158	-0.059 0.446	-0.001 0.984	-0.082 0.297	-0.034 0.664	1.000	
IR	0.017 0.822	-0.057 0.466	0.069 0.379	-0.060 0.441	-0.001 0.984	-0.210* 0.007	-0.265* 0.0006	0.462 0.000	1.000

*. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed)
***. Correlation is significant at the 0.1 level (2-tailed)

Source: Authors calculations based on survey data

According to correlation analysis in Table 3, it shows that correlation between firm size (SIZE) and returns on assets (ROA) is 0.1405 with a p-value of 0.0727, which implies that there is a positive significant relationship between firm size and ROA at a 10% significant level. Then the correlation between Tangibility of Assets (TOA) and return on assets (ROA) is 0.1326 with a p-value of 0.0904, which implies that there is a positive significant relationship between tangibility of assets and ROA at 10% significance level. Also, then the correlation between Gross Domestic Product (GDP) and return on assets (ROA) is 0.1413 with a p-value of 0.0711, it implies there is a negative significant relationship between GDP and ROA at a 10% significant level. Except the above, all the correlations of leverage ratio, loss ratio, liquidity, managerial efficiency and inflation rate between ROA are 0.1173, 0.0934, -0.0591, 0.0086 and 0.0176, which imply that the relationships are insignificant relationships. Even though, most of the determinants are

correlated except gross domestic product (as recorded a negative correlation) with the profitability of the insurance companies in Sri Lanka.

In summary, the correlation analysis shows the direction and degree of associations between variables. It does not allow the researcher to make cause and inferences regarding the relationship between the identified variables in this study. Hence, regression analysis which is discussed in the next subsection of the study gives assurance to overcome the particular shortcomings in examining the effects of selected proxies of the independent variable on the dependent variable.

4.3 Multiple Regression Analysis

The previous section presented the results highlighting the descriptive statistics and pairwise correlation analysis. This section uses a panel regression analysis to test the developed research hypotheses. This panel regression analysis was undertaken to examine the impact of the determinants on profitability of the insurance companies in Sri Lanka. Multiple Regression analysis is used to test the impact of determinants on profitability of the listed Insurance companies in CSE. As the researcher mentioned in mode of analysis, two models were formulated and the results as follows.

Table 5 - Multiple regression analysis: results summary

Source	**SS**	**df**	**MS**	**Number of observations**	= 164
Model	.113	8	.014	**F (8, 154)**	= 2.460
Residual	.884	154	.006	**Prob > F**	= 0.015
Total	.997	162	.006	**R-squared**	= 0.114
				Adj. R-squared	= 0.067
				Root MSE	= 0.078

Variable	**Coefficient**	**Std. Error**	**t**	**p>t**
SIZE	.015	.006	2.42	.017
LEV	.070	.027	2.62	.010
LOS	.014	.025	0.55	.581
TOA	.041	.033	1.24	.216
LQ	-.001	.001	-0.79	.433
MGE	.000	.001	0.43	.671
GDP	-.007	.003	-2.24	.027
IR	.004	.004	0.93	.353
_cons	-.091	.055	-1.66	.098

Source: Authors calculations based on survey data

According to the data analysis model as constructed above for ROA, the Table3 shows the analyzed results in order to find the impact of predictors (SIZE, LEV, LOS, TOA, LQ, MGE, GDP, and IR) and the profitability in ROA. According to R squared value, it shows the variation in the dependent variable that is predicted by the other independent variables. R squared value shows how far the model is the best fit. According to the above results, the value of R2 is 0.1135 and it indicates the 11.4% variance in the profitability. It can be concluded that the model is a weaker one.

Accounting to the F-value, the above table indicates that the regression model predicts the dependent variable ROA significantly well. This indicates the statistical significance of the regression model that was run. Here the P-value is 0.0154 which is less than 0.05, and indicates that the regression model statistically significantly predicts the dependent variable. This means that it is a good fit for the data.

The coefficients of Table 5 provides us with the necessary information to predict ROA from SIZE, LEV, LOS, TOA, LQ, MGE, GDP, and IR as well as to determine whether SIZE, LEV, LOS, TOA, LQ, MGE, GDP, and IR contribute statistically significantly to the model. When considering ROA, the beta coefficient values of SIZE, and LEV, are 0.015 and 0.07 respectively, whereas the beta coefficient of GDP is -0.01. Among these variables; SIZE, and LEV, are positively significantly associated with ROA at a 5% significance level. Also, GDP is negatively significantly associated with ROA at a 5% significance level. Out of these three significant variables, all other variables are insignificant. According to the t values of SIZE, LEV, and GDP are 2.42, 2.62 and -2.24, which are more than 2 or less than -2.

By referring to the Beta coefficients, the regression model can be of the following firm.

ROE = -0.09 +0.01 SIZE+0.07 LEV+0.01 LOS+0.04 TOA-0.00 LQ+0.00 MGE-0.01GDP+0.00 IR +Ɛ

Multicollinearity Test

The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is 1/Tolerance, it is always greater than or equal to 1. There is no formal VIF value for determining presence of multicollinearity. Values of VIF that exceed 10 are often regarded as indicating multicollinearity, but in weaker models values above 2.5 may be a cause for concern. Therefore, the researcher has used a multicollinearity test to examine whether the multicollinearity problem exists or not.

Table 6 - Variance Inflation Factor (VIF)

Variable	VIF	1/VIF
SIZE	1.52	0.658063
LEV	1.45	0.689569
LOS	1.41	0.711575
TOA	1.28	0.784244
LQ	1.16	0.859245
MGE	1.12	0.896164
GDP	1.11	0.900512
IR	1.06	0.946107
Mean VIF	1.26	

Source: Authors calculations based on survey data

By referring to the above table it is possible that no VIFs are greater than 10 and the mean VIF is greater than 1, but not deviating much. It is pointed out that there is no multicollinearity issue between independent variables utilized to run this multiple regression model. According to the above table, all VIF values are less than 10, and tolerance (1/VIF) values are within the range of 0.2 and 1 (Field, 2009). It showed the direction for the researcher that independent variables are not highly correlated. So, it asserted the absence of multicollinearity issues.

4.4 Hypothesis Testing

Assessment of the research hypotheses were made based on the relationship of dependent variable and the explanatory variables. Consequently, the succeeding sections in connection with hypothesis testing and the explanation of the regression result explained above.

Table 7 - Summary of the hypotheses tested

Hypotheses no	Impact between two Variables	P Value	Outcome
Hypothesis 1	SIZE on ROA	0.017 P < 0.05	Supported
Hypothesis 2	LEV on ROA	0.010 P < 0.05	Supported
Hypothesis 3	MGE on ROA	0.671 P > 0.05	Not Supported
Hypothesis 4	TOA on ROA	0.216 P > 0.05	Not Supported
Hypothesis 5	LQ on ROA	0.433 P > 0.05	Not Supported
Hypothesis 6	LOS on ROA	0.581 P > 0.05	Not Supported
Hypothesis 7	GDP on ROA	0.027 P < 0.05	Supported
Hypothesis 8	IR on ROA	0.353 P > 0.05	Not Supported

Source: Based on survey data

According to the hypothesis testing in this study, only three hypotheses namely H1 -SIZE, H2 - LEV and H7GDP are supported. Other hypotheses are not supported.

5. CONCLUSION, IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

5.1 Conclusion

This research was performed on Sri Lankan insurance companies insurance in order to find out the impact of the determinants on profitability of such companies. The profitability of any business industry needs to be evaluated in certain time periods for the purpose of assessing and monitoring its growth and gathering maximum benefits out of it. Profitability is important to measure as it has the tendency to play a pivotal role in concentrating into practice the modern technological innovations and organizational changes by making use of motivated derivatives for enhancing the profitability and other measurements to evaluate progress toward success. Therefore, an in-depth analysis was conducted to explore, understand and assess the profitability of the insurance sector of Sri Lanka by using the determinants of its profitability. The profitability of insurance sector was measured in terms of return on assets as the dependent variable: and eight specific determinants was measured in terms Firm Size (SIZE), Leverage Ratio (LEV), Loss Ratio (LOS), Tangibility of Assets (TOA), Liquidity (LQ), Managerial Efficiency (MGE), Gross Domestic Product (GDP), and Inflation Rate (IR) as independent variables.

The findings of the study show that three determinants; firm size, leverage, and gross domestic product have correlated with the profitability of Sri Lankan insurance companies. Out of these three, the first two, firm size and leverage are positively significantly correlated with the profitability of Sri Lankan insurance companies, so that these results are consistent with the findings of Sumeira and Amjad (2013), Mehari and Aemiro (2013), and Abate (2012). Also, the gross domestic product is negatively correlated with the profitability of insurance companies. This is inconsistent with findings of Peleckienė et al., (2019). Out of these, all the correlations of leverage ratio, loss ratio, liquidity, managerial efficiency and inflation rate between ROA, which imply that the relationships are insignificant. In addition, the regression analysis indicated that the factors; firm size, leverage ratio, and gross domestic product have significant impact on profitability, whereas, loss ratio, tangibility of assets, liquidity ratio, managerial efficiency, and inflation rate have insignificant impact on profitability of Sri Lankan insurance companies. As in Sri Lanka the pattern of investing is becoming faster because of policy wise investment strength of the government in terms of regaining the country with a view to build up on a theme of prosperity is superior to in this decade

and the insurance industry is frequently put some part of sophisticated approach in activities of investment to create more benefit to the customers, shareholders, staff and other existing and potential investors. In last, after considering the effect of determinant franked variables, the findings reveal that firm size is a key determinant to increase the business efficiency by expanding their firm plus business density all over the country with foreign intervention or investment to increase their profitability within the insurance industry. Also, the leverage ratio is a key determinant on profitability in the insurance sector as well. Because, in insurance leverage ratio is a core determinant of an industry to keep the balance between the owned capital and debt capital invested in order to sustain the optimal financial structure of such companies. Also, the insurance industry is a key contributable industry to economic development, so that the insurance companies are likely to operate their business activities concentrating on the growth of the country in order to keep an optimal profitability. Finally, it is emphasized that a set of seven determinants except gross domestic product is averagely contributed to determine the optimum level of profitability of the Sri Lankan insurance industry with concentrating other determinants which would be found beyond in the market.

5.2 Implications

Surprisingly, the performance on macro-economic factors in Sri Lanka with structural changes in the insurance sector would definitely show tangible improvements while improving financial strength of the insurance industry as well. The application and diversification of sophisticated insurance services have very constructive implications for the insurance sector's profitability. The increase in profitability by declining the interest expense of the insurance sector also plays a significant role. With huge increases in profitability associated with these services, the risk exposure in shape of emerging liquidity constraints and rising maturity also poses a threat. That risk can be overcome by increased capital requirements somewhat, the insurance company needs to think of innovative ideas to mobilize its long term deposit in fruitful investments and further breakthrough in liability products.

In recent times, the Sri Lankan insurance industry has been subjected to improvements in size and structure through running reform processes and strong macroeconomic fundamentals. Insurance industry in Sri Lanka has witnessed a swift yet major shift of aggregated assets from the public to private sector. This resulted in decreased asset concentration in this sector. Privatization is the main reason for these massive improvements and has impacted the performance of Sri Lankan insurance companies and other developing nations in the long run. Despite the privatization of insurance companies, intermediation spread has not reduced. Implying asset

concentration has also found to be an important determinant of the intermediation spread. It further implies that improvement in asset concentration would improve the efficiency of the insurance sector significantly. Therefore, the research findings are focused on the entire insurance industry in Sri Lanka as a whole. These results would be beneficial for the insurance companies as well as to the managers to utilize the resources and assets in the most optimum manner.

5.3 Directions for future research

For reliability and the authenticity of the results, it is recommended that future researchers can conduct or expand the extensive research or studies to compare the Sri Lankan insurance industry with the extent of other countries to realize the better correlation and impact between the internal and external determinants on the profitability of Sri Lankan insurance companies. Further, it is authoritative to discover endogenous and exogenous factors which may, straightforwardly and in some way, affecting the model. Furthermore, conducting essential research on strengthening industrial performance towards global economic trends and/or hazards that would be affected for the profitability of the insurance industry may concentrate for the future research as well.

REFERENCES

Ahmed, S., 2008. Aggregate Economic Variables and Stock Market in India. International Research Journal of Finance and Economics, 14, 14-64.

Almajali, A. Y., 2012. Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. Journal of Management Research, 4(2).

Almazari, A. A., 2014. Impact of Internal Factors on Bank Profitability: Comparative Study between Saudi Arabia and Jordan. Journal of Applied Finance & Banking, 4(1), 7.

Al-Shami, H. A. A., 2008. Determinants of Insurance Companies Profitability in UAE. Master of Science in Finance, Universiti Utara Malaysia. Retrieved from http://ep3.uum.edu.my/256/.

Abate, G. A., 2012. Factors Affecting Profitability of Insurance Companies in Ethiopia: Panel Evidence, Unpublished Dissertation for Master of Science in Accounting and Finance, Addis Ababa University, Ethiopia, 01-63.

Bilal, K. J., Tufail, S., & Sehar, N. U., 2013. Determinants of Profitability Panel Data: Evidence from Insurance Sector of Pakistan. Management and Administrative Sciences Review, 2(1), 10-22. Retrieved from https://www.researchgate.net/publication/237837272.

Boadi, E.K., Antwi, S., & Lartey, V C., 2013. Determinants of Profitability of Insurance Firms in Ghana. International Journal of Business and Social Research (IJBSR), 3(3), 43-50.

Burca, A., & Batrinca, G., 2014. The determinants of financial performance in the Romanian insurance market. International Journal of Academic Research in Accounting, Finance and Management Sciences, 4(1), 299-308.

Central Bank of Sri Lanka, Annual Report 2019.

Charumathi, B., 2012. Determinants of Profitability of Indian Life Insurers – An Empirical Study. Proceedings of the World Congress on Engineering, July 4-6, 2012, London, UK,

Chen, R., & Wong, K.A., 2004. Determinants of financial health of Asian insurance companies, Journal of Risk and Insurance. 71(3), 469-499.

Ćurak, M., Pepur, S., & Poposki, K., 2011. Firm and Economic Factors and Performance: Croatian Composite Insurers. The Business Review Cambridge, 19(1), 136-142.

Daniel, M., & Tilahun, A., 2013. Firm specific factors that determine insurance companies' performance in Ethiopia, European Scientific Journal, 9(10), 245-255.

Deloof, M., 2009. Does Working Capital Management Affect Profitability of Belgian Firms? Journal of Business Finance and Accounting, 30(3-4), 573-588.

Derbali, A., & Jamel, L., 2018. Determinants of performance of Tunisia insurance companies: case of life insurance, International Journal of Productivity and Quality Management, Inderscience Enterprises Ltd, 24(4), 531-542.

Eling, M., Gatzert, N., & Schmeiser, H., 2008. The Swiss solvency test and its marketing applications. The Geneva Papers on Risk and Insurance - Issues and Practice, 33, 418–439.

Gamlath, G. R M., & Rathiranee, Y., 2015. The impact of capital Structure on financial performance: An investigation of listed insurance companies of Colombo Stock Exchange in Sri Lanka. Proceedings of International conference on Contemporary Management – 2015, University of Jaffna, Sri Lanka, 222-232.

Hailegebreal, D., 2016. Macroeconomic and Firm Specific Determinants of Profitability of Insurance Industry in Ethiopia. Global Journal of Management and Business Research: C Finance, 16(7), 27-36.

Himmelberg, C., & Hubbard, R. G., 1999. Understanding the Determinants of Managerial Ownership and Link between Ownership and Performance. Journal of Financial Economics, 53(3), 353-384.

Hifza, M., 2011. Determinants of insurance companies' profitability: An analysis of insurance sector of Pakistan, Academic Research International, 1(3).

Insurance Board of Sri Lanka, Progress Report, 2018.

Jian-Shen C., Mei-Ching C., Wen-Ju L. & Tsung-Hsien, C., 2006. Influence of Capital Structure and Operational Risk on Profitability of Life Insurance Industry in Taiwan. Journal of Modeling in Management, 4(1), 7-18.

Kaguri, A. W., 2012. Relationship between Firm Characteristics and Financial Performance of Life Insurance Companies in Kenya. Unpublished Dissertation for Master of Science in Finance, University of Nairobi, 01-58.

Lire, A., and Tegegn, T., 2016. Determinants of Profitability in Private Insurance Companies in Ethiopia. Journal of Poverty, Investment and Development, 26, 85-92.

Lewis, S., 2015. Qualitative Inquiry and Research Design: Choosing Among Five Approaches. Health Promotion Practice. Retrieved from https://doi.org/10.1177/1524839915580941.

Majed, A., & Qabajeh, M., 2012. The Relationship between the ROA, ROE and ROI Ratios with Jordanian Insurance Public Companies Market Share Prices. International Journal of Humanities and Social Science, 2(11), 115-120.

Malik, H., 2011. Determinants of insurance companies profitability: an analysis of insurance sector of Pakistan. Academic Research International, 1(3), 315-321.

Masood, O., & Muhammad, A., 2012. Bank-specific and macroeconomic profitability determinants of Islamic banks. Qualitative Research in Financial Markets, 4(2/3), 255-268.

Mehari, D., & Aemiro, T., 2013. Firm Specific Factors that Determine Insurance Companies' Performance in Ethiopia. European Scientific Journal, 9(10).

Mishkin, F. S., & Stanley, G. E., 2018. Financial Markets, Nineth Edition (Global Edition), Pearson Educations Ltd, United Kingdom. ISBN 10: 1-292-21500-3 ISBN 13: 978-1-292-21500

Naveed A., Zulfqar A., & Ahmad, U., 2011. Determinants of performance: a case of life insurance Sector of Pakistan, International Research Journal of Finance and Economics, 61, 123-128.

Nucci, F., Pozzolo, A. F., & Schivardi F., n.d. Is firm's productivity related to its financial structure? Evidence from microeconomic data. Rivista di Politica Economica, SIPI Spa, 95(1), 269-290.

Olaosebikan O., 2012. The Determinants of the Profitability of Micro-Life insurers in Nigeria, Master of Science thesis, University of Bath, United Kingdom.

Peleckienė, V., Peleckis, K., Dudzevičiūtė, G., & Peleckis, K K., 2019. The relationship between insurance and economic growth: evidence from the European Union countries, Economic Research-Ekonomska Istraživanja, 32(1), 1138-1151.

Perera, L.W., 2007. Principles of Financial Management, First Edition, Pasan Publishers, Colombo.

Shawar, K., & Siddhiqui, D.A., 2019. Factors affecting financial performance of insurance sector in Pakistan. Research Journal of Finance and Accounting, 10(5), 29-41.

Shiu, Y., 2004. Determinants of United Kingdom general insurance company performance. British Actuarial Journal, 10(5), 1079-1110.

Spaseska, T., Jankulosla, A. R., Risteska, F., Sotiroski, K., Vitanova, G., & Odzaklieska. D., 2017. Determinants of Banks' Profitability in Republic of Macedonia. Annals of the Constantin Brâncuşi University of Târgu Jiu, Economy Series, 2, 30-42.

Sumaira, B.J.K., & Amjad, T. S., 2013. Determinants of profitability: Panel data Evidence from insurance sector of Pakistan, Elixir Finance Management, 57, 14377-14382.

Weerasigha, E., & Perera, T. R., 2019. Determinants of Balance of Trade in the Sri Lankan Economy. International Journal of Trade, Economics and Finance, 10(1), 17-24.

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

FACTORS AFFECTING CONSUMER IMPULSE BUYING BEHAVIOR IN SUPERMARKETS: EVIDENCES FROM GAMPAHA DISTRICT

Madushani P M S[1] and Shantha A A[2]

Department of Economics and Statistics, Sabaragamuwa University of Sri Lanka[1, 2]

shashi.thamel@gmail.com[1], arunaeconomics999@gmail.com[2]

ABSTRACT

Supermarkets have emerged as a result of the modernization of retail business in Sri Lanka. A supermarket can be defined as a wide range of retail stores that operate on self-service, including groceries and basic home products. Nowadays, consumers have a high tendency to buy goods from supermarkets. As a result, it creates a high competition among supermarkets in which they tend to adopt various visual merchandising strategies to attract customers. There is a direct impact on the decisions of customers to purchase certain goods, owing to these visual merchandising strategies and customers are highly motivated to purchase goods in an instant. The major objective of the study is to investigate the influence of visual merchandising strategies of supermarkets in the Gampaha district regarding the impulse buying behavior of customers. The researcher identified window displaying, floor merchandising, product shelf presentation, store environment, and sales promotion as visual marketing strategies that influence impulse buying behavior through the literature review. Music, lightning, sales staff, buy 1 get 1 free, free samples distribution, and discounts were identified as sub-dimensions to measure store environment and sales promotion respectively. Primary data were collected by submitting a structured

questionnaire using a sample of 300 customers using the multi-cluster sampling method to achieve the objectives of the study and the data were analyzed through the Structural equation model using smart PLS version 2.0 software. According to the results of the research, visual merchandising strategies have a positive relationship with consumer impulse buying behavior. Moreover, floor merchandising, product shelf presentation, store environment has the strength of significant association to impulse buying behavior. Finally, the overall research provides important recommendations to supermarket owners, consumers, and the government regarding supermarket regulations.

Keywords – Customers of supermarket, Consumer Impulse Buying Behavior, Visual Merchandising Strategies, Demographic Factors, Structural Equation Model

1. INTRODUCTION

Retail has been growing rapidly as an industry and modernizing over the past few decades which plays an important role in improving the living standards of the people and building the economy of the country. Supermarket chains are a major category in the retail industry and currently showing signs of rapid growth (Gunasekera, De Silva, 2012*). "A supermarket is a store of not less than 2,000 sq. ft. sales area with three or more checkouts and operated mainly self-service, whose range of merchandise comprises all food groups, including fresh meat, fresh fruits, and vegetables, plus basic household requisites (i.e.soaps and cleaning materials)" (McClelland, 1962).* Moreover, the Supermarket sector had traversed beyond the stage of the industrial life cycle and private supermarkets have widely spread in both urban and rural areas. Major reasons that are affected by this sudden upheaval are the emergence of a newly rich circle in those areas and the motivation of inhabitants to a novice lifestyle (Wanninayake & Randiwela, 2007).

Five major supermarket chains are operating in Sri Lanka (Herath, 2014). Cargills Food City and Keells Supermarkets, two supermarket chains owned by Cargills (Ceylon) PLC and John Keells Holdings PLC, have already dominated the supermarket industry (Wanninayake & Randiwela, 2007, October). The Cargills Food City chain currently has 298 branches island-wide and 62 branches in the Gampaha District (Cargills Ceylon, n.d.), while the Keells super supermarket chain has 110 branches island-wide and 18 branches in the Gampaha District (Keells Super, n.d.).Other major supermarket chains include Arpico Super, Laugfs Super Market, and Lanka Sathosa (Herath, 2014). Such development in the chain of supermarkets had increased the competition in between Retail sales industries by attracting the

interest of customers and utilized strategies and steps followed by Retail sales industries to compete with its competitors (Shamini, 2016).

At present, most of the customers' interests had evolved from the traditional retail sales industry to modern retail sale models of shopping tours in supermarkets. The convenience offered with the ability to purchase varied goods under different brands, unique luxury and comfort offered with the supermarket model, storage facility and most importantly the security of food, the ability to purchase goods with high quality, cleanliness and the pleasant shopping aura created for customers are major motivations for buyers. Moreover, owing to the increase of busy lifestyles of people, their decisions to interact in supermarkets have the capability to secure their time and it has proved the decrease of pre-planned purchases by people (Wanninayake & Randiwela, 2007). In addition to that, customers are entrapped in sales strategies utilized by the supermarket schemes: that they choose products without the initial knowledge of other options and not having adequate information or else without the pre-intention of purchasing. An instance in this regard is impulse buying (Tversky & Kahneman, 1981). In such behaviors, both external and internal factors had directly affected. A major limitation to this study is the exploration of only external factors that influence the impulse buying behavior of customers. Further, according to Hubrechts & Koktürk (2012), visual merchandising strategies are an external motivator that can significantly influence consumer buying behavior. That is, when consumers roam the supermarket without the intention of buying any specific product, they are exposed to visual merchandising tactics in the supermarket environment. It will encourage customers to spend more time in stores and be attracted to products, eventually making unplanned purchases (Gajanayake, Gajanayake, & Surangi, 2011). Therefore, this study is a timely research that explores few varied visual merchandising strategies that directly influence the instant buying of customers.

Sri Lanka as a developing country, caters to the Sri Lankan retail sales industry as a booming sector with diversified transformations (Wanninayake & Randiwela, 2007, October). Here, in order to attract customers, sales strategies had utilized visual merchandising as a significant arena in it (Stern, 1962). Supermarket owners and producers annually allocate a large sum of revenue on visual merchandising to motivate customers to buy day-to-day needs of food and other non-food products that directly affect the impulse behavior of customers that increase their sales profits (Chhabra & Farooque, 2018).

Moreover, research conducted in the discipline had proved that in the past decade, there is a gradual development in novice visual merchandising strategies and the increase of competitive aura had resulted in the use of many

visual merchandising strategies within Sri Lanka. Yet, systematic research had not been conducted on the tendency on the impulse buying of customers. Herath (2014) focus on the storage environment an important aspect of visual merchandising that has a significant effect on impulse buying behavior. Weerathunga & Pathmini's (2015) research is on sales promotions in relation to impulse buying of supermarkets in the Anuradhapura district. According to Shamini's (2016) research, the influence of promotional variables which is a major component of visual merchandising strategies in impulse buying has been explored. Apart from these scholarly researches, rigorous and systematic scholarly research had not been conducted within the field.

The increase of supermarkets and shopping complexes, transformations in lifestyles, independence of young customers, and the vulnerability to hundreds of daily promotional messages had filled the impulse buying of customers in the modern economy. Furthermore, customers' attitudes had changed in relation to shopping tours and impulse buying (Muruganantham & Bhakat, 2013). The owners of supermarkets had identified the customers' attitudes alongside impulse buying behavior, and that phenomenon had been utilized through different visual merchandising strategies to motivate buyers. Therefore, the broad exploration of visual merchandising strategies of impulse buying in the modern retail sales industry is required. By means of that, this research will focus on supermarkets in the second dense populated district and the commercial hub, Gampaha district to utilize an in-depth exploration in the selected field.

Therefore, this research's major research problem is checking "what are the most impacting visual merchandising strategies in determining the impulse buying behavior of consumers in supermarkets in Gampaha district ". The main objective of this study is to identify highly influential visual merchandising strategies that affect impulse buying of customers.

2. LITERATURE REVIEW & HYPOTHESES

Impulse buying behavior: According to Beatty & Ferrell (1998) and Stern (1962), impulse buying *is "any purchase that is not planned in advance by the shopper*" (Sharma, et al, 2010). Rook (1987) challenged this statement by stating that not all unplanned purchases happen spontaneously or instantaneously. Iyer (1989) states *that "not all instant purchases are at least planned, but not all unplanned purchases are necessarily instantaneous."* Various stimulants in the store directly or indirectly affect the consumer, and the exposure of the consumer to a stimulant while in the store may result in an impulse buying (Applebaum, 1951). Sharma, et al, 2010, identified window display, floor merchandising, product shelf presentation, sales promotion, and storage environment as visual merchandising strategies that have a strong

influence on impulse buying behavior. According to the Literature Review, Music (Herath, 2014; Mattila & Wirtz,2008; Saad & Metawie ,2015; Sherman et.al, 1997), lighting (Gajanayake et.al,2011; Siddhu & Miet, 2012; Herath 2014; Saad & Metawie ,2015), sales staff Herath,2014; Mattila & Wirtz, 2008**;** Sangalang et.al, 2017; Sherman et al.,1997; Tinne 2011), buy1 get1 free (Cho et al.,2014; Tinne,2011; Weerathunga & Pathmini, 2015), free samples distributions (Karbasivar & Yarahmadi ,2011; Weerathunga & Pathmini, 2015) and price discounts (Cho et al.,2014; Karbasivar & Yarahmadi ,2011; Tinne,2011) were considered as sub-dimensions to measure store environment and sales promotion. As a result of these visual merchandising strategies, the consumer is tempted to buy any product instantly without any real need.

H_1: There is a relationship between window display and consumer impulse buying

The window display is "any kind of visual presentation of face-to-face merchandise to attract the attention of the customer that eventually enter the store" (Jiyeon, 2003). Accodring to Abratt & Goodey (1990), Bhatti & Latif (2014), Gutierrez (2014), Jiyeon (2003), Karbasivar & Yarahmadi (2011), Mehta & Chugan, (2012), Shamini (2016), Siddhu & Miet (2012) and Vishnu & Raheem (2013), there is a positive relationship between impulse buying and Window display.

H_2: There is a relationship between floor merchandising and consumer impulse buying

Floor Merchandising is defined as the way in which different parts of a store are organized, with the primary purpose of facilitating the purchase of more goods (Davies & Tilley, 2004). According to Cho et al., (2014), Bhatti & Latif (2014), Hubrechts & Koktürk (2012), Mehta & Chugan (2012), Pradhan (2014) and Shamini (2016) there is a positive relationship between impulse buying and floor merchandising.

H_3: There is a relationship between sales promotion and consumer impulse buying

Impulse purchases occur when the buyer is reminded of the need to buy in-store products through sales promotions (Muruganantham & Bhakat, 2013) . According to Akyuz (2018), Hubrechts & Koktürk (2012), Jamal & Lodhi (2015), Mehta & Chugan (2012) Muruganantham & Bhakat (2013), Pradhan (2016), Sangalang et al., (2017) and Shamini (2016), sales promotion also affects impulse buying.

H_{3A}: There is a relationship between sales promotion and Buy 1 Get 1 based on the consumer's impulse purchase

According to Nakarmi (2018) Buy 1 Get 1 influences on the decision to buy while shopping. It motivates consumers to make impulse purchases and leads

to sales growth (Nagadeepa et al., 2015) and also has a positive impact on impulse purchases (Cho et al., 2014; Tinne, 2011; Weerathunga & Pathmini, 2015).

H_{3B}: There is a relationship between sales promotion and price discounts based on the consumer's impulse purchase

Price discounts affect the consumer's impulse buying decision (Nakarmi, 2018). It also contributes to the sales growth (Nagadeepa et al., 2015). According to Cho et al (2014) and Karbasivar & Yarahmadi, (2011) Tinne, (2011) and Nakarmi, (2018) price discounts are also positively associated with impulse buying. But according to Weerathunga & Pathmini (2015), price discounts have a negative impact on impulse purchases.

H_{3C}: There is a relationship between sales promotion and free samples distribution based on the consumer's impulse purchase

Free samples motivate customers to make impulse purchases and lead to sales growth (Nagadeepa et al., 2015). Free delivery of samples has a positive effect on impulse purchases (Karbasivar & Yarahmadi, 2011; Nakarmi, 2018; Weerathunga & Pathmini, 2015).

H_4: There is a relationship between product shelf presentation and consumer impulse buying

The product shelf emphasizes highlighting the items for sale. Accordingly, Abratt & Goodey (1990), Davies & Tilley (2004), Hubrechts & Koktürk (2012) and Jiyeon (2003) explained that there is a positive relationship between product display and impulse buying

H_5: There is a relationship between the consumer impulse purchase and the store environment

Pleasant storage environments lead to impulse purchases (Hoyer & Macinnis, 1997; Muruganantham & Bhakat, 2013). According to Pradhan (2016), the storage environment has a positive effect on impulse buying.

H_{5A}: There is a relationship between the store environment and the music based on the consumer's impulse purchase

Music is a factor that affects on the impulse buying (Baker et al., 2002). According to Herath (2014), Mattila & Wirtz (2008) and Saad & Metawie (2015) the pleasant music background has a positive impact on the store environment as well as on the impulse purchases.

H_{5B}: There is a relationship between the storage environment and lighting based on the consumer's impulse purchase

Lighting is a factor that effect on the consumers' impulse purchases (Baker et al., 2002). There is a significant positive relationship between lighting and

impulse buying (Gajanayake et.al, 2011; Herath 2014; Saad & Metawie, 2015).

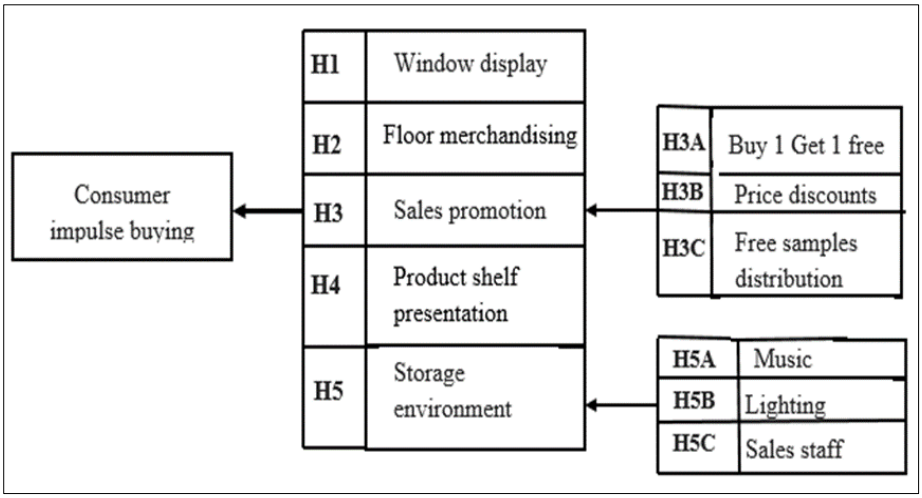
H_{5C}: There is a relationship between the warehouse environment and the sales employee based on the consumer's impulse buying

Social factors in the warehousing environment, such as the productivity of sales staff usually encourage the consumer impulse buying (Baker et al., 2002). According to Herath (2014), Mattila & Wirtz (2008), Sangalang et al., (2017) iy Tinne (2011), there is a significant positive relationship between sales employees and impulse buying.

3. METHODOLOGY

The type of the study and its nature: The research is a Pure survey as it deviates from exploring solutions for the pragmatic problem in the country. In addition to that, the research is a Clear observation as it utilizes descriptive analysis and 5 visual merchandising strategies in relation to impulse buying of customers.

Research Approach: According to the nature and objective of the research, a Qualitative approach was utilized. In the Data Collection, the Questionnaire survey method had been conducted as an applicable methodology to derive data and collected data had been interpreted using Quantitative methods. In relation to that, the influence of visual merchandising strategies on impulse buying had investigated. According to Holmen & Solvang (1997) (as cited in Hubrechts & Koktürk, 2012), the Qualitative approach to the study is depicted to derive a systematic study and the influence of variables utilized through a deductive process.



Source: Author Developed

Figure 1- Conceptual Framework

Table 1: Operationalize of the variable

Variables	Measurement Indicators	Sources
Consumer impulse buying	Based on 7 questions (5 Point Likert scale)	Abratt & Goodey (1990), Applebaum (1951), Beatty & Ferrell (1998), Iyer (1989), Jiyeon (2003), Rook (1987), Sharma et.al (2010), and Stern (1962)
Window display	Based on 5 questions (5 Point Likert scale)	Bhatti & Latif (2014), Gudonaviciene & Alijosiene (2015), Hubrechts & Koktürk (2012), Jiyeon (2003), Karbasivar & Yarahmadi (2011), Mehta & Chugan (2012), Shamini (2016), and Vishnu & Raheem (2013)
Floor merchandising	Based on 5 questions (5 Point Likert scale)	Bhatti & Latif (2014), Gajanayake et al. (2011), Jiyeon (2003), Mehta & Chugan (2012), Pradhan (2016), and Shamini (2016)
Sales promotion	Buy 1 Get 1 Price discount free samples dis_	Cho et al. (2014), Karbasivar&Yarahmadi (2011), Nagadeepa et al. (2015), Nakarmi (2018), Shamini (2016), Tinne (2011), Vishnu & Raheem (2013), Weerathunga & Pathmini(2015)
Product shelf presentation	Based on 5 questions (5 Point Likert scale)	Hubrechts & Koktürk (2012), Jiyeon (2003), Mehta & Chugan (2012)
Store environment	Music lighting, sales staff	Gajanayake et al. (2011), Herath (2014), Saad & Metawie (2015), Sangalang et al. (2017), Tinne (2011)

Source: Developed by researcher

Research Population: Customers of supermarkets in the Gampaha district.

Sample Frame and Sample unit : The sample Frame has consisted of Wattala, Negombo, and Ja- Ela divisional secretariats with Ja-Ela, Kochchikade, Wattala Grama niladhari divisions of Gampaha district that includes all Cargills and Keells customers. The sample unit consisted of all buyers above 18 who come out from supermarkets after their purchases.

Sample Method and Sample size : Gampaha district had assigned to 13 Divisional secretariats and the research is confined to supermarkets in Grama

Niladhari divisions of Ja-Ela, Kochchikade, and Negombo. Therefore, in the selection of the sample, Multiplayer Cluster Sampling which is a Random sampling method had implemented. According to the Literature review of (Bhatti & Latif (2014), the entire sample is 344, Gajanayake et al.,(2011), the sample is 307 also, Karbasivar & Yarahmadi (2011) the sample size is 275 customers). As the entire sample, 300 customers had taken into consideration with Cargills and Keells supermarket chains that inherited the monopoly of retail sales in Gampaha district with the highest number of supermarkets. the researcher intends to conduct the research using 150 customers per supermarket.

Data collection : The questionnaire method was used to collect primary data. Questionnaire items were measured using a five point likert scale ranked from strongly disagree = 1 to strongly agree = 5. Websites, books and the 2019 Central Bank Report were used for this research to collect secondary data.

The method of Data collection : Before entering the supermarket, a randomly selected buyer (most probably the customer comes third) is acknowledged with the purpose of the study and after the purchase of products from the supermarket, if the pre-recognized customer has not done any unnecessary purchase, will not respond to the Questionnaire. When the customer had done one or a few impulse buying he/she is selected as respondents to the Questionnaire.

Data analysis : The first step of analysis was to report the results of the questionnaire by reporting the basic features of the sample through the SPSS software. The second step was to use the structural equation model in the Smart PLS version 2.0 software to first address the outer model results and then evaluate the Inner model results.

4. DATA ANALYSIS AND DISCUSSION

As the first and the second step, the reliability of items in the measurement model was checked by testing the indicator reliability (outer Loading, T-statistics) and internal consistency reliability (composite reliability, cronbach's alpha). When checking the validity of the items, factors like convergence validity (AVE) and discrimination (Fornell-Lacker criteria) were considered. Accordingly, it is clear that the outerloading values of the questionnaire items mentioned in Tables 3 and 5 above are above 0.7. Also, the T statistics value for those items is much higher than 2:58. It can be stated with a high statistical reliability level of over 99% that more reliable items have been used to build independent variables. Table 3 shows the items of indicators used to construct the latent variables and Table 5 shows the high reliability and internal consistency of the final model.

Table 2 : Demographic (personal) data in the sample

Demographic Factors	Frequency	Cumulative Percent (%)
Gender		
Male	191	63.7
Female	109	36.3
Age		
18-30	142	47.33
31-40	83	27.67
41-55	50	16.67
>55	25	8.33
Educational level		
Primary Education	2	0.67
Secondary Education	13	4.33
Tertiary Education	202	67.33
Bachelor degree	62	20.67
Post Graduated	21	7.0
Average Monthly Income		
<25,000	22	7.33
26,600-50,000	95	31.67
51,000-100,000	118	39.33
>100,000	65	21.67

Source: Survey data, 2020.

Measurement Outer Model

Table 3: Validity and Reliability constructs of first order analysis

Construct		Indicator Reliability		Internal Consistency Reliability		Convergent Validity
		Loading	T statistics	Composite Reliability	Cronbach's Alpha	AVE
Sales promotion						
01	**Buy1 Get1**			0.841	0.739	0.639
	BG2	0.798	15.517			
	BG3	0.797	41.294			
	BG4	0.803	17.707			
02	**Free samples distribution**			0.892	0.759	0.805
	FSD3	0.896	66.407			
	FSD5	0.898	59.523			
03	**Price discount**			0.896	0.855	0.633
	PD1	0.832	36.010			
	PD2	0.734	20.035			
	PD3	0.815	32.109			
	PD4	0.827	45.395			
	PD5	0.765	22.198			
Store environment						
01	**Lighting**			0.985	0.978	0.957
	L2	0.968	54.588			
	L3	0.979	104.075			
	L4	0.987	228.428			
02	**Music**			0.963	0.924	0.930
	M3	0.963	72.543			
	M4	0.965	87.041			
03	**Sales staff**			0.945	0.884	0.895
	SE2	0.940	53.465			
	SE4	0.952	96.865			

Source: Survey data, 2020

Table 4: Fornell-Larcker criterion analysis for checking Discriminant validity

		Buy1 Get1	free samples dis_	Price disc_	lighting	Music	sales staff
Buy1 Get1	Pearson Correlation	.799*	.604*	.727*	.749*	.762*	.846*
	Sig. (2-tailed)		.000	.000	.000	.000	.000
free samples dis_	Pearson Correlation	.604*	.897*	.915*	.386*	.359*	.344*
	Sig. (2-tailed)	.000		.000	.000	.000	.000
Price disc_	Pearson Correlation	.727*	.915*	.795*	.420*	.394*	.390*
	Sig. (2-tailed)	.000	.000		.000	.000	.000
lighting	Pearson Correlation	.749*	.386*	.420*	.978*	.960*	.875*
	Sig. (2-tailed)	.000	.000	.000		.000	.000
Music	Pearson Correlation	.762*	.359*	.394*	.960*	.964*	.897*
	Sig. (2-tailed)	.000	.000	.000	.000		.000
sales staff	Pearson Correlation	.846*	.344*	.390*	.875*	.897*	.946*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

**Correlation is significant at the 0.01 level (2-tailed)

Source: Survey data, 2020

Table 5 : Validity and Reliability construct of second order analysis

Construct		Indicator Reliability		Internal Consistency Reliability		Convergent Validity
		Loading	T statistics	Composite Reliability	Cronbach's Alpha	AVE
01	**Consumer impulse buying behavior**			0.943	0.929	0.705
	CIB1	0.809	19.533			
	CIB2	0.919	93.661			
	CIB3	0.772	19.487			
	CIB4	0.849	30.004			
	CIB5	0.919	91.070			
	CIB6	0.755	18.348			
	CIB7	0.839	28.264			
02	**Window displaying**			0.956	0.943	0.816
	WD1	0.907	47.340			
	WD2	0.874	40.487			
	WD3	0.947	128.921			
	WD4	0.935	85.080			
	WD5	0.847	33.482			
03	**Floor Merchandising**			0.917	0.880	0.734
	FM1	0.890	51.493			
	FM2	0.880	56.467			
	FM3	0.817	35.678			
	FM4	0.837	25.262			
04	**Sales promotions**			0.930	0.899	0.816
	Buy1Get1	0.917	61.942			
	Free Sample Dis :	0.861	28.356			
	Price Discounts	0.930	43.981			
05	**Product shelf presentation**			0.898	0.860	0.638
	PSP1	0.778	18.682			
	PSP2	0.870	75.228			
	PSP3	0.772	21.013			
	PSP4	0.815	21.625			
	PSP5	0.752	13.161			
06	**Store environment**			0.979	0.968	0.940
	Music	0.982	241.137			
	Lighting	0.974	136.001			
	Sales Employees	0.952	69.784			

Source: Survey data, 2020

Table 6 : Fornell-Larcker criterion analysis for checking Discriminant validity

		Con_ imp_ buy_	Floor Merch_	Prod_ shelf pres_	Sales prom _	Store env_	Window disp_
Con_ imp_ buying_	Pearson Correlation	.840*	.618*	.806*	.517*	.772*	.645*
	Sig. (2-tailed)		.000	.000	.000	.000	.000
Floor Merch_	Pearson Correlation	.618*	.857*	.631*	.320*	.464*	.491*
	Sig. (2-tailed)	.000		.000	.000	.000	.000
Prod_ shelf pres_	Pearson Correlation	.806*	.631*	.799*	.549*	.818*	.671*
	Sig. (2-tailed)	.000	.000		.000	.000	.000
Sales prom_	Pearson Correlation	.517*	.320*	.549*	.904*	.661*	.456*
	Sig. (2-tailed)	.000	.000	.000		.000	.000
Store env_	Pearson Correlation	.772*	.464*	.818*	.661*	.970*	.718*
	Sig. (2-tailed)	.000	.000	.000	.000		.000
Window disp_	Pearson Correlation	.645*	.491*	.671*	.456*	.718*	.903*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

*Correlation is significant at the 0.01 level (2-tailed)

Source: Survey data, 2020

Fornell & Larcker (1981) stated that the square root of the AVE values relative to each variable can be used to verify validity. It can be seen that the validity of the separation of all the other index variables in the model is due to the fact that the corresponding $\sqrt{AVE}$ of the index variables in the model are less than the horizontal values under the $\sqrt{AVE}$ value, with the exception of

the free sampling index, which is the latent variable in Table 4 above. Also, according to Table 6, the AVE squares of the variables in the model are less valid than the original values, so the model can be considered as valid. Furthermore, according to Table 6, it is clear that product shelf presentation has a higher correlation with the impulse buying when considering the correlation (0.806) and the lower correlation that exists in the ground trade (0.618).

Measurement Inner Model

Assessment of Collinearity

Table 7: VIF values and Tolerance of the model

Variables	Tolerance	VIF
Window displaying	0.447	2.237
Floor Merchandising	0.574	1.743
Sales promotions	0.561	1.782
Product shelf presentation	0.248	4.033
Store environment	0.222	4.506

Source: Survey data, 2020

According to the above table, the VIF value for each independent variable is less than 10, i.e. the VIF value is between 1-5 and the tolerance value is greater than 0.2, and it is considered as not having a multiple linearity condition. Accordingly, all the variables included in the model can be used to measure the model.

Table 8: Determining the relationships and statistical significance among variables

Hypothesis	ß Co-efficient	T Statistics	Results
H1	0.058448	1.171754	Not supported
H2	0.204993	3.278118	Supported
H3	0.003801	0.106994	Not supported
H3A	0.917432	61.942692	Supported
H3B	0.930640	43.981960	Supported
H3C	0.861334	28.356466	Supported
H4	0.356934	4.021327	Supported
H5	0.332589	4.595928	Supported
H5A	0.982326	241.137288	Supported
H5B	0.974216	136.001115	Supported
H5C	0.952599	69.784584	Supported

Source: Survey data, 2020

Table 9: Coefficient of determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.847[a]	0.717	0.712	0.537779403

Source: Survey data, 2020

Assessment of Coefficient of determination (R^2)

The coefficient of determination (R^2) is 0.717. That is, 71% of the total variation in the dependent variable, consumer impulse buying behavior will be explained by the independent variables which are window display, floor merchandising, sales promotion, product shelf presentation, and storage environment. Adjusted R^2 for this model is 0.712. Accordingly, this model can be identified as a research model with high accuracy (R^2> 0.67).

Assessment of f squared (F^2) – Effect Size

Table 10: Values of the effect size

Variables	Consumer impulse buying	Effect Size
Window displaying	1.08	Large
Floor Merchandising	1.014	Large
Sales promotions	1.55	Large
Product shelf presentation	0.24	Medium
Store environment	0.05	Small

Small: 0.0 < F2 effect size < 0.15; Medium: 0.15 < F2 effect size < 0.35; Large: F2 effect size > 0.35

Source: Survey data, 2020

The most influential variables in the model were the window display, Floor Merchandising, and sales promotion.

Assessment of Predictive Relevance (Q^2)

The Q^2 value in this research was 0.4993. Therefore, it can be seen that there is a predictive.

Table 11: Predictive Relevance

Variable	SSO	SSE	Q^2(=1-(SSE/SSO)
Consumer impulse buying	2100.0000	1051.5279	0.4993

Source: survey data, 2020

5. CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

According to the results of Demographic Factors (Table 2), it was clear that there was a tendency for impulse purchases of goods among male consumers in the income group between Rs. 51000-100000 whose ages are of 18 to 30 years with average tertiary education level. Further, there was a significant positive relationship between consumer impulse buying behavior, window display, floor merchandising, product shelf presentation, storage environment, and sales promotion. Also, there is a strong association of floor merchandising, product shelf presentation, storage environment with consumer impulse buying behavior.

Product shelf presentation and storage environment had a correlation coefficient of 0.806 and 0.772 respectively. Therefore, it is essential to attach name tags and prices on each product shelf to make it easier for consumers to choose the products they want to buy. It is also essential to consider the space provided for each product so that it can be easily identifiable and problem-free for customers, and the height and size of the shelves should be taken into account when designing product shelves. Further, as the recommendations, employees working in the store should be concerned about service ethics and formal training to employees should be given.

Impulse buying is a common phenomenon in the modern visual merchandising market and has become a hub for several marketing strategies. Therefore, there is more practical orientation in the results of this test, which is primarily aimed at exploring the factors influencing impulse buying behavior of consumers.

In particular, this research will provide an understanding of the impact of age on the relationship between impulse buying and visual merchandising strategies, and may encourage marketers to make policy reforms that need to be made at the institutional level to increase sales revenue, targeting younger consumers in the future. Also, consumers are attracted to various visual marketing strategies that cause them to lose the logical understanding of the expendable income when making a purchase, which can lead to reduced long term living standards. Therefore, programs that provide consumers with a rational consumer-based understanding of purchases should be implemented. Several visual merchandising strategies may lead to marketing misconducts, and therefore it is needed for government regulation of supermarkets and implementation of new policies on trade misconducts. Further, the results of this research will guide to develop existing policies to avoid misconducts.

REFERENCES

Cargills Ceylon. (n.d.). Retrieved from http://www.cargillsceylon.com

Abratt, R., & Goodey, S. D. (1990). Unplanned buying and in-store stimuli in supermarkets. *Managerial and Decision Economics, 11(2)*, 111-121.

Akyuz, A. (2018). Determinant factors influencing impulse buying behavior of Turkish customers in supermarket setting. *International Journal of Research in Business and Social Science (2147-4478), 7(1)*, 1-10.

Applebaum, W. (1951). Studying customer behavior in retail stores. *Journal of marketing, 16(2)*, 172-178.

Baker, J., Parasuraman, A., Grewal, D., & Voss, G. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. *Journal of marketing, 66(2)*, 120-141. Retrieved from http://www.dhruvgrewal.com/wp-content/uploads/2014/09/2002-JM-ENVIRONMENT.pdf

Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modeling its precursors. . *ournal of retailing, 74(2)*, 169-191. Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S002243599980092X

Bhatti, K. L., & Latif, S. (2014). The impact of visual merchandising on consumer impulse buying behavior. *Eurasian Journal of Business and Management, 2(1)*, 24-35.

Chhabra, D., & Farooque, A. (2018). Factors Affecting Consumer Buying Behaviour and Decision Making Process towards FMCG Products. Retrieved from https://pdfs.semanticscholar.org/f73f/48f857e10f72379dbd78974ef7ebdee5bc1c.pdf

Cho, J., Gregory , G. S., & Luong, T. H. (2014). Impulse buying behavior of Vietnamese consumers in supermarket setting. *International Journal of Research Studies in Management 3.2*, 33-50. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.656.1350&rep=rep1&type=pdf

Davies, J., & Tilley, N. (2004). Interior design: using the management services approach in retail premises. *Management Services, 48(7)*, 10-13.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research, 18(1)*, 39 .

Gajanayake, R., Gajanayake, S., & Surangi, H. A. (2011). The impact of selected visual merchandising techniques on patronage intentions in supermarkets (study based on Colombo district). *In Proceedings of the second international conference on business and economic research*, (pp. pp. 1130-1154).

Gudonaviciene, R., & Alijosiene, S. (2015). Visual merchandising impact on impulse buying behaviour. *Procedia-Social and Behavioral Sciences, 213*, 635-640.

Gunasekera, P., De Silva, Y., Gunawardane, B., & De S Gunawardane, M. (2012). Critical Success Factors Lead to Competitive Advantage for Supermarket Chains in Sri Lanka. Retrieved from https://pdfs.semanticscholar.org/2fd2/200891e9d119d567345be04d68fd265d67f9.pdf

Gutierrez, B. .. (2014). Determinants of planned and impulse buying: the case of the Philippines. *Asia Pacific Management Review, 9(6)*, 1061-1078.

Herath, S. (2014). The impact of in-store environment on the impulse buying behavior in at supermarkets in Sri Lanka.University of Sri Jayewardenepura .

Hoyer, W. D., & Macinnis, D. J. (1997). Consumer Behavior: South-Western.

Hubrechts, L., & Koktürk, B. (2012). *Effects of visual merchandising on young consumers' impulse buying behaviour.* Halmastad University, Department of Marketing , Sweden.

Iyer, E. S. (1989). Unplanned Purchasing: Knowledge of shopping environment Unplanned Purchasing . *Knowledge of shopping environment and. Journal of retailing, 65(1)*, 40.

Jamal, M., & Lodhi, S. (2015). Consumer shopping behavior in relation to factors influencing impulse buying: A case of superstores in Karachi, Pakistan. *International Journal of Scientific and Research Publications, 5(2)*, 41.

Jiyeon, k. (2003). College students' apparel impulse buying behaviors in relation to visual merchandising (Doctoral dissertation, uga).

Karbasivar, A., & Yarahmadi, H. (2011). "Evaluating effective factors on consumer impulse buying behavior.". *Asian Journal of Business Management Studies 2.4*, 174-181.

Keells Super. (n.d.). Retrieved from https://www.keellssuper.com/

Mattila, A. S., & Wirtz, J. (2008). The role of store environmental stimulation and social factors on impulse purchasing. *Journal of services marketing*.

McClelland, W. (1962). Economics of the supermarket. *The Economic Journal, 72(285)*, 154-170.

Mehta, N., & Chugan, P. K. (2012). Visual Merchandising: Impact on Consumer Behaviour (An Exploratory Study of Apparel Segment in Ahmedabad). *Mapping the Global Future: Evolution Through Innovation, and Excellence", Eds., Nejdet Delener, Leonora Fuxman, F. Victor Lu, and Susana Rodrigues* (pp. 607-614.). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2128294

Muruganantham, G., & Bhakat, R. S. (2013). A review of impulse buying behavior. *International Journal of Marketing Studies, 5(3)*, 149.

Nagadeepa, C., Selvi, T., & Pushpa, A. (2015). Impact of sale promotıon technıques on consumers' impulse buyıng behavıour towards apparels at Bangalore. *Asian Journal of Management Sciences & Education, 4(1)*, 116-124. Retrieved from http://www.ajmse.leena-luna.co.jp/AJMSEPDFs/Vol.4(1)/AJMSE2015(4.1-13).pdf

Nakarmi, A. (2018). Effect of Sales Promotion On Consumer Behavior. Retrieved from https://www.theseus.fi/bitstream/handle/10024/142006/anuraj%20thesis%20final.pdf?sequence=1

Pradhan, V. (2016). Study on Impulsive Buying Behavior among Consumers in Supermarket in Kathmandu Valley. *Journal of Business and Social Sciences Research, 1(2),*, 215-233. Retrieved from https://www.nepjol.info/index.php/jbssr/article/view/20926

Rook, W. D. (1987). The buying impulse. *Journal of consumer research 14.2* , 189-199. Retrieved from http://www.psych.ualberta.ca/~msnyder/p486/read/files/R1987.pdf

Saad, M., & Metawie, M. (2015). Store environment, personality factors and impulse buying behavior in Egypt: The mediating roles of shop enjoyment and impulse buying tendencies. *Journal of Business and Management Sciences, 3(2),* , 69-77.

Sangalang, R. A., Siochi, J, J., & Plaza, M. (2017). Factors influencing consumers' impulse buying behavior in the fifth district of Cavite. *In DLSU Research Congress* , (pp. 1-6).

Shamini , N. (2016). A study on factors affecting impulse buying behavior of consumers in the super market special reference to food city, Sri Lanka. Retrieved from http://ir.lib.seu.ac.lk/bitstream/handle/123456789/1925/A%20Study%20on%20Factors%20Affecting%20Impulse%20Buying.pdf?sequence=1

Sharma, P., Sivakumaran, B., & Marshall, R. (2010). Impulse buying and variety seeking: A trait-correlates perspective. *Journal of Business Research, 63(3)*, 276-283.

Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: mediating role of consumer emotions. *Psychology & Marketing, 14(4)*, 361-378.

Siddhu, C., & Miet, M. (2012). Visual Merchandising and its impact on Impulse Buying Behavior of Consumer–A Literary Review with special reference to Apparel Retail Sector. *International Journal of Research in Engineering, IT and Social Sciences, ISSN 2250-0588*. Retrieved from http://indusedu.org/pdfs/IJREISS/IJREISS_2431_59015.pdf

Stern, H. (1962). The significance of impulse buying today. *Journal of marketing 26.2*, 59-62. Retrieved from https://www.jstor.org/stable/1248439

Tinne, W. S. (2011). Factors affecting impulse buying behavior of consumers at superstores in Bangladesh. *ASA University Review, 5(1)*, 209-220. Retrieved from https://pdfs.semanticscholar.org/3984/27e617fa78be6d306d4edc3ede8805b9547b.pdf

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *science 211.4481*, 453-458. Retrieved from https://science.sciencemag.org/content/211/4481/453

Vishnu, P., & Raheem, A. R. (2013). Factors influencing impulse buying behavior. *European Journal of Scientific Research 100.3*, 67-79. Retrieved from https://www.researchgate.net/profile/Rizwan_Ahmed12/publication/264383676_factors_influencing_impulse_buying_behavior/links/53dab8f00cf2a19eee8b3d04/factors-influencing-impulse-buying-behavior.pdf

Wanninayake, W. M., & Randiwela, P. (2007, October). The impact of visual merchandising on consumer store choice decisions in Sri Lankan supermarkets. *In 7th Global conference on Business & Economics* , (pp. Vol. 10, pp. 13-14).

Weerathunga, A. k., & Pathmini, M. G. (2015). Impact of Sales Promotion on Consumer's Impulse Buying Behaviour (IBB); Study in Supermarkets in Anuradhapura City. *In Internat Ional Research Symposium Rajarata University of Sri Lanka* , 321-329.

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

IDENTIFYING FACTORS AFFECTING INFLATION RATE IN U.S.A UNDER DIFFERENT SCENARIOS

Illukkumbura, I M G A S[1] and Peiris, T S G[2]

Department of Mathematics, Faculty of Engineering, University of Moratuwa, Sri Lanka[1]
Department of Mathematics, Faculty of Humanities and Sciences, Sri Lanka Institute of Information Technology[2]

a.illukkumbura@gmail.com[1] , Sarath.p@slit.lk[2]

ABSTRACT

Inflation is the rise of the price level of an economy and inflation influences consumer behavior and it is important in driving economic growth. The aim of this study is to identify if there is a significant difference between the economic theories related to the inflation rate and behavior of economic variables in the USA economy according to the different political phases in the country. In order to identify the gap between theories and practices in economics in the USA, eight economics variables are selected and secondary data is collected from 1981 to 2016. Four vector error correction models are estimated and granger causality is tested to identify the long-run and short-run relationships between economic variables and inflation. Portmanteau tests for autocorrelation, Serial correlation LM have been used to confirm the stability and validity of VEC models. Foreign direct investment shows a negative impact on the inflation rate during four periods. The exchange rate, money supply, balance of trade, and the unemployment rate have a relationship with the inflation rate in accordance with the theories during the economic expansion periods. Gross domestic product and government expenditure have mixed influence on the inflation rate in the US economy; therefore, they do not indicate any pattern of behavior with

the inflation rate. This study shows that the economic theories might be altered with strategic economic decision-making. Therefore, it shows the importance of an independent institute, which actively introduces effective strategic policies to maintain the economy of a country, regardless of the existing political situation.

Keywords – US Economy, Inflation, Vector Error Correction Model

1. INTRODUCTION

Inflation is considered a chronic economic issue around the globe. Inflation is simply defined as the increase of the average price level of goods and services for a sustained period of time. The United States of America (USA) is the largest economy in the world with a net worth of $20.4 Trillion in 2017 (Gray, 2017). With such a reporting economy the United States of America has been successful to maintain its inflation rate of around 2% over the past decades.

Terrorist attacks, on September 11, over the U.S.A, caused around $40 billion insurance loss and hindered the tourism, airlines, and aviation field. Around $2 trillion of damage has been inflicted by the September attack. Despite the terrorist attack, the United States of America was able to keep control of the inflation rate due to the timely reactions of the Federal Bank in St Louise (Bysyuk, 2010).

Keynesian economy and monetarism are two leading economic theories explaining the cause of inflation and other economic indicators influencing it under different circumstances (Barone, 2019). In general, as U.S.A inflation is constant and stable; investors can invest with confidence. However, the slowing rate of inflation or the disinflation could be causing problems for the investors who are involved with bonds commodities and currencies. It is indubitable that a country's political condition affects the economy and its inflation rate.

Macroeconomic performance in the USA accelerated in a high volume from the early 1980s. Two longest economic expansions in United States of America history have happened in the 1980s and 1990s and two mild contractions during 1990 and 2001. 1981, 1998, 2001, 2008 are other crucial years in the latest economy of the United States as the economic activities dropped by a significant and notable amount due to mini recessions.

According to the Keynesian economy (Keynes,1931) when aggregate demand exceeds the aggregate supply there will be a rise in the price level. Employment will increase as a result of the effort to meet the demand. Aggregate demand depends on consumption, investments, government

expenditure, and exports. Imports and tax rates should be increased to lower the inflation rate. When government expenditure is increased it will create more employment and more individual consumption which will result in demand-pull inflation.

The Multiplier Effect introduced by Keynes indicates that increasing government expenditure will increase business activities which will result in economic growth and an increase in the inflation rate. Monetarism (Friedman, 1968), on the other hand, suggests that monetary phenomenon is the only influence that can make the inflation rate fluctuate. In monetarism, Money supply takes a lead role in explaining the inflation rate. Money supply will decrease the interest rate of borrowing. When there is less borrowing interest rate individual consumption will go up and so does inflation. Thus, it is important to find the influence of different economic indicators on the inflation rate under different scenarios. The different scenarios considered in this study are the political party of the president in power and the recessions the U.S economy faces during the identified periods.

Although the United States of America has faced mini recessions in years of 1981, 1998, 2001, 2008 which reduced the economic activities in a significant amount, the country has been able to continue the growth of the economy using several strategies like revising policies of money supply and government expenditure. From March 1991 to March 2001 and November 2001 to December 2007 there were two economic expansions in the United States of America and during these periods inflation rate remained low compared with the preceding decades. The data set is divided into four periods in order to find out the main reasons behind the variation of the behavior of inflation rate according to the period.

In this study, data set is divided into four time periods as below.1st Period – 1981 Q1 to 1992 Q4 is the period of twelve years when Republican Presidents Ronald Regan and George Bush were the presidents of the United States of America. 2nd Period – 1993 Q1 to 2000 Q4 is the period of eight years when Democratic President Bill Clinton was in the presidency of the United States of America.3rd Period – 2001Q1 to 2008 Q4 is the period of eight years when Republican President George W Bush was in the presidency.4th Period – 2009 Q1 to 2016 Q4 is the period of eight years when Democratic President Barack Obama was in the presidency.

Policymakers rely on economic theories to make decisions on the economy. Therefore, there should be studies on economic theories on a regular basis in order to identify if the theories can still be applied in the modern era and modern economy. This study aims to model the relationship between inflation and seven other economic indicators in different scenarios and to assess the

applicability of theories related to inflation of the U.S.A. The United States of America being a developed and powerful Economy in the world has a stable inflation rate irrespective of the time period and thus it is important to understand if the theories of inflation get proven during different periods under the circumstances.

By implementing the right policies, the government can balance the inflation rate which will lead to the prosperity of an economy. When the inflation increases to an unacceptable level then the policymakers try to implement fiscal policies which help to decrease the inflation rate. Many strategic policies can give an optimal balance of low inflation rate which has been achieved by the economy of the United States of America.

This study will be important to Sri Lankan economists to understand how the economic variables influence the inflation rate in a developed country and to identify the methods and policy strategies that are helpful to balance the inflation rate.

2. LITERATURE REVIEW

Keynesian economic theories were introduced by John Maynard Keynes in the 1930s as an attempt to understand the Great Depression which started with the stock market crash of the U.S.A in 1929 (Ahuja, 1986). Keynes explains when aggregate demand (AD) exceeds aggregate supply (AS) at full employment level of output, and then inflation occurs. Aggregate demand depends on consumption, investments, government expenditures, and exports. It is the total spending on goods and services of government and consumers plus the net investments considered by entrepreneurs. The factors that increase aggregate demand are the increase in private consumption, private investments, individual exports, and government expenditure. Decreasing the imports and tax rate underpins augmenting the inflation rate.

It is assumed that low inflation and low wage rate will cause employers to make capital investments which will increase employment rates that restore economic growth. Keynes anyhow refutes the idea of a lower wage rate restoring full employment. He indicates that with a lower wage rate the demand will be lower; hence the employers won't hire more employees to produce the products as there is less demand. Keynes wrote his popular book named "The General Theory of Employment, Interest, and Money" during the great recession, therefore Keynes's economy sometimes is referred to as depression economics. He rejects the idea of a natural state of equilibrium suggesting that the economy will be in constant flux or natural cycle which will be referred to as boom and bust. Keynes suggests increasing government expenditure to alleviate inflation. His notion is when government expenditure

is increased, consumer demand will be increased which results in an overall dynamic of economic activities that reduces inflation.

Many researchers have attempted to study the relationship between economic variables with the inflation rate. Lim and Papi (1997) have taken Time Series data from 1970 to 1995 to determine the variables affecting Inflation in Turkey. Johansen Cointegration technique was used in this study and it concludes that money, prices of exports, and prices of Imports positively affect the domestic price level. The exchange rate has an inverse effect on the domestic price level in Turkey. The study claimed that monetary factors such as exchange rate and money play a central role in determining the inflation rate of the country. Khan and Gill (2010) use several price indicators to find out the determinants for the inflation of Pakistan using the ordinary least square method. The study explains that variables such as the budget deficit, exchange rate, wheat support price, imports, the support price of sugarcane and cotton, and money supply are found to be directly affecting all the price indicators and the interest rate is indirectly affecting all the variables explained in the study in Pakistan. According to the study, the determinants of inflation have been shifted in the modern era and inflation has less sensitivity to the domestic economy and more sensitivity to global factors and inflation expectations. Furthermore, Simionescu (2016) has conducted a study to identify the determinants of inflation rate in the U.S.A using Bayesian Econometric methods using monthly inflation rate during the economic crisis period of 2008 -2015. Variables used are the inflation rate, unemployment rate, the exchange rate, crude oil prices, the trade-weighted U.S. Dollar Index, and the M2 Money Stock. He concludes that the unemployment rate, exchange rate, crude oil prices, trade-weighted U.S. Dollar Index, and M2 Money Stock determine the monthly inflation rate in the U.S.A, since 2008. Results are in accordance with the economic theories.

2.1 Multiplier Effect

The multiplier effect is one of the main components suggested in Keynesian economics which indicates that government expenditure increases business activities adding more spending to the economy. This spending will expand aggregate supply and income will be increased. When extra income is spent, the Gross Domestic Product will increase and the economy will boom. Keynes is not in accordance with the idea of savings and in conformity with spending more. Spending will become the income of another person who will achieve full employment. Full employment supports economic growth. The Multiplier Effect becomes a controversial notion that later economists such as Milton Friedman pointed out that the Keynesian model has misinterpreted the relationship between savings, investments, and economic growth (Friedman, 1968).

Keynesian economics emphasizes the government's intervention in alleviating economic crises. Lowering interest rates is a method to enhance the condition of the economic well-being of a country. When interest rates are lower, many will borrow money and there will be an expansion in the financial sector. But only lowering the interest rate doesn't help improve the economic situation. As an example, during the 1990s even though Japan lowered the interest rate, it didn't help in economic improvement (Chappelow, 2019).

2.2 Fiscal Policy

Fiscal policy is a concept based mainly on Keynesian Economics. It defines the use of government expenditure and tax policies to influence macroeconomic phenomena like inflation, economic growth, employment, and aggregate demand. Expansionary fiscal policy increases the money supply and government expenditure and lowers tax rates in order to increase aggregate demand and economic growth. With lower tax, there will be more individual expenditure which will lead to high demand and high employment. Other than that, the government can increase government expenditure by constructing public properties as highways, schools, universities which ultimately will create more employment.

Contractionary fiscal policy is a rare situation where the government tries to balance the economy by reducing government expenditure and increasing tax when there is a budget surplus. When the fiscal policy is not contractionary or expansionary, then it is neutral. Measuring Core Inflation, the study conducted by Quah and Vahey (1995) confirms that monetary policy has a direct collision with core inflation where the core inflation is defined as the measure of inflation excluding food and energy prices. Data used was the real gross domestic product. And, consumer price index limited influence estimators of twelve countries dating from 1980 to 1990 and early 2000. They have used the VAR model for analyzing data.

2.3 Monetary Policy: The Quantity Theory of Money

The quantity theory of money is an infamous theory of inflation from the 18th century. David Hume (1752) identifies the impact of monetary changes in the economy from one sector to the other in form of quantity and price. In 1817, David Ricardo, a classical economist, revealed that the inflation in Britain was caused majorly by the irresponsible supply of money by the Bank of England due to the war caused by Napoleons. Irving Fisher (1933) in supporting Monetarism presents the below equation to describe the monetary relationship between economic indicators:

$$M*V = P*T \qquad P = \frac{MV}{T} \qquad [1]$$

Where;

MV = Money supply

M= Currency

V= Velocity of circulation

P= General price level

T=Total trade (sales and purchase)

The above equation shows that the general price level increases proportionately to the money supply and the total trade.

Berger and Österholm (2015) examined whether money supply granger causes the inflation rate of the U.S.A by using a quarterly sample from 1960 to 2015 with applying Bayesian VAR as the research methodology. They extended the study further to find indications of real GDP growth and interest rates in the model built for the inflation rate. An outcome of the study suggested that money growth plays a miniature role in determining inflation in the short run which goes against monetarism and other monetary models.

2.4 Printing Money

Printing money is a method of increasing the money supply of an economy. If money is printed excessively disregarding the growth of the number of goods, then the households will have more money to spend, thereby increasing the market price of goods due to competition of demand. During the Civil War of 1861-1864 in the U.S.A, the confederacy printed supplementary paper money of $1 billion which caused an inflation rate of 700% by April 1864. Then by the end of the civil war, people lost confidence in the currency as the inflation rose to 5000%. From 1922 to 1923 due to excess money supply in Germany, the US dollar became equal to 4,210,500,000,000 German marks. It caused hyperinflation and loss of value of the currency (Weidenmier, 2008).

Although in traditional economics, it is suggested that printing money causes inflation and devalues the currency, the modern monetary theory suggests that printing money can be used to solve problems in the economy. Modern monetary theory indicates that the government can create more money to pay off debts in their own currency and the government can grow their spending to an optimal amount which will create more job opportunities, enhance capital for the private and government sector. It suggests when there is non-utilized unemployed labour and economic capacity, increasing government expenditure will not cause inflation. According to this theory, inflation happens due to the demand and supply gap. The Federal Reserve uses the extra money to control recessions which keeps the inflation rate at control. If there is excess money in the economy, the tax rate can be increased to

maintain the value of money in order to keep inflation in check (Edwards, 2019).

2.5 Monetarism: Friedman's Modern Quantity Theory of Money

Milton Friedman in supporting monetarism suggests his new theory of money called the Modern Quantity Theory of Money. He explains that the main factor that affects inflation is the money supply. In economic stabilization, monetary policy plays a more effective role than fiscal policy. Monetarists focus on stabilizing inflation by controlling the money supply. Both excess and insufficient money supply are not healthy for inflation in an economy. When there is high inflation in a country, then contractionary monetary policy is applied and, in a deflation, expansionary monetary policy is used. According to the supply of money, interest rates will fluctuate supporting or opposing the amount of borrowing which again balances the aggregate supply and the aggregate demand (Chappelow, 2019).

Milton Friedman in short, revived the Classical Monetary Theory which indicated that inflation is proportionate to the supply of money Milton Friedman, in contrast, suggests that the increase of inflation is not proportionate to the money supply (Friedman, 1968). Akbar et al (2014) identified that the money supply affects the inflation rate in Pakistan. The money supply grows due to the increase of government sector borrowings in Pakistan. They have used producer price index, money supply, durable goods, electricity, exchange rate, import, export, natural gas, oil products, crude petroleum, capital goods export, capital goods import, food export, food import, agricultural products export, and wages explanatory variables. In order to remove the multi co-linearity among explanatory variables principal component analysis has been performed.

2.6 Equation of Modern Quantitative Theory of Money

Later Milton Freedman presented a new equation of

$$M*V = P*Y \quad [2]$$

Where;

M= Money supply,

V= Average velocity of circulation

P= Price level

Y= Average National Income (T = number of transactions)

In quantitative Monetary Theory it is assumed that

1. Velocity of circulation or speed of money circulation is constant in the short run.

2. Due to full employment in the economy National Income is also constant.

Therefore, money supply and price level have a proportional relationship. When the money supply goes up by x%, the price level also increases by x%. Simply increasing the money supply will increase the price level. Monetarists indicate that in the short run, velocity is fixed as the rate of money circulation doesn't change often and even though velocity changes, it varies by a little amount so that amount can be ignored (Barone, 2019).

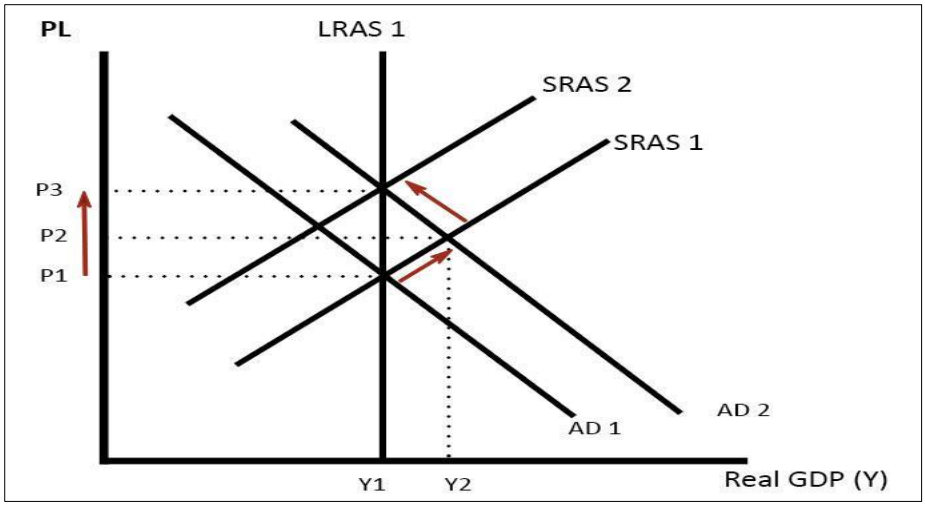
Monetarists also assume that output Y is fixed, stating that Y may vary in the short run but not in the long run (because LRAS is inelastic and determined by supply-side factors.) Therefore, increasing Money Supply will increase inflation (Friedman, 1968)

When the Money Supply increases, citizens get more money, which raises individual consumptions. This shifts aggregate demand (AD) to right from AD1 to AD2.Responding to these producers increases Short-Run Aggregate Supply (SRAS). Real output rises from Y1 to Y2.

The inflationary gap happens as national output exceeds the output level in accordance with the equilibrium. Producers will hire more employees and it will make the rise in costs and prices due to a rise in wages. When prices increase, purchasing power will be low. Employees will demand more wages which will cause Short-Run Aggregate Supply to shift the left. With SRAS2 economy will get an equilibrium level of output, Y1 but the price level will be higher, P3. Long-Run Aggregate Supply Rise (LRAS) is not elastic. An increase in the money supply will cause rise of demand which will cause demand-pull inflation.

2.7 Monetarist View on Aggregate Demand (Ad) and Supply Curve

Economists who criticize monetarism say that the relationship between money supply and inflation is not direct and powerful in the practical world. The United States of America a few times in recent history injected money supply due to recessions and it did not increase inflation (Radcliffe, 2019).

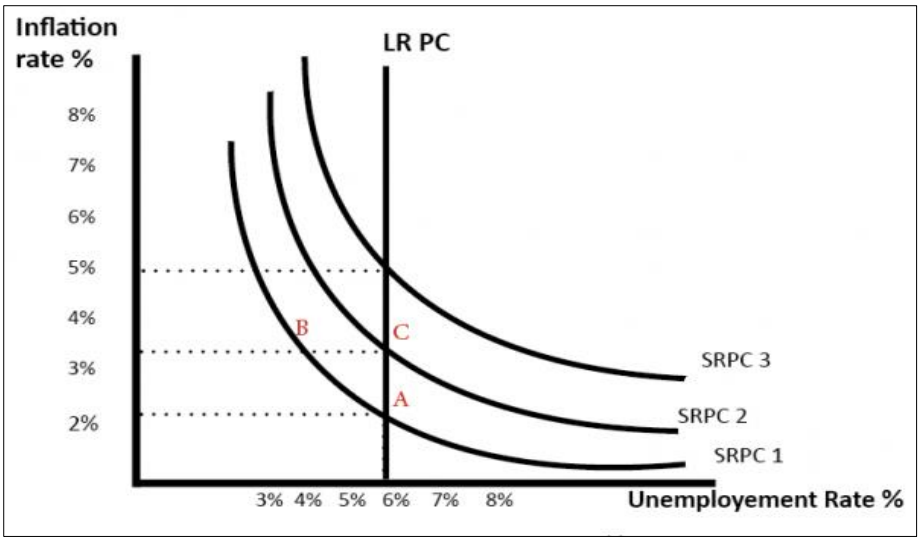


Source: Ahuja (1986)

Figure 1: Monetarist inflation in the Aggregate Demand (AD) and Aggregate Supply (AS) model

2.8 Phillips Curve

Phillips Curve describes the relationship between inflation and the unemployment rate. The Phillips curve is named after a single-equation empirical model built by A.W.H. Phillips (1958). Concepts of demand and supply can be used to explain the theories of the Phillips Curve.



Source: Ahuja (1986)

Figure 2: Phillips curve

It has an impact on the inflation rate which makes the inflation high. In contrast, when the labor supply is greater than the demand then the wages push downwards. It would result in a low inflation rate in the country and the unemployment rate will go up. Rising inflation has a correlation with falling unemployment. Monetarists believe that in the short run, there is a trade-off relationship between inflation and unemployment. Equilibrium of Long-Run Phillips Curve (LRPC) and shift of Short-Run Phillips Curve (SRPC) are shown in figure 2. Dhakal et al (1994) identified the main factors affecting inflation in the United States of America using a Vector Autoregressive model. They concluded that the major factors affecting inflation in the United States of America are money supply, the wage rate, and the budget deficit, and energy prices. Demand and Supply shocks are potential in affecting the inflation rate of the U.S economy. The findings of the study are in accordance with the New Keynesian Phillips curve. Furthermore, they have identified the relationship between real variables, inflation, and expectations of inflation which is independent of the oil cycle, and have explained the dilemma of the behavior of inflation in the last decade by separating the Phillips curve from the oil cycle.

3. METHODOLOGY

Quarterly data from 1981Q1 to 2016Q4 were obtained from the website of the International Monetary Fund and from the website of the Federal Reserve Bank of St. Louise. Variables collected are described below in table 1.

Table 1: List of the variables used for the study

Notation	Stands For	Description	Units
INF	Inflation Rate	Quarterly inflation rate calculated	Percentage Value
GDP	Gross Domestic Product	Real Gross Domestic Product, Quarterly, Seasonally Adjusted Annual Rate	Billions of US Dollars
TOB	Trade of Balance	Trade of Balance	Millions of US Dollars
EXC	Exchange Rate	Real Effective Exchange Rate, based on Consumer Price Index	Percentage Value
MS	Money Supply	M2 Money Supply	Billions of US Dollars
FDI	Foreign Direct Investment	Rest of the world; foreign direct investment in U.S.A.; asset, Flow, Quarterly, Seasonally Adjusted Annual Rate	Millions of US Dollars
GE	Government Expenditures	Federal government total expenditures, Quarterly, Seasonally Adjusted Annual Rate	Billions of US Dollars
UMP	Unemployment Rate	Percentage of unemployment rate quarterly	Percentage Value

3.1 Vector Auto-Regression Model

Economic indicators show long-term relationships among variables. These time-series don't have constant mean or variance as they differ according to the time. Analyzing nonstationary time series will lead to spurious regression, which output error some results. De-trending and differentiating are used to analyze nonstationary data (Maddala, 2001). Co-integration on the other hand is a technique with detrending and differencing nonstationary data which was introduced by Granger's representation theorem.

If Y_t and X_t are integrated of order one I(1) , then Y_t and X_t are co-integrated if and only if $Y_t - \beta X_t = Z_t$,where Z_t in integrated order zero I(0). Therefore if Y_t and X_t are co-integrated, then they move together in the long run so that they cannot drift arbitrarily far apart from each other as time goes on (Maddala , 2001). Two typical methods to which recommended to examine long run relationships of variables are Engle and Granger (1987) co-integration test and Johansen-Juselius (1990) cointegration test. Engle and Granger test is suitable for bivariate analysis and Johansen –Juselius is suitable for multivariate analysis.

3.2 Johansen–Juselius (1990) Co-Integration Test

Johansen Juselius cointegration test is used to identify the long run relationships that may exist between economics variables and inflation rate in the study. In Johansen Juselius cointegration all variables are treated as endogenous variables and it doesn't segregate dependent variables and independent variables. Johansen Juselius approach is a one step approach compared to two step Engle Granger methodology. Due to these reasons Johansen Juselius cointegration is considered as an effective statistical method for testing co-integration.

Johansen Juselius cointegration approach can be expressed using the below equation.

$$Y_t = \mu + A_1 Y_{t-1} + A_2 Y_{t-2} + A_3 Y_{t-3} + \ldots + A_p Y_{t-p} + \varepsilon_t \quad \textbf{[3]}$$

Where Y_t is a vector containing p variables, all of which are integrated of order one and the subscript t denotes time period. μ is an (n_{x1}) vector of constants, A_p is an (n*n) matrix of coefficients where ρ is the maximum lag included in the model and εt is an (nx1) vector of error terms. This can be written in the form of the error correction model assuming cointegration of order p. Enders (2004) shows how to rewrite the above equation as:

$$\Delta Y_t = \mu + (A_1 - I) Y_{t-1} + A_2 Y_{t-2} + A_3 Y_{t-3} + \ldots + A_p Y_{t-p} + \varepsilon_t \quad \textbf{[4]}$$

Where ($A_1 + A_2 + \ldots + A_{P-1-I}$) represents the dynamics of the model in the short run. In the above equation , ($A_1 + A_2 + \ldots + A_{P-I}$) represents the long run relationship among the variables included in the vector Y, and I is the identity vector. The key idea of the Johansen Juselius approach is to determine the rank of the matrix ($A_1 + A_2 + \ldots + A_{P-I}$), which represents the number of independent cointegration vectors or the number of error correction terms belonging to the model.

3.3 Error Correction Model

Granger Test is valid only when there is no long run equilibrium relationship among examined variables, therefore Engle and Granger (1987) suggest including error terms in the equation which turns it into an Error Correction Model. Error Correction Model is used for data with underlying variables having a long run stochastic trend or a co-integration. It estimates both long term and short term effects of one time series on another time series. Error is short run dynamics and the error correction term is long-run equilibrium.

In two variable setting where X and Y are integrated of order one or I~(1) , the error correction model (ECM) can be formulated as:

$$\Delta X_t = \delta_i + \sum_{i=1}^{p} a_i \Delta X_{t-i} + \sum_{i=1}^{p} \beta_i \Delta X_{t-i} + \gamma_1 \hat{\varepsilon}_{1t-1} + v_{1t} \quad \textbf{[5]}$$

$$\Delta Y_t = \lambda_i + \sum_{i=1}^{p} d_j \Delta X_{t-i} + \sum_{i=1}^{p} c_i \Delta X_{t-i} + \gamma_2 \hat{\varepsilon}_{2t-1} + v_{2t} \quad \textbf{[6]}$$

$\hat{\varepsilon}_{1t-1}$ and $\hat{\varepsilon}_{2t-1}$ are the error correction terms obtained from the long run model lagged once, which can be interpreted as the deviation of X and Y from their long run equilibrium values, respectively. Including the error correction term represents the short-run dynamics necessary to reach the long run equilibrium and opens a channel to detect Granger causality (Granger, 1988). γ_1 captures the long run causal relationship among the variables in the system, and it is expected to be negative and most likely have an absolute value of less than one.

When γ_i's are not statistically significant, the system of equations suggests that the variables of the system are independent in the context of prediction. When γ_1 is statistically significant, while γ_2 is not, the system suggests a unidirectional causality from Y to X, meaning that Y drives X towards long run equilibrium but not the other way around. However, the opposite implication will be observed when γ_2 is significant and γi is not. Indeed, if both coefficients γ_1 and γ_2 are significant, then this suggests feedback causal relationship in the system or bidirectional Granger causality relationships. β_i measures the short run impact of changes in X on Y, d_j measures the short run impact of changes in Y on X and v_{it} is the standard error term.

4. RESULTS AND DISCUSSIONS

The Correlation matrix is a fundamental statistical test that is used to identify the mutual relationship among variables. All variables for four periods were transformed into the natural log to minimize the variance and heteroskedasticity before applying the Vector Error Correction Model. The stationary of the variables should be identified before applying any time series model. Augmented Dicky Fuller Test (ADF) and P-Perron (PP) tests were used to identify the stationary of the economic time series effectively. Identifying a suitable lag length is important before applying a VEC model. Lag is the difference between the current time period to the certain past time period. Lag order n can be selected by using Akaike Information Criteria (AIC), Schwarz Bayesian (SC) and Hannan Quinn (HQ). VEC models are used for I(1) variables. Presence of cointegration indicates non stationary variables. Johansen Cointegration test is used to identify the existence of the co-integration.

Vector error correction model is established to identify the long-term error adjustment between the variables. Residual tests were done to confirm the validity of the model developed. Null hypothesis of no serial correlation at lag order n is tested under Portmanteau Test for Autocorrelation. Hypothesis is tested under 5% of significance level. Jarque –Bera test statistic under the null hypothesis of residuals are multivariate normal is tested in order to confirm the normality of the residuals of the VEC model. Stability of the variables can be identified using the AR root graph. If no root lies outside the unit circle that confirms the stability of the VEC model. Granger causality is used to identify the short term and directional causality of the variables. F-square statistics and probability values are used to test the null hypothesis of non-causality. As indicated in table 2, ADF tests and PP tests show that all variables become stationary by applying first difference as all p-values are less than 5%. Therefore, it is suitable to apply Vector Auto-Regressive model or Vector Error Correction model for the dataset.

Table 2: Stationary of Times Series data for period 1

Variable	Level		First Difference	
	ADF	PP	ADF	PP
LNINF	0.8640	0.0998	0.0007	0.0002
LNEXC	0.8483	0.7329	0.0001	0.0002
LNFDI	0.2785	0.0120	0.0000	0.0000
LNGDP	0.8270	0.9206	0.1202	0.0022
LNGE	0.9694	0.9364	0.0000	0.0000
LNMS	0.0001	0.0000	0.0006	0.0008
LNTOB	0.2340	0.1155	0.0000	0.0000
LNUMP	0.2234	0.4667	0.0119	0.0000

Source: Researchers computation using E-View version 10

4.1 VEC Model for the Period 1 (1981-1992)

According to table 3 the suitable lag length for the given economic variables is lag order 1 as selected by Akaike Information Criteria (AIC), Schwarz Bayesian (SC) and Hannan Quinn (HQ).

Table 3: Determine Lag Intervals with VAR Lag order Selection Criteria for 8 Economical Variables in U.S.A (Period 1)

Lag	AIC	SC	HQ
0	-12.58536	-12.26417	-12.46563
1	-24.79457	-21.90391*	-23.71696
2	-25.80775	-20.34762	-23.77227

Source: Researchers computation using E-View version 10

As indicated in table 4 there exists co-integration between endogenous variables of period 1. When cointegration exists, VEC model should be applied for the time series data instead of Vector Auto- Regressive model.

Table 4: Johansen Cointegration test (Period 1)

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	4	5	4	5	4
Max-Eig	2	3	0	3	3

Source: Researchers computation using E-View version 10

Table 5 shows the VEC model estimated using lag order 1. The t- statistics shown in the squared brackets should be greater than 2.0 for lag order to be significant. Inflation rate is taken as the endogenous variable and the other seven variables as the exogenous variables.

Table 5: Summary of Vector Error Correction Model Results Long Run Equation (Period 1)

Variable	Coefficient
Speed of Adjustment	107.2463 (Long Run)
LNEXC(-1)	-6.808127
	[-5.67571]
LNFDI(-1)	-1.201298
	[-4.72420]
LNGDP(-1)	-9.438562
	[-1.31874]
LNGE(-1)	3.195232
	[0.96507]
LNMS(-1)	-1.45773
	[-0.59800]
LNTOB(-1)	2.768994
	[8.09509]
LNUMP(-1)	-0.160214
	[-0.12975]

Source: Researchers computation using E-View version 10

Below equation 7 of VEC model 1 was derived from table 5. The Equation of the Error Correction Term and the long run model that explains the long run relationship between given economic variables and inflation rate for period 1 is shown in equation.

$LNINF_t = 107.2463 - 6.8081*LNEXC_{t-1} - 1.2013*LNFDI_{t-1} - 9.4386*LNGDP_{t-1} + 3.1952*LNGE_{t-1} - 1.4577*LNMS_{t-1} + 2.769*LNTOB_{t-1} - 0.1602*LNUMP_{t-1}$ **[7]**

4.2 Residual Tests of VEC Model for the Period 1 (1981-1992)

Table 6 shows the test results of portmanteau test for autocorrelation under the null hypothesis of no residual autocorrelations up to lag n proves that there is no autocorrelation among the lags at 5% of significant level.

Table 6: Portmanteau Test for Autocorrelation for VEC Model 1

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	31.68004	NA*	32.38404	NA*	NA*
2	83.70653	0.9952	86.77538	0.9903	120
3	135.1496	0.9973	141.8075	0.9908	184

*The test is valid only for lags larger than the VAR lag order. df is degrees of freedom for (approximate) chi-square distribution

Source: Researchers computation using E-View version 10

Table 7: Serial Correlation LM Test for VEC Model 1

Lags	LM-Stat	Prob
1	94.87869	0.0073
2	68.89682	0.3153
3	64.50707	0.4587
4	67.95152	0.3442
5	57.02050	0.7195
6	47.39647	0.9403

Probs from chi-square with 64 df.

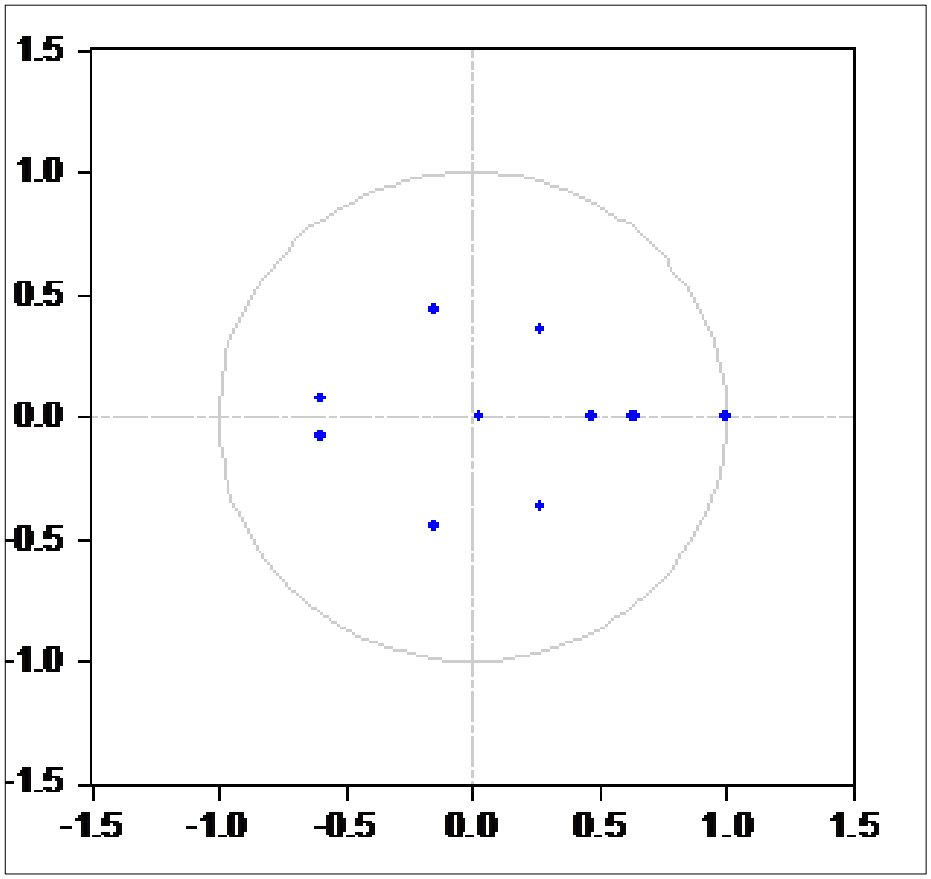
Source: Researchers computation using E-View version 10

Table 8: Normality Tests VEC Model 1

Component	Jarque-Bera	df	Prob.
1	0.761584	2	0.6833
2	5.195985	2	0.0744
3	1.236877	2	0.5388
4	1.652605	2	0.4377
5	1.476601	2	0.4779
Joint	12.82503	16	0.6855

Source: Researchers computation using E-View version 10

Null hypothesis of no serial correlation at lag order 12 is tested in table 7. It confirms that the hypothesis is significant at 5% of significant level. There is no serial correlation among the lags. Jarque –Bera test statistic under the null hypothesis of residuals are multivariate normal is shown in table 8.



Source: Researchers computation using E-View version 10

Figure 4: Inverse Roots of AR Stability of the VEC Model 1

Stability of the variables can be identified using the AR root graph. Unit root graph in figure 4 confirms that there is no root outside the unit circle and VAR satisfies the stability condition

4.3 Granger Causality for Period 1 (1981-1992)

F-Square statistics and probability values constructed under the null hypothesis of non causality show that there is a causal relationship between some variables.

Table 9: Granger Causality test

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
LNEXC does not Granger Cause LNINF	47	1.240	0.271	Do not Reject
LNINF does not Granger Cause LNEXC		9.288	0.003	Reject
LNFDI does not Granger Cause LNINF	47	3.118	0.084	Do not Reject
LNINF does not Granger Cause LNFDI		0.493	0.486	Do not Reject
LNGDP does not Granger Cause LNINF	47	0.434	0.513	Do not Reject
LNINF does not Granger Cause LNGDP		26.782	5.E-06	Reject
LNGE does not Granger Cause LNINF	47	0.652	0.423	Do not Reject
LNINF does not Granger Cause LNGE		4.617	0.037	Reject
LNMS does not Granger Cause LNINF	47	0.186	0.668	Do not Reject
LNINF does not Granger Cause LNMS		0.777	0.382	Do not Reject
LNTOB does not Granger Cause LNINF	47	0.503	0.481	Do not Reject
LNINF does not Granger Cause LNTOB		8.360	0.005	Reject
LNUMP does not Granger Cause LNINF	47	2.027	0.161	Do not Reject
LNINF does not Granger Cause LNUMP		1.208	0.277	Do not Reject

Source: Researchers computation using E-View version 10

As the null hypothesis rejects when the F-statistics are not significant, it can be concluded that there is causality among exchange rate (EXC), government expenditure (GE) and balance of trade (TOB) during the period 1 as explained in table 9.

4.4 VEC Model for the Period 2 (1993-2000)

As indicated in table 10 ADF test and PP tests show that all variables become stationary by applying the first difference as all p-values are less than 5%. Therefore the dataset is suitable to be analyzed using the Vector Auto-Regressive model or Vector Error Correction model.

Table 10: Unit Root Test results of Sequence of level (Period 2)

Variable	Level		First Difference	
	ADF	PP	ADF	PP
LNINF	0.0256	0.4006	0.0742	0.0024
LNEXC	0.9635	0.9635	0.0001	0.0001
LNFDI	0.7476	0.2614	0.0000	0.0001
LNGDP	0.9902	0.9930	0.0000	0.0000
LNGE	0.6498	0.0173	0.0047	0.0000
LNMS	0.9554	1.0000	0.6001	0.0048
LNTOB	0.9952	0.7369	0.4174	0.0000
LNUMP	0.8082	0.5915	0.1752	0.0001

Source: Researchers computation using E-View version 10

According to table 11 the suitable lag length for the given economic variables is lag order 1 as selected by Akaike Information Criteria, Schwarz Bayesian and Hannan Quinn (HQ).

Table 11: Determine Lag Intervals with VAR Lag order selection criteria for eight (08) economic variables in USA (Period 2)

Lag	AIC	SC	HQ
0	-21.23219	-20.86213	-21.11156
1	-32.99707*	-29.66652*	-31.91140*

Source: Researchers computation using E-View version 10

As indicated in table 12, there exists co-integration between endogenous variables. Therefore, a VEC model should be applied for the time series data.

Table 12: Johansen Cointegration test for eight (08) economic variables in USA (Period 2)

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	6	7	7	8	5
Max-Eig	4	3	2	3	3

Source: Researchers computation using E-View version 10

VEC Model 2 which is shown as equation 8 can be derived from table 13. The Vector Error Correction model is estimated using lag order 1 selected from lag order criteria.

$LNINF_t = 8.8674 - 0.0801*LNEXC_{t-1} - 0.09087*LNFDI_{t-1} - 3.2659*LNGDP_{t-1} - 2.3747*LNGE_{t-1} + 5.3632*LNMS_{t-1} - 1.2684*LNTOB_{t-1} - 4.5197*LNUMP_{t-1}$ **[8]**

Table13: Summary of Vector Error Correction Model Results Long Run Equation (Period 2)

Variable	Coefficient
Speed of Adjustment	-8.867394(Long Run)
LNEXC(-1)	-0.080068
	[-0.23424]
LNFDI(-1)	-0.090865
	[-3.10379]
LNGDP(-1)	-3.265895
	[-1.42887]
LNGE(-1)	-2.374673
	[-3.96969]
LNMS(-1)	5.363180
	[6.36526]
LNTOB(-1)	-1.268402
	[-17.2907]
LNUMP(-1)	-4.519676
	[-18.1068]

Source: Researchers computation using E-View version 10

Table 13 shows the VEC model estimated using lag order 1. The t- statistics shown in the squared brackets should be greater than 2.0 for lag order to be significant. Inflation rate is taken as the endogenous variable and other seven variables as the exogenous variables.

4.5 Residual Tests of VEC Model for the Period 2 (1993-2000)

Table 14 shows the test results of portmanteau test for autocorrelation under the null hypothesis of no residual autocorrelations up to lag h proves that there is no autocorrelation among the lags at 5% of significant level.

Table 14: Portmanteau Test for Autocorrelation for VEC Model 2

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	36.79504	NA*	38.06384	NA*	NA*
2	114.1872	0.6324	120.9840	0.4576	120
3	162.2172	0.8746	174.3506	0.6834	184

*The test is valid only for lags larger than the VAR lag order. df is degrees of freedom for (approximate) chi-square distribution

Source: Researchers computation using E-View version 10

Null hypothesis of no serial correlation at lag order n is tested in table 14, it confirms that the hypothesis is significant at 5% of significant level. There is no serial correlation among the lags.

Table 15: Serial Correlation LM Test for VEC Model 2

Lags	LM-Stat	Prob
1	75.69379	0.1504
2	76.92441	0.1289
3	32.86307	0.9996
4	91.19983	0.0144
5	53.37330	0.8257
6	68.53147	0.3263

Probs from chi-square with 64 df.

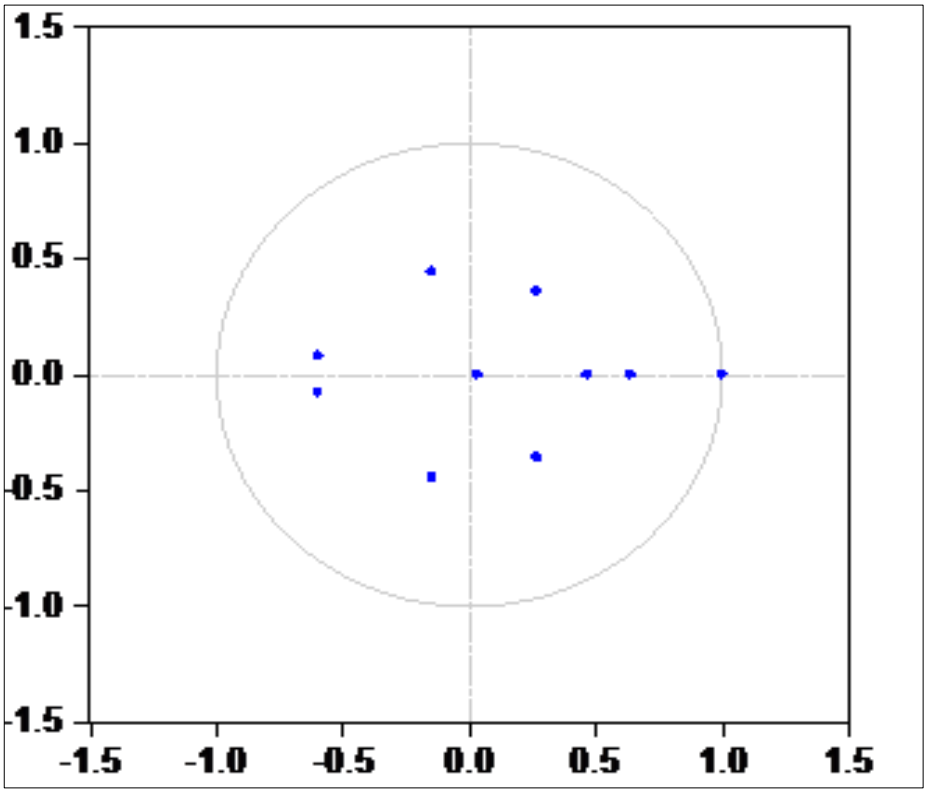
Source: Researchers computation using E-View version 10

Table 16: Normality Tests for VEC Model 2

Component	Jarque-Bera	df	Prob.
1	1.684313	2	0.4308
2	21.74035	2	0.0000
3	0.555336	2	0.7575
4	1.532379	2	0.4648
5	2.296769	2	0.3171
Joint	29.83926	16	0.0189

Source: Researchers computation using E-View version 10

Jarque –Bera test statistic under the null hypothesis of residuals are multivariate normal is shown in table 16. Statistics of skewness and kurtosis support the above indication.



Source: Researchers computation using E-View version 10

Figure 5: Inverse Roots of AR Stability of the VEC model 2

Unit root graph in figure 5 confirms that there is no root outside the unit circle and VEC model satisfies the stability condition

4.6 Granger Causality for Period 2 (1993-2000)

There is no granger causality running among all variables to inflation rate during the period which confirms there is no short-term causality running among variables as explained in table 17.

Table 17: Granger Causality Test for Period 2

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
LNEXC does not Granger Cause LNINF	31	1.47076	0.2354	Do not Reject
LNINF does not Granger Cause LNEXC		0.37257	0.5465	Do not Reject
LNFDI does not Granger Cause LNINF	31	0.94169	0.3402	Do not Reject
LNINF does not Granger Cause LNFDI		0.27560	0.6037	Do not Reject
LNGDP does not Granger Cause LNINF	31	2.15322	0.1534	Do not Reject
LNINF does not Granger Cause LNGDP		1.34713	0.2556	Do not Reject
LNGE does not Granger Cause LNINF	31	1.26751	0.2698	Do not Reject
LNINF does not Granger Cause LNGE		1.0E-05	0.9975	Do not Reject
LNMS does not Granger Cause LNINF	31	2.44156	0.1294	Do not Reject
LNINF does not Granger Cause LNMS		0.75557	0.3921	Do not Reject
LNTOB does not Granger Cause LNINF	31	3.20147	0.0844	Do not Reject
LNINF does not Granger Cause LNTOB		0.35110	0.5582	Do not Reject
LNUMP does not Granger Cause LNINF	31	1.49841	0.2311	Do not Reject
LNINF does not Granger Cause LNUMP		0.61254	0.4404	Do not Reject

Source: Researchers computation using E-View version 10

4.7 VEC Model for the Period 3 (2001-2008)

As indicated in table 18 ADF test and PP tests show that most variables become stationary by applying first difference.

Table 18: Unit root Test Results of Sequence of level (Period 3)

Variable	Level		First Difference	
	ADF	PP	ADF	PP
LNINF	0.1119	0.0992	0.0002	0.0034
LNEXC	0.3098	0.6449	0.1108	0.1108
LNFDI	0.0003	0.0003	0.0000	0.0001
LNGDP	0.4344	0.5403	0.4467	0.5546
LNGE	0.1704	0.7278	0.8943	0.0000
LNMS	0.9772	0.9816	0.0002	0.0112
LNTOB	0.4606	0.4244	0.0000	0.0005
LNUMP	0.0915	0.0452	0.2468	0.0000

Source: Researchers computation using E-View version 10

Table 19: Determine Lag Intervals with VAR Lag order selection criteria for 8 economic variables in USA (Period 3)

Lag	AIC	SC	HQ
0	-16.03909	-15.66903	-15.91846
1	-25.98583*	-22.65528*	-24.90015*

Source: Researchers computation using E-View version 10

According to table 19 the suitable lag length for the given economic variables is lag order 1 as selected by Akaike Information Criteria (AIC), Schwarz Bayesian (SC) and Hannan Quinn (HQ).

As indicated in table 20 there exists co-integration between endogenous variables. VEC model should be applied for the time series data.

Table 20: Johansen Cointegration test for eight (08) economic variables in USA (Period 3)

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	4	7	5	6	5
Max-Eig	4	3	2	3	3

Source: Researchers computation using E-View version 10

Table 20 shows the VEC model estimated using lag order 1. T statistics shown in the squared brackets should be greater than 2.0 for lag order to be significant.

Equation 9 of VEC model 3 can be derived from table 20

$LNINF_t$= - 108.5129 + 1.1500*$LNEXC_{t-1}$ + 0.1466*$LNFDI_{t-1}$ + 15.6210*$LNGDP_{t-1}$ + 3.3601*$LNGE_{t-1}$ - 0.9363*$LNMS_{t-1}$ - 5.1595*$LNTOB_{t-1}$ + 4.4191*$LNUMP_{t-1}$ **[9]**

Table 21: Summary of Vector Error Correction Model Results Long Run Equation (Period 3)

Variable	Coefficient
Speed of Adjustment	108.5129 (Long Run)
LNEXC(-1)	1.150042
	[5.20035]
LNFDI(-1)	0.146643
	[30.8125]
LNGDP(-1)	15.62104
	[18.0575]
LNGE(-1)	3.360133
	[13.6842]
LNMS(-1)	-0.936284
	[-3.24126]
LNTOB(-1)	-5.159458
	[-52.6052]
LNUMP(-1)	4.419073
	[22.6733]

Source: Researchers computation using E-View version 10

4.8 Residual Tests of VEC Model for the Period 3 (2001-2008)

Table 22 shows the test results of portmanteau test for autocorrelation under the null hypothesis of no residual autocorrelations up to lag 12 proves that there is no autocorrelation among the lags at 5% of significant level.

Table 22: Portmanteau Test for Autocorrelation for VEC Model 3

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	25.39637	NA*	26.27211	NA*	NA*
2	79.67062	0.9983	84.42309	0.9943	120
3	135.2355	0.9972	146.1618	0.9817	184

*The test is valid only for lags larger than the VAR lag order. df is degrees of freedom for (approximate) chi-square distribution

Source: Researchers computation using E-View version 10

Null hypothesis of no serial correlation at lag order 12 is tested in table 23, it confirms that the hypothesis is significant at 5% of significant level. There is no serial correlation among the lags. Jarque –Bera test statistic under the null hypothesis of residuals are multivariate normal is shown in table 24. Unit root graph in figure 6 confirms that there is no root outside the unit circle and VAR satisfies the stability condition.

Table 23: Serial Correlation LM Test for VEC Model 3

Lags	LM-Stat	Prob
1	56.89827	0.7234
2	50.47181	0.8910
3	64.69199	0.4523
4	80.89332	0.0754
5	90.80821	0.0154
6	66.94242	0.3764

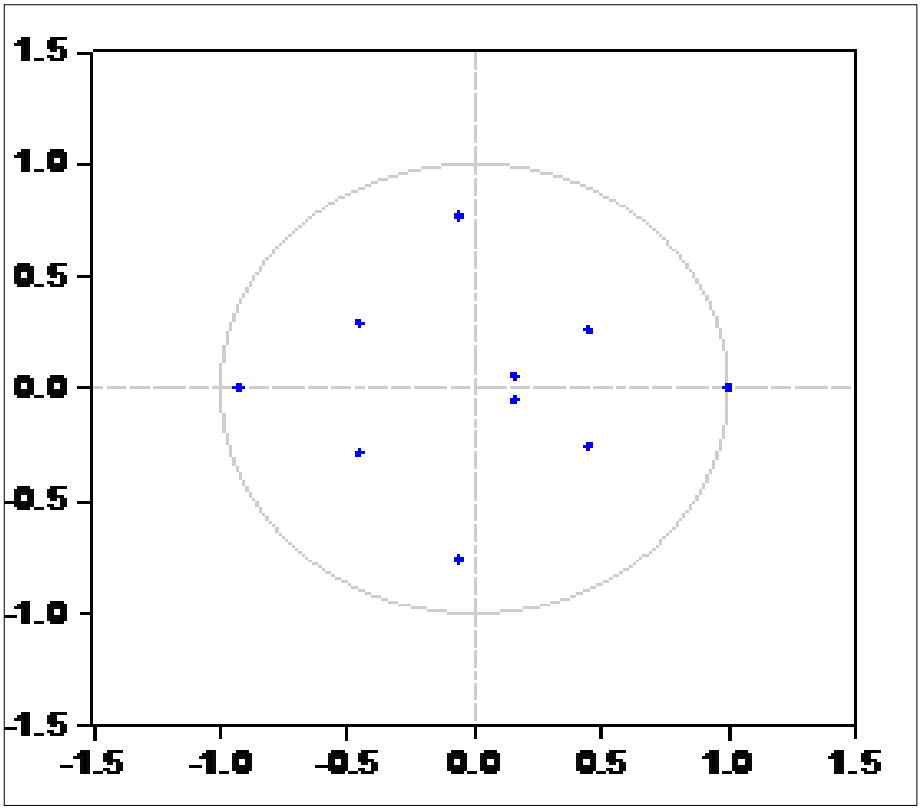
Probs from chi-square with 64 df.

Source: Researchers computation using E-View version 10

Table 24: Normality Tests for VEC Model 3

Component	Jarque-Bera	Df	Prob.
1	0.053533	2	0.9736
2	0.992337	2	0.6089
3	1.952124	2	0.3768
4	1.111649	2	0.5736
5	2.346787	2	0.3093
Joint	8.649543	16	0.9271

Source: Researchers computation using E-View version 10



Source: Researchers computation using E-View version 10

Figure 6: Inverse Roots of AR Stability of the VEC Model 3

4.9 Granger Causality for Period 3 (2001-2008)

There is no granger causality running among all variables to inflation rate during the period which confirms there is no short-term causality running among variables as explained in table 25.

Table 25: Granger Causality Test for Period 3

Null Hypothesis:	Obs	F-tatistic	Prob.	Decision
LNEXC does not Granger Cause LNINF	31	3.68882	0.0650	Do not Reject
LNINF does not Granger Cause LNEXC		2.29385	0.1411	Do not Reject
LNFDI does not Granger Cause LNINF	31	0.78815	0.3822	Do not Reject
LNINF does not Granger Cause LNFDI		3.89614	0.0583	Do not Reject
LNGDP does not Granger Cause LNINF	31	3.42450	0.0748	Do not Reject
LNINF does not Granger Cause LNGDP		4.07563	0.0532	Do not Reject
LNGE does not Granger Cause LNINF	31	1.93271	0.1754	Do not Reject
LNINF does not Granger Cause LNGE		0.11389	0.7383	Do not Reject
LNMS does not Granger Cause LNINF	31	1.96006	0.1725	Do not Reject
LNINF does not Granger Cause LNMS		2.32485	0.1385	Do not Reject
LNTOB does not Granger Cause LNINF	31	2.63879	0.1155	Do not Reject
LNINF does not Granger Cause LNTOB		1.13437	0.2959	Do not Reject
LNUMP does not Granger Cause LNINF	31	0.10616	0.7470	Do not Reject
LNINF does not Granger Cause LNUMP		0.43647	0.5142	Do not Reject

Source: Researchers computation using E-View version 10

4.10 VEC Model for the Period 4 (2009-2016)

Table 26: Unit Root Test Results of Sequence of level for Period 4

Variable	Level		First Difference	
	ADF Test	PP test	ADF Test	PP test
LNINF	0.0002	0.0482	0.0000	0.0000
LNEXC	0.9688	0.9239	0.0135	0.0179
LNFDI	0.0262	0.0316	0.0000	0.0000
LNGDP	0.9525	0.9595	0.0000	0.0000
LNGE	0.5802	0.4905	0.0022	0.0007
LNMS	0.9873	0.9972	0.0204	0.0004
LNTOB	0.0253	0.0028	0.0000	0.0000
LNUMP	0.9133	0.9419	0.0001	0.0000

Source: Researchers computation using E-View version 10

As indicated in table 26 ADF test and PP tests shows that all variables become stationary by applying first difference. According to table 27 the suitable lag length for the given economic variables is lag order 1 as selected by Akaike Information Criteria (AIC), Shwartz Bayesian (SC) and Hannan Quinn (HQ). As indicated in table 28 there exists co-integration between endogenous variables. VEC model should be applied for the time series data.

Table 27: Determine Lag Intervals with VAR Lag order selection criteria for eight (08) economic variables in USA (Period 4)

Lag	AIC	SC	HQ
0	-20.11295	-19.74289	-19.99232
1	-29.49784*	-26.16729*	-28.41216*

Source: Researchers computation using E-View version 10

Table 28: Johansen Co-integration test for eight (08) Economical Variables in USA (Period 4)

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	6	7	6	5	5
Max-Eig	4	5	4	5	5

Source: Researchers computation using E-View version 10

Below equation 10 of VEC model 4 can be derived from table 29.

$LNINF_t = 1354.12946 + 13.03348*LNEXC_{t-1} - 0.10276*LNFDI_{t-1} - 158.17008*LNGDP_{t-1} + 15.53531*LNGE_{t-1} + 0.36757*LNMS_{t-1} + 2.90795*LNTOB_{t-1} - 15.20314*LNUMP_{t-1}$ **[10]**

Table 29: VEC Model for selected economic variables in USA (Period 4)

Variables	Coefficient
Speed of Adjustment	1354.129 (Long Run)
LNEXC(-1)	13.03348
	[7.32137]
LNFDI(-1)	-0.10276
	[-0.74463]
LNGDP(-1)	-158.1701
	[-14.9644]
LNGE(-1)	15.53531
	[11.1056]
LNMS(-1)	0.367573
	[0.19222]
LNTOB(-1)	2.907952
	[3.38785]
LNUMP(-1)	-15.20314
	[-15.1020]

Source: Researchers computation using E-View version 10

4.11 Residual Tests of VEC Model for the Period 4 (2009-2016)

Table 30 shows the test results of portmanteau test for autocorrelation under the null hypothesis of no residual autocorrelations up to lag 12 proves that there is no autocorrelation among the lags at 5% of significant level.

Table 30: Portmanteau Test for Autocorrelation for VEC model 4

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	Df
1	53.71270	NA*	55.56487	NA*	NA*
2	114.0223	0.6365	120.1823	0.4781	120
3	155.2505	0.9394	165.9914	0.8254	184

*The test is valid only for lags larger than the VAR lag order. df is degrees of freedom for (approximate) chi-square distribution

Source: Researchers computation using E-View version 10

Null hypothesis of no serial correlation at lag order 12 is tested in table 31, which confirms that the hypothesis is significant at 5% of significance level. There is no serial correlation among the lags.

Table 31: Serial Correlation LM Test VEC model 4

Lags	LM-Stat	Prob
1	101.9437	0.0018
2	59.24034	0.6452
3	35.42927	0.9986
4	65.05559	0.4397
5	81.11653	0.0730
6	84.02485	0.0474

Probs from chi-square with 64 df.

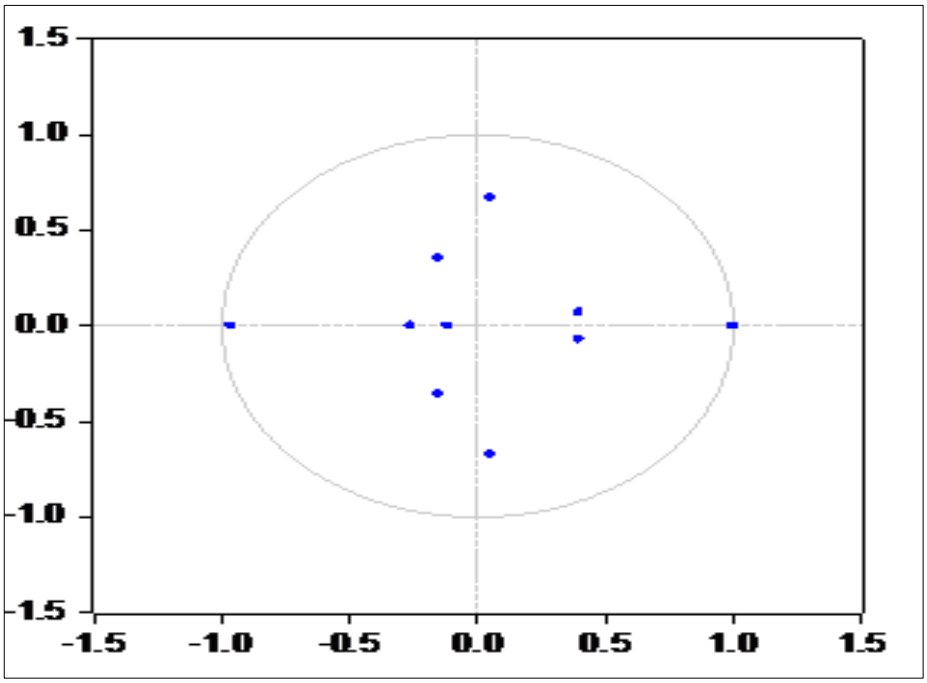
Source: Researchers computation using E-View version 10

Table 32: Normality Tests for VEC model 4

Component	Jarque-Bera	Df	Prob.
1	1.027999	2	0.5981
2	1.224548	2	0.5421
3	1.573487	2	0.4553
4	2.520553	2	0.2836
5	0.838776	2	0.6574
Joint	10.22928	16	0.8544

Source: Researchers computation using E-View version 10

Jarque –Bera test statistic under the null hypothesis of residuals are multivariate normal is shown in table 32. Statistics of skewness and kurtosis support the above indication.



Source: Researchers computation using E-View version 10

Figure 7: Inverse Roots of AR Stability of the VEC model 4

Stability of the variables can be identified using the AR root graph. Unit root graph in figure 7 confirms that there is no root outside the unit circle and VAR satisfies the stability condition

4.12 Granger Causality Test for period 4

There is no granger causality running among all variables to inflation rate except money supply during the period which confirms there is no short-term causality running among variables as shown in table 33

Table 33: Granger Causality Test for period 4

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
LNEXC does not Granger Cause LNINF	31	3.85937	0.0595	Do not reject
LNINF does not Granger Cause LNEXC		4.10419	0.0524	Do not reject
LNFDI does not Granger Cause LNINF	31	0.13058	0.7205	Do not reject
LNINF does not Granger Cause LNFDI		0.12887	0.7223	Do not reject
LNGDP does not Granger Cause LNINF	31	0.37284	0.5464	Do not reject
LNINF does not Granger Cause LNGDP		1.85876	0.1836	Do not reject
LNGE does not Granger Cause LNINF	31	0.28485	0.5977	Do not reject
LNINF does not Granger Cause LNGE		3.36627	0.0772	Do not reject
LNMS does not Granger Cause LNINF	31	0.40974	0.5273	Do not reject
LNINF does not Granger Cause LNMS		7.02772	0.0131	Reject
LNTOB does not Granger Cause LNINF	31	0.56869	0.4571	Do not reject
LNINF does not Granger Cause LNTOB		0.00289	0.9575	Do not reject
LNUMP does not Granger Cause LNINF	31	3.81257	0.0609	Do not reject
LNINF does not Granger Cause LNUMP		1.52854	0.2266	Do not reject

Source: Researchers computation using E-View version 10

4.13 Summary of VEC Models

The factors that influence the inflation rate on a long-term basis for the four periods are as shown in table 34.

Table 34: Summary of Significant Variables (Long Term) during Four Periods

Period	Significant Variables
Period 1	$LNINF_{t-1}$, $LNEXC_{t-1}$, $LNFDI_{t-1}$, $LNGDP_{t-1,}$ $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$, $LNUMP_{t-1}$
Period 2	$LNINF_{t-1}$, $LNEXC_{t-1}$, $LNFDI_{t-1}$, $LNGDP_{t-1,}$ $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$, $LNUMP_{t-1}$
Period 3	$LNINF_{t-1}$, $LNEXC_{t-1}$, $LNFDI_{t-1}$, $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$, $LNUMP_{t-1}$
Period 4	$LNFDI_{t-1}$, $LNGDP_{t-1,}$ $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$, $LNUMP_{t-1}$

During the first period which is a republican period (From 1981Q1 to 1992Q4) one lagged inflation rate, one lagged exchange rate, one lagged foreign direct investment, one lagged gross domestic product, one lagged government expenditure, one lagged money supply, one lagged balance of trade, and one lagged unemployment rate affected the inflation rate.

During the second period (From 1993Q1 to 2000Q4) which is a democratic period one lagged inflation rate, one lagged exchange rate, one lagged foreign direct investment, one lagged gross domestic product, one lagged government expenditure, one lagged money supply, one lagged balance of trade, and one lagged unemployment rate affected the inflation rate.

During the third period (From 2001Q1 to 2008Q4) which is a republican period one lagged inflation rate, one lagged exchange rate, one lagged foreign direct investment, one lagged government expenditure, one lagged money supply, one lagged balance of trade, and one lagged unemployment rate affected the inflation rate.

During the fourth period (From 2009Q1 to 2016Q4) which is a democratic period one lagged foreign direct investment, one lagged gross domestic product, one lagged government expenditure, one lagged money supply, one lagged balance of trade, and one lagged unemployment rate affected the inflation rate.

Considering table 34 it is visible that one lagged foreign direct investment, one lagged government expenditure, one lagged money supply, one lagged balance of trade, and one lagged unemployment rate affected the inflation rate during four periods. There is no visible pattern that can be identified according to the four periods or political party which ruled the country.

Table 35 shows the nature of the relationship with the inflation rate of significant variables which are displayed in 34.

During the first period which is a republican period (From 1981Q1 to 1992Q4) one lagged inflation rate, one lagged exchange rate, one lagged gross domestic product and one lagged unemployment rate have a positive relationship with inflation rate while one lagged foreign direct investment, one lagged government expenditure, one lagged money supply and one lagged balance of trade have a positive relationship with the inflation rate.

During the second period (From 1993Q1 to 2000Q4) which is a democratic period one lagged inflation rate, one lagged money supply and one lagged balance of trade have a positive relationship with inflation rate while one lagged exchange rate, one lagged foreign direct investment, one lagged gross domestic product, one lagged government expenditure, and one lagged unemployment rate have a positive relationship with the inflation rate.

During the third period (From 2001Q1 to 2008Q4) which is a republican period one lagged government expenditure, one lagged money supply and one lagged balance of trade have a positive relationship with inflation rate while one lagged inflation rate, one lagged exchange rate, one lagged foreign direct investment, and one lagged unemployment rate have a negative relationship with the inflation rate.

During the fourth period (From 2009Q1 to 2016Q4) which is a democratic period one lagged unemployment rate has a positive relationship with inflation rate while one lagged foreign direct investment, one lagged gross domestic product, one lagged government expenditure, one lagged money supply and one lagged balance of trade have a negative relationship with the inflation rate.

Therefore, according to table 35, there is no similarity between the nature of the relationship between economic variables and inflation rate.

Table 35: Summary of Positively and Negatively Influenced Variables during Four Periods

Period	Positively influenced	Negatively influenced
Period 1	$LNINF_{t-1}$, $LNEXC_{t-1}$, $LNGDP_{t-1}$, $LNUMP_{t-1}$	$LNFDI_{t-1}$, $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$
Period 2	$LNINF_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$	$LNEXC_{t-1}$, $LNFDI_{t-1}$, $LNGDP_{t-1}$, $LNGE_{t-1}$, $LNUMP_{t-1}$
Period 3	$LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$	$LNINF_{t-1}$, $LNEXC_{t-1}$, $LNFDI_{t-1}$, $LNUMP_{t-1}$
Period 4	$LNUMP_{t-1}$	$LNFDI_{t-1}$, $LNGDP_{t-1}$, $LNGE_{t-1}$, $LNMS_{t-1}$, $LNTOB_{t-1}$

The factors that influence the inflation rate on a short-term basis for the four periods are as in table 36. During the first-period exchange rate, government expenditure and balance of trade influence the inflation rate, and during the fourth period money supply has influenced the inflation rate. During the second and third period, none of the variables has a short-term influence on the inflation rate.

Table 36: Summary of Significant Variables (Short Term) during Four Periods

Period	Significant Variables
Period 1	EXC , GE, TOB
Period 2	None
Period 3	None
Period 4	MS

5. CONCLUSIONS

The study shows that there is a gap between theories of inflation and practices of the economy in the USA during the given periods, but the economic expansion period shows an exception.

Money supply which accelerates the growth of the economy is supposed to have a positive relationship with the inflation rate according to the Equation of Modern Quantitative Theory of Money. But it gives both positive and negative influences on the inflation rate according to the study. As it is mentioned earlier in the study there were two economic expansions during March 1991 to March 2001 and November 2001 to December 2007 in the USA and during this period the inflation rate remained low. It can be observed that during this period money supply has a positive relationship with the inflation rate. During an economic expansion, money is easy to access and cheap to borrow. In such a situation there is a visibly positive effect on money supply on the inflation rate as shown in the study. But during the other two periods, the money supply has a negative relationship with the inflation rate. During the first and fourth periods where there is no indication of economic expansion, the results are reversed.

The exchange rate can affect the inflation rate through wages and prices of goods and services (Svensson,2000) During the economic expansion period exchange rate shows an inverse relationship with the inflation rate which is

not according to the theoretical relationship between exchange rate and inflation rate.

The unemployment rate, on the other hand, is according to the Phillips curve theory during the economic expansion, which means during the economic expansion it shows an inverse relationship with the inflation rate.

In the U.S.A economy's balance of trade indicates that exports exceed imports which helps the economy to maintain a positive balance of trade. Another observation is that during an economic expansion, the balance of trade has a positive relationship with the inflation rate. Positive trade of balance increases money supply which increases inflation rate. Therefore, the relationship between the balance of trade during an economic expansion is not against the theories in the economy.

Foreign direct investment during four periods has an inverse relationship with the inflation rate. Investors typically invest money in countries with a low and stable inflation rate. Therefore, this relationship is theoretically acceptable.

The relationship of inflation rate with money supply, exchange rate, the balance of trade, and unemployment rate during the economic expansion periods are not against the economic theories. But the typical behavior of other variables such as gross domestic product, government expenditure towards the inflation rate is not stable during the given four periods of the study.

It can be concluded that the inflation rate of the country does not vary according to the political party which rules the country. But there is a visible impact of economic expansion of the U.S.A economy on the behavior of the economic variables towards the inflation rate.

The federal bank of the U.S.A influence economic expansions and it also maintains the low inflation rate. (Parry,1999). The active interference of the Federal Bank of the United States can be identified as the main reason to maintain the inflation rate of the country despite the political party or sudden economic shocks. Therefore, the economic theories might be altered with strategic economic decision making. The economy of Sri Lanka, which is highly influenced by political influences, should try to establish an independent body to maintain the inflation rate and apply strategic decisions and policymaking during a time of recession. This method will maintain the economy of the country without much hazard.

Furthermore, although the theories of inflation predefine some influences that can be caused by other economic variables, not in all situations the theories

can be correct. In the US economy, some of the economic practices are in accordance with theories during the expansion period.

Therefore, rather than depending solely on economic variables, economists and policymakers must study the present situation and influences before making decisions on maintaining the inflation rate.

REFERENCES

Ahuja, H. L. (1986). Macro Economics (Theory & Policy). S Chand Publishers

Akbar, M., Arshed M., Jamal, F., (2014). Statistical Analysis of the Factors Affecting Inflation in Pakistan, *International Journal of Research*, 1(4), 331-341.

Barone, A. (2019). What Is the Quantity Theory of Money? https://www.investopedia.com/insights/what-is-the-quantity-theory-of-money

Berger, H., Österholm, P. (2015). Does money still matter for U.S. output? Economic Letters. 102. 143-146. DOI: 10.1016/j.econlet.2008.11.029.

Bysyuk, V. (2010). Impact of 9/11 Terrorist Attacks on US and International Tourism Development. https://www.modul.ac.at/uploads/files/Theses/Bachelor/BYSYUK_Impact_of_9_11_on_US_and_International_Tourism_Development.pdf

Chappelow, J. (2019). Economic Growth Definition https://www.investopedia.com/terms/e/economicgrowth.asp

Dhakal, Dharmendra, Kandil, Magda, Sharma, Subhash C., Trescott, Paul B., (1994). "Determinants of the inflation rate in the United States: A VAR investigation," *The Quarterly Review of Economics and Finance*, Elsevier, vol. 34(1):95-112.

Edwards, J., Mohamed T. (2019). MMT: Here's a Plain-English guide to 'Modern Monetary Theory' and why it's interesting. https://www.businessinsider.com/modern-monetary-theory-mmt-explained-aoc-2019-3

Enders, W. (2004). Applied Econometric Time Series, 2nd Edition. In: Wiley Series in Probability and Statistics, John Wiley & Sons, Inc., Hoboken.

Engle, R. F., Granger, C. W. (1987). Co-integration and error correction: Representation, estimation and testing, *Econometrica*, 55, 251-76.

Fisher, I. (1933). The Debt-Deflation Theory of Great Depressions, *Econometrica*, 1(4),337-357. doi:10.2307/1907327

Friedman, M. (1968). The Role of Monetary Policy, *American Economic Review*, 58, March, 1-17.

Gray, A. (2017) The World's Biggest Economies in 2017, World Economic Forum, https://www.weforum.org/events/the-jobs-reset-summit-2021

Granger, C. (1988). Causality, cointegration, and control, *Journal of Economic Dynamics and Control*, 12, (2-3), 551-559.

Hume, D. (1752). Political discourses. Edinburgh: Printed by R. Fleming, for A. Kincaid and A. Donaldson

Johansen, S., Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration – with Applications to the Demand for Money, *Oxford Bulletin of Economics and Statistics* 52, 169-210

Keynes, J. (1931). Essays of Persuasion, The Economy Report. https://www.economicsnetwork.ac.uk/archive/keynes_persuasion/The_Economy_Report.htm

Khan, R., Gill, A. (2010). Determinants of Inflation: A Case of Pakistan (1970-2007). *Journal of Economics*, 1, 45-51.

Maddala, G.S. (2001). Introduction to Econometrics. 3rd Edition, Wiley, New York.

Papi L., Lim, G.C. (1997). An Econometric Analysis of the Determinants of Inflation in Turkey, No 1997/170, IMF Working Papers, International Monetary Fund

Parry, R.T. (1999). The Role of the Federal Reserve in the Economy. Fed Focus: A Community Conference Fairmont Hotel, San Jose, California

Phillips, A. W. (1958). The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957, 283-299.

Quah,D.,Vahey, S.(1995). Measuring Core Inflation? *Economic Journal*, 105, (432), 1130-44

Radcliffe, B. (2019). Monetarism: Printing Money to Curb Inflation https://www.investopedia.com/articles/economics/08/monetarism.asp

Ricardo, D. (1817). On the Principles of Political Economy and Taxation. Works and Correspondence of David Ricardo Volume I, Cambridge University Press.

Simionescu, S. (2016). "The Identification of Inflation Rate Determinants in The USAUsing the Stochastic Search Variable Selection," CES Working Papers, Centre for European Studies, Alexandru Ioan Cuza University, 8(1), 171-181.

Svensson, L.E.O. (2000). Open-economy ınflation targeting. Journal of International Economics. 50,155–183.

Weidenmier, M. (2008). The Baring Crisis and the Great Latin American Meltdown of the 1890s, *The Journal of Economic History*, 68(2), 462-500.

World Tourism Organization (2005). WTO Report 2005. http://www.world-tourism.org/facts/menu.html

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

THE IMPACT OF FREQUENT TAX REFORMS ON CONSTRUCTION INDUSTRY IN SRI LANKA

Chandresekera A D D J[1], Waidyasekara K G A S[2] and Sirimewan D C[3]

Department of Building Economics, University of Moratuwa Sri Lanka[1,2,3]

dennisjayan8@gmail.com[1], anuradha@uom.lk[2], dianis@uom.lk[3]

ABSTRACT

The influential and the fast-spreading nature makes the construction industry a critical driver which foster the economic growth of a nation. Furthermore, it is evident that the economic growth is highly sensitive to the tax regimes and the tax policies. Correspondingly, taxation is regarded as an aspect which significantly impact the construction industry and the economic stability. The sudden and frequent nature of the current Sri Lankan tax practices are challenging the construction industry in many ways. Therefore, when reforming tax systems, the indirect and direct impact on the construction industry should be considered to minimise the effect on the entire economy. Thus, the lack of research on the impact of tax fluctuations on the construction industry has led this research to achieve the aim of investigating the direct and indirect effect of tax reforms on the construction industry.

The qualitative research approach was adopted for this research by using semi-structured interviews. Sixteen Semi-structured interviews were conducted from a sample selected with purposive sampling technique. The collected data were analysed using the code-based content analysis method. Through the findings it was evident VAT, income tax, withholding tax, NBT, CESS, PAL, PAYEE, CIFGL and stamp duty are the taxes which significantly impact on the construction industry. Further, the findings of the research revealed the current Sri Lankan tax

practices are lacking the salient features of a proper tax regime like certainty, predictability, stability, and transparency. Inadequate national policies regarding taxation were founded as one of the significant shortcomings. Furthermore, it was evident that even though the tax reforms were done aiming at improving the construction industry they have impacted the industry in an unseen and indirect manner. Therefore, the knowledge gap of the policymakers on the construction industry and the construction supply chain member's knowledge on the financial aspect of the tax systems should be improved to mitigate this issue. Also, it was found out from the research that different aspects of the construction industry like labour supply, material supply, investment, and cost are impacted due to sudden tax reforms. Further, this research presents suggestions that can be incorporated when reforming tax systems to overcome the various issues faced by current tax practices.

Keywords – Construction Industry, Tax Reforms, Tax Policies, Tax Systems, Sri Lanka

1. INTRODUCTION

The studies of Ozkana and Ozknab (2012) point out that the construction industry is the critical driving sector of any country since it has backward and forward linkages with more than 200 sub-industries or sub-sectors. According to the Central Bank of Sri Lanka (2019) the shutdown in the construction industry caused the other industrial activities to slow down in 2018. Similarly, the research findings of Rameezdeen and Ramachandra (2008) state that the construction industry and the economy of the country has a close relationship. The studies of Ibrahim et al. (2010), further reinforce this fact by stating that the construction sector is a critical section in the nation's economy since a country cannot grow if there is no infrastructure build to spur the economy. Further The literature findings of Samari, Esmaeilifar, and Shafiei (2014) state that the CI, which encompasses a workforce of 120 million people, contributes 8–10% of the global GDP by producing an annual output of US $4.6. Osei (2013), point out that the construction industry significantly contributes to the industrial output and the Gross Domestic Production (GDP) of a country.

According to the Annual Report (2018) issued by the Ministry of Finance state, due to the declining nature of construction, and mining and quarrying subsectors, the overall economic growth dropped to 3.2 percent in 2018 compared to 3.4 in 2017. The report further states, this is because the construction industry accounted for 6.8 percent of Gross Domestic Production (GDP) in 2018.

It is apparent from the findings of Osei (2013) that economic growth drives the construction sector positively by filling the infrastructural gap. Similarly, the research of Shehu et al. (2014) points out that the construction industry also encourages economic growth and development. Padovano and Galli (2007) state that high marginal tax rates negatively correlate economic growth, hence it is evident that tax changes which affect economic growth also affect the construction industry. Correspondingly it is evident from the studies of De Silva, Rajakaruna, and Bandara, (2005), that the construction industry in Sri Lanka is sensitive to government policies and tax policies.

Also, the findings of Mbusi, Mbiti, and Wanyona (2015) highlight that tax rate reduction by the government would boost the economy. The findings of Amirthalingam (2010) emphasise that most of the countries are frequently reforming tax structure to formulate a better tax policy with a view of increasing tax revenue. Also, the findings of Buchanan and Allan (2000) exhibit the importance of tax system to the construction industry by pointing out that tax policy and practice play a significant role in structuring construction employment. The findings of Briscoe, Dainty and Millett (2000) point out that the impact of UK government policy, which caused self-employment of the construction sector to shift in to direct employment. Further, the studies suggest that there are several practical issues such as high compliance cost, when implementing tax systems like Goods and Services charge to the construction industry (Sui Pheng & Loi, 1994).

There are several types of research carried out regarding the impact of tax reform on the economy in general (Yagen, 2015; Dale & Yun, 2002; Aaron & Gale, 1996; Yang, 2016). Even though there is less literature finding on the impact of tax reforms in the construction industry. Therefore, this study aims to identify the direct and indirect impacts of tax reforms on the Sri Lankan construction industry. Hence, this study is organised as follows: first, a literature review is presented on different taxes systems, which affect the cost of the construction industry and then direct and indirect effects imposed by tax changes on the construction project. Then justification of methods employed in collecting data. Finally, the results of the study are discussed with an outline of the implications for construction companies, and policy makers.

2. LITERATURE REVIEW

This section discusses literature review on the unique nature of the construction industry, the tax policies and practices related to Sri Lankan construction industry, and the effect on several aspects of the construction industry because of tax changes.

2.1 The unique nature of construction industry

The construction industry is exceptionally competitive (Agapiou & Notman, 1998). According to Abenayake (2008), the construction industry covers a sophisticated and comprehensive field of activities involving numerous practical skills and conditions, which vary considerably from one project to another. Furthermore, the research of Dubois and Gadde (2002) emphasis the complexity of the construction industry. The findings of Zou, Zhang, and Wang (2007) introduce, long period, complicated processes, abominable environment, financial intensity and dynamic organisation structures as significant features of the construction industry. The studies of Ozkana and Ozknab (2012) point out that the construction industry is the critical driving sector of any country since it has backward and forward linkages with more than 200 sub-industries or sub-sectors. Also, the literature findings of Osei (2013), point out that the construction industry significantly contributes to the industrial output and the Gross Domestic Production (GDP) of a country. Therefore, whatever happens to the construction industry, directly and indirectly, affects the other sectors and ultimately to the economy of the country (Lean, 2001; Rameezdeen and Nisa, 2006).

2.2 Tax systems and policies related to the Sri Lankan construction industry

According to Zagler and Durnecker (2003), tax structure has direct and indirect influences on the construction industry. Thereby, construction industry is considered to be one of the most complex, fragmented, schedule and resource-driven sectors (Memon, Rahaman & Aziz, 2011). Hence, it is essential to carry out a comprehensive analysis about the tax systems and policies, which relates to the CI. Sri lankan tax system is mainly divided into direct tax and indirect tax (Sri Lanka Tourism Development Authority, 2019).The findings of Amirthalingam (2010), emphasise the main aim of a tax reform is to formulate a better tax policy in the country. Correspondingly, the Fiscal Management Report (2019) states Sri Lanka has structured the tax system in a simple, equitable and efficient manner. Table 1 presents tax systems in Sri Lankan construction industry based on extensive literature findings.

Karim, Bouzahzah, and Touzani (2020) suggest that policymakers should get to know the insights of the country's economic situation before reforming the tax structure. Additionally, Slemrod and Gillitzer (2014) state that the complexity of a tax system makes it harder to reform. Similarly, Briscoe, Dainty, and Millett (2000) point out that implementing a new tax scheme would rise uncertainty in the construction industry.

Table 1- Recent Tax Policy Changes

2013	1. Registration Threshold on VAT and NBT was increased to Rs. 12 million per annum. 2. Introduction of VAT on wholesale and retail trade and liable threshold of registration was not less than 500Mn (including exempt supplies) for any consecutive three months in a year. 3. The threshold concerning partnership was increased to Rs. 1,000,000
2014	1. The maximum rate of income tax applicable to the employment of qualified professionals 16% 2. The liable threshold for registration of wholesale and retail trade reduced to Rs. 250 million
2015	1. Threshold on VAT and NBT was increased to Rs. 15 million per annum and the rate of VAT reduced to 11% 2. The liable limit for registration of wholesale and retail business reduced to Rs. 100 million 3. Fixed qualifying payment for employees was increased up to Rs. 250,000 4. The maximum income tax rate applicable to employment income for every employee was limited to 16% 5. The imposition of excise (special provision) Import or Manufacture of Liquor, Cigarettes and Custom Duty on Motor Vehicles instead of VAT and NBT 6. Super Gain tax was introduced as one-off payment, for any individual, company or group of company who has earned profits over Rs. 2,000 million in the tax year 2013/2014 will be liable to pay 25% of their profit.
2017	1. Inland Revenue Act No.24 of 2017

Source: Inland Revenue Department Sri Lanka

The findings of Gale and Samwick (2014) suggest that even well-designed tax policies do not have the potential to positively impact each and every industry in the same manner. The findings of Simo and Edwards (2008), exemplify that formulation of successful tax reform has to be followed by a complex process. This fact is further braced by the research of Owens (2006), which states that even though maintaining an ideal tax system is a challenging task, it is a continuous process of tax policy makers to constantly adapt tax systems to take account of changing economic, social and political circumstances.

2.3 Effect of tax reforms on the construction industry

The findings of Zagler and Durnecker (2003) emphasize that level and the structure of taxation can influence the long-run growth of an economy. Furthermore, the authors point out that taxes exhibit an indirect effect on economic growth; hence, the taxes may finance growth-enhancing

government expenditures (Zagler & Durnecker, 2003). Correspondingly, the findings of Turnovsky (1997) highlight that by introducing a more flexible tax scheme can balance the growth path of the economy. Similarly, Kneller, Bleaney, and Gemmell (1999) point out the structure of taxation can have a significant impact on economic growth. Therefore, Karim, Bouzahzah, and Touzani (2020) suggest that policymakers should get to know the tax system that is least favourable to economic growth before reforming the tax structure.

Accordingly, the literature findings emphasise that construction materials, labour supply, cost and investment are significantly affected due to tax reforms. The increase of construction material and labour price is a significant reason for frequent cost overruns in the construction industry (Oghenekevwe, Olusola, & Chukwudi, 2014; Perera et al., 2014; Chan et al., 2011). Correspondingly, Ayodeji (2011) illustrated that reduction of tax would result in cheaper construction materials and additional employment opportunities.

Furthermore, Devereux (2004) states that lower tax rate typically increases the incentive to invest. Nwannekanma (2017) states that the increase of these construction costs would lead to unemployment, lack of incentive for investors, skill reductions, and reduction of innovations. Adedokun (1999) determined that construction costs will increase, when taxes are increased, hence, contractors and material manufacturers will feel reluctant to commit themselves to additional capital expenditure on materials, labours, plants and equipment. Adi and Ni'am (2012) highlight labour is one of the significant elements in continuity and implementation of construction projects. Correspondingly, the literature findings of Mbusi, Mbiti, and Wanyona (2015) elaborate that proper government spending and tax policies can create employment. This fact is further elaborated by the findings of Teulings (2014) and Mbusi, Mbiti, and Wanyona (2015) which state that proper government tax and spending policy can avoid the reallocation of construction labour.

There are researches on factors affecting construction cost (Memon, Rahaman and Aziz, 2011; Azhar et al., 2008; Rahaman, Memon and Karim, 2013; Subramani, Sruthi and Kavitha, 2016). Some researchers address labour costs (Balushi & Raveendranath, 2015) while some researches focus on construction investment (Ozkana, Ozkanb, & Gunduzc, 2012) and the material cost (Rahaman & Memon, 2013). Even though there are less literature findings on impact of tax reforms on all of these aspects related to the construction industry. Since there is a literature gap it is essential to examine the effect of tax changes on the construction industry.

3. METHODOLOGY

Kumar (2011) elaborates that a research methodology is piloted to identify the systematic process which can be used to respond to the research problem and

questions. The qualitative approach can be incorporated when an in-depth analysis of the subject area is required (Thomas & Magilvy, 2011; Yin, 2009). Similarly, Yin (2013) suggests that the qualitative approach is suitable for the research, which depends on the perspectives, views, and beliefs of a group of people. The opinions, ideas, knowledge, and views of different key players in the construction supply chain are subjective. Hence, the qualitative research approach was selected in this study. Fink (2003) defines that the qualitative survey is suitable to explore the experiences of people. Furthermore, Yin (2019) states that the appropriate research strategy depends on the nature of the research question. Based on the literature gap identified in the literature review the research question of this study is "how does the construction industry is affected by tax reforms". Hence this research is required to gather opinions of key players of the construction industry. Fusch, and Ness (2015) state that an appropriate data collection method should be adopted after considering the nature of the research approach. Liamputtong (2009) elaborates that interviews are the most common data collection method in a qualitative approach. Cohen and Crabtree (2006), point out the degree of freedom in semi-structured interviews to express opinions rather than restricting to boundaries of a structured questionnaire as the main advantage of these types of interviews. Therefore, semi-structured interviews were incorporated in this research as the primary data collection.

Kapur (2017) states that successful research depends on the selection of the sampling method. The experiences, knowledge, and attitude of the clients, contractors, manufacturers, and suppliers of the supply chain are required for this research. Hence, a sample consisting of the experts of each field should be chosen as the sample. Therefore, the purposive sampling method was used to select the respondents to collect data. Also, the author stated that when deciding the size of the sample, parameters of interests of research should be considered (Kothari, 2004). Given all the facts cited above, four (4) respondents representing clients, contractors, manufacturers, and suppliers of the construction supply chain, which sums up to 16 respondents are chosen as the sample. The sample consists of chief quantity surveyors, project managers, chief accountants and finance managers and among them ten respondents had more than 20-year work experience and balance had more than 10-year work experience in the construction industry.

4. RESULTS AND DISCUSSIONS

The findings of the research are elaborated from the following sections.

4.1 Taxes which affect the construction industry

16 out of 16 respondents agreed that all of the taxes found in the literature have a direct or an indirect impact on the construction industry. It is apparent

that the impact depends on the nature of the tax. If the tax is transferable, the impact can be transferred. Therefore, VAT, CESS, PAL and stamp duty can be transferred. On the other hand, income tax, withholding tax, NBT and PAYEE cannot be transferred.

13 out of 16 respondents agreed that the current tax system in Sri Lanka is complex except for 2 respondents, who stated the only issue with the tax system is that it does not address the construction industry differently, therefore if there is a specific tax system dedicated for the construction industry it would be better. Moreover, 4(4) respondents among clients stated that the taxes related to the construction industry are of a complex nature, with the purpose of protecting various infant industries and products related to construction industry (ex: steel bars, tiles, PVC, etc.,). Furthermore, 10(16) respondents pointed out that the duplicating nature of taxes like NBT is the reason for the tax system to be complicated. Similarly, 13(16) respondents highlighted that the current tax system is highly unpredictable since many indirect impacts could be experienced, when taxes get reformed. Similarly, 3(4) respondents among suppliers pointed out that due to the complex nature of tax systems, there are disadvantages and advantages. Further 4(4) respondents among suppliers emphasised that these disadvantages peruse supply chain members to avoid paying taxes. Correspondingly, respondents pointed out it is hard to sell for a person, who is not paying tax no matter what cost leadership or strategies are followed. Similarly, 10(16) respondents elaborated that the unattractive and inefficient nature of the current tax system peruses the supply chain members not to pay taxes. Therefore,16(16) respondents further highlighted tax system should be simple and should trace everyone. Furthermore, 12(16) respondents pointed out that taxes are not equal for every supply chain member, some are entitled to unmerited tax benefits, therefore, the competition is not equal. Moreover, 4(4) respondents among manufacturers emphasised the need for a process to charge taxes from all the supply chain members and further pointed out that if the tax burden is distributed among every supply chain member, the tax rates also could be brought down.

Moreover, 16(16) respondents highlighted the need for a national policy for tax and further stated that the current tax policies differ with the change of political agendas, therefore, it would be better if long-term and short-term policies are incorporated. Similarly, 16(16) respondents illustrated, since there is no proper tax policy, people have no trust in the tax system. Even if a favorable tax change comes, the people may be reluctant to pay much attention to that. Furthermore, 3(4) respondents among manufacturers stated that the current taxes are hard to standardise and not straightforward, therefore the way of calculating various tax systems is complex. Similarly, 3(4) respondents among the suppliers emphasised since there are numerous taxes,

the current tax system is complex, even though, by the recent tax reforms, most of the tax rates are brought down, which has impacted the construction industry favorably. On the contrary, 13(16) respondents pointed out that taxes should be there but they should be reasonable.

4.2 Direct and indirect impacts of tax changes on construction projects

The respondents emphasised that if the impact of tax reform directly affects the principal construction process that impact can be identified as a direct impact. On the other hand, if a certain tax reform affects the core construction process in an indirect manner, such impacts are regarded as indirect.

Table 2- Direct and Indirect impact of tax changes

Direct Impact	**Respondents (16)**
Subsequent claims could happen because of the initial planning is challenged	15
Disputes and negotiation procedures could happen during the construction phase	16
Claimable taxes also have to be absorbed to cost due to tax liable threshold changes	14
Impact on temporary cash flow	14
The quality of the construction project could be compromised	15
Indirect Impact	
Complications when differentiating tax components from rate build up	15
High compliance cost when tax systems constantly change	16
Construction professionals would take time to adjust when tax changes happen	13
Downsising the labour force could happen	13
Impact on distributable profit	13

Source: Based on survey data

16(16) respondents agreed that there are direct and indirect effects on the construction industry because of tax reforms. Furthermore, 13(16) respondents pointed out that lower tax rates are generally favorable to the CI.

Correspondingly, 3(4) respondents among clients emphasised with the reduction of tax rates the cost of construction inputs and eventually the decisive construction cost would diminish. The argument of one of the clients among respondents was *"when such adverse tax reforms happen a shutdown, an increase of the contract period or downsizing of the labour force has to be done"* since the project will not be able to complete with the planned budget. On the contrary, 13(16) respondents argued that temporary cash flow is significantly affected by tax reforms. Even though 3(4) respondents among manufacturers underlined this effect on the cash flow is gradual. 14(16) respondents pointed out that the impact of tax can be mitigated through changes in legislation clauses. Correspondingly, one of the respondents among contractors described *"some projects are silent in this matter and in such situations the impact is high"*. A contradictory argument was highlighted by a respondent among clients, this mechanism would not account for tax escalations*, "either from hidden taxes because of changes in HS codes or restricting of certain material and imposing different taxes that come through gazettes and circulations".* Even though 13(16) respondents viewed that regardless of the fact that this mechanism would account for tax changes differentiating the imbued tax component from the rate breakdowns is challenging.

14(16) respondents pointed, with frequent tax reforms the particular inside tax system of a construction company has to be adjusted which escalated the compliance cost. Further 13(16) respondents explained that the government tax system incurs an extensive time to get adjusted accordingly the tax reform. Moreover, 3(4) respondents among clients argued that an additional cost has to be incurred to interpret a newly introduced tax. 3(4) respondents among the clients argued that distinguishing a tax which is comprised with in the rate is complicated. 13(16) respondents further highlighted that several practical issues had to be faced when differentiating NBT component from rate build ups with the recent reforms. Furthermore, transferable taxes becoming a cost because of tax evasion was identified as another impact. 3(4) respondents among suppliers emphasised that since taxes like NBT and withholding tax cannot be transferred if one party evades paying such taxes, other party has to bear it up as a cost.

Moreover, 14(16) respondents highlighted that construction supply chain members have to encounter several complications with the variation of tax liable threshold. 3(4) respondents among clients agreed to this view since supply chain members will fail to set off input VAT against output VAT if excluded from tax registration threshold. On the contrary, 3(4) respondents among contractors pointed out since VAT unregistered supply chain members do not include VAT components in price, would gain an unfair advantage. Moreover, 3(4) respondents among clients viewed that competitiveness issues

during competitive tendering could occur if supply chain members keep a high margin to bear up the effects of tax reforms.

4.3 Impact of tax reforms on various aspects of construction projects

Respondents highlighted, construction materials, labour supply, cost and investment are significantly affected due to tax reforms. Thus, based on respondent's views, the impact of tax reforms on these aspects of the construction projects are discussed in the following sections.

4.3.1 Impact on construction material

16(16) respondents agreed that there is a significant impact of tax changes on material supply. Accordingly, 12(16) the respondents argued that the impact of a tax contrition material depends on the ability to transfer that tax to another party. The respondents further highlighted that because the current tax practice does not trace entire supply chain members, some small-scale local suppliers, who are not registered for tax generally incorporate the tax to the price and this makes it impossible to claim those taxes. 4(4) respondents among clients viewed that the impact of a tax reduction or an exemption is on the temporary cash flow. Furthermore, 12(16) respondents highlighted that if tax rates excessively increase, complicated situations like price rescheduling and cash forecast issues have to be encountered. On the contrary, 13(16) respondents pointed out generally, when tax is reduced, the material costs also reduce accordingly, and because of this favorable nature, the selection pool and the verity of the suppliers would increase as well. 3(4) respondents among contractors argued that if pre ordered large quantities of materials are available, the expected price reduction of tax reforms would not occur.

The argument of some of 3(4) respondents among suppliers was that the impact of tax change on materials is determined by price escalations. Moreover,10(16) respondents highlighted that practical issues like outdated nature of BSR, lack of knowledge of central bank professionals, who is responsible for preparing the indices about the construction industry and the excessive time to prepare indices could be root causes to increase the impact on materials. Furthermore, the respondents pointed out that if the sample used when preparing escalations does not include a category of materials, which is overpriced due to incorporating the tax component by the above mentioned non-tax liable suppliers, it would result in increased material price. 14(16) respondents agreed that the effect of tax changes on construction material significantly affects, when importing. Accordingly, 16(16) respondents highlighted that custom duty, CESS, and PAL as the main taxes that affect imports. Moreover, 4(4) respondents among suppliers pointed out, in Sri Lanka, most of the construction materials are imported since taxes are higher compared to other countries. With regard to this view, 3(4) respondents

among contractors argued that the suppliers would be reluctant to import goods under an unstable and high tax regime. Furthermore, respondents stated it is a known fact that if a price of a material is increased by a substantial amount, the demand for it would be lower, whereby the suppliers would be forced to supply the goods to the customers at an increased price. With regard to all the above findings, it is apparent that the tax reforms have a significant impact on construction material supply.

4.3.2 Impact on construction labour

16(16) respondents suggested that the impact of tax on labour supply is not significant and it is of a rather indirect nature. Furthermore, the respondents identified that NBT, VAT, PAYE, and income tax have an indirect effect on labour supply. On the other hand,16(16) respondents suggested that withholding tax has a direct impact on labour supply. Correspondingly, (4) respondents among clients highlighted, increment of withholding tax would persuade the suppliers to withdraw since percentage deduction from the cash flow would be high. Furthermore, 13(16) respondents pointed out that labours will demand a higher remuneration with tax rate increase. Therefore, the contractors will have to increase the wage, which would ultimately impact the construction cost. The respondents extended the argument further by stating that labour would be naturally louvered to find remuneration in an environment with low income tax rates. It is apparent with regard to all the above mentioned facts that if there is a strict and unsettling tax policy in a country, the labour supply would be directly affected.

4(4) respondents among clients agreed that neither local nor foreign labour supply is affected due to tax reforms since generally the local labour supply depends on other trends like agriculture and the weather the foreign labour supply is affected by the regulations of the country. 16(16) respondents agree to the fact that through tax concessions the cost- effectiveness of labour supply can be optimised. Even though 12(16) respondents expressed a contradictory view since, in some projects, there are specific terms that foreign labor should be incorporated, therefore, in such projects, the impact on foreign labour supply is significant. Moreover, 3(4) respondents among the suppliers argued, labour-oriented contractors as a party, who significantly affected due to tax reform. The respondents highlighted the barrier, which would be imposed to carry out the project with a constant labour price as the reason. Furthermore, 12(16) respondents emphasised, labour suppliers would be reluctant to supply labor for construction, if the tax policy is not favorable and is uncertain. The respondent further emphasised, if the tax policy is not consistent throughout the project, the suppliers will be unable to supply labours for the same price agreed before and even the labour force would be scared in an industry with such tax complications.

4.3.3 Impact on construction cost

16(16) respondents agreed that the construction cost has the most significant effect of tax changes. Accordingly, respondents emphasised that the impact on construction cost depends on the ability for that tax to be transferred. Furthermore, the respondents further stated that if a tax cannot be transferred it has to be absorbed to the cost, which results in the cost component of that particular supply chain member to be increased. Therefore, respondents suggested that tax change directly or theoretically does not affect the construction cost. 4(4) respondents among clients exemplified that reduction of certain taxes like VAT and NBT might decrease the construction cost. The respondents further argued that problematic situations have to be encountered, when a tax like NBT is reformed since it is a tax, which is included in the rates.12(16) respondents highlighted that the impact of tax changes on construction cost depends on the incorporation of changes in legislation clause and the extent that tax reform is represented by price escalations. Therefore, the practical limitations of the escalation making process apply to this context as well. Correspondingly, 3(4) respondents among contractors argued that the cash flow of supply chain members are affected during the time it takes to prepare indices. Furthermore, respondents suggest, there are some taxes that does not come through legislation but incorporate from circulations. Similarly, 3(4) respondents among suppliers highlighted there are some tax changes that are not yet enacted but brought with a paper notice. Therefore, these kinds of taxes cannot be claimed under changes in legislation clause.

Furthermore, 16(16) respondents suggest the construction cost depends on how the end-user of supply chain is affected by tax reforms. 3(4) respondents among supplier's view that the manufacturers generally transfer the impact of most of the tax reforms to the suppliers, which leads the suppliers to transfer the impact to other supply chain members. Moreover, respondents suggest that the impact on construction cost depends to the extent the tax policy traces the supply chain members.13(16) respondent further viewed that since withholding tax is a tax, which has to be set off by income tax and if the sub-contractors are not paying taxes, there is no possible way for that sub-contractor to recover that tax. Therefore, there are instances, where the contractor has to absorb the withholding tax component. 3(4) respondents among suppliers agreed that the construction cost is likely to escalate with the tax rates. Furthermore, respondents emphasised the impact on the other aspects of construction ultimately reflects on construction cost. 12(16) respondents further exemplified, in a measure and pay contract, the client has to bear up the construction price increments resulting from tax reforms. In such situations the client will be forced to change a part of the project by bringing up value engineering proposals or has to downsize the labor force.

Therefore, it is apparent that the impact of taxes on construction cost, material supply and labour supply are interrelated.

4.3.4 Impact on construction investment

16(16) respondents identified construction investment as an aspect that is significantly impacted due to tax changes. Similarly, 3(4) respondents among the suppliers pointed out that taxes like withholding tax, which affect interest has a significant impact on investment. Accordingly, 14(16) respondents emphasised the construction industry is a highly competitive and low-profit margin industry, since if suddenly the tax regime gets changed, the people will be demotivated to invest. Similarly, 3(4) respondents among the clients highlighted that if tax rates are low in a certain industry the investors transfer their funds to that industry. On the other hand, if tax rates are high in the country, the inverters invest in other countries since they will not get the expected benefits from the investment. Furthermore,13(16) respondents pointed out that if tax rates are high, the demand for construction would go down, therefore, the investors will not get attracted to invest. 3(4) respondents among the contractors pointed out, if there are more taxes, people will get discouraged to invest in construction. Furthermore,16(16) respondents pointed out tax reform should be in a friendly manner to get a better return for people, when investing. Furthermore, 3(4) respondents among the contractors described that if the national policy and tax structure is not stable the foreign direct investment would get affected. Correspondingly, 14(16) respondents elaborated that if the investment does not come, the employment in the construction industry would get decreased dragging the entire economy to a depression. Finally, 13(16) of the respondents explained that not only the above-mentioned significant aspect but also every aspect and every person of the construction industry is affected by tax changes. Thus, the magnitude and the manner it affects differs from one supply chain member to another. The magnitude of impact depends on the supply chain member whether the impact could be mitigated or not.

5. CONCLUSION

The aim of this paper is to identify the indirect and the direct effect of sudden tax reforms on the construction industry. This study was carried out in Sri Lankan construction sector with 16 interviews of clients, contractors, suppliers and manufacturers. The findings of the semi-structured interviews identified the taxes, which affect the construction industry as well as the direct and the indirect effect on several aspects of the construction industry in terms of construction materials, labour supply, construction cost and investment. The findings highlighted that the main reason for the negative impacts of tax reforms on the construction projects was the current tax system does not account for the requirement of the industry. Furthermore, the findings

emphasised that even though the tax reforms seem favourable to the industry they have resulted in many other indirect aspects. Similarly, it was evident that the composite effect on construction material, labour and investment finally reflects on the construction cost. The essence of these findings was centered on whether the changes in legislation are incorporated or not. If this mechanism is incorporated most of the direct impacts on construction cost can be mitigated. Even though the study points out there are some complicated instances that even this clause does not affect. Therefore, the need for a better and stable tax culture was emphasised further from these findings. According to the research findings, it is apparent that there is a huge gap between the financial aspect behind taxation and construction. This is because most of the policymakers are not aware of the insights of construction while most of the construction experts are unaware of the economic aspect behind taxation. Therefore, this study attempts to bridge up this gap by identifying different tax systems' impact on the construction industry, drawbacks of current tax practices and direct and indirect impact of sudden tax reforms on the construction industry. Further this study can be utilized by industry practitioners to bridge up the gap of having lack of knowledge regarding the applicable tax systems to the industry. Similarly, the industry practitioners can grasp the maximum out of the taxes and reduce the effect of tax avoidance which would avoid other supply chain members being burdened with unnecessary taxes. Similarly, this study can be utilized by industry practitioners to act accordingly in situations which affect the construction industry in direct and indirect manner and take precautionary measures to mitigate such effects. The policy makers also can get an idea through this study of the unseen effects of tax reforms on construction industry when reforming taxes.

REFERENCES

Abeynayake, M. D. (2008). Special Features and Experiences of the. *Building Resilience* (pp. 1227-1236). Kandalama, Sri Lanka: University of Salford.

Adedokun, O. P. (1999). Nigerian Fiscal Policy; Nigerian Institute of Social Economic Research (NISER). Construction. *Journal of the Federation of Building and Civil Engineering Contractors in Nigeria, 6*, 10-15.

Adi, H. P., & Ni'am, M. ,. (2012). Improving skill's strategies of Indonesian construction labours to have global competitiveness. *Intrnational journal of Civil and Structural Engineering*, 150-157. doi:doi:10.6088/ijcser.201203013014

Agapiou, A., & Notman, D., (1998). The changing role of builders merchants in the construction supply chain. *Construction Management and Economics, 16*(3), 351–361. doi:doi:10.1080/014461998372376

Akintoye, A., McIntosh, G., & Fitzgerald, E. (2000). A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing and Supply Management, 6*(3), 159–168.

Amirthalingam, K. (2010). Indirect Taxation in Sri Lanka : The Development Challenge. *Economic Review, 36*(7), 11-15.

Amirthalingam, K. (2015, November 24). Importance and issues of taxation in Sri Lanka. *The Colombo Business Journal : International Journal of Theory and Practice, 8*(2), 112-150. Retrieved from https://mgmt.cmb.ac.lk/cbj/

Ayodeji, O. (2011). Effect of fiscal policy on Nigerian construction sector. *Journal of Surveying, Construction & Property, 2*(1), 1-10. doi:DOI: 10.22452/jscp.vol2no1.1

Briscoe, G., Dainty, A., & Millett, S. (2000). The impact of the tax system on self-employment in the British construction industry. *International Journal of Manpower, 21*(8), 596 - 614. Retrieved from http://dx.doi.org/10.1108/01437720010379501

Buchanan, J., & Allan, C. (2000). The Growth of Contractors in the Construction Industry: Implications for Tax Revenue. *The Economic and Labour Relations Review,, 11*(1), 46-75. doi:doi:10.1177/103530460001100103

Christopher, M. (1992). *Logistics and Supply Chain Management: Strategies for Reducing Costs and Improving Service*. London: Pitman Publishing.

Devereux, P. (2004). *Measuring Taxes on Income from Capital, in P. B. Sørensen (ed.), Measuring the Tax Burden on Capital and Labor, .* Cambridge: MIT Press.

Dreyfuss, E., & Shane, H. (2016, October). *R&D Tax Credit Changes Open Doors for Contractors* . Retrieved from Mossadams: https://mossadams.com/search-results?searchtext=tax+changes&searchmode=anyword

Dubois, A., & Gadde, L., (2002). The construction industry as a loosely coupled system: implications for productivity and innovation. *Construction Management and Economics, 20*(7), 621–631. doi:doi:10.1080/01446190210163543

Flanagan, R., Norman, G., & Worral, H. (1995). Trade performance of the UK building materials and components industry. *Engineering, Construction and Architectural Management, 2*(2), 141-163.

Gale, W., & Samwick, A. (2014). *Effects of Income Tax Changes on Economic Growth.* Brookings: The Brookings Institution and Tax Policy Center.

Gallagher, B. (2018, March 8). *Tax reform's positive Impact on the construction industry.* Retrieved from construction executive: https://constructionexec.com/article/tax-reforms-positive-impact-on--the-construction-industry

Ghoddousi, P., & Hosseini, M., (2012). Survey of the factors affecting the productivity of construction projects in Iran. *Technological and Economic Development of Economy, 18*(1), 99–116. doi:https://doi.org/10.3846/20294913.2012.661203

Hasan, N., & Tjaraka, H. (2019). Analysis of construction services tax law. *SYARIAH: Jurnal Hukum dan Pemikiran, 8*(2), 55-74.

Hicks, J. (2015, 7 12). UK head of government and public at Aecom. (general@Scapegroup.co.uk, Interviewer) Retrieved from https://www.scapegroup.co.uk/news/2015/10-policies-that-will-affect-construction-in-the-summer-budget

Ibrahim, A., Roy, M., Ahmed, Z. U., & Imtiaz, G. (2010). Analyzing the dynamics of the global construction industry: past, present and future. *Benchmarking: An International Journal, 17*(2), 232–252. doi:doi:10.1108/14635771011036320

Inland-revenue-department. (2019, 4 17). *Sri Lanka Inland revenue department*. Retrieved 3 22, 2020, from Sri Lanka Inland revenue department: http://www.ird.gov.lk/en/Type%20of%20Taxes/SitePages/Income%20Tax.aspx?menuid=1201

Joumard, I. (2001). *Tax Systems in European Union Countries- Economics department working papers, no. 301*. Organisation for Economic Co-operation and Development. Retrieved from http://www.oecd.org/eco/eco.

Karim, M., Bouzahzah, M., & Touzani, A. (2020). Tax Mix, Tax Reform and Economic Growth in Morocco: A Quantitative Analysis. *Journal of Economics and Public Finance, 6*(1), 44-56. doi:http://dx.doi.org/10.22158/jepf.v6n1p44

Keen, M., & Smith, S. (1996). *"The future value-added tax in the European Union", Economic Policy , Vol. 23.*

Kneller, R., Bleaney, M., & Gemmell, N. (1999). Fiscal Policy and Growth: Evidence from OECD Countries. *Journal of Public Economics, 74*, 171–190.

Kumar, R. (2011). *RESEARCH METHODOLOGY- a step-by-step guide for beginners* (3 ed.). New Delhi: SAGE Publication. Retrieved from http://www.sociology.kpi.ua/wp-content/uploads/2014/06/Ranjit_Kumar-Research_Methodology_A_Step-by-Step_G.pdf

Le-Hoai, L., Lee, Y., & Lee, J. (2008). Delay and Cost Overrun in Vietnam Large Construction Projects: A comparison with other selected Countries. *Projects: A comparison with other selected Countries*, 367-377.

Mbusi, E. T., Mbiti, T. k., & Wanyona, G. (2015). Monetary and Fiscal Policy Factors That Affect. *International Journal of Soft Computing and Engineering, 5*(5), 16-20. Retrieved from http://www.ijsce.org/wp-content/uploads/papers/v5i5/E2732115515.pdf

McNabb, K. (2018). Tax structures and economic growth: new evidence from the government revenue dataset. *Journal of International Development, 30*(2), 173– 205.

Minister-Of-Finance. (2019). *Fiscal Management Report 2019*. Department of Government Printing.

Mohamed, K., Mohamed, B., & Ahmed, T. (2020). Tax mix, tax reform and economic growth in Morocco. *Journal of Economics and Public Finance, 5*(1), 44-56.

Nicholson, A. (2019, 8 11). Armstrong Watson VAT director. (N. Regan, Interviewer) Times and Star. Retrieved from https://www.timesandstar.co.uk/news/17830135.tax-rules-change-affect-construction-industry/

Nwannekanma, B. (2017, 7 24). *The Guardian*. Retrieved from How to resolve fiscal policy impact on construction sector: https://guardian.ng/property/how-to-resolve-fiscal-policy-impact-on-construction-sector/

Osei, V. (2013). The construction industry and its linkages to the Ghanaian economy-policies to improve the sector's performance. *International Journal of Development and Economic Sustainability, 1*(1), 56-72.

Owens, J. (2006). Fundamental Tax Reform: An International Perspective. *National Tax Journal, 59*, 131-164.

Ozkana, F., & Ozkanb, O. G. (2012). Causal relationship between construction investment policy and economic growth in Turkey. *Technological Forecasting & Social Change*, 362-370.

Padovano, F., & Galli, E. (2007). Tax rates and economic growth in the OECD countries. *Economic Inquiry, 39*(1), 44–57. doi:doi:10.1111/j.1465-7295.2001.tb00049.x

Rahman, A. H., Rahim, F. H., Hamid, M., & Zakaria, N. (2005). Beyond basic: the potential role and involvement of the QS in public projects – an observation. *QS National Convention 2005; Sustaining the Profession – Towards Diversification*, (pp. 10-18). Kuala Lumpur, Malaysia.

Rameezdeen, R., & Ramachandra, T. (2008). Construction linkages in a developing economy: the case of Sri Lanka. *Construction Management and Economics, 26*(5), 499–506. doi:doi:10.1080/01446190802017706

Rathnayake, L. (2019). Application of recent tax changes in contract administration of construction contracts. *CCI magazine, 8*(2), 1-7.

Robson, M. (1994). The determinants of new firm formation in UK construction:Evidence from quaterly vat registrations. *International Journal of Economics of Business, 1*(2), 233-246. doi:10.1080/758516797

Shehu, Z., Endut, I., Akintoye, A., & Holt, G. ,. (2014). Cost overrun in the Malaysian construction industry projects: A deeper insight. *International Journal of Project Management, 38*(2), 1471–1480. doi:doi:10.1016/j.ijproman.2014.04.004

Simo, J., & Edwards, A. (2008). Developing Tax Policy in a Complex and Changing World. *Economic Analysis and Policy, 38*(1), 35-53.

Slemrod, J., & Gillitzer, C. (2014). *Tax Systems.* Cambridge, Massachusetts,London: MIT press.

Sri Lanka Tourism Development Authority. (2019, 2 30). Retrieved from Tax Schemes: http://www.sltda.gov.lk/node/167

Sui Pheng, L., & Loi, C., (1994). Implementation of the Goods and Services Tax (GST) in the Singapore Construction Industry. *Journal of Property Finance, 5*(3), 41–58. doi:doi:10.1108/09588689410078593

Teulings, C. N. (2014). Unemployment and house price crises: Lessons for Fiscal Policy from the Dutch Recession. *IZA Journal of European Labor Studies, 3*(20). doi: https://doi.org/10.1186/2193-9012-3-20

Turnovsky, S., (1997). Fiscal policy in a growing economy with public capital. *Macroeconomic Dynamics, 1*(30), 615-639. doi:doi:10.1017/s1365100597004045

UK-Government. (2010). *Tax policy making: A new approach.* London: HM treasury. Retrieved from https://webarchive.nationalarchives.gov.uk/20130102201052/http://www.hm-treasury.gov.uk/d/junebudget_tax_policy_making.pdf

Welsh-Government. (2018). *Tax Policy Framework.* Welsh Government. Retrieved from https://gov.wales/sites/default/files/publications/2018-10/tax-policy-framework.pdf

Wickramatillake, C. D. (2007). Measuring performance within the supply chain of a large-scale project. *Supply Chain Management: an International Journal, 12*(1), 52–59.

William, G., & Andrew, A. (2014). *Effects of income tax changes on economic growth.* The brookings institution and tax policy center.

Zagler, M., & Durnecker, G. (2003). Fiscal Policy and Economic Growth. . *Journal of Economic Surveys, 17*(3), 397–418. doi:doi:10.1111/1467-6419.00199

Zou, P. X., Zhang, G., & Wang, J. (2007). Understanding the key risks in construction projects in China. *International Journal of Project Management, 25*(6), 601–614. doi:doi:10.1016/j.ijproman.2007.03.001

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

CUSTOMERS' SATISFACTION TOWARDS BANK SERVICES: AN EMPIRICAL ANALYSIS IN THE PERSPECTIVE OF TRANSACTION COST

Madubashini H I[1], Ranatunga R V S P K[2] and Priyanath H M S[3]

Department of Economics and Statistics, Sabaragamuwa University of Sri Lanka[1, 3]
Center for Computer Studies, Sabaragamuwa University of Sri Lanka[2]

hewarathnageishara95@gmail.com[1], spkr@ccs.sab.ac.lk[2], piya@ssl.sab.ac.lk[3]

ABSTRACT

Acting as the driving force in the financial sector of Sri Lanka, the modern banking system plays a key role in the development of the trade and commerce sectors. In this context, the main purpose of this study is to examine the impact of Transaction Costs (TC) on customer satisfaction in bank services in both public and private sector which has not been adequately studied by scholars. The study was conducted using a sample of 152 bank customers both private and public sector banks as well as collected data through a structured questionnaire having face-to-face and telephony interviews. Partial Least Square Structural Equation Model was used to evaluate the data. The research explored four hypothetical relationships between four dimensions of TC and customer satisfaction of the bank services. The results indicated that there is a significant negative relationship between searching cost and customer satisfaction in both public and private banks. Negotiation costs of private banks have a significant negative effect on customer satisfaction. Although a significant negative correlation between monitoring cost and customer satisfaction in the public banks founded, there is no effect on private banks. Policy and enforcement costs of both public and private banks have a significant

negative relationship with customer satisfaction. The study finally found that the TC of public banks was slightly higher than private banks. Hence, the banking sector can enhance customer satisfaction and minimize TC by accelerating suitable strategies and efficient services through a suitable corporate plan.

Keywords – Bank services, Customer satisfaction, Transaction cost

1. INTRODUCTION

The banking industry has reached vital changes due to the implementation of innovative practices with Information and Communication Technology throughout the world, and Sri Lanka is no exception to such a situation. Therefore, it is one of the leading financial sectors in Sri Lanka as well as it plays a major financial role in the economy (Tharanikaran et al., 2017). According to the Central Bank of Sri Lanka (2018), the Sri Lankan banking system is the fastest growing and more complex service sector among others. The banking sector mainly depends on two objectives and the former is to increase the opportunities to customers by providing the customer requirements such as applying for accounts and loans, payment of bills, transfer money, and querying various information on their activities. The latter objective is to reduce the cost of banking operations especially by combining the technology (Al-Shbiel & Al-Olimat, 2016). A significant competition throughout the industry also can be seen and therefore, bankers who involved in the industry should attempt to provide more values to the customers and it is developing as one of the major aspects which significantly facilitate firms to face the gravity of competition as well as provide different services among competitors especially, in the banking sector (Al-Shbiel & Al-Olimat, 2016; Keneth & Jane, 2013). This value creation directly focuses on customer care and satisfaction with bank services because customers are the major building block (Bena, 2010; Montazemi & Qahri-Saremi, 2015). Therefore, in the competitive world customer satisfaction is the area where all organizations are focusing on. As well as it is customer satisfaction that will decide whether the organizations will survive in the market or not.

Howard & Sheth (1969, p. 145) had defined customer satisfaction: "the buyer's cognitive state of being adequately or inadequately rewarded for the sacrifices he has undergone." Customer satisfaction factors in the service industry are different from any other industry. According to Eggert & Ulaga (2002), evaluating such customer satisfaction in the banking sector is been increased and therefore, it became a major research area and consequently, it is a multidimensional aspect that is widely used in different contexts (Bharadwaj & Mitra, 2016; Kumar, 2016).

In the complex socio-economic environment, customers expect to save their financial, material, labor, and time cost as much as possible by using alternatives (Kaleem & Ahmad, 2009). Nevertheless, customers in the banking sector have been engaged with some extra cost which is due to incompleteness of employee performance and various inefficiencies (Meramveliotakis & Milonakis, 2010). According to Williamson (1979) people are bounded rational due to the scarcity of information and therefore, opportunism appeared in the transactions. The opportunistic behavior distributes the hazards to the transaction parties and avoiding these hazards increases the cost of transactions. Financial, material, labor, and time cost for searching detailed information about different bank services, contacting with banks, negotiating with banks, and maintaining bank activities are called TC of the bank services (Fox, 2007). Some factors such as poor conditions in the banks especially in the public sector, lack of information, shortcomings in outdated technical tools, employee ethics, market weaknesses in service delivery affect to increase the cost in the banking system (Central Bank of Sri Lanka, 2018; Wanninayake & Dissanayake, 2007). Mostly, people move to the informal sector because the cost of borrowing is high in banking systems (Anjalika & Priyanath, 2018). As well as customers are discouraged by bank deposits due to travel costs and time off (Ladman & Jerry, 1984).

The banking sector must understand how to reduce costs by using specific tools, materials and devices to enhance the efficiency of bank services. Therefore, this study attempts to understand the concept of TC minimization, a profile that has not been covered by studies especially in the Sri Lankan context, which enables the banking industry to create greater interconnectedness and greater cognitive value in the customer perspective.

Theoretically, it is important to study the costs of the transaction mixing variables such as TC, customer satisfaction, and bank services. Most of the findings (Yasuda, 2005; Frank & Henderson, 1992) considered how TC affects several industrial sectors but empirically, there are not enough studies examined the impact of TC on bank services' effect on customer satisfaction. Therefore, this study aims to explore how the TCs of bank services affect customer satisfaction in both public and private sector banks in Sri Lanka. The article adopts the following outline in order to accomplish this goal. The next part integrates the literature review and synthesizes the research model. Subsequently, the material and methodology are described and the empirical findings are discussed. Finally, the study will address key observations, theoretical and practical consequences, as well as some research weaknesses and potential directions for future research.

2. LITERATURE REVIEW

Researchers who empirically studied the customer satisfaction especially, in the banking sector considered several dimensions. The recent studies have mostly attempted to reveal the relationship between technology used in the banks like internet banking and e-banking and the customer satisfaction of bank services (Bena, 2010; Ejigu, 2017; Kombo, 2015; Kundu & Datta, 2015; Mobarek, 2007). Some other researchers like Chochol'áková, Gabcová, Belás, & Sipko, (2015) and Kaura, Prasad, & Sharma (2015) examined customer satisfaction which depends on the customer loyalty and type of banks as public, private, and foreign. Lopez, Kozloski & Rampersad, (2007) empirically tested the relationship between ethnicity and customer satisfaction. However, the scarcity of scholarly articles on cost-based approach, especially direct relationship between customer satisfaction and TC is an empirical gap found in the literature.

Customer Satisfaction: When building relationships with customers, satisfaction characterizes as the foundation. Satisfaction is a feeling generated by customers because of fulfilling their expectations (Kotler, 1997). When services provided in a quality manner, it upgrades customer satisfaction, and business organizations launch their researches or developments to this profile to enhance the competition level in the market space (Heskett, Sasserjr & Hart (1990). Moreover, according to Hom (2000) and Perera & Priyanath (2018), satisfaction is the experience or motivation to buy back into a product or service that is in the mind of the customer or triggers a repurchase. Customer satisfaction defined by Anderson, Fornell & Mazvancheryl (2004) said that it is an evaluation process that a product or service consumes over a long period. Whether it is a product or services which go beyond the customer expectations, it determines customer satisfaction (Zairi, 2000).

Customer satisfaction with a bank is a long-term positive attitude in the customer and also it is the customer's perception of a bank's continuous services and its performance (Kombo, 2015). Customer satisfaction under the services can be measured by the confidence of service, fast delivery, protection of service, employee activities, and comfortable access (Anjalika & Priyanath, 2018; Habibi, et al., 2013). According to Hoyer & Maclnnis (2001), emphasize that feeling like the happiness of acceptance of delight services. Accelerating of facilitating in bank services conduct based on the satisfaction level of the customer and also it is built up by favorable working conditions of the service place (Mihelis, et al., 2001). When customer satisfaction declines, customers withdraw from banks due to their inability to retain customers, which also has a profound effect on the future growth of the business as well as dissatisfaction is a significant factor that drives customers away. Some previous researches have looked at the factors that determine

customer satisfaction, and it depends on the culture of different countries and the customer's view of service. According to studies by Hokanson (1995), fast and efficient service, business confidentiality, banking board friendliness, billing accuracy, service quality, and timeliness affect customer satisfaction. According to Almossawi (2001), the customer is more concerned with the ease of the transaction than the reputation of a bank which means that there are less TCs. Under this context, the customer pays close attention to factors such as the convenience of parking, convenient location, and ATM 24 hours a day. Gerrard & Cunningham (1997) emphasize that customer satisfaction was reduced due to the reduction in the quality of the banking service and the poor quality of service. Customer satisfaction is the result of a customer's understanding of the outcome of a transaction or relationship compared to the price and acquisition cost of a particular product or service (Fraering & Minor, 2006; Perera & Priyanath, 2018). Service quality is an engine of the successive business performance and also in the banking sector, banks should henceforth improve the quality of service to provide outstanding service in current, it will be even better for future (Ejigu, 2017).

Bank Services: Kotler (2003) has defined services as an intangible action provided by one to another and it may or may not be connected to a physical object and also service can be an intangible act generated by individuals or machines, or both to create a better perception among users. While services are carried out jointly by service provider and service gainer, service gainer is the person who estimates their perception and value (Rao, 2007). A service is an interaction, an intangible activity that always happens (Gronroos, 2000). A comprehensive analysis of the services shows that it is a non-physical or non-construction product where its value increases in terms of convenience, timeliness, and hygiene. According to Quinn, Baruch & Paqette (1987), the service contains essential elements for people, which are elementary to very sophisticated such as food, clothing, sleep, banking, sports, telecommunication, etc.

Banking is a customer-focused service sector, and due to intense competition, customer satisfaction has become the most important aspect of any banking business (Munusamy, Chelliah & Mun, 2010). Bank services is a company that provides financial intermediary services and It covers a wide range of financial services, including savings and payment services, and represents a wide range of activities in the economy (Rose & Hudgins, 2008). Generally, banking functions include cash creation, payment mechanism, savings, loan extension, foreign financial facility, securities, and brokerage services. In global banking, financial services span a wide range, with equity transactions occurring through credit, and bank services as intermediaries and liquid financial instruments, bond equity affiliations, investment management, consulting services, and insurance services (Heffernan, 2005). Bank services

have gone into financial diversification, such as selling housing loans, mortgages, personal consumption loan funds, and trustees, as emerging financial products to win over the consumer (Heffernan, 2005). Also, internet banking, smart payments, international remittances, have been introduced today and these are the services that have been enhanced with the advancement of technology (Koch & MacDonald, 2006).

Transaction Cost: The concept of TC first introduced by Ronald Coase in 1937 further concluded and said there is some additional cost other than the production cost for searching relevant prices, negotiating, and making a contract (Coase 1992, Coase 1988, Coase 1960). Another contribution made by Williamson (1985) has developed the theory called Transaction Cost Economics by introducing the economic actors and their activities as behavioral assumptions such as opportunism and bounded rationality and determinant factors such as asset specificity, uncertainty, frequency. This theory generally examined the customer-supplier relationship in the context of a contractual arrangement and it introduced this entire relationship associated with cost called TCs such as costs of searching information, negotiation with partners, contract administration and monitoring, and finally, enforcement (Artz, 1999; Heide & Stump, 1995; Melese & Franck, 2005).

TC include all of the costs related to doing transactions in the businesses and it has been divided into two and the former is ex-ante TC or search and contracting costs as well as the latter is ex-post contracting costs, or monitoring and enforcement costs (Dyer & Chu, 2003; Hennart, 1993; North, 1990; Williamson, 1985). According to Dyer (1997, p. 536) explained, "search costs include the costs of gathering information to identify and evaluate potential trading partners".

The search cost has been divided into two as external and internal. External cost includes financial expenditure for obtaining information about the partners, and the opportunity cost of the time period spent for searching. Contracting costs are related to making agreements to negotiate the transaction (Dyer, 1997; Dyer & Chu, 2003). The monitoring costs relate to observing the agreement to confirm that each party fulfills the necessary requirements of the predetermined agreement. Finally, the enforcement cost associated with ex-post bargaining and sanctioning which influences the transaction partner who does not follow the instructions according to the predetermined agreement (Dyer, 1997; Dyer & Chu, 2003). These costs included many everyday forms such as transport, meetings, sales calls, postages, bidding rituals, and their primary objective is to execute the transaction of goods and services (Dyer & Chu 2003; Heide & Stump 1995; Huimin, David & Zhuofu, 2013).

3. CONCEPTUAL FRAMEWORK AND HYPOTHESIS

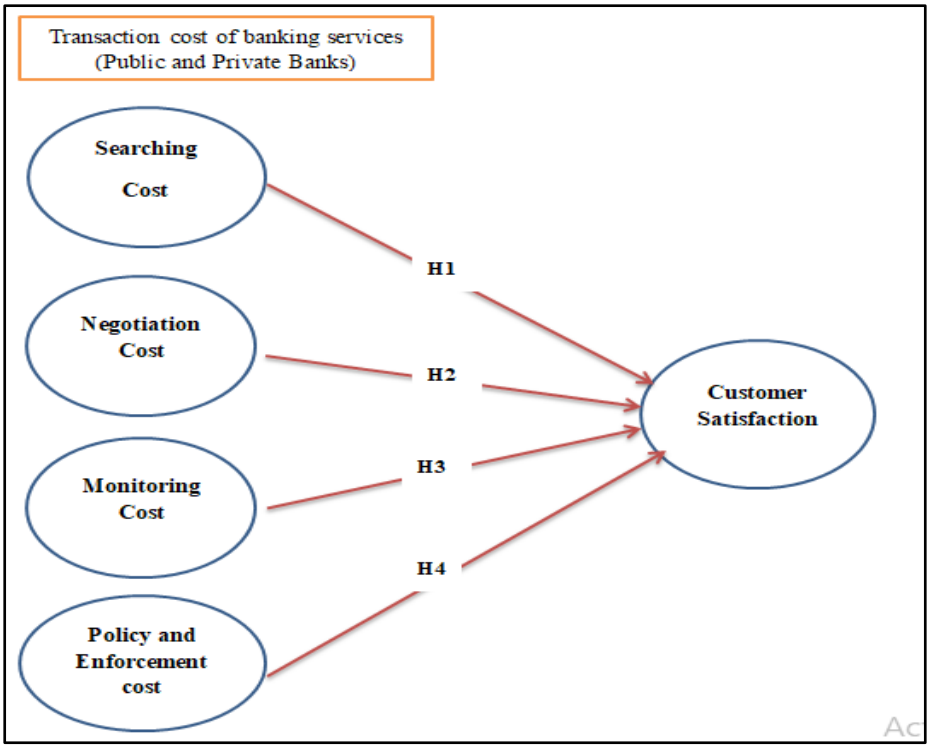
This study is primarily intended to study customer satisfaction towards bank services perspective to TC. Many customers abandon traditional banking methods due to the high costs and try to reduce those costs through more convenient subscription services (Mobarek, 2007). Customer satisfaction is one of the most important factors in enhancing the performance of a bank as well as any business (Keisidou, Sarigiannidis, Maditinos & Thalassinos, 2013). Therefore, a bank has the potential to enhance its reputation as well as its profitability by reaching out to the customer on cost-reducing services that increase customer satisfaction. The customer should consider opportunity cost in addition to financial costs, and they mainly consider how TCs arising from bank services affect customer satisfaction. The conceptual framework provides a site map for this research. In there, two variables can be identified such as the independent variable and the dependent variable. Figure 1 shows that the adoption of customer satisfaction considers a dependent variable in the current study and TC of the bank services considered as independent variables.

Customer satisfaction is reflected from five items such as personnel of the bank, products, image of bank, service, access (Mihelis, et al., 2001; Felix, 2015). While TC is reflected from four dimensions searching cost, negotiation cost, monitoring cost, policy, and enforcement cost (Rahayu, 2015; Fox, 2007; Anand, 2008) for the bank services. The conceptual framework in figure 1 illustrates the variables that affect the TC of bank services to customer satisfaction.

Searching cost of bank services and customer satisfaction: Haffernan (2005) emphasized that clients always spend money to find quality services and that there is a strong connection. Wruuck, Speyer & Hoffmann (2013) emphasized that there is a financial incentive to take out a real estate loan and that extensive information should be gathered before making a purchase and that additional effort may be required.

Rural areas charge very high interest rates due to a lack of information, where customers are reluctant to apply for loans (Ahmed, 1999). Bebczuk (2003) studied a lending business and the borrower and the lender established a loan contract and the searching cost are positively affected by the lack of proper information. Goldman (1978) presented in information theory; it has been suggested that the cost of information affected the lender until the marginal cost equals the economic benefit of obtaining additional information. Therefore, the study hypothesizes that;

H1: Searching cost of bank services has a negative impact on customer satisfaction.



Source: Developed by Researcher, 2020

Figure 1: Conceptual Framework

Negotiation cost of bank services and customer satisfaction: Unsatisfied customers who have been left are difficult to serve and more cost spend for switching them to the banks again (Coyles & Gokey, 2005). Retail banking today applies the price factor where the consumer is also strongly tempted to pay the cost where it is directly affected. The consumer is less knowledgeable about the purchase of a particular product or service and it positively affects the contract cost (Wruuck, et al., 2013). Krawcheck (2012) emphasizes that there expectation between customer and supplier creating the dissatisfy feeling beyond them. But a customer finds it hard to turn to competition because of the learning costs, psychological, transactional, and contractual effects (Farrell & Klemperer, 2007). The lending and borrowing of banks consist of two difficulties and consequently, it has been suggested that bank lending and borrowing are based on contractual transaction-level data and that it mainly generates costs (Carey, Prowse, Rea & Udell, 1993). The lack of collateral and the high cost of concluding agreements on loans to low-income earners depicted higher dissatisfaction (Rhyne, 1998). Thus, the study predicts that:

H2: Negotiation cost of bank services has a negative impact on customer satisfaction.

Monitoring cost of bank services and customer satisfaction: Burnham, Frels & Mahajan (2003) emphasized customers who use a self-service banking environment have a direct impact on start-up cost, maintenance costs, and bill payment cost. It has been suggested that maintaining a cost-effective interaction with customers has a vital effect on their default satisfaction (Davidow, 2003). Nitsch & Santos (2001) studied the Grameen bank customers and emphasized that hidden charges were levied on the customers. According to the study, there is additional paperwork cost, transportation, and accommodation, reception cost occurs by customers. Empirical findings of Bonfim, Dai & Franco (2018) have suggested that it does not support increasing permanent bargaining power or reducing the oversight cost of banks. Hubbard, Kuttner & Palia (2002) emphasized that many firms face significant costs in switching lenders and thus provide support for the bank lending channel of monetary transmission. Therefore, the study hypothesizes that;

H3: Monitoring the cost of bank services has a negative impact on customer satisfaction.

Policy and enforcement cost of bank services and customer satisfaction: Delis, Staikouras & Tsoumas (2019) conducted research and established the hypothesis that assumes the announcement of formal compliance measures promotes the supervision and discipline of depositors' withdrawals. According to Diamond's (2004) study, legal systems with expensive or inefficient contract enforcement are difficult. It is suggested that if the lenders do not enforce, there will be an incentive for the borrowers to misbehave. If the agreed remedies do not benefit the lenders then they will not enforce their agreement Mitchell (1993). La Porta & Lopez-de-Silanes (1998) examined that contract enforcement may be costly or inefficient due to high costs and said that it has a strong influence on the legal system in credit transactions. Thus, the study predicts that:

H4: Policy and enforcement cost of bank services has a negative impact on customer satisfaction.

4. METHODOLOGY

The deductive approach has been employed and the method was quantitative in order to study the research problem. Primary data were used in the analysis to evaluate the hypotheses. The target population in this study is the bank customer in the Colombo district. Due to the Covid-19 pandemic situation, the sample required for the study was limited to the bank customers in

Maharagama Divisional Secretariat Division (DSD) which was selected randomly from Colombo District. Seven Grama Niladhari Divisions were selected from the Maharagama DSD using the lottery method. According to Kock and Hadaya (2018) and Ranatunga, Priyanath, and Meegama (2020), 'Inverse Square Root Method' has been used to determine the sample size and hence, 152 banks customers who actively engage with banking activities with both public and private banks were selected from such Grama Niladari Divisions to the survey as the sample based on a convenience sampling method. Data collected by using a survey method having face-to-face and telephony interviews with the selected bank customers using a structured questionnaire. In developing the 7-point Likert scales structured questionnaire, the study used two steps procedure. Initially, a pool of items of each dimension was generated which includes reviewed empirical literature published in the cited journals and carefully selected items for the structured questionnaire since objects were more important for calculating the basic dimensions of the constructs. Furthermore, prior to the main questionnaire test, a pilot survey was conducted.

According to this study, Confirmatory Factor Analysis (CFA) is used for determining the hypothetical relationships by using the Partial Least Square Structural Equation Modeling (PLS-SEM) which is a statistical analysis used to analyze the relationship between independent and dependent variables as well as can evaluate more than one construct at the same time. In a structural equation model, there are two sub-models; the inner model specifies the relationships between independent and dependent latent variables, while the outer model specifies the relationships between the latent variables and their indicators observed. Demographic data and dimension-wise customer satisfaction and TC of bank services were analyzed by using SPSS software.

The data collected from the study is equally divided into two sections applicable to public and private banks. Customer satisfaction is the dependent variable and the independent variable is the TC of bank services. The dimensions of the independent variable suggested by the literature such as searching cost, negotiation cost, monitoring cost, policy, and enforcement cost were employed (Priyanath, 2017; Rahayu, 2015). Five latent variables created for personnel of the bank, products, Image of the bank, service, and access (Mihelis, et al., 2001; Felix, 2015) as that determine customer satisfaction.

In the first-order analysis, the latent variable was created for the dependent variable and calculated the reliability and validity of the construction. Second-order analysis calculated the validity and reliability using the independent variables and latent variables constructed by the first-order analysis. The second-order analysis measures the reliability and validity of the variables, respectively, with convergence validity and discriminant validity. Collinearity

issues assessed the efficiency of the structural model, and evaluation involves examining the significance of the hypothesized relationships, coefficient of determination (R2), f Squared (f2), Predictive Relevance (Q2). Finally, the model checked for the moderate influence of savings and credit programs on the relationship between TC and customer satisfaction.

5. RESULTS AND DISCUSSIONS

Based on the PLS-SEM measurement model, two steps were taken to ensure the validity and reliability of the measurement model. Validity and reliability scores between questionnaire items and lower constructs were determined in the first step (first-order analysis). In this review, two reliability tests and two validation tests were carried out. In first-order analysis indicator reliability and internal consistency, reliability were examined between indicators and questionnaire items relating to the reliability of the constructs, while the convergence validity is conducted. The standardized factor loadings above the minimum threshold criterion 0.7 are confirming the reliability of the first-order reflective build indicator.

In addition, further indicates that at the significance level of 0.05, all factor loadings were statistically significant. The study initially assessed the validity and the reliability of five constructs (personnel of the bank, products, the image of the bank, service, and access) at the first-order level, it is also represented that the outer loading of all those indicators is more than 0.7 values. The statistical value of all constructions is higher than 2.58, indicating that constructions in a 99 percent significant level.

Table 1: Analysis of the Indicator Reliability

Questionnaire Item	Public Banks		Private Banks	
	Outer Loadings	T-statistic	Outer Loadings	T-statistic
Customer Satisfaction				
Personnel of the bank				
1. There is a well-informed and experienced staff in the bank	0.886	22.939	_	_
2. Responds efficiently to customer issues	0.874	18.949	0.906	30.125
3. There is good communication and cooperation with customers.	0.926	66.318	0.950	70.140
4. Employees are friendly with customers	0.854	19.930	0.892	29.367

Products				
1. The bank offers a wide range of services	0.869	35.018	0.786	14.013
2. Minimum repayment problems	0.770	9.372	0.755	6.573
3. The cost of the services provided by the bank is minimal	0.757	10.232	0.698	8.207
4.The bank provides customer-specific services (Leasing, Factoring, Banking assurance)	0.833	16.913	0.890	29.903
Image of the bank				
1.The bank provides a reliable service	0.913	26.395	0.936	56.936
2.The bank services are technically superior	0.858	18.683	0.878	11.396
3. The bank has the ability to meet the needs of prospective customers.	0.920	29.447	0.885	12.338
Service				
1.The bank offers interesting services	0.823	21.500	0.880	32.554
2.The time it takes to wait in line and on the phone is minimal	0.761	9.878	0.856	19.574
3.Provides services information in a way that customers can understand	0.857	23.230	0.845	11.505
4. The complexity of service processes is very low.	0.869	27.355	0.874	31.618
Access				
1. Can be satisfied with the expansion of the bank	0.863	29.055	0.969	169.500
2. Bank branches can be satisfied with the location	0.860	15.385	0.789	11.017
3.Minimize inconveniences in using the services (Strikes, damaged ATM)	0.772	12.474	0.969	169.500

Source: Survey Data, 2020

Table 2 shows that the Cronbach's alpha of all constructs was greater than the required value of 0.7 and it indicated composite reliability of each construct and it was greater than the recommended value of 0.7. As well as the Average Variance of Exacted (AVE) was higher than the required value of 0.5 for each construct. These two measures confirm the convergent validity of these models.

Table 2: Composite Reliability and Convergent Validity

	Public Bank			Private Banks		
	AVE	**Composite Reliability**	**Cronbach's Alpha**	**AVE**	**Composite Reliability**	**Cronbach's Alpha**
Access	0.694	0.872	0.779	0.834	0.938	0.897
Customer Satisfaction	0.462	0.939	0.929	0.393	0.918	0.904
Image of the bank	0.805	0.926	0.878	0.810	0.928	0.883
Personnel of the bank	0.784	0.936	0.908	0.840	0.940	0.904
Products	0.654	0.883	0.823	0.709	0.879	0.795
Service	0.686	0.897	0.849	0.747	0.922	0.887

Source: Survey Data, 2020

According to Fornell & Larcker (1981), the square root of AVE in each latent variable can be used to establish discriminant validity where, if the diagonal values are larger than other correlation values among the latent variables. Accordingly, Table 3 shows the validity of the model is confirmed by both private and public banks in this analysis.

Table 3: Discriminant Validity of First Order Constructs (Fornell-Larcker Criterion)

Public Banks	**Access**	**Image of the bank**	**Personnel of the bank**	**Products**	**Service**
Access	**0.833**				
Image of the bank	0.595	**0.898**			
Personnel of the bank	0.545	0.519	**0.885**		
Products	0.553	0.567	0.603	**0.808**	
Service	0.526	0.501	0.577	0.532	**0.828**
Private Banks					
Access	**0.914**				
Image of the bank	0.566	**0.9**			
Personnel of the bank	0.348	0.466	**0.917**		
Products	0.344	0.345	0.441	**0.842**	
Service	0.505	0.472	0.336	0.387	**0.864**

Source: Survey Data 2020

In second-order analysis indicator reliability and internal consistency reliability were examined between indicators and latent variables corresponding to the reliability of the constructions and, for the validity of the constructions, Convergence validity and Discriminant validity were considered. Standardized factor loadings were greater than 0.7 for all the constructs provided in Table 4 and loading factors were significant at a 0.05 significance level, indicating the reliability of the predictor.

Table 4: Analysis of the Indicator Reliability (Second Order Constructs)

Questionnaire Item	Public Banks		Private Banks	
	Outer Loadings	T-statistic	Outer Loadings	T-statistic
Analysis of Second order construct				
Access<- CS	0.796	17.039	0.810	22.721
Image of the bank <- CS	0.793	10.333	0.827	16.909
Personnel of the bank <- CS	0.815	17.326	0.625	4.917
Products <- CS	0.829	15.467	0.649	4.653
Service <- CS	0.767	11.823	0.743	10.96
Searching cost				
1. A significant amount of money is spent for search information about deposit or loan demand, supply, interest rates and other benefits.	0.814	17.547	_	_
2. There is a significantly higher cost for information communication about deposits or loans.	0.858	18.238	_	_
3. Disclosure of information about loans, deposits and other services involves significant traveling costs.	0.844	21.005	_	_
4. Bank takes a considerable amount of time to get information about loans and deposits.	0.740	10.584	1.000	

Negotiation cost				
1. A considerable time to handle legal matters and negotiate with the bank to decide on deposits or loan services.	0.937	3.736	_	_
2. A considerably higher amount of traveling cost to handle legal matters and negotiate with bank to determine information about deposits or loan services.	0.788	2.547	_	_
3. A considerably higher amount of cost for communication to handle legal matters and negotiate with bank to determine information about deposits or loan services.	_	_	1.000	
Monitoring cost				
1. Have to spend a considerable amount of money to monitor activities that are carried out in accordance with the agreements entered into with the bank	0.832	12.141	0.736	2.206
2. Have to spend a considerable time to monitor activities that are carried out in accordance with the agreements entered into with the bank	0.846	14.594	0.968	3.430
3. Have to spend a considerable amount of travelling cost to monitor activities that are carried out in accordance with the agreements entered into with the bank	0.853	10.049	0.762	2.285

4. Have to spend a considerable amount of communication cost to monitor activities that are carried out in accordance with the agreements entered into with the bank	0.796	5.471	_	_
Policy and enforcement cost				
1. Have to spend Significantly higher expenditure for resolve transaction disputes, service charges and taxes levied by the bank for loans and deposits.	0.823	10.198	0.927	38.972
2. Have to spend considerably higher time to resolve transaction disputes, service charges and taxes levied by the bank.	0.888	35.976	0.935	56.821
3. Have to spend Significantly higher travelling cost for resolve transaction disputes, service charges and taxes levied by the bank.	_	_	0.801	14.833
4. Have to spend considerably higher communication cost for resolve transaction disputes, service charges and taxes levied by the bank.	_	_	_	_

Source: Survey Data, 2020

According to second-order analysis, Table 5 shows that the Cronbach alpha was higher than the required value of 0.7 and that the composite reliability for all the constructs was higher than the recommended value of 0.7 and hence the convergent validity of constructs was verified by the findings. Tables 5 show that the AVE was higher than the necessary value of 0.5 for each construct, indicating convergent validity.

Table 5: Composite Reliability and Convergent Validity (Second Order Constructs)

	Internal Consistency				**Convergent validity**	
	Public Banks		**Private Banks**		**Public banks**	**Private Banks**
	CR	**CA**	**CR**	**CA**	**AVE**	**AVE**
Access (LAC)	0.872	0.779	0.938	0.897	0.694	0.834
Image of the bank (LIM)	0.926	0.879	0.927	0.883	0.805	0.810
Personal of the bank (LPE)	0.936	0.909	0.940	0.904	0.784	0.840
Products (LPR)	0.883	0.824	0.865	0.790	0.654	0.617
Service (LSE)	0.897	0.849	0.922	0.887	0.686	0.747
Monitoring cost (TMO)	0.899	0.853	0.866	0.818	0.692	0.687
Negotiation cost (TNE)	0.856	0.688	1	1	0.750	1
Policy and enforcement cost (TPO)	0.846	0.639	0.918	0.865	0.733	0.791
Searching cost (TSE)	0.888	0.832	1	1	0.664	1

Source: Survey Data, 2020

The results further indicate that the square root of AVE was greater than all the correlations of the constructs as demonstrated in Tables 6. According to results confirmed that the discriminant validity of all the second-order was adequate to interpret the relationships among constructs.

Table 6: Discriminant Validity of Second Order Constructs (Fornell-Larcker Criterion)

Public banks	**Customer Satisfaction**	**TMO**	**TNE**	**TPO**	**TSE**
Customer Satisfaction	**0.800**				
TMO	-0.361	**0.831**			
TNE	-0.164	0.176	**0.866**		
TPO	-0.814	0.197	0.117	**0.856**	
TSE	-0.660	0.243	0.120	0.463	**0.815**
Private banks					
Customer Satisfaction	**0.730**				
TMO	-0.107	**0.821**			
TNE	-0.734	0.085	**1**		
TPO	-0.855	0.045	0.653	**0.889**	
TSE	-0.600	0.213	0.388	0.398	**0.717**

Source: Survey Data, 2020

According to Hair et al. (2012), the next step is to estimate the hypothesized causal relationship between exogenous (independent) and an endogenous (dependent) latent variable after the reliable and validated measurement model has been developed. The evaluation of the structural model was mainly based on the five-stage steps. As the first step, assess the structural model for collinearity issues. VIF values for public banks show minimal collinearity, ranging from 1.042 to 1.316 and private banks show ranging from 1.035 to 1.83. The tolerance levels range from 0.76 to 0.95 in public banks and 0.54 to 0.96 in private banks. According to analysis, VIF values are lower than 5 and their Tolerance values are higher than 0.2. Thus, there is no collinearity problem. This demonstrates an absence of multicollinearity in the structural model between the independent constructs and the dependent constructs. The second step in evaluating the structural model is to examine the significance of the hypothetical relationships and to perform the first PLS algorithm to estimate the path coefficients. R^2 value has a significant correlation of 0.788 with public banks and 0.846 with private banks. Typically, it is significant if the value of R^2 is greater than 0.69, and the model matches with the observations. Therefore, according to the above results, we can conclude that public banks have 78.8 percent, and private banks have 84.6 percent variation of customer satisfaction is being clearly explained by the independent variables. The fourth step of structural model assessment was, assess of F

squared (F^2) – effect size. Searching cost of the public bank represents a large effect size for customer satisfaction and private banks also represent a large effect size. The value of F^2 of negotiation cost is provided by in public bank medium-size effect and that effect size is the same for the private banks also. F^2 value of monitoring cost is a large size effect for public bank and for private banks. F^2 value for policy and enforcement cost is represented by in public bank large size effect but according to private banks, it represents by small effect size. The model must be able to provide a prediction of the dependent variable by the measuring items. For public banks, the predictive relevance (Q^2) of customer satisfaction is 0.487, while the predictive relevance of customer satisfaction is 0.382 for private banks. Both values demonstrate substantially greater explanatory power. Finally, the model tested for the moderate effect of savings and credit services on the relationship between TC and customer satisfaction. According to public banks, there is a significant effect of bank services on the relationship between customer satisfaction and searching cost, negotiation cost, and enforcement cost of services. Type of bank services significantly affected the relationship between negotiation cost, monitoring cost and enforcement costs, and customer satisfaction under private banks.

Table 7: Path Coefficients and Significance

Public Banks				
Hypothesis	**H1**	**H2**	**H3**	**H4**
	TSE -> Customer Satisfaction	TNE -> Customer Satisfaction	TMO -> Customer Satisfaction	TPO -> Customer Satisfaction
Path coefficient (β)	-0.329	-0.024	-0.153	-0.629
T- value	4.244***	0.396	2.127**	7.596***
Results	**Supported**	**Not Supported**	**Supported**	**Supported**
Private Banks				
Path coefficient (β)	-0.268	-0.252	-0.009	-0.583
T- value	4.293***	2.734**	0.192	6.048***
Results	**Supported**	**Supported**	**Not Supported**	**Supported**

**p>0.05, ***p>0.01

Source: Survey Data, 2020

H1 hypothesis established as the searching cost of bank services has a negative impact on customer satisfaction. According to Table 7 path coefficient (β value) of searching cost is -0.329 which includes t- statistics higher than 1.96 at 0.05 significance level (t-statistic = 4.299) and it can be concluded as there is a significant negative relationship between searching cost and customer satisfaction regarding public banks. Considering private banks path coefficient (β value) of searching cost of the bank is -0.268 and the t-statistics of private banks is 4.293 which indicates the negative impact of customer satisfaction. That means when searching cost increase by 1 percent, customer satisfaction decreases by 32 percent in a public bank and 26 percent in private banks. Based on public banks' ineffective response to customer issues, lack of proper communication cooperation, lack of technical updates, and unavailability of understandable information can have reduced the customer satisfaction and it affected to increase the searching cost of bank services significantly. The cost of searching arises due to factors such as rising banking costs, branch locations, only commercial cities, and opportunistic behavior. Berger & DeYoung (1997) also emphasized that searching and collecting relevant information about agent-based on loans have a negative effect on the volume of loan funds. Bardhan & Udry (1999) emphasized that fragmented or missing information is negatively affected by borrowers. Stiglitz & Weis (1981) stated that the lack of sufficient information regarding activities of agents in the credit market and lenders have negatively affected borrowers. The result of this research has proved these findings.

H2 hypothesis represents the negative relationship between negotiation cost and customer satisfaction. Path coefficient of negotiation cost is -0.024 but the t-statistic is lower than 1.96 at a 0.05 significance level. Thus, there is no significant relationship between negotiation cost and customer satisfaction based on public banks. In private banks path coefficient (β value) of the negotiation cost of the bank is -0.252 and the t-statistic of private banks is 2.734 which emphasizes the negative impact of customer satisfaction. That means when negotiation costs increase by 1 percent, customer satisfaction decreases by 25 percent in private banks. Although the cost of negotiations in the public sector has a negative impact on customer satisfaction it was not significant due to some factors. The public sector banks are mainly subject to the regulatory framework of the Central Bank of Sri Lanka to act in accordance with government regulations. Therefore, the public sector is free from opportunistic behavior and acts responsibly and transparently. In this context, the negotiation costs of public banks have a negative impact on customer satisfaction but not a significant impact. Farrel & Klemperer (2007) explained that unsatisfied customers and contractual effects have a significant relationship. Rhyne (1998) emphasized in his studies there is a negative

relationship between the cost of concluding agreements and loans of low-income earners.

H3 hypothesis predicted that the monitoring cost has a negative impact on customer satisfaction. As depicted in table 7 the path coefficient of monitoring cost is -0.153 and t - statistics is 2.127 which represents the negative relationship between monitoring cost and customer satisfaction of public banks. However, private banks' path coefficient value of monitoring cost is -0.009, and t - statistics is 0.192. Therefore, it has no significant negative relationship with customer satisfaction. According to the above results when the monitoring cost is increased by 1 percent, customer satisfaction decreases by 15.3 percent in public banks. According to the results, private banks, which are constantly facing competition, always expect to improve and serve their customers through processes. Private Banks reduce the complexity of services as compared to public bank services to customers through technological tools. In private banks, the flexibility, resource capacity, a greater focus on competitiveness, and absence of complex service processes, the cost of monitoring is reduced than public banks. In addition, banking institutions face the problem of customer satisfaction in the light of their operation in a variety of situations like impolite counter service, inadequate staff to serve customers, busy telephone lines, and minimal banking times (Saeed, 1996; Perera & Priyanath, 2018). As per previous research findings, Nalukenge (2003) emphasized that monitoring the cost of small loans, affected both lenders and borrowers, as well as transportation and monitoring costs naturally increase the distance, which can affect negatively customer expectation. Coyles & Gokey (2005) examined unsatisfied consumers are increased by moving cost and time. Kaura, Prasad & Sharma (2015) and Anjalika & Priyanath (2018) emphasized because of generating hidden charges from banks highly affected customer satisfaction negatively under the monitoring cost.

Hypothesis H4 established a negative relationship between policy and enforcement cost and customer satisfaction. Path coefficient value of policy and enforcement cost is -0.629 which influences negatively on customer satisfaction with a higher significance level (t- statistic=7.596) and it emphasizes a significant relationship between policy and enforcement cost and customer satisfaction on the public banks. According to private banks, the path coefficient value is about -0.583, and the t – statistic is 6.048. This represents a significant negative relationship between policy and enforcement cost and customer satisfaction. Based on results, the enforcement cost increases by 1 percent, customer satisfaction decreases by 62 percent regarding the public banks, and by 58 percent regarding private banks. Polski & Kearney (2001) emphasized several factors such as securities losses, income taxes, and loan and lease losses are highly affected for banking. The organizational framework, including the banking sector, is framed in a human

manner. It, therefore, delivers a variety of restrictions to the customer, both formal (rules, laws, and constitutions) and informal (norms of behavior, conventions, and self-imposed codes of conduct) (Daniela, Mihail-Ioan, Anatol & Sebastian, 2010). La Porta & Lopez-de-Silanes (1998) stated that there is a strong negative influence on the legal system in credit transactions.

6. CONCLUSION

According to the study, argues that customer encounters problems in obtaining bank services are analyzed by perspective to TC. Hence it was concerned about the TCs generated by deposit and credit services as the most sought-after services by its customers. Based on this argument, the results revealed that the searching cost of public banks represents a significant negative relationship with customer satisfaction. The study reveals about bank services in both public and private banks generate a significant communication cost, travel cost, and time cost for providing services. The results of this study showed that negotiation costs have a negative impact on customer satisfaction in public banks and that is not statistically significant. Negotiation costs have a significant negative impact on customer satisfaction in private banking compared to public banking. Monitoring costs generated by bank services have a significant negative impact on customer satisfaction in public banks. Nevertheless, monitoring costs did not have a significant impact on customer satisfaction in private banks. It was revealed that the monitoring costs of public banks are higher than those of private banks, which reduces customer satisfaction. Moreover, finally, the cost of policy and enforcement of bank services has a significant negative impact on customers of both public and private bank services. It is noted that public and private banks generally incur significant costs for transaction disputes and service charges.

The banking sector needs customer retention through good satisfaction and future customer attraction to sustain its presence in the industry. Therefore, it is important for banks to develop a sound corporate plan which helps in developing a more satisfying service environment, and therefore, it is advisable to use successful techniques and innovations that are resilient in the face of the economy without adverse regulations. As this study revealed, banks should give priority to developing reforms that minimize customer TCs associated with credit and deposit services. Hence, a good network connection should be established within the bank premises and the employee from the lowest level to the highest level should be ensured to contribute to it. In order to reduce the investment deficit that arises in the economy, better deposit growth and easy access to credit should be developed. Also, a mechanism needs to be put in place to minimize the costs incurred by equipping the customer with comprehensive information. Entrepreneurs and small businesses fall victim to financial intermediation due to a lack of information

and opportunistic behavior. Therefore, policymakers should be encouraged to enter into enterprise development through appropriate institutional strategies, through various loan schemes and financial assistance schemes. In addition, an information dissemination mechanism should be set up across the country through the banking network to generate the new knowledge required by entrepreneurs. It is important to build a well-informed and cooperative staff within the premises to minimize the damage that negotiation costs can cause to business satisfaction. It is also important that the Central Bank of Sri Lanka relax adequately prudent regulations and controls on financial sector reforms. It is important to implement a proper regulatory framework to prevent fraud in the financial sector. As a government, the consumer will have confidence in banking and will not be reluctant to invest in such measures. Implementing an appropriate regulatory framework within the system is less likely to create opportunistic behaviors. Even bankrupt financial services can be restructured by moving towards a privatization policy followed by almost every developing country. In this way, the banking sector will be possible to reduce the TC of the customers and improve investment performance and create a strong financial capability as a country.

Operationalization of the independent variable TC has been done on only four factors. However, there can be other considerations that affect the TC in the banking service of different socio-economic and cultural environments. Researchers can further enhance the used indicators according to the nationwide requirements. The study used a small sample (152) and future researchers can use larger samples to minimize the generalization issues. This research was conducted in an Asian country and researchers are encouraged to conduct this kind of experiment in different regions in different education, social, and cultural environments.

REFERENCES

Ahmed, A. S., Takeda, C., & Thomas, S. (1999). Bank loan loss provisions: a reexamination of capital management, earnings management and signaling effects. Journal of accounting and economics, 28(1), 1-25.

Ahmed, Z. U. (1989). Effective Costs of Rural Loans in Bangladesh. World Development, 17(3), 357-363.

Almossawi, M. (2001). Bank selection criteria employed by college students in Bahrain: an empirical analysis. Int. Bank. Mark, 19(3), 115-125.

Al-Shbiel, S. O., & Al-Olimat, N. H. (2016). Impact of information technology on competitive advantage in Jordanian commercial banks. Accounting information system effectiveness as a mediating variable.

International Journal of Academic Research in Accounting, Finance and Management Sciences, 6(3), 202–211.

Anand, R. P. (2008). New states and international law. Pinnacle Technology. Vikas Publishing House, Delhi.

Anderson, E. W., Fornell, C., & Mazvancheryl, S. K. (2004). Customer satisfaction and shareholder value. Journal of marketing, 68(4), 172-185.

Anjalika, W. P. W. & Priyanath, H. M. S. (2018). Effect of service quality on customer satisfaction: an empirical study of customers who have bank accounts in both public and private banks in Sri Lanka. International Journal of Marketing and Technology, 8(1), 11 – 36.

Artz, K. W. (1999). Buyer-Supplier Performance: The Role of Asset Specificity, Reciprocal Investments and Relational Exchange. British Journal of Management, 10(2), 113-126.

Bardhan, P., & Udry, C. (1999). Development microeconomics. OUP Oxford.

Bebczuk, R. N. (2003). Asymmetric information in financial markets. Cambridge Books, Cambridge University Press.

Bena, I. (2010). Evaluating customer satisfaction in banking services. Management & Marketing, 5(2), 143-150.

Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. Journal of Banking & Finance, 21(6), 849-870.

Bharadwaj, S. G., & Mitra, D. (2016). Customer satisfaction and long-term stock returns. Journal of Marketing, 80, 116–121.

Bonfim, D., Dai, Q., & Franco, F. (2018). The number of bank relationships and borrowing costs: The role of information asymmetries. Journal of Empirical Finance, 46, 191-209.

Burnham, T. A., Frels, J. K., & Mahajan, V. (2003). Consumer switching costs: a typology, antecedents, and consequences. Journal of the Academy of marketing Science, 31(2), 109-126.

Carey, M., Prowse, S., Rea, J., & Udell, G. (1994). The economics of the private placement market. Fed. Res. Bull., 80, 5.

Central Bank of Sri Lanka, (2018). Annual Report. Colombo. Central Bank of Sri Lanka.

Chochol'áková, A., Gabcová, L., Belás, J., & Sipko, J. (2015). Bank customers' satisfaction, customers' loyalty and additional purchases of banking products and services. A case study from the czech republic. Economics & Sociology, 8(3), 82.

Coase, R. H. (1960). The Problem of Social Cost. Journal of Law and Economics, 3, 1-44.

Coase, R. H. (1988). The Nature of the Firm: Origin, Meaning and Influence. Journal of Law and Economics, 4(1), 3-59.

Coase, R. H. (1992). The Institutional Structure of Production. The American Economic Review, 82(4), 713-719.

Coyles, S., & Gokey, T. C. (2005). Customer retention is not enough. Journal of Consumer Marketing, 69(4), 193-200.

Daniela, Z., Mihail-Ioan, C., Anatol, C., & Sebastian, M. D. (2010). New international financial regulation: Necessity or required by crisis. Annals of the University of Oradea, Economic Science Series, 19(1), 456-461.

Davidow, M. (2003). Organizational responses to customer complaints: What works and what doesn't. Journal of Service Research, 5(3), 225-250.

Delis, M. D., Staikouras, P. K., & Tsoumas, C. (2019). Supervisory enforcement actions and bank deposits. Journal of Banking & Finance, 106, 110-123.

Diamond, L., & Morlino, L. (2004). The quality of democracy: An overview. Journal of democracy, 15(4), 20-31.

Dyer, J. H., & Chu, W. J. (2003). The role of trustworthiness in reducing transaction costs and improving business performance: empirical evidence from the United States, Japan, and Korea. Organization Science, 14(1), 57-68.

Eggert, A., Ulaga, W. (2002). Customer perceived value: a substitute for satisfaction in business markets?, Journal of Business & Industrial Marketing, 17(2/3), 107-118.

Ejigu, S. N. (2017). E-Banking Service Quality and its Impact on Customer Satisfaction in State Owned Banks in East Gojjam Zone; Ethiopia. Global Journal of Management and Business Research, 16(8-B).

Farrell, J., & Klemperer, P. (2007). Coordination and lock-in: Competition with switching costs and network effects. Handbook of industrial organization, 3, 1967-2072.

Felix, K. (2015). Factors for customer satisfaction and customer dissatisfaction in commercial banks. Mediterranean Journal of Social Sciences, 6(4), 584.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39–50. JSTOR. https://doi.org/10.2307/3151312.

Fox, G. (2007). The real Coase theorems. Cato J., 27(3), 373-396.

Fraering, M., & Minor, M. S. (2006). Sense of community: An exploratory study of US consumers of financial services. International Journal of Bank Marketing, 24(5), 284-306.

Frank, S. D., & Henderson, D. R. (1992). Transaction costs as determinants of vertical coordination in the US food industries. American Journal of Agricultural Economics, 74(4), 941-950.

Gerrard, P., & Cunningham, J. B. (1997). Islamic banking: a study in Singapore. Int. J. Bank. Mark., 15(6), 204-216

Goldman, S. M. (1978). Portfolio choice and flexibility: The precautionary motive. Journal of Monetary Economics, 4(2), 263-279.

Grönroos, C. (2000). Creating a relationship dialogue: communication, interaction and value. The marketing review, 1(1), 5-14.

Habibi, S., Azari, A. D., Toloue, G., Ejlali, N., & Nejadjavad, M. (2013). Customer satisfaction and its impact on improvement of banking services. Interdisciplinary Journal of Contemporary Research in Business, 4(10), 998-1003.

Heffernan, S. (2005). Modern banking. John Wiley & Sons. New York, United States.

Hennart, J. F. (1993). Explaining the Swollen Middle: Why Most Transactions are a Mix of "Market" and "Hierarchy. Organization Science, 4(4), 529-547.

Heskett, J. L., Sasser, W. E. & Hart, C. W. L. (1990) Service Breakthroughs: Changing the Rules of the Game. The Free Press, New York.

Heide, J. B. & Stump, R. L. (1995). Performance Implications of Buyer-Supplier Relationships in Industrial Markets: A Transaction Cost Explanation. Journal of Business Research, 32(1), 57-66.

Hokanson, S. (1995). The Deeper You Analyze, The More You Satisfy Customers. Marketing News, p. 16.

Hom, W. (2000). An Overview of Customer Satisfaction Models. Annual Meeting of the Research and Planning Group for California Community Colleges, p.13

Hoyer, W. D. & MacInnis, D. J. (2001). Consumer Behaviors (2nd ed.). Boston, Houghton Mifflin Company. Boston. Houghton Mifflin.

Howard, J. A., & Sheth, J. N. (1969). The theory of buyer behavior. New York: Wiley.

Huimin, L., David, A., & Zhuofu W. (2013). Factors that affect transaction costs in construction projects. J. Constr. Eng. Manage, 139, 60-68. DOI: 10.1061/(ASCE)CO.1943-7862.0000573.

Hubbard, R. G., Kuttner, K. N., & Palia, D. N. (2002). Are there bank effects in borrowers' costs of funds? Evidence from a matched sample of borrowers and banks. The Journal of Business, 75(4), 559-581.

Kaleem, A., & Ahmad, S. (2009). Determinants of SMEs' perceptions of electronic banking in Pakistan. International Journal of Electronic Finance, 3(2), 133-148.

Kaura, V., Prasad, C. S. D., & Sharma, S. (2015). Service quality, service convenience, price and fairness, customer loyalty, and the mediating role of customer satisfaction. International Journal of Bank Marketing, 3(4), 404-422.

Kenneth, C. L., & Jane, P. L. (2013). Management Information Systems: Managing the Digital Firm (12th ed.). Prentice Hall.

Keisidou, E., Sarigiannidis, L., Maditinos, D. I., & Thalassinos, E. I. (2013). Customer satisfaction, loyalty and financial performance. International Journal of Bank Marketing, 31(4), 259-288

Koch, T. W., & MacDonald, S. (2006), Management of banking. The Journal of Risk Finance, 13(1), 29-38.

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. Information Systems Journal, 28(1), 227–261.

Kombo, F. (2015). Customer satisfaction in the Kenyan banking industry. Journal of International Studies, 8(2), 174-186.

Kotler, P. (2003). A framework for marketing management. Pearson Education India.

Krawcheck, S. (2012). Four Ways to fix banks. Harvard Business Review, 1 June 2012. Harvard Business Review. Marketing Management in Turkey

Kumar, V. (2016). Introduction: Is customer satisfaction (Ir)relevant as a metric?. Journal of Marketing, 80(5), 108–109.

Kundu, S., & Datta, S. K. (2015). Impact of trust on the relationship of e-service quality and customer satisfaction. EuroMed Journal of Business, 10(1), 21-46.

La Porta, R., & Lopez-de-Silanes, F. (1998). Capital markets and legal institutions. Beyond the Washington consensus: Institutions matter, 73-92.

Ladman, & Jerry, R. (1984). Loan-transactions costs, credit rationing, and market structure: the case of Bolivia undermining rural development with cheap credit. Dale W Adams et al. (eds.), Westview Press, Boulder.

Lopez, J., Kozloski Hart, L., & Rampersad, A. (2007). Ethnicity and customer satisfaction in the financial services sector. Managing Service Quality: An International Journal, 17(3), 259-274.

Melese, F. & Franck, R. (2005). A Transaction Cost Economics View of DOD Outsourcing. Translated by California: Naval Postgraduate School.

Meramveliotakis, G., & Milonakis, D. (2010). Surveying the transaction cost foundations of new institutional economics: A critical inquiry. Journal of Economic issues, 44(4), 1045-1072.

Mihelis, G., Grigoroudis, E., Siskos, Y., Politis, Y., & Malandrakis, Y. (2001). Customer satisfaction measurement in the private bank sector. European Journal of Operational Research, 130(2), 347-360.

Mitchell, J. S. (1993). Introduction to machinery analysis and monitoring. Tulsa, Okla: PennWell. Paper Prepared for the International.

Mobarek, A. (2007). E-banking practices and customer satisfaction-a case study in botswana. In 20th Australasian Finance & Banking Conference.

Montazemi, A. R., & Qahri-Saremi, H. (2015). Factors affecting adoption of online banking: A meta-analytic structural equation modeling study. Information & Management, 52(2), 210-226.

Munusamy, J., Chelliah, S., & Mun, H.W. (2010). Service Quality Delivery and Its Impact on Customer Satisfaction in the Banking Sector in Malaysia. International Journal of Innovation, Management and Technology, 1(4), 398-404.

Nalukenge, I. K. (2003). Impact of lending relationships on transaction costs incurred by financial intermediaries: Case study in Central Ohio (Doctoral dissertation, The Ohio State University.

Nitsch, M., & Santos, C. A. (2001). Da repressão financeira ao microcrédito. Brazilian Journal of Political Economy, 21(4).

North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press, Cambridge, UK.

Perera, A.P.P. & Priyanath, H.M.S. (2018). Impact of internet banking service quality on customer satisfaction: An empirical investigation of customers in Sri Lanka. International Journal of Management, IT & Engineering, 8(2), 198 – 220.

Polski, M. M., & Kearney, A. T. (2001). Measuring transaction costs and institutional change in the US commercial banking industry. Institute for Development Strategies Discussion Papers. ISSN, 1-3.

Priyanath H. M. S. (2017). Effect of network structure on transaction cost of small enterprises in Sri Lanka: An empirical study. Journal of Small Business and Entrepreneurship Development, 5(1), 1-10. DOI: 10.15640/jsbed.v5n1a3.

Quinn, J. B., Baruch, J. J., & Paquette, P. C. (1987). Technology in services. Scientific American, 257(6), 50-59.

Rahayu, R., & Day, J. (2015). Determinant factors of e-commerce adoption by SMEs in developing country: evidence from Indonesia. Procedia-Social and Behavioral Sciences, 195, 142-150.

Ranatunga, R. V. S. P. K., Priyanath, H. M. S. and Megama, R. G. N. (2020a), Methods and rule-of-thumbs in the determination of minimum sample size when appling structural equation modelling: A review, Journal of Social Science Research, 15(2020), 102–109. https://doi.org/10.24297/jssr.v15i.8670.

Rao, R. V. (2007). Decision making in the manufacturing environment: using graph theory and fuzzy multiple attribute decision making methods: Springer Science & Business Media: 2012

Rhyne, E. (1998). The yin and yang of microfinance: Reaching the poor and sustainability. Micro Banking Bulletin, 2(1), 6-8.

Rose, P. S., & Hudgins, S. C. (2008). Bank management & Financial Service, Mc Graw-Hill/Irwin. New York.

Saeed, A. (1996). Islamic banking and interest: A study of the prohibition of Riba and its contemporary interpretation (Vol. 2). Brill.

Stiglitz, J. E., & Weiss, A. (1992). Asymmetric information in credit markets and its implications for macro-economics. Oxford Economic Papers, 44(4), 694-724.

Tharanikaran, V., Sritharan, S., & Thusyanthy, V. (2017). Service quality and customer satisfaction in the electronic banking. International Journal of Business and Management, 12(4), 67-83.

Wanninayake, W. M., & Dissanayake, D. M. R. (2007). A comparative study of service quality and customer service in public sector and private sector commercial banks. In Conference proceedings of 4th International Conference on Business Management (ICBM), 268-274.

Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. The journal of Law and Economics, 22(2), 233-261.

Williamson, O. E. (1985). Assessing contract. Journal of Law, Economics, & Organization, 1(1), 177-208.

Wruuck, P., Speyer, B., AG, D. B., & Hoffmann, R. (2013). Pricing in retail banking. Scope for boosting customer satisfaction. Frankfurt am Main: Deutsche Bank AG, 1-20.

Yasuda, H. (2005). Formation of strategic alliances in high-technology industries: comparative study of the resource-based theory and the transaction-cost theory. Technovation, 25(7), 763-770.

Zairi, M. (2000). Managing customer satisfaction: a best practice perspective. The TQM magazine, 12(5),

Sri Lankan Journal of Banking and Finance

An endeavor to share knowledge

Volume: 4 Issue: 01 June: 2021

AN EMPIRICAL ANALYSIS ABOUT SECTORAL CONTRIBUTION TO THE ECONOMIC GROWTH: EVIDENCE FROM SRI LANKA

Dissanayaka D M S M, Senanayaka R H, Nisham M N N and Nishla M N F

Department of Economics and Statistics, Faculty of Arts, University of Peradeniya, Sri Lanka

sajith.ma095@gmail.com[1], rajitha.rhs.1@gmail.com[2], nahlanishamnm388@gmail.com[3], f.nishla94@sen.ac.lk[4]

ABSTRACT

This study aims to investigate the contributions of each sector to the economic growth in Sri Lanka over the period 1980 – 2019. This study adopted the Ordinary Least squared (OLS) method to achieve above objective. Moreover, the Pairwise Granger causality method is used to make sure the causality relationship between the variables. The results of The OLS method suggest that the growth rate of Agricultural sector and economic growth rates of the previous years do not have significant impact on economic growth at 1% or 5% level of significance and Growth Gross domestic capital formation does not have contributed to economic growth at any level. However, the growth rate of Industrial and service sectors have positive and statistically significant impact on economic. Service sector contribute largely followed by industrial sector to the economic growth. That is, one percent increase in service sector output tends to extend the Growth rate by 0.43% while economic growth rate rises by 0.15% together with an increase in the industrial rate of growth. It also found that Agriculture and Industrial sector do not granger cause with economic growth whereas, service sector causes economic growth indicating that service sector influence economic growth greatly than the opposite two sectors.

Keywords – Economic Growth, Sectoral Contribution, Ordinary Least Square Method, Granger Causality Test

1. INTRODUCTION

1.1 Research background

Sri Lanka is facing many kind global and domestic economic and political challenges caused by natural disasters and number of insurrections since its independence. For example, more than twenty-five years (1983-2009) of civil war slowed down the economic growth of Sri Lanka during this period. In early period after the independence, Sri Lanka was known as agricultural based country. That is, before 1977, the main source for income of the households and the economy was agriculture. However, after 1977, the share of agriculture sector for economic growth decreased while share of industry and service sectors became the major sectors in gross domestic product. Generally, GDP growth rate is an important indicator of the economic performance of a country. The following figure shows the history of GDP in Sri Lanka from 1960.

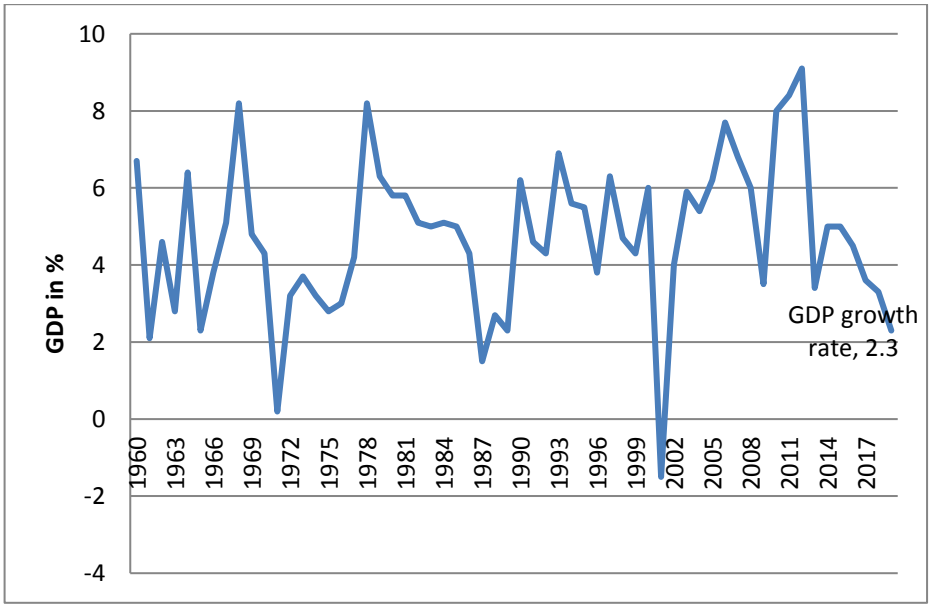


Figure 1: History of GDP in Sri Lanka from 1960 to 2019

Source: Central Bank of Sri Lanka Report (2020)

Before explaining the economic performance of Sri Lanka, History of Sri Lankan Economy can be divided into three basic periods as follow: Closed economy/ food self-sufficiency era (1948–1977), open economic policy era I (1977–1994), and open economic policy era II (1994–present). The economy contracted by 0.8% in 1971, mainly because of the turmoil following a youth uprising in southern Sri Lanka, and the economy continued to experience

slower growth than in the previous decade mainly because of shortages of imported inputs (Athukorala and Jayasuriya 1994). As a result of the marginalization of the private sector in the economy under the governmental policy regime, coupled with rampant inefficiency of public enterprises, the annual average growth rate of per capita gross national product declined from 2.8% in the 1960s to a mere 0.7% during 1970–1977 (Athukorala and Jayasuriya 1994: 28).

As a reaction to the dismal economic outcome of the inward-looking policy, in 1977 Sri Lanka embarked on an extensive economic liberalization process that marked a decisive break with decades of protectionist policies (Snodgrass 1998; Rajapatirana 1988; Athukorala and Rajapatirana 2000). A cycle of growth and conflict followed over the last 3 decades, with only 1 year of negative growth in 2001[1].

From 2002 to 2004, there was a short lived peace process and the economy could benefit from lower interest rates, a recovery in domestic demand, increased tourist arrivals, a revival of the stock exchange, and increased foreign direct investment in the country. In 2002, economic growth reached 4%, aided by strong service sector growth.

Because of the Tsunami devastation at the end of 2004 and the resumption of the civil war in 2005 led to steep increase in defense expenditure. A sharp rise in world petroleum prices combined with economic fallout from the civil war led to inflation that peaked 20%. However, in May 2009 as the civil war ended the economy started to grow at a higher rate of 8.0% in the year 2010 and reached 9.1% in 2012 mostly due to the boom in non-tradable sectors. However, the boom didn't last and the GDP growth for 2013 fell to 3.4% and only slightly recovered to 4.5% in 2014. After growing 5.0% in 2015, growth fell to 4.5% in 2016, 3.6% in 2017, 3.3% in 2018 and 2.3% in 2019 due to the currency crisis which brought an International Monetary Fund programme and there was a flood in 2016, political instability in 2018 and suicide bombings on Easter Sunday in 2019.

During these time periods, different kinds of policy implications were introduced in various disciplines which are fixed in development

[1] In 2001 the economy was hit by a series of adverse external shocks resulting in the negative real GDP growth. The prolonged drought that was started in 2000 and continued in 2001 reduced domestic agricultural output and hampered hydroelectricity generation. The terrorist attack on the Katunayake International Airport in July sharply curtailed tourist arrivals, weakened business confidence, and reduced external trade as a result of the imposition of a high war-risk insurance premium on ships and airlines following the attacks. Intensification of the ethnic conflict further lowered investor confidence (CBSL 2002).

administration, which includes land, water, credit, trade, marketing, food, and other sectors. Let's see the contribution of sectors through the changes of time period.

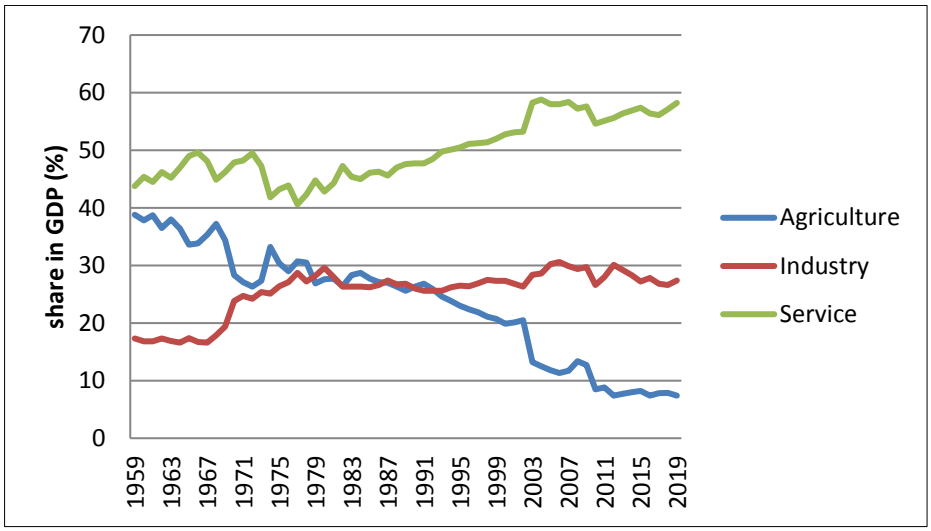


Figure 2: Contribution of Sectors for GDP from 1960 to 2019 (in %)

Source: CBSL Annual Report (Selected years)

The process of sector change accompanying Sri Lanka's economic growth has been largely conventional. Since 1960, the contribution of agriculture has shrunk quite rapidly. Agriculture includes forestry, hunting and fishing as well as cultivation of crops and livestock production. The average value of agriculture sector for GDP of Sri Lanka during the period was 22.24 percent with a minimum of 7.42 percent in 2019 and a maximum of 38.8 percent in 1959.

The industry includes mining, manufacturing, energy production and construction. The major contributor to the increase of industrial sector was manufacturing. The above figure shows that the contribution of industrial sector increased slightly with small fluctuations. The figure reported the minimum value of this sector is 16.6 percent in 1967 and the maximum value is 30.6 percent in 2006. In 2019, this sector contributed approximately 27.4 percent to the GDP.

The share of services sector to GDP increased from early 1960s to 1972 then there was decline in the shares of services for GDP contribution from 1972 to 1977 after that contribution of this sector increase gradually till now. The share of services sector to GDP increased from about 47% in the early 1960s

to over 58% in 2004. The minimum value of this sector contribution was 40.6 percent in 1977 and the maximum value was 58.8 percent in 2004. The share of service sector to the GDP in 2019 was about 58.24 percent. Trade structures contribute to the structural change when a country experiences economic development. Sri Lanka is facing structural change that the dispensation of the country's economic output shifts from agriculture to industry and then to services sector due to the development within interior factors with this structure change.

Each service sector component in this analysis has a very different contribution to the growth rate in the economy and service sector gives the highest contribution for the economic growth in Sri Lanka (Kumarasinghe and Sandaruwan, 2018). The relationship among agricultural, industrial, and service related gross domestic products (GDPs) under an open economic policy setting, different government policy regimes, and major policy eras from 1950 to 2015 (Jayasooriya, 2017).

Any positive growth in the service sector generated positive impacts in the agricultural and industry sectors, because of a spill over link of the latter with the services. The industrial sector of Sri Lanka is of key importance in determining the volume of GDP, and directly contributes to enrichment of the service sector in the economy. Finally, the agricultural sector is not productive enough to generate spillover effects to the other sector of the economy (Handapangoda, 2010).

Above empirical studies show that there is a significant relationship between agriculture, industry, and services sectors. For example, the performance of the processing industries (tea, rubber, and coconut) depends on the production of plantation crop. When a manufacturing sector is developing services related activities such as wholesale and retail trade, transport services and telecommunication and banking and financial services are expanding.

It can be identified Importance of the research as follows:

1. By identifying which sector is most influential to contribute to the GDP in Sri Lanka, the policy makers can take into account this finding when they formulate and implement policy related to economic well-being.

2. The government can target specific sector which will improve the economic performance.

3. The issues of the sector's contribution to the GDP can be identified.

1.2 Research Problem

The economic development of any country is heavily influenced by economic growth and sectoral changes of the economy. Even though several policies have been put in place by Sri Lankan government to strengthen the sectors in order to effectively and efficiently influence to achieve higher growth rates, data of Sri Lanka depict the higher fluctuation over time (See Figure 1 above). At the same time, Figure 2 shows that there is a significant structural change in the economy. Therefore, it is important to examine which sector led to achieving on achieving higher GDP growth in Sri Lanka over the time period 1980 - 2019.

An empirical analysis of the impact of sectoral growth on Sri Lanka's economic growth has not been adequately studied, as has been studied in other countries. Therefore, it has been taken as a research question and examine the sectoral contributions to the economic growth of Sri Lanka over the period 1980 - 2019 has been taken as a research objective.

2. LITERATURE REVIEW

Since last few decades, various studies have been carried out by researches to identify the role of sectors on economic growth. It is important to review the existing studies in order to get an idea about research area, objective, research problem, research gap, methodology, variables and analytical techniques. Also, it can compare the research findings with existing study's findings. Hence, the literature review is integral to the success of academic research. It ensures the research ability of the topic. It is designed to identify related research, to set the current research project within a conceptual and theoretical context. There exist many studies related to sectoral contribution to economic growth which has done globally and domestically. But, we review only a few researches which are most relevant to the study.

Using time series data from 2006 to 2014, Kumarasinghe and Sandaruwan (2016), the service sector gives the highest contribution to the GDP of Sri Lanka and it is about more than 50%. The study mainly focused on growth decomposition methodology developed by Ivanov and Webster (2010). They are able to identify the direct impacts of service sector components on the per capita growth of real GDP. But in this study the authors have not given a considerable concern about other 2 sectors and they have directly focused only the service sector and only data was used for a short period of 9 years.

Using relevant data of a long time period for his analysis and focusing on all three sectors of the economy, Jayasooriya (2017) has examined through his research the impact of structural transformation of Sri Lanka's economy on sectoral interdependencies. Mainly, the researcher has investigated the

relationship among agricultural, industrial, and service-related gross domestic products under an open economic policy setting, different government policy regimes and major policy eras from 1950 to 2015. Secondary data from the Central Bank of Sri Lanka and the Institute of Policy Studies publications were used in this study. Vector Auto Regression has been used including causality analysis, and Gregory-Hansen co-integration, for estimating a long-run relationship in sectoral growth. According to the findings, Agriculture sector growth depends highly on service sector growth but not on industry sector growth. Both the industry and service sectors are interdependent on agriculture sector growth, performing as a driving factor of the economic growth of the country and the policy impact to increase agricultural growth is minimal in Sri Lanka, even after open economic scenario, or at different policy adjustments. In this study it has not investigated the effect of each sector to GDP and mainly focused to examine the relationship among sectors.

Examining the relationship between all sectors and between those sectors and GDP, Handapangoda (2010) has done an investigation under the topic of Interrelationship among the Sectoral Contributions of Agricultural, Industrial and Service Sectors to GDP in Sri Lanka. In this research time series data were used from 1970 to 2006. The key components of the analysis included the estimation of VAR, generalized impulse response functions, variance decomposition and the Granger causality test. The study has found that any positive growth in the services sector generated positive impacts in the agriculture and industry sectors, because of a spill over link of the latter with the services. The analysis further found that the industrial sector of Sri Lanka is of key importance in determining the volume of GDP, and directly contributes to enrichment of the services sector in the economy. Finally, the agricultural sector is not productive enough to generate spillover effects to the other sectors of the economy. Hence, the study has recommended implementation of remedial policy actions to enhance agricultural sector productivity in the Sri Lankan economy. In this study recent data has not been used for the analysis and there is 15 years of gap to the present (2021).

George and Ibiok (2015) examined sectoral contributions to Nigerian gross domestic product using a VAR and Granger causality tests. Quarterly data from 1981-2010 was used in their study. Unit Root test approach was employed to check the stationarity of series. The result has shown bilateral causality between industrial sector and GDP. The unrestricted VAR also suggest that there is a significant and positive relationship between industrial sector and GDP. The authors recommend that the Nigerian government should come up with a strategic plan to diversify their economy using the Agriculture and services sectors since the Nigerian economy only depends on industrial sector to GDP. Chandio (2016) studied the agricultural sub-sectors performance focusing on the agricultural sub-sectors performance to

agricultural GDP in Pakistan by using secondary data from 1998 to 2015. Ordinary Least Square (OLS) method and econometric model was applied to estimate the model parameters. The empirical results indicate that agricultural sub-sectors contribute positively and significantly in the agriculture GDP. The results suggest that the Government of Pakistan should make some intervention in the agricultural sub-sectors by introducing innovative agriculture technologies that could improve the sub-sectors share in the overall agriculture GDP.

Myrdal (1897) demonstrates that 'Agriculture is a panacea for economic growth'. However, he explains that economic prosperity has been the subject of debates among economists and development scholars. Sertoglu, Ugural and Bekun (2017) investigated the contribution of the agriculture sector on economic growth using time series data of 32 years in Nigeria. Unit root test and Cointegration test were used in their analysis of data. They found that agricultural sector and its output had a positive impact on economic growth in the country. They recommended to embark on diversification and enhance more allocation to agricultural sector budgeting in order to improve this sector and contribute more to the economy. Nevertheless, the service sector has completely ignored in this study which might be badly affected to the research output.

Highlighting the importance of the agricultural sector to an economy, Hussain and Khan (2011) examined the relationship between agriculture sector and GDP growth rates in Pakistan using an econometric analysis for the period 1961 – 2007. A linear growth equation was specified by them and employed Ordinary least squares estimation (OLS) technique for the data analysis. The dependent variable was GDP growth rate and independent variable was agriculture growth rate measured as agriculture growth rate % at factor cost in Pakistan. The key finding was growth rate. They identified a positive correlation between agriculture growth rate and GDP growth rate. A one percent increase in the agriculture rate brings about 0.34% increase in GDP growth rate. They concluded that the government of Pakistan should make structural changes in the agricultural sector so as to ensure that agriculture leads overall growth in Pakistan.

Enu et al., (2013) used OLS and time series data to examine the contributions of the agricultural, service and industrial sectors to economic growth in Ghana. They found that increase in agriculture sector, Service sector and industrial sector growth by 1%, GDP growth increases respectively by 0.452849%, 0.376308% and 0.1827%. This indicates that increasing the agriculture sector growth contributes the highest GDP growth potential. Accordingly, the researchers recommend that activating/strengthening the agricultural sector will promote growth in the Ghanaian economy. Dasgupta

and Singh (2005) investigated that will service be the new engine of Economic Growth in India? Six different kinds of simple linear growth equations were estimated by them to achieve above objective. They found that all equations indicated higher correlation between sectoral and overall growth. Unfortunately, only four of those equations relating to manufacturing and services respectively satisfactorily passed the various diagnostic tests. More importantly, the estimated beta coefficient for manufacturing was less than one as Kaldor (1966) had suggested and those for services were however greater than one. They also found that agricultural rates were highly correlated with GDP growth, but the correlation was not as high as that of manufacturing. Although it has been revealed that the agricultural sector sometimes does not have much impact on economic growth, at other times it has made a very significant contribution to economic growth.

Although the majority of the above studies used time series data, Linden and Mahmood (2007) studied the long run relationship between sectors' share and economic growth using panel data of Schengen region from the period 1970 to 2004. The production function was employed this study. Panel data contains more information, more variability, and more efficiency than pure time series data or cross-sectional data and panel data can detect and measure statistical effects that pure time series or cross-sectional data cannot. In their dynamic panel data model, panel cointegration and error correction model was adapted to estimate the parameter. Further, they conducted Granger causality test in panel setting to examine the causality relationship. The dependent variable was GDP per capita growth rate and the independent variables were agriculture share as a percentage of GDP; industry share as a percentage of GDP and service share as a percentage of GDP. They found out that shocks in industry sector share cause turbulence in sector share relationships which slowly correct to equilibrium. Their results of Granger causality test suggested that a unidirectional causality runs from the growth of GDP per capita to agriculture share growth, but a two-way causality runs between industry share growth and growth rate of GDP per capita. The relationship between services share growth and growth rate of GDP per capita was also bi-directional. They concluded that feedback impacts were found between sector shares and the growth rate of GDP per capita. Also the link between GDP per capita growth rate, service, and agriculture shares are complex but industry sector is still the engine of economic growth.

Further highlighting the importance of the industrial sector in relation to the economy, Adediran and Obasan (2010) investigated the role of industrial sector in the economic development of Nigeria. They used an endogenous growth model and Ordinary Least Squares (OLS) technique to analyze the data. The dependent variable of this model was real gross domestic product and the independent variable plus other exogenous variables were

manufacturing output as a proxy for industrial sector, exchange rate, inflation rate, interest rate and government expenditure. Their results showed that there is a positive relationship between the endogenous variable and all the exogenous variables except for exchange rate and government expenditure. The study also indicated that in countries where industrialization is given a primary place, it acts as a catalyst to economic development process. They suggested that there is a need for cooperation between the manufacturing sector and research institutes with a view to making R&D activities more demand driven. Also, there is the need for Nigeria to engineer infrastructure in order to facilitate the local production of machinery and equipment to strengthen the industrial development and so on.

Krishnadutt and Younglee (1993) regressed the growth rate of GDP on share of services in employment. They found a negative and significant coefficient suggesting that relative increase of the services' share in employment is associated with a decline in the output growth rate. Also Kaldor (1966) found a positive and statistically significant correlation between the rate of growth of the manufacturing sector and rate of growth of output. Ahungwa et al., (2014) examined the pattern and contribution of agriculture to the Gross Domestic Product (GDP) of Nigeria within a time frame of 53 years (1960-2012). The results suggest that the share of agriculture to the total GDP had a downward trend, yet maintaining a clear dominance over other sectors from 1960-1975. Further analysis depicted an undulating trend, intertwining with the industrial sector from 1976-1989. The regression results showed that agriculture sector has a positive relationship with GDP and contributes significantly with a coefficient of 0.664, implying that one percentage increase in agriculture output can increase the GDP by 66.4 percent.

Obson and Adediran. (2010) investigated the role of the industrial sector in Nigeria's economic development. The intrinsic growth model was employed and the average minimum variety assessment method is adapted to the analysis. The real GDP, industrial output, exchange rate, inflation rate, interest rate and government spending are employed as the variable of this study. The results showed that there was a positive correlation between the endocrine variable and all external variables except the exchange rate and government spending. The study shows that in countries where industrialization is a priority, it acts as a catalyst for economic development. They suggested that there was a need for cooperation between the manufacturing sector and research institutes to increase research and development activities. Also, there is a need for Nigeria to design infrastructure to facilitate the production of local machinery and equipment to strengthen industrial development.

From the above, it can conclude that the various sectors (agriculture, industry and service) of an economy influence economic growth and development in one way or the other. There are some relationships among the sectors and because of that one sector can be affected by another sector. Considering the conducted studies about sectoral contribution to the GDP so far, can draw the theoretical basis to investigate the sectoral contribution to the GDP in Sri Lanka. If it is possible to identify the relationship among sectors and between sectors and GDP in Sri Lanka it can be used for the policy implementation for economic growth. Few studies were done to investigate the sectoral contribution to the Sri Lankan GDP, but some of them have not used long time period data as well as some of them have only concerned about few sector in the economy. An empirical analysis of the impact of sectoral growth on Sri Lanka's economic growth has not been adequately studied, as has been studied in Pakistan, Nigeria and some other countries. Furthermore, the need for such a study is revealed by the literature review.

3. METHODOLOGY

3.1 Background

To identify the transformative change in the contribution of agriculture, industry and services sectors to gross domestic production, many scholars have paid different methodological, time period and country specific attention. This chapter describes the data, the variables used, as well as the methods used in this study to analyze the data.

3.2 Data and Sources

This study uses secondary data of Sri Lanka over the period 1980 – 2019 covering fifty-nine years data. Growth rates of the agricultural, industrial and service sectors and growth rate of the GDP are used as the variable of this study. All data of variables are extracted from the Central Bank of Sri Lanka annual report.

3.3 Model Framework

The Ordinary Least squared (OLS) method is used to examine the role of agricultural, industrial and service sectors on GDP in Sri Lanka. Also used Gross domestic capital formation growth as a controlled variable

Based on the existing studies, we constructed the regression model as follow:

$$\mathbf{GDPG_t = \beta_0 + \beta_1 A_{t-1} + \beta_2 I_{t-1} + \beta_3 S_{t-1} + \beta_4 GDPG_{t-1} + CF_t + u_t} \quad (1)$$

Where, GDPG: GDP growth rate which is the dependent variable, independent variables are A_{t-1}: Valid lag variables of growth rates of

agriculture sector, I_{t-1}: Valid lag variables of growth rates of industrial sector, S_{t-1}: Valid lag variables of growth rates of services sector, $GDPG_{t-1}$:Valid lag variables of GDP growth rate , CF_t:Growth rate of Gross domestic capital formation and u is white noise error term. All the variables are used in growth rate.

3.4 Econometrics Methods

Before estimating equation (1), we need to check the stationary property of each series. To that aim, we used Augmented Dickey-Fuller (ADF) unit root approaches. Since all variables included in the model are stationary in level, we used OLS method to estimate the equation (1).

Further, we employed Pairwise Granger causality test to find out the causality relationship between the variables. The model is formed as below:

$$\mathbf{GDPG_t} = \boldsymbol{\alpha_0} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\pi_i} \mathbf{GDPG_{t-i}} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\beta_i} \Delta \mathbf{AG_{t-i}} + \mathbf{u_t} \quad (2)$$

$$\mathbf{AG_t} = \boldsymbol{a_t} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\theta_i} \mathbf{GDPG_{t-i}} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\sigma_i} \mathbf{AG_{t-i}} + \boldsymbol{u_t} \quad (3)$$

Using either F-test or Chi squared distribution; we will test the following hypothesis: for equation (2): H_0: growth rate of agriculture does not granger causes GDP growth rate and for equation (3): H_0: GDP growth rate does not granger causes growth rate of agriculture. We will reject H_0, when test statistic greater than the critical value and conclude that growth rate of agriculture granger causes GDP growth rate in equation (2) that is $\sum_{i=1}^{p} \beta_i$ is jointly significant in equation (3). And GDP growth rate granger causes growth rate of agriculture in equation (2), that is $\sum_{i=1}^{p} \theta_i$ is jointly significant in equation (3). If both of these parameters are not significant then no causality exists between these two variables. Likewise, we can do the test for all other variables that included in the model.

Before estimating the Granger causality test, we need to choose appropriate lag length that can be included in the model. Because, the underlying theory and any hypothesized structure indicate to the economist which variable to include in the model and how many lags would be appropriate. Therefore, the method of determining the appropriate lag length is still an important issue in the time series literature since longer lag lengths increase the number of estimated parameters, reduce degrees of freedom and increase data requirements. There have been several methods proposed to deal with the problem of correctly determining the proper lag length for time series model like Vector Autoregressive (VAR), Vector Error Correction Model (VECM) and Autoregressive Distributed Lag (ARDL) etc. Those methods are Likelihood ratio (LR) statistics, Akaike Information Criterion (AIC), Swartz

Information Criterion (SC), Hannan-Quin Information Criterion (HQIC) and Final Prediction Error (FPE). Thus, we will adopt either one or more of these criterions in our analysis according to our results and the requirements. EViews 10 and Excel 2013 are used to analyze the data.

4. RESULT AND DISCUSSION

4.1 Unit root test

A test of stationarity or non-stationarity becomes popular among the researchers when we are dealing with macroeconomic variables. It is crucial to test the stationary of the variables for the accuracy of the study. The order of integration is confirmed using the ADF unit root test approaches. The results of this approach are reported in Table 4.1.

Table 1: Results of ADF Unit Root Test

Variables	ADF Test (Level)	
	t-statistic	P-value
Growth rate of GDP	-6.065	0.000*
Valid lag variables of growth rates of agriculture sector	-5.562	0.000*
Valid lag variables of growth rates of industrial sector	-3.312	0.001*
Valid lag variables of growth rates of services sector	-4.412	0.001*
Growth Gross domestic capital formation	-3.470	0.002*

Note: Significant Level * p<1%, ** p<5%, *** p<10%

ADF test confirmed that all variables are stationary at their level form at 1% level of significance as the probability value of each series is less than 0.01. Since all variables are stationary at level form, we can estimate the equation by Ordinary Least squares (OLS) method. The results of OLS method are given below:

4.2 OLS Estimation

Table 2: Results of OLS (Dependent Variable: GDP Growth Rate)

$GDPG_t$	Coefficient	Standard Err.	t-value	P>|t|
$GDPG_{t-1}$	0.2830	0.1428	1.9811	0.0568***
A_{t-1}	-0.2335	0.1255	-1.8604	0.0726***
I_{t-1}	0.1578	0.1598	-0.9873	0.0314**
S_{t-1}	0.4349	0.2281	1.9063	0.0022*
Cf_t	2.6555	2.1183	1.2535	0.2197
_Con	0.072997	1.1314	0.0645	0.9490
Number of obs. = 39			F - Value = 15.62918	
Prob > F = 0.0000			R- squared = 0.80643	

The economic growth rate of a particular year may be determined by the economic growth rates of the previous years but in this case does not have significant impact on economic growth at 1% or 5% level of significance. Moreover, the growth rate of Agricultural sector does not have significance impact on economic growth at 1% or 5% level of significance. Both variables are significant at 10% level of significance but it does not contribute to the GDP. However, the growth rate of Industry and Service sectors have positive and statistically significant impact on economic growth at 5% level of significant. Service sector contribute largely followed by industrial sector to the GDP. That is, one percent increase in service sector output tend to increase the GDP growth rate by 0.434% while GDP growth rate rises by 0.157% as one percent increase in industrial growth rate. Growth Gross domestic capital formation does not have significant impact on economic growth at any level of significance.

The R2 value is 0.80, which explain around 80% of the variation in GDP growth rate was explained by the growth rate of agricultural, industrial and service sectors Also, the F –statistics confirmed the overall significance of the model. These two measures suggest the goodness of fit of the selected model.

The Wald tests for the regression model which is explained sectoral contribution to the GDP,

$$\mathbf{GDPG_t = \beta_0 + \beta_1 AG_t + \beta_2 IG_t + \beta_3 SG_t + u_t}$$

Here β_1, β_2 and β_3 are denote growth rate of Agriculture Sector growth rate, Industry sector growth rate and Service sector growth rate respectively. The hypothesis of constant returns to scale is then tested by the restriction: $\beta_1 + \beta_2 + \beta_3 = 1$

According to table 2, Results of OLS Shows that the sum of the coefficients appears to be in excess of one, but to determine whether the difference is statistically relevant, should conduct the hypothesis test of constant returns. Also we have to check the following to show the validity of the model

$$\boldsymbol{\beta_1 = \beta_2}, \quad \boldsymbol{\beta_1 = \beta_3}, \quad \boldsymbol{\beta_2 = \beta_3}$$

Even though E-Views reports provides an *F*-statistic and a Chi-square statistic with associated *p*-values here we consider the Chi-square and its *p*-values.

Table 3: Results of Wald test

Null Hypothesis	Test Statistic		Results
	Chi-square	P-value	
C(1)+C(2)+C(3)=1	0.814	0.366	Reject
C(1) = C(2)	4.997	0.025	Accept
C(1) = C(3)	19.734	0.000	Accept
C(2) = C(3)	3.941	0.047	Accept

4.3 Granger Causality Test Results

For the Granger causality model, we used 1 lags as an optimal lag that can be included in the model based on AIC (see the appendix for the results). The results of Granger causality test is given below:

Table 4: Results of Granger Causality Test

Dependent Variables: GDPG		
Hypothesis	**F- Statistics**	**P-Value**
AG does not Granger causes GDPG	1.796	0.169
IG does not Granger causes GDPG	1.996	0.135
SG does not Granger causes GDPG	11.016	0.029**

Note: Significant Level * p<1%, ** p<5% , *** p<10%

Above results depict that Agriculture and Industrial sector do not granger cause GDPG whereas, service sector causes GDPG. Indicating that service sector influence the economic growth greatly than the other two sectors.

Table 5: Results of Granger Causality Test

Hypothesis	F- Statistics	P-Value
GDPG does not Granger causes AG	0.6414	0.5944

Note: Significant Level * p<1%, ** p<5%, *** p<10%

Above results implies that GDPG sector do not granger cause AG.

5. CONCLUSION WITH POLICY IMPLICATIONS

5.1 Conclusion

From the result of the analysis it has identified that the contribution of service sector to GDP is a major driving force in sectoral growth of Sri Lanka even though it is an agriculture based country. According to the OLS estimation, the growth rate of industrial and service sectors has contributed more to the GDP than the growth rate of agricultural sector. It means that the highest contribution is provided by the service sector and the Industrial sector and the lowest contribution given by Agricultural sector. The economic growth rate of a particular year does not have contributed a large impact on economic growth. According to the results, the Growth Gross domestic capital formation does not have contributed to economic growth at any level.

According to the Granger Causality test, it could be seen that the agricultural sector and industrial sector do not granger cause on GDP while the Service Sector granger cause on GDP. This implies a deep mutual linkage between the Service sector and GDP, which confirms that Sri Lankan economy highly depends on the sectoral contribution of Service based on the analysis. Despite the fact that sectorial contributions of Service are the driving force of the Sri Lankan economy a lot still needs to be done in this area.

According to the Rowstow's growth model, when an economy moves through the stages (Expanding the economy) the contribution of the agricultural sector to the GDP decreases and the Industrial sector contribution to the GDP increases. But the recent development experiences show that the Service sector has taken the position of industrial sector when moving through the economic stages. According to the analysis it is possible to identify this nature in Sri Lanka too.

5.2 Policy Implication

The analysis shows that the service sector is the leading sector in Sri Lankan economy. But recently the Sri Lankan government has taken actions to strengthen the Agricultural sector as well as some times industrial sector. But we cannot identify a considerable effort taken by government to strengthen or to expand the Service sector. To achieve a higher GDP growth rate it is really essential to consider Strengthening the service sector too.

When considering about the natural resources that belong to Sri Lanka, it is really rich country in that way. But still a huge portion of resources is being exported as raw materials or very lowly value added products and on the other hand industrial sector contribution to the GDP is not in a favorable situation although it contributes to GDP growth more than agricultural sector. Thus it is really essential to implement new policies to re-structure the Industrial sector to perform efficiently.

Diminishing the Agriculture sector is maybe good for economic growth. But when considering another dimension, it can see that many developed countries are moving to an agricultural protectionism to keep their independence. Currently, Sri Lankan government has taken many actions to protect and expand the agriculture sector and need to continue it.

REFERENCES

Adediran, O. and Obasan, K., 2010. The role of industrial sector in the economic development of Nigeria. *Journal of Management and Society*, *1*(2), pp.9-16.

Ahungwa, G.T., Haruna, U. and Abdusalam, R.Y., 2014. Trend analysis of the contribution of agriculture to the gross domestic product of Nigeria (1960-2012). Journal of Agriculture and Veterinary Science, 7(1), pp.50-55.

Ali, M.M. and Parvin, R., 2010. Strategic management of tourism sector in Bangladesh to raise gross domestic product: An analysis. AIUB Business and Economic Paper Series, July, American International University Bangladesh.

Athukorala, P. and Jayasuriya, S., 1994. Macroeconomic Policies, Crises and Growth in Sri Lanka, 1969–1990, Washington, D.C.: World Bank.Reference.

Athukorala, P. and Rajapatirana, S., 2000. Liberalization and Industrial Transformation: Sri Lanka in International Perspective. New Delhi: Oxford University Press.

Chandio, A.A., Yuansheng, J. and Magsi, H., 2016. Agricultural sub-sectors performance: an analysis of sector-wise share in agriculture GDP of Pakistan. *International Journal of Economics and Finance*, 8(2), pp.156-162.

Dasgupta, S. and Singh, A., 2005. Will services be the new engine of Indian economic growth? Development and Change, 36(6), pp.1035-1057.

George, U. and Ibiok, E.U., 2015. Sectoral contributions to Nigerian gross domestic product using a VAR approach. *Global Journal of Pure and Applied Sciences*, 21(2), pp.137-143.

Enu, P., Osei-Gyimah, F., Attah-Obeng, P. and Opoku, C.D.K., 2013. Achieving higher GDP growth rates in Ghana: which sector is to lead?. Academic Research International, 4(4), p.457

Grytten, O.H., 2004. The gross domestic product for Norway, 1830'2003. *Norges Bank: Occasional Papers*, *1*, p.241.

Handapanagoda, W.S., 2010. Interrelationship among the Sectoral Contributions of Agricultural, Industrial and Service Sectors to Gross Domestic Product [GDP] in Sri Lanka: A Vector Autoregressive (VAR) Analysis. *Studies in Regional Science*, 40(2), pp.549-563.

Hussain, A. and Khan, A.Q., 2011. Relationship between Agriculture and GDP growth rates in Pakistan: An Econometric analysis (1961-2007). *Academic Research International*, 1(2), p.322.

Ivanov, S. and Webster, C., 2010. Decomposition of economic growth in Bulgaria by industry. *Journal of Economic Studies*. 37(2), pp.219-227.

Jayasooriya, S.P., 2017. Growth empirics: Structural transformation and sectoral interdependencies of Sri Lanka (No. 728). ADBI Working Paper.

Kaldor, N., 1966. Causes of the slow rate of economic growth of the United Kingdom: an inaugural lecture. Cambridge University Press.

Kansal, S.M., 1992. Contribution of'Other Services' Sector to Gross Domestic Product in India: An Evaluation. Economic and Political Weekly, pp.2047-2056.

Krishnadutt, A. and Younglee, K., 1993. The service sector and economic growth: Some cross-section evidence. *International Review of Applied Economics*, 7(3), pp.311-329.

Kumarasinghe, P.J. and Sandaruwan, M.P.M.D., 2018 Decomposition of Economic Growth in Sri Lanka: Deep Look into the Service Sector. *International Journal of Management Excellence,* Volume 10, No.3.

Linden, M. and Mahmood, T., 2007. Long run relationships between sector shares and economic growth: A panel data analysis of the Schengen region, *Keskustelualoitteita*, 50, pp. 1-36.

Lum, S.K., Moyer, B.C. and Yuskavage, R.E., 2000. Improved estimates of gross product by industry for 1947-98. *Survey of Current Business*, 80(6), pp.24-54.

Myrdal, G. (1984), International inequality and foreign aid in retrospect. *Pioneers in development*, pp. 151-165.

Obasan, K.A. & Adediran, O.A. (2010). The Role of Industrial Sector in the Economic Development of Nigeria. *Journal of Management and Society*, 1(2).

Rajapatirana, S. 1988. Foreign Trade and Economic Development: Sri Lanka's Experience. World Development, 16(10): 1143–57.

Snodgrass, D. 1998. The Economic Development of Sri Lanka: A Tale of Missed Opportunities. In R. Rotberg (ed). Creating Peace in Sri Lanka: Civil War and Reconciliation, Washington D.C.: Brookings Institution Press.

Sertoglu, K., Ugural, S. and Bekun, F.V., 2017. The contribution of agricultural sector on economic growth of Nigeria. *International Journal of Economics and Financial Issues*, *7*(1).

Yuskavage, R.E., 1996. Improved Estimates of Gross Product by Industry. *Survey of Current.*

Call for Research Articles- Sri Lankan Journal of Banking and Finance

Sri Lankan Journal of Banking and Finance (SLJBF) welcomes original research articles in English on disciplines related to economics, banking and finance at both national and international level.

Core Principles

- Publication in the journal of banking and finance is based upon the editorial criteria cited and the evaluation of the reviewers (each manuscript will be sent two reviewers);
- Priority is given for novelty, originality, and to the extent of contribution that would make to the banking industry;
- Conceptual papers based upon current theory and empirical findings and contribute to the development of theory in the domain of financial intermediary and economics are also welcome.

Guidelines for Submission

The contribution should be an original work which has not been previously published or accepted for the publication in whole or in part and which is not currently under consideration for publication by any other publisher or organization. The paper submission criteria including manuscript preparation, contact details, review process can be downloaded from the University web site http://bsf.wyb.ac.lk.

Paper Submission

Papers could be submitted as hard copy or e-mail the soft copy both in the word and PDF format with a covering letter including author's details. Please send manuscript for publishing considerations to the following mail or email addresses.

Chief Editor,
Sri Lankan Journal of Banking and Finance,
Department of Banking and Finance,
Wayamba University of Sri Lanka,
Kuliyapitiya, Sri Lanka.
Tel:(+94)- 037-2284216
Email: sljbf@wyb.ac.lk
sljbf.ce@gmail.com

Sri Lankan Journal of Banking and Finance

An Endeavor to Share Knowledge

ISSN 234-9271

Volume. 04. No. 01, June 2021

Designed by: Lahiru Gunaratna, Banking & Finance, FBSF