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THE EFFECTIVENESS OF MACROECONOMIC POLICIES ON CHANGING THE INDIVIDUAL PREFERENCE

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ABSTRACT

The study aims to identify the effectiveness of macroeconomic policies and socio-economic stability in changing individual preferences in Sri Lanka. Monthly, secondary data was collected to analyse the background from reliable institutions such as the Central Bank of Sri Lanka, the Department of Motor Traffic, and the Sri Lanka Customs and Tourism Development Authority, referring to the period from 2011 to 2017. Econometric techniques, including the Unit Root test, Vector Error Correction Model, and WALD, were utilized in the data analysis methodology. The results showed that the individual preference has a long-run association with monetary policy factors, fiscal policy factors, and the socio-economic stability of a country. The real interest rate, the tax rate on motor vehicles, and government expenditure were negatively related to individual preference. The long-run association of the model corrected the previous period's disequilibrium to 46%. Prominent factors that influenced "individual preference" in both the short run and long run were the real interest rate and the socio-economic stability of a country. Monetary policy factors and the socio-economic stability of a country were affected more by individual preference than fiscal policy factors. However, socio-economic stability was highly correlated with the individual-preference. Hence, it is essential to maintain the socio-economic stability of the country and monetary policy stability to enhance the individual preference in Sri Lanka.

Key Words: Individual Preference, Macroeconomic Policies, Socio-economic Stability

1. Introduction

Individual preference is most powerful factor to determine the economic, social and political stability of country most of the time the successful of policy implementation and development of the country basically depend on the individual behavior. When people are going to take decisions, macroeconomic policies are affected to change their decisions sometimes. Somehow, when government going to implementing new policies to development of country, it is essential to give some consideration to the reaction of people who live in country. Sometimes people resist respond the changes of macroeconomic policies when they are going to take decisions. They considered another factors rather than the policies and regulations. However, this study hopes to identify how individual reacted to the changes of the macroeconomic policies and socio-economic stability of the Sri Lanka.

The importance of macroeconomic policies is understanding and controlling economic fluctuations, formulation of economic policies, the study of economic development, understanding the effects of inflation and deflation, full and stable employment of resources, price stability, economic growth, balance of payment stability and appropriate distribution of income and wealth. Macroeconomic policies can be mainly categorized into two parts such as fiscal policy and monetary and exchange rate policy. (Anna,2012).

Fiscal policy is a policy which government makes decisions about the government spending and government revenue and also called budgetary policy. Fiscal policy can be mainly categorized as contractionary fiscal policy and expansionary fiscal policy (Padda and Akram,2014). The main aim of the fiscal policy is developing productive use of resources, efficient allocation of financial resources, reduce the income and wealth inequalities, control inflation and maintain price stability, generate employment opportunities, balanced regional development, increasing national income, development of infrastructure facilities and etc. (Abeygunawardana,2016).

Monetary policy is also known as the credit policy or money management policy. According to A.G. Hart, monetary policy means “A policy which influence the public stock of money substitute of public demand for such assets of both that is a policy which influences public liquidity position” (Shokoofeh,2006). The main objectives of monetary policy are rapid economic growth, price stability, exchange rate stability, balance of payments equilibrium, full employment, equal income distribution, neutrality of money (Anna,2012a).

Individual preference is directly affected to the efficiency of macroeconomic policies. In economics, preference is an order of lots of alternatives which are based on their relative utility and it is an optional one. Individual preference is basically determined by factors such as independent of price consideration, availability of goods, the income level of that individual etc. In 1926 Ragnar Frisch developed the idea of preference as a mathematical model. Individual preference is blend of economic, technological, political, cultural, demographic and natural factors as well as his own characteristics (Shende, 2014).

The effectiveness of macroeconomic policies basically depends on the reaction of the people who live in that country. That means country can achieve the macroeconomic stability of the country through the individual preference. But, most of the time individuals resist to respond these policies in the real situation (Shende,2014a). The reason behind that may be less aware of fiscal and monetary policies and their framework, less information about policies and etc.

Most of the time people take and change their decisions according to the socio-economic stability of country. Such as civil wars, cultural factors, climate changes, political situation of the country, rules and regulations imposed by government etc. Individual preference is very hard to measure in directly (Mahamood & Sial, 2018).

The main objective of this study is to explore whether macroeconomic policies have been efficiently affected to change the individual preference in Sri Lanka and specific objective is identify whether individual decisions, react to the changing socio-economic hazards in Sri Lanka.

2. Literature Review

Canh (2018) carried out a study the effectiveness of fiscal policy in Vietnam: contributions from institutions and external debts. An author used panel data from 2002 to 2014 of 14 emerging countries. The finding showed that, GDP growth rate is positive with fiscal policy variables and the results also confirmed Keynesian views of fiscal policy. Keynesian said that the government expenditure or decreasing tax will occur to increase disposable income of individuals (Rakic and Radenovic, 2013).

The study which investigated the effect of monetary policy on export demand, revealed that expansionary monetary policy occurs to fall in interest rate and encourages the borrowings, stimulates the household consumption and therefore increase the aggregate demand and export demand (Shokoofeh, 2006).

The study conducted on titled of an empirical study on the effects real effective exchange rate on Algeria's trade balance mainly focused on the J-curve phenomenon. According to the findings, relationship between dependent and independent variables were positive in long run while negative in short run (Guechari, 2012).

The Keynesians and the Monetarists made a debate over the usefulness of fiscal and monetary policies in various aspects. The monetarist economists said that monetary policy has a great influence to the economic activity and the Keynesian economists believed that fiscal policy is most important to determine the economic activities. (Egbunike and Okerekoti,2018).

Darrat (1984) investigated the relative influence of fiscal and monetary actions by using a modified St. Louis single equation. This study basically covered five Latin American countries. The findings suggested that fiscal policy monetary policy to determine the relative changes.

Jayraman (1996), Ali and Ali (2008), Chingarande (2012) reveals that there is a positive and significant relationship between economic growth and monetary policy while fiscal policy is insignificant with economic growth.

A study titled that How monetary and fiscal policy variables and the socio-economic stability of the country affected to the Nigerian economic growth shows that, positive relationship between government expenditure, government revenue and money supply while interest rate and budget deficit show the negative relationship with economic growth. Also the socio-economic stability shows insignificant negative relationship with economic growth of Nigeria (Adegoriola,2018).

Dharmadasa (2015) carried out a study how monetary and fiscal policies affected to the output level of Sri Lanka. He identified overall effect of monetary policy to the output was very low and there was no causality between them. This study suggested that monetary policy was more powerful than fiscal policy in Sri Lankan context.

Muhamad et al. (2013) concentrated the relationship between the macroeconomic variables and passenger vehicle sales in Malaysia. The results showed there is no significant long run equilibrium relationship between macroeconomic variables and passenger vehicle sales in Malaysia. But in short run index of industrial production was significant. Finally, they conclude that to improve the Malaysian automotive industry, government need to reduce oil prices and reduce taxes.

Muhammad et al. (2012) conduct their study on Automobile sale and macroeconomic variables: A pooled mean group analysis for ASEAN countries. Dynamic Panel analysis, mean group and pooled mean group were utilized to get final results. Findings from the tests showed that all the independent variables were significantly correlate with automobile sales. Finally, they conclude both policies effect simultaneously to the automobile sales of those ASEAN countries.

Tarihi & Tarihi (2018) studied how macroeconomic variables effected to the automobile sales in top four automobile production countries such as China, USA, Japan and Germany. OLS and fixed effect models were used to analyze the data. Real GDP, gasoline prices was positively impact to the car sales while change in real GDP per capita, exchange rate, inflation rate occurs opposite.

Apart from macro-economic determinants, previous literature indicates that political stability, socio-economic stability and institutional factors also impact economical behavior of the people who lives in country (Rakic and Radenovic, 2013a) (Shende, 2014).

Research Gap

The knowledge gap or research gap in this study is that there is no single prior academic work to understand how both fiscal and monetary policies affected to the individual preference with reference to Sri Lankan context. And also there is no previous study which uses the amount of registered motor cars as a proxy variable to measure the individual preference. Therefore, this study hope to bridge this gap by providing empirical evidences to develop our understanding about this issue.

3. Data and Methodology

Utilized the secondary data at the time period of 2011-2017. The monthly data were used in its raw. The research approach of this study is quantitative and explanatory research, because the independent and dependent variables of this study can clearly

identify (Sekaran and Bougie, 2013). The data were obtained from Sri Lanka Customs, Department of Motor Traffic Sri Lanka, Central Bank of Sri Lanka and Tourism Development Authority.

Variables:

Dependent Variable

Individual Preference (IP)

The dependent variable of this study is individual preference. However, there's no direct method to measure the individual preference. Willingness to pay for the motor vehicles by individuals used as a proxy variable to measure individual preference. Data pertaining to the variable has been collected as number of registered motor cars at department of motor traffic.

Independent Variables

Interest Rate (IR)

The main segment of Sri Lankan money market is the Treasury bill market. Treasury bills are mainly three varieties according to maturity period such as 91, 182 and 364 days. To represent the interest rate, researcher used 91-days Treasury bill rates according to the past literature (Dharmadasa, 2015) (Adegoriola, 2018).

Real Effective Exchange Rate (REER)

There are two types of exchange rates namely, nominal and real effective exchange rate. REER used to measure the competitiveness of exports and relative profitability. REER used to determine currency value of a one country relative to the other major currencies of the index and it is very important part to determine the monetary policy in Sri Lanka (Dharmadasa, 2015a). It is calculated by adjusting the trade weighted nominal exchange rate with relative prices between destination countries and the exporting countries.

Tax Rate (TAX)

The main income source of Sri Lankan government is tax revenue. This study used tax revenue from motor vehicles to measure the effectiveness of fiscal policy. Some scholars have also used tax rate as a measurement of fiscal policy (Richard and Maturu, 2017) (Mabusi, 2016). Researcher used this variable as a percentage. To construct this variable as follows;

$$Tax\ Rate = \frac{Motor\ vehicle\ tax\ import\ revenue\ from\ custom}{Total\ tax\ collected\ by\ custom} \text{ x } 100$$

Government Expenditure (GVT)

Salaries and wages are major component of government expenditure. This kind of expenditures are recurrent expenditures and government bare this kind of expenditures at every month. Most of the time the individual behavior at economy is depend on their income. The main source of their income is salaries and wages (Rakic and Radenovic,

2013). For this study, use government employers wage rate as a measurement to government expenditure. The based year is 1978=100.

Socio-economic Stability (SE)

According to the dictionary meaning the socio-economic stability means good condition and interaction between the social and economic habits of people or country. The researcher hypotheses if there is a good socio-economic situation of a country, tourism arrivals getting higher value and positively related. Because of that, through the tourism arrivals, measures the socio-economic stability of a country. Tourism arrivals use as a proxy variable to measure the socio-economic stability of this study.

Table 1: Operationalization Table

Variable	**Measurement**
Individual Preference (IP)	Number of newly registered motor cars
Interest Rate (R)	Yield rate from 91-days Treasury bills at secondary market
Exchange Rate (REER)	Real Effective Exchange Rate
Tax Rate(TAX)	Customs tax rate on motor vehicle imports
Government Expenditure (GVT)	Government employees wage rate (1978=100)
Socio-economic Stability (SE)	Monthly tourism arrivals of Sri Lanka

Source: Author, 2019

Conceptual Framework

This conceptual framework assesses the impact of fiscal and monetary policy on changing the individual preference and identify whether the individual decisions, react to the changing individual decisions.

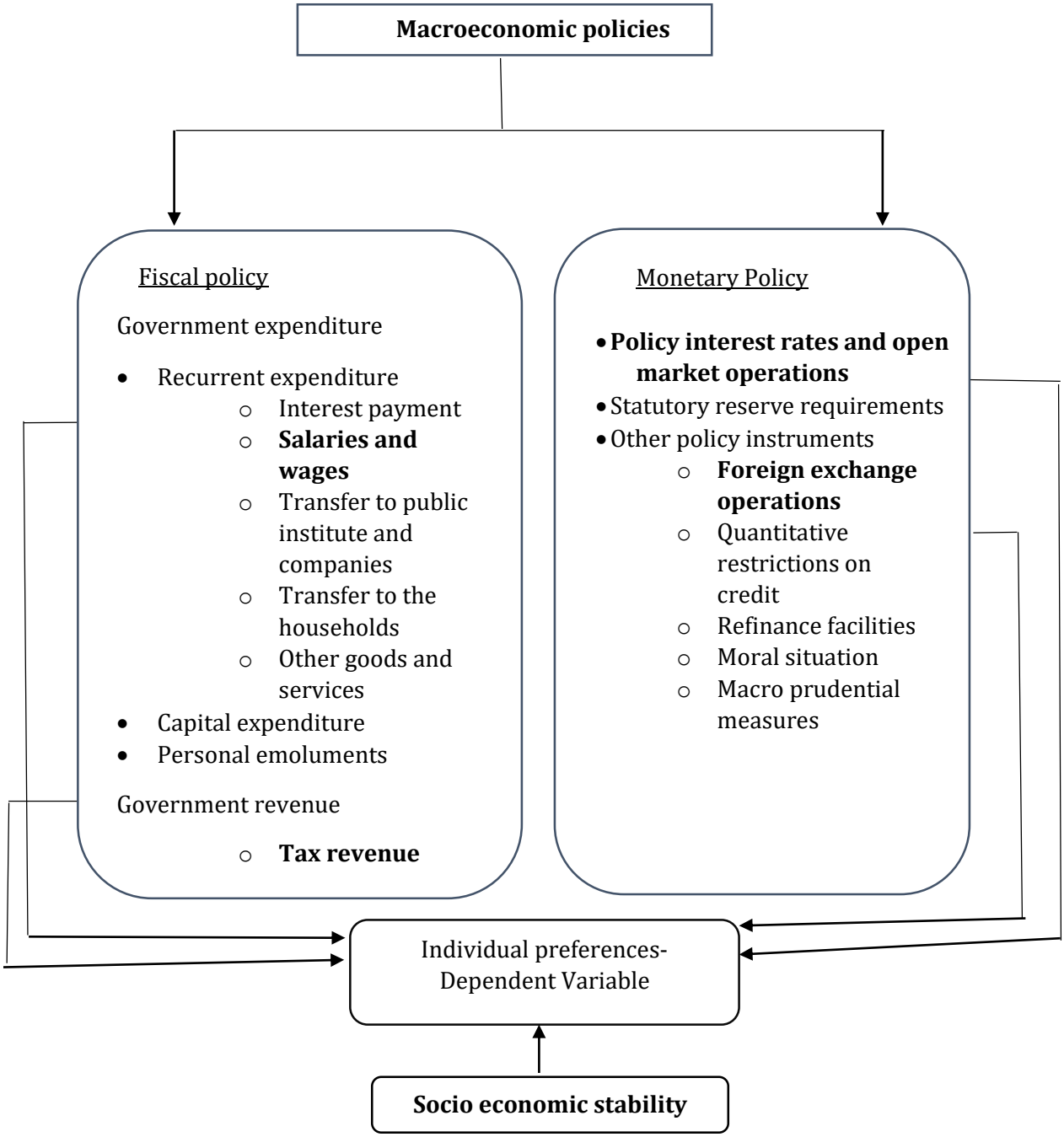

Figure 1. Conceptual Framework

4. Data Analysis

To avoid the problem of heteroscedasticity, it is necessary to transform some variables into natural logarithms. Then after the variables which suffer from heteroscedasticity become homoscedastic. Individual preference and socio-economic stability are in thousands in its raw. Therefore, convert that two variables into natural logs as LNIP and LNSE.

Properties of time series analysis:

Optimal Lag Selection

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-898.2730	NA	870.7942	23.79666	23.98066	23.87020
1	-579.6270	578.5941	0.514008	16.35861	17.64664*	16.87337
2	-525.0145	90.54172*	0.320434*	15.86880	18.26087	16.82479*
3	-492.7885	48.33899	0.370023	15.96812	19.46422	17.36533
4	-463.6064	39.16555	0.483200	16.14754	20.74767	17.98597
5	-430.6605	39.01490	0.608296	16.22791	21.93207	18.50757
6	-343.7027	42.84350	0.750692	15.83428	23.74651	18.99639
7	-285.0823	41.65128	0.718755	15.23901*	24.25527	18.84234

Source: Author Calculation, 2019

According to the above table 2, Sequential Modified LR test statistic, Final Prediction Error and Schwarz Criterion choose optimal lag length as 2.

Test of Stationarity – Unit root test

A stochastic process can be said stationary, if the covariance between the two time periods depends only on the lag between two time periods and not actual time. Also mean and variance of two time periods are constant over the time (Gujarati and Porter, 2013). Augmented Dickey Fuller test can be used for conducting the unit root test. To avoid the problem of autocorrelation this test was adopted and it's stated below three equations.

$\Delta y_t = \beta_1 + z y_{t-1} + \alpha_i + \varepsilon_i$ ……. Equation (1) ……Intercept only

$\Delta y_t = \beta_1 + \beta_{2t} + z y_{t-1} + \alpha_i + \varepsilon_i$ ……. Equation (2) ……Trend and intercept

$\Delta y_t = z y_{t-1} + \alpha_i + \varepsilon_i$ ……. Equation (3) ……No trend and intercept

To find out a variable has got unit root or not it is essential to check above three conditions at level, first difference or second difference. Considering the P- values of test can build up two hypotheses as,

Null Hypothesis: H_0 = Variables are not stationary or got unit root

Alternative Hypothesis: H_1 = Variables are stationary or not unit root

Table 3: Unit Root Test Results for Level Data (0)

Varia-ble	With Intercept			With Trend & Intercept			No Trend & Intercept		
	ADF Test Statistic	Critical Value (5%)	P-Value	ADF Test Statistic	Critical Value (5%)	P-Value	ADF Test Statistic	Critical Value (5%)	P-Value
Ln IP	1.9858	2.8968	0.4268	2.0548	3.4649	0.7172	0.2145	1.9448	0.6463
R	1.7015	2.8972	0.4417	1.7649	3.4656	0.4187	0.1001	1.9448	0.7258
Ex	1.6718	2.8968	0.1528	2.3194	3.4649	0.0721	0.1460	1.9448	0.4559
TAX	2.3721	2.8977	0.7703	4.5784	3.4649	0.8697	0.5967	1.9448	0.8398
GVT	0.9412	2.8968	0.0564	1.3444	3.4649	1.0000	0.5806	1.9448	1.0000
Ln SE	3.6813	2.9024	0.2925	1.9848	3.4735	0.5628	8.0862	1.9454	0.6061

Source: Author Calculation, 2019

After conducting the ADF test for data, researcher can accept null hypothesis for level data. Because, ADF test statistic is less than the critical value while P-value also greater than 5%. Therefore, variables are not stationary at level. It is essential to convert them into stationary.

Table 4: Unit Root Test Results for First Differencing Data

Varia-ble	With Intercept			With Trend & Intercept			No Trend & Intercept		
	ADF Test Statistic	Critical Value (5%)	P- Value	ADF Test Statistic	Critical Value (5%)	P- Value	ADF Test Statistic	Critical Value (5%)	P- Value
Ln IP	12.162	2.8982	0.0001**	12.091	3.4669	0.0001**	12.239	1.9449	0.0000**
R	8.1921	2.8991	0.0000**	8.1608	3.4685	0.0000**	8.2385	1.9450	0.0000**
Ex	7.5802	2.9001	0.0000**	7.5257	3.4700	0.0000**	7.6347	1.9451	0.0000**
TAX	8.7239	2.8996	0.0000**	8.6596	3.4692	0.0000**	8.7869	1.9451	0.0000**
GVT	10.404	2.8986	0.0001**	10.347	3.4677	0.0000**	10.472	1.9449	0.0000**
Ln SE	12.085	2.9036	0.0001**	11.977	3.4753	0.0001**	12.186	1.9455	0.0000**

Source: Author Calculation, 2019

After conducting the ADF test for data, researcher can accept alternative hypothesis for first differencing data. Because ADF test statistic > 5% critical value and P- values are less than 5%. At the first differencing of the data all the variables become stationary and absence of unit root.

Johansen Co-Integration Test

This test can be carried out when the data become stationary at first difference or second difference. Among this test, can identify the variables associated with a long run relationship or not.

Table 5: Unrestricted Co-integration Rank Test (Maximum Eigen Values)

Hypothesized No. of CE (s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None*	0.528680	60.92966	40.07757	0.0001**
At Most 1*	0.384439	39.30296	33.87687	0.0102**
At most 2	0.183680	16.43882	27.58434	0.6283

Source: Author Calculation, 2019

By considering the Johansen co-integration test results, there are two co-integration equations at 0.05 significance level. Results proved, exist a long run relationship among variables of the study. Then researcher can formally derive the Vector Error Correction model.

Vector Error Correction Model

Through this model can be identify the functional relationship between dependent variable and independent variables (Chingarande, 2012).

Table 6: Results of Vector Error Correction Model

	Coefficient	**Std. Error**	**t-statistic**	**Prob.**
C(1)	-0.467725	0.99940	-4.680049	0.0000**
C(2)	-0.052561	0.022549	-2.331003	0.0228**
C(3)	0.142165	0.115600	1.229803	0.2231
C(4)	0.141078	0.113093	1.247460	0.2166
C(5)	0.063091	0.057635	1.094657	0.2776
C(6)	0.125580	0.059980	2.093679	0.0401**
C(7)	-0.006881	0.016546	-0.415226	0.6788
C(8)	-0.016078	0.016877	-0.952632	0.3443
C(9)	0.005741	0.004978	1.153296	0.2529
C(10)	0.007271	0.004571	1.590702	0.1165
C(11)	0.011115	0.004734	2.348210	0.0219**
C(12)	-0.000215	0.004664	-0.046021	0.9634
C(13)	0.423581	0.140240	3.020402	0.0036**
C(14)	0.69248	0.117333	0.590183	0.5571
C(15)	-0.014730	0.020860	-0.706148	0.4826

Source: Author Calculation, 2019

According to the above table, C (1) represent the coefficient of co-integrating model. It shows the speed of adjustment towards equilibrium. The coefficient value -0.467725 is negative in sign and probability value less than 5%. It proves long run causality running from R, REER, TAX, GVT and LNSE to the individual preference. The system corrects its previous period disequilibrium at a speed of 46.77%, monthly and it takes 1.5 months to correct the disequilibrium.

D (LNIP) = C (1)*(LNIP (-1) – 0.144734015841*REER (-1) +0.0494386931287*TAX (1) - 0.0112155169608*GVT (-1)+ 1.657943259 *LNSE (-1) – 11.7207458249) + C (2) * R (-1) + 0.966603670565 * REER (-1) – 0.339783502802 * TAX (-1) – 19.6732472264) + C (3) * D (LNIP (-1)) + C (4) *D (LNIP (-2)) + C (5) *D (R (-1)) + C (6) *D (R (-2)) + C (7) *D (REER (-1)) + C (8) *D (REER (-2)) – C (9) *D (TAX (-1)) + C (10) *D (TAX (-2)) + C (12) *D (GVT (-2))+ C (13) *D (LNSE (1)) + C (14) *D (LNSE (-2)) + C (15)

The above equation derived using the Vector Error Correction Model and up to C (2) shows the long run relationship between individual preference and determinants of individual preference. By using above equation and coefficient values which derived

from Vector Error Correction Model can be derive the regression equation for long run as follows.

$$IP = 6.501 - 0.262\ R_t + 0.022\ REER_t - 0.015\ TAX_t - 0.017\ GVT_t + 0.712\ SE_t$$

Interpretation:

- An increase in the 1% of real interest rate would results, decrease the individual preference by 26%
- An increase in the 1% of tax rate on motor vehicles would results, decrease the individual preference by 1.5%
- An increase in the 1% of government expenditure would results, decrease the individual preference by 1.7%
- An increase in the 1% of socio-economic stability causes to reduce appreciate the individual preference by 71.2%
- An increase in the 1% of real effective exchange rate would results that increase the individual preference by 2.2%

WALD Chi-square Test

Table 7: Results of WALD Test

Variable	Probability	Significant at 5%	
R	0.0546	Significant	Short run causality exists
REER	0.6256	Not Significant	No short run causality
TAX	0.2444	Not Significant	No short run causality
GVT	0.0631	Not Significant	No short run causality
LNSE	0.0103	Significant	Short run causality exists

Source: Author Calculation, 2019

This test used to check whether there is a short run causality between individual preference and independent variables. Results showed that, there is no short run causality running from REER, TAX and GVT to LNIP except LNSE and R.

Correlation of Variables

Table 8: Correlation Matrix

Correlation Probability	LNIP	R	REER	TAX	GVT	LNSE
LNIP	1.000000 ……..					
R	-0.583347 (0.0000)	1.000000 ……..				
REER	0.572219 (0.0000)	-0.632075 (0.0000)	1.000000 ……..			
TAX	0.537173 (0.0000)	-0.100512 (0.3630)	0.302602 (0.0051)	1.000000 ……..		
GVT	0.538001 (0.0000)	-0.198221 (0.0707)	0.753652 (0.0000)	0.419654 (0.0001)	1.000000 ……..	
LNSE	0.144855 (0.0000)	-0.185250 (0.0916)	0.683398 (0.0000)	0.087909 (0.0000)	0.703097 (0.0000)	1.000000 ……..

Source: Author Calculation, 2019

Correlation matrix revealed that, the individual preference correlates in the same direction or positively correlated with REER, TAX, GVT and LNSE. But the variable R shows an opposite or negative correlation with LNIP. Also the variables R, REER, TAX and GVT significantly correlated with individual preference while socio-economic stability is significant with individual preference at 0.05 level.

5. Conclusion and Recommendations

Conclusion

The study objectives achieved through the study which is find out what are the most influencing factors among macroeconomic policies and socio-economic stability to the individual preference in Sri Lanka. The main conclusion which buildup through the Vector Error Correction Model is the long run association in between real interest rate, real effective exchange rate, tax rate on motor vehicle, government expenditure, socio-economic stability of the country to the individual preference. Also it corrects the long run disequilibrium at 46.77% by monthly and it takes 1.5 months. WALD test conclude that, the individual preference is statistically significant with real interest rate and socio-economic stability in short run. But fiscal factors and real exchange rate haven't shown short run association with individual preference. Finally, can be conclude that the specific objective of this study is clearly achieved because socio-economic stability has both long and short run relationship with individual preference. That means people reacted to the changes of socio-economic conditions of country. And also people reacted to the changes of monetary policy rather than the fiscal policy factors. That means monetary policy is more effective than the fiscal policy of Sri Lanka. According to the long run equation real interest rate, tax rate on motor vehicle and government expenditure negatively related with interest rate while real effective exchange rate and socio-economic stability recorded positive relationship.

Recommendations

The results revealed by the analysis emphasized real interest rate and socio-economic stability are the major factors affected on individual preference in Sri Lanka. Therefore, it could be recommended any policy which should be focused to maintain the socio-economic stability in the Sri Lanka. Since the real interest rate is also significant factor affected on individual preference. Among the macroeconomic factors, monetary factors could be used to influence on macroeconomic stability and individual preference in Sri Lanka. Therefore, it is essential to enhance the individual preference. Also monetary authority of Sri Lanka takes some actions to control the monetary policy stability.

The major perspective of this research was mostly focused on the economic factors. However, the future research should be essential to finding the impact of socio and political impact.

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