CENTRAL BANK OF SOLOMON ISLANDS
ECONOMICS, RESEARCH, AND STATISTICS DEPARTMENT

CENTRAL BANK WORKING PAPER SERIES

DETERMINANTS OF INFLATION IN THE SOLOMON ISLANDS

Vitarina H Takana
Research Analyst
Real Sector
ERS Department, CBSI

Patricia Samani
Senior Research Analyst
Money and Banking Sector
ERS Department, CBSI

Kenneth Especkerman-True
Senior Research Analyst
Research Unit
ERS Department, CBSI

No. 2015/01 **March 2015**

DETERMINANTS OF INFLATION IN THE SOLOMON ISLANDS

By Vitarina H Takana, Patricia Samani, and Kenneth Especkerman-True*

Abstract: This paper seeks to shed light on the key determinants of inflation in the Solomon Islands by undertaking an empirical study for the period 2003-2012. Using quarterly time series data, our results are two-fold. First we find that in the long-run, both money supply and government spending play an important role in the inflationary processes in the Solomon Islands. Second, in the short-run, the one-period lag or dynamics of nominal effective exchange rate does affect the inflation rate. There is clear evidence that the inflation is both affected by both domestic and external pressures.

* The authors wish to express their sincere gratitude and thanks to Professor Paresh Narayan for his valuable comments and suggestions throughout the development of this paper. Special thanks to members of the Economics, Research, and Statistics Department of the Central Banks of the Solomon Islands for their assistance and guidance. The views expressed herein are those of the authors and do not necessarily reflect those of the Central Bank of the Solomon Islands.

1. Introduction

Macroeconomic stabilisation is an important task of economic policy of which price stability is an integral component. There is a vast body of literature that identifies the main determinants of inflation in advanced economies and emerging economies (for summary see Watanabe and Cournède; Vogel et al.,2009; Jaumotte and Morsy, 2012; Domaç and Yücel, 2004; Mohanty and Klau, 2008; Osorio and Unsal, 2011), and developing economies (for a cross-country analysis see Loungani and Swagel, 2001) where economic theory argues that inflation is caused by both monetary and non-monetary variables, reflecting domestic and external pressures, such as money stock, exchange rate, unemployment rate, wages, fiscal deficit, oil prices, government securities market and output. The empirical findings from the majority of these studies confirm that money supply, exchange rates, government spending and prices of trading partner countries are important determinants of inflation.

However, given data limitations in the past, not much is known about the sources of inflation in small island states such as the Solomon Islands. Ascertaining the determinants of inflation is, therefore, the first step in understanding price movements and in identifying measures linked to the containment of inflation at an acceptable level. Evidence from this study will help to guide the Central Bank of the Solomon Islands (CBSI) in formulating appropriate monetary policy decisions in its efforts to achieve its primary objective under the CBSI Act (2012): *to achieve and maintain domestic price stability in Solomon Islands*[1]. Of the limited studies on the Pacific island countries (PICs), Jayaraman and Chen (2013) and the IMF country reports (2008, 2011) find that the common determinants of inflation are monetary aggregates, exchange rate, interest rates, trading partners' inflation and inflation expectations.

The Solomon Islands, like most other PICs depend heavily on tradable and consumable goods, thereby exposing the economy to external shocks. Although the inflation rate of the Solomon Islands

[1] CBSI has additional objective that also include fostering and maintain a stable financial system whilst supporting the general economic policies of Government, without the prejudice of attaining its two priority objectives.

is largely affected by domestic conditions, such as weather, the impact of external conditions is likely to have a significant second round effect via imported components that feed through to domestic inflation. In this paper, we examine the determinants of inflation for the Solomon Islands using time-series quarterly data for the period 2003-2012. Consistent with the literature and appropriate to the economy, we use three determinants, namely government expenditure, narrow money, and the nominal effective exchange rate, to characterise the domestic and external determinants of inflation. Government spending and money supply represent the domestic variables while the nominal effective exchange rate reflects the external conditions. Reviewing our results, we find that inflation, using the price index, and its determinants share a long-run relationship. We find that only narrow money and government spending have a statistically significant and positive relationship in the long-run. By adding variable dynamics to the error correction model (ECM), a one-period lag of the nominal effective exchange rate was found to be significant in the short-run.

The rest of this paper is outlined as follows. Section 2 undertakes a brief overview of the recent literature and draws implications for the Solomon Islands. Section 3 explains the theoretical framework motivating the empirical analysis and discusses the econometric approaches used in this study. Section 4 discusses the empirical findings, while concluding remarks and policy implications appear in Section 5.

2. An overview of the literature and the implications for Solomon Islands

An extensive body of literature has focussed on the determinants of inflation across a range of countries and this section aims to summarise the key features of this literature. Essentially, we identify three main features of the literature on the determinants of inflation.

The first feature is that most of the studies have been carried out on developed countries and emerging economies (see Darrat, 1985; Kandil *et al*., 2002) with a growing interest on developing countries (for see Lim *et al*.,1997; Magda and Hanan, 2009; Bonato, 2007; Al Raisi and Sitikantha,

2003; for Tajikistan, see Qurbanalieva, 2013). Limited evidence exists on small island states and particularly on Pacific island countries, owing mainly to lack of sufficient time-series data.

The second feature relates to econometric methodology. The majority of the studies have used the Vector Autoregressive (VAR) models, cointegration testing, error correction models, and the Granger causality test to analyse the determinants of inflation.

The final feature of the literature relates to the variables used as determinants of inflation. For instance, Dhakal *et al.* (1994) concluded that the main determinants of inflation in the US were money supply, wage rates, budget deficit, and energy prices. Furthermore, using panel data analysis, Cottarelli *et al.* (1998) found that for 47 advanced and transition economies, non-monetary variables, such as fiscal balances and price liberalisation, were important factors determining inflation. In developing and emerging economies, additional variables were also identified as important for inflation. Lim *et al.* (1997) concluded that, in Turkey, monetary variables (money and the exchange rate) played a central role in the inflationary process. Studies on Nigeria by Kuijs (1998) and on Iran by Liu *et al.* (2000) also concluded that monetary policy matters for inflation whilst Fanizza and Soderling (2006) argued that monetary policy was insufficient in explaining price level if public debt was properly managed. They concluded that, in the case of Middle East and North African countries, a sound fiscal position constitutes a necessary condition for macroeconomic stability, whereas a sound monetary policy is neither sufficient nor necessary. Furthermore, a study undertaken by Kandil and Morsy (2009) on the Gulf Cooperation Council (GCC) countries (Bahrain, Kuwait, Oman, Qatar and Saudi Arabia) found that inflation of major trading partners and oil revenues were the most relevant foreign factors and that oil revenues reinforced inflationary pressure through growth of credit and aggregate spending. The main implication here is that depending on the economic structure, such as whether or not countries are oil consumers or producers, matters in terms of what factors determine inflation.

There are far fewer studies on the Pacific island countries. Jayaraman and Chen (2013), for instance, emphasised the importance of budget deficit, nominal exchange rate, and poor governance in influencing inflation trends in Fiji. For Papua New Guinea, the IMF (2008) in their 2008 country report found that the nominal effective exchange rate (NEER) was the most important determinant of price level, followed by government expenditure, and broad money. More specifically, the IMF (2011), in their country report for the Solomon Islands, suggested that global food and fuel prices were important factors influencing inflation. Furthermore, a recent study by the IMF (2013), also found that global commodity prices, aggregate demand, and exchanges rates were all important determinants of inflation. The main implication here is that we choose a list of variables based on this literature and conditional on data availability for the Solomon Islands.

3. Empirical Framework

This section presents the empirical framework to estimate the determinants of inflation in the Solomon Islands. Domestic price level is affected by both external and domestic factors. In developing a country-specific model for the Solomon Islands, three variables, namely money supply, the nominal effective exchange rates, and government spending are taken as the key determinants of inflation, consistent with the literature alluded to earlier. Based on this, the following functional form is proposed:

$$HCPI = f(M1, NEER, GS) \quad (1)$$

where $HCPI$ is the Honiara Consumer Price Index or the domestic price level, $M1$ is the nominal money supply proxied by narrow money, $NEER$ is the nominal effective exchange rate and GS denotes the overall government spending[2]. The $NEER$ is included to represent the external conditions and impact to the overall inflation measure. Narrow money is included in this model to reflect the monetary policy transmission and the impact narrow money has on inflation. Government spending is included to gauge the impact of fiscal policy on inflation through the

[2] This includes both recurrent and development expenditure.

aggregate demand channel. Wage rates can also affect aggregate demand and potentially leading to upward pressure on inflation. However, a wage rate variable is not included in our discussion due to the unavailability of data. Inflation of trading partners, another variable representing external price movements, was originally included in the model but found to be highly correlated with the dependent variable, $HCPI$; and other explanatory variables, hence, omitted from the final model.

The monetary aggregate, $M1$, is expected to have a positive relationship with inflation; when money supply increases, the resulting demand pressure in the economy may lead to demand pull inflation. Theoretically, the nominal effective exchange rate, $NEER$, affects inflation through the exchange rate channel such that when there is an appreciation of the Solomon Island dollar, the cost of imports would be cheaper and should, therefore, drive down inflation on imported items. On the other hand, if there is a depreciation, a price increase on the imported items would be expected. Hence, a negative relationship between inflation and the nominal effective exchange rate is expected. Government spending, GS, is also perceived to be positively related to inflation through fiscal expansion, which encourages employment and higher incomes. This, in turn, will lead to an increase in aggregate demand causing inflationary pressures.

3.1. Long-run model specification

We construct our model using three determinants because we do not have sufficient time-series data on other variables. However, including both domestic and external factors in the model would sufficiently capture the impact in the long-run, if there is any.

In the long-run model, we expect the $NEER$ to have negative and statistically significant effect to inflation whilst $M1$ and GS have positive and statistically significant effect. The following time-series regression model in equation 2 captures this relationship.

$$ln\mathrm{HCPI}_t = \alpha_0 + \alpha_1 ln\mathrm{NEER}_t + \alpha_2 ln\mathrm{M1}_t + \alpha_3 ln\mathrm{GS}_t + \varepsilon_t \quad (2)$$

3.2. Short-run model specification

The short-run inflation equation is an error correction of the long-run equation. Assuming that there is a long-run relationship, that is, the variables are cointegrated between inflation and its determinants, the short-run model is represented by Equation (3).

$$\Delta ln\mathrm{HCPI}_t = \alpha_0 + \alpha_1 \Delta ln\mathrm{NEER}_t + \alpha_2 \Delta ln\mathrm{NEER}_{t-1} + \alpha_3 \Delta ln\mathrm{M1}_t + \alpha_4 \Delta ln\mathrm{M1}_{t-1} + \alpha_5 \Delta ln\mathrm{GS}_t + \alpha_6 \Delta ln\mathrm{GS}_{t-1} + \alpha_6 \mathrm{ECT}_{t-1} + \mu_t \quad (3)$$

In Equation (3), ECT_{t-1} is the one-period lag of the residuals, which are obtained from Equation (2). The long-run equilibrium relationship between $ln\mathrm{HCPI}_t$ and the explanatory variables will be captured by a negative coefficient on the error correction term, ECT_{t-1}, which also represents the speed of adjustment at which a short-run disequilibrium is corrected. The symbol Δ denotes the first difference of each of the variables.

4. Empirical Analysis

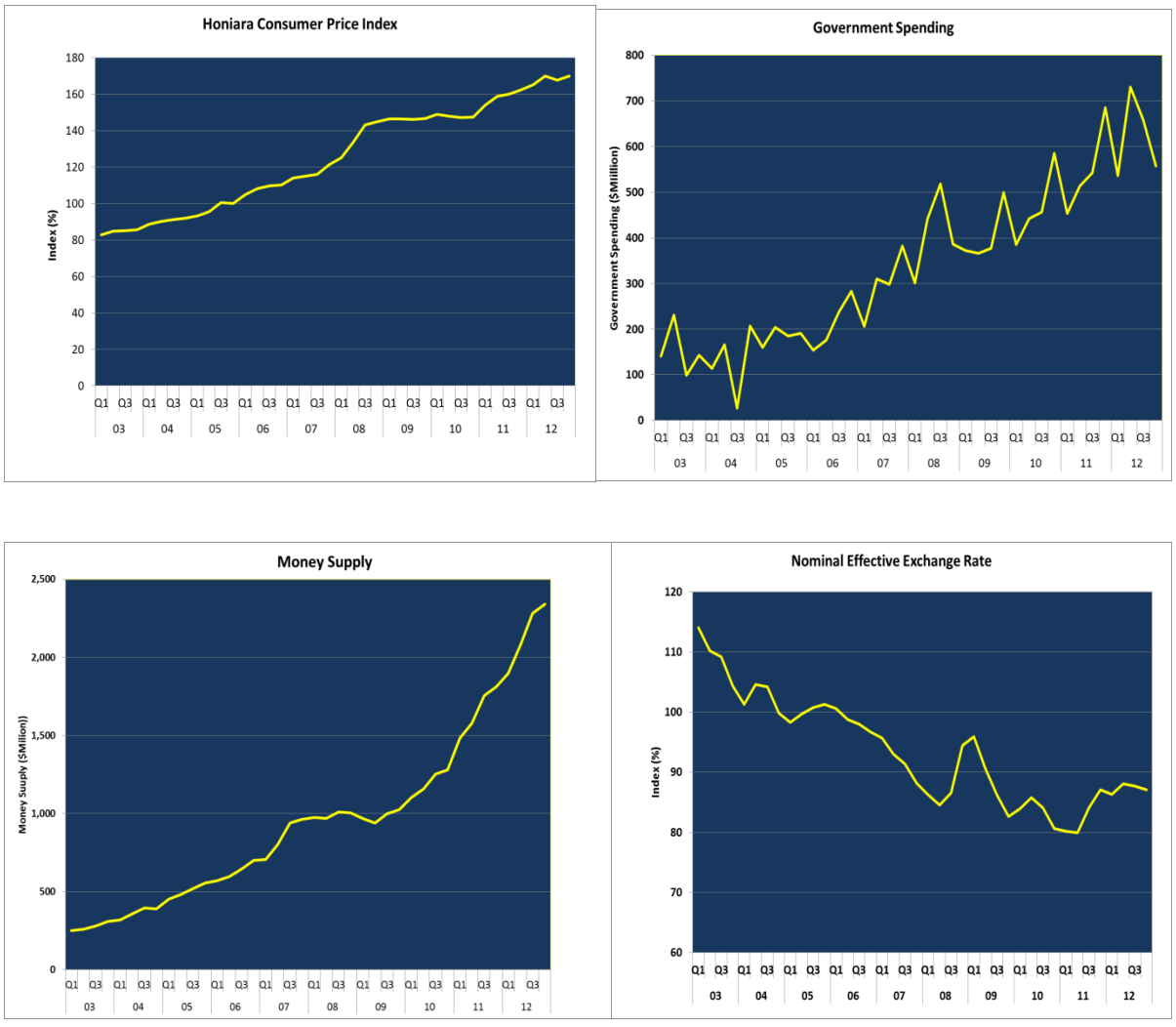
4.1. Data

The data covers a 10-year quarterly sample that spans the period 2003Q1 to 2012Q4. The choice of the sample period is dictated by the availability of data. The rationale for the use of quarterly as opposed to annual data is not only to capture any short-term inflation dynamics but also to ensure reasonable number of observations for time-series econometric modelling. All data series are converted to natural logarithmic form for ease of interpretation.

The Honiara Consumer Price Index was compiled by the Solomon Islands National Statistics Office to measure the changes in the general price level of the basket of goods and services with a base year of 2005Q4. Narrow money, as an indicator for money supply, comprises of currency in circulation and transferable deposits with other depository corporations sourced from CBSI in-house data. We include the nominal effective exchange rate, which is obtained from the IMF's *International Financial Statistics*, indexed to 2005, while government spending, which comprises of both recurrent and development expenditure, is estimated from the Solomon Islands Government budget estimates.

In Figure 1, we plot each of the four variables in our data set. Three observations are worth taking note. First, we notice a clear trend in the data; an upward trend in all series with the exception of the NEER. For the NEER, this downward trend is an indication of a depreciation in the Solomon Island dollar over the 2000-2008 period. We also notice that the Solomon Island dollar appreciated between late 2011 and early 2012. Third, the fluctuations in government spending, GS, suggest a cyclical pattern during the quarters within a given year.

Figure 1: A plot of the data series, 2003Q1-2012Q4



Source: Authors' own plot

Selected descriptive statistics are presented in Table 1. Over the time series, the average value of HCPI was 125.6 index points. Meanwhile, money supply, M1, averaged \$960 million[3] whilst the mean government expenditure value, GS, stood at around \$179 million. The nominal effective exchange rate, NEER, registered an average index value of 93.3 points, implying a appreciation over the time horizon.

Table 1
Selected descriptive statistics

	HCPI	M1	NEER	GS
Mean	125.5625	960.3205	93.2875	179.7484
Median	123.2193	952.6400	92.2000	177.2066
Maximum	170.0667	2341.2300	114.0000	382.5815
Minimum	82.9487	249.6400	79.9000	13.9613
Std. Dev.	28.9491	571.4284	8.9885	93.5179

Source: Authors' own calculations

4.2. Unit Root Test

The aim of this section is to determine the order of integration of the variables considered in the analysis. Understanding the order of integration is the first step before undertaking a test for identifying a long-run relationship. To test for the integrational properties of the time series, we use the augmented Dickey and Fuller (1979, 1981) test based on the following regression model:

$$\Delta y_t = \kappa + \alpha y_{t-1} + \beta_t + \sum_{j=1}^{k} d_j \, \Delta y_{t-j} + \varepsilon_t \qquad (4)$$

Eq. (4) tests for a unit root in y_t, where y consists of each of the four variables in our model, t=1,…,T is an index of time, Δy_{t-j} is the lagged first differences to accommodate serial correlation in the errors, ε_t. Eq. (4) tests the null of a unit root against a trend stationary alternative. The null and the alternate hypotheses for a unit root in y_t are: $H_0 : \alpha = 0$ and $H_1 : \alpha < 0$. To select the lag length (k), we use the 't-sig' approach proposed by Hall (1994). The results of the unit root test are presented in Table 2.

Table 2

[3] This is expressed in Solomon Islands Dollar unless identified otherwise.

ADF unit root test results

	Level		First difference	
	t-stat	p-value	t-stat	p-value
$ln\mathrm{HCPI}$	-0.0902	0.9435	-4.5748***	0.0004
$ln\mathrm{NEER}$	-2.2867	0.1814	-5.3025***	0.0001
$ln\mathrm{M1}$	3.9930	1.0000	-3.9207***	0.0000
$ln\mathrm{GS}$	-0.4181	0.8959	-11.6696***	0.0000

Source: Authors' own calculations
*** denoted statistical significance at 1% levels.

From the results computed for both log-levels and the first difference of the log-levels series, we find that the null hypothesis of a unit root cannot be rejected for any of the four variables at conventional levels of significance. When we consider the first difference of the variables, however, the unit root null hypothesis is rejected at the 1% level. These results suggest that all variables are $I(1)$. Since all variables are stationary in their first difference, they can potentially share a cointegrating relationship in the long-run. The next section discusses the cointegration analysis and the results.

4.3. Cointegration test

The aim of this section is to investigate whether HCPI shares a long-run relationship with its proposed determinants. Based on two statistics (the trace test and the maximum eigenvalue test), we achieve this goal using the Johansen (1988) cointegration test. The testing sequence under the null hypothesis is $r = 0,1, \dots k-1$, where k is the number of series. We increase the value of *r* until we can no longer reject the null hypothesis. If the test statistic is greater than the critical values, we reject the null hypothesis that there are *r* cointegrating vectors in favour of the alternative that there are more than *r* cointegrating vectors. The results are presented in Table 3.

Table 3
Johansen's test for cointegration

$H_0(r)$	$H_1(r)$	Trace statistic	5% CV
0	1	74.6226 ***	69.8189
≤1	2	27.6691*	47.8561
≤2	3	8.9460	29.7971
≤3	4	0.0048	15.4947
$H_0(r)$	$H_1(r)$	Max eigenvalue statistic	5% CV
0	1	46.9535 ***	33.8769

≤1	2	18.7230	27.5843
≤2	3	8.9411	21.1316
≤3	4	0.0048	14.2646

Source: Authors' own calculations
Notes: *,*** denote statistical significance at 10% and 1% levels, respectively.

According to the trace test, we are able to reject the null H_O=0 in favour of H_1=1 at the 1% level whilst we cannot reject the null hypothesis of $H_O \leq 2$ in favour of H_1=3 at the 10% level of significance. Similarly, the maximum eigenvalue test also identifies at the presence of at least one cointegrating relationship at the 1% level of significance. The result suggests that there is at least one long-run cointegrating relationship among the price index, money supply, government spending and the nominal effective exchange rate. Since there is a long-run-cointegrating relationship between the variables, the next step is to assess the long-run elasticity.

4.4. Long-run model

The long-run elasticities of the explanatory variables, money supply, government spending, and the nominal effective exchange rate are reported in Table 4.

Table 4
Long-run elasticities

Regressor	coefficient	t-statistic
$ln\mathrm{M1}$	0.2876 ***	8.4484
$ln\mathrm{NEER}$	-0.2958	-1.4776
$ln\mathrm{GS}$	0.0454*	1.7937
Constant	3.9952***	3.6794

Source: Authors' own calculations
Notes: *, *** denote statistical significance at 10% and 1% levels, respectively.

The relationship between each of the three explanatory variables with inflation, as denoted by the sign of the corresponding coefficients, are consistent with theories such that money supply and government spending have positive relationships with inflation whilst the nominal effective exchange rate has a negative relationship on inflation. Our main findings are as follows. First, we find that the money supply and government spending have positive and statistically significant impacts on the inflation rate. A 1% increase in money supply leads to 0.3% increase in inflation, whilst a 1% increase in government spending causes inflation to increase by 0.05%. Second, our results on the

relationship between the nominal effective exchange rate and inflation suggest a negative relationship; a 1% appreciation in the exchange rate will lead to 0.3% fall in inflation. However, we notice that the exchange rate is statistically insignificant in the long-run.

4.5. Short-run model

To estimate the short-run model, each of the series in natural logarithm form were differenced, denoted by Δ. They were then regressed using Ordinary Least Squares (OLS) by adding the error term from the long-run model in Equation 2, with one lag of the residual from the long-run model in Table 4. The empirical model has both the combination of the determinants of inflation in the long-run with short-run dynamics. The short-run model, Error Correction Model, is presented in Table 5.

Table 5
Short-run elasticities

Dependent variable	Coefficient	t-statistic
When $\Delta ln\mathrm{HCPI}$ is endogenous		
$\Delta ln\mathrm{M1}_t$	-0.1396***	-2.5146
$\Delta ln\mathrm{M1}_{t-1}$	-0.1740***	-2.8121
$\Delta ln\mathrm{NEER}_t$	0.1264	1.4360
$\Delta ln\mathrm{NEER}_{t-1}$	-0.1733*	-1.8118
$\Delta ln\mathrm{GS}_t$	-0.0039	-0.6327
$\Delta ln\mathrm{GS}_{t-1}$	-0.0108	-1.5037
$\mathrm{ECT1}_{t-1}$	-0.3133***	-5.5626
Constant	0.0364***	7.1426

Source: Authors' own calculations
Notes: *, **** denote statistical significance at 10%, and 1% levels, respectively.

In the short-run, the impact of money supply in particular narrow money is small although statistically significant. Government spending in the short-run has a negative relationship but statistically insignificant effect on inflation. Furthermore, both variables do not display the expected relationship in terms of expected relationship. Money supply, despite being statistically significant at the 1% level, shows a negative relationship with inflation. On the other hand, the lag of nominal effective exchange rate shows a statistically significant relationship with HCPI at the 10% level. Meaning that past levels of nominal effective exchange rate do affect inflation of the current period in the short run.

The important result obtained from the short-run model relates to the error correction term, which is statistically significant and has the expected negative coefficient suggesting that, on average, 31% of the disequilibrium in the inflation rate will be corrected within one quarter. This means that it will require four quarters or about 12 months for inflation to adjust to its long-run equilibrium level following a shock to the system in any of the three variables in the model.

4.6. Granger Causality

In this section, we examine the causality of the relationship between explanatory and dependent variables. The Granger causality statistic is the F-statistic testing the null hypothesis that the coefficients of all lagged values of a variable are zero. This null hypothesis implies that these regressors have no predictive content. From the results (see Table 6), we find that in the ECM model, there is a unidirectional Granger causality effect at the 10% level of significance running from a one-period lag of government spending, $\Delta ln\mathrm{GS}_{\mathrm{t}-1}$, to inflation, indicating that government spending is a useful predictor of inflation in the Solomon Islands. On the other hand, narrow money has significant bi-directional granger causality with inflation. This means both variables have some predictive element to affecting each other at a 5% significance level. Meanwhile we also found that unidirectional causality at 5% level existed with causality emerging from inflation to nominal effective exchange rate and not the other way around as expected.

Table 6
Results of pairwise Granger causality test

when all variables is endogenous	F -statistic (probability)
Δ *ln* M1	2.92703**[0.0401]
Δ *ln* M1(-1)	2.7418** [0.0510]
Δ *ln* NEER	1.1228 [0.3673]
Δ *ln* NEER(-1)	0.5940 [0.6702]
Δ *ln* GS	1.4439 [0.2478]
Δ *ln* GS(-1)	2.5483* [0.0643]
when Δ *ln* HCPI is endogenous	F -statistic (probability)
Δ *ln* M1	3.8404** [0.0139]
Δ *ln* M1(-1)	4.6922*** [0.0058]
Δ *ln* NEER	2.4528* [0.0710]
Δ *ln* NEER(-1)	2.4827* [0.0696]
Δ *ln* GS	0.3464 [0.8441]

Δ *ln* GS(-1)	0.6124 [0.6576]

Source: Authors' own calculations
Notes: The probability values are in square brackets.

*, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

4.7. Results from Diagnostic Tests

Having identified that all variables are cointegrated, this section examines some of the commonly used diagnostic tests to check whether or not our empirical model is consistent with the assumptions of the OLS estimator.

The first test evaluates the normality of the residuals. We conduct the normality test such that the null hypothesis is normally distributed. We find that we cannot reject the null hypothesis of normality implying that the residuals are normally distributed at the 1% level.

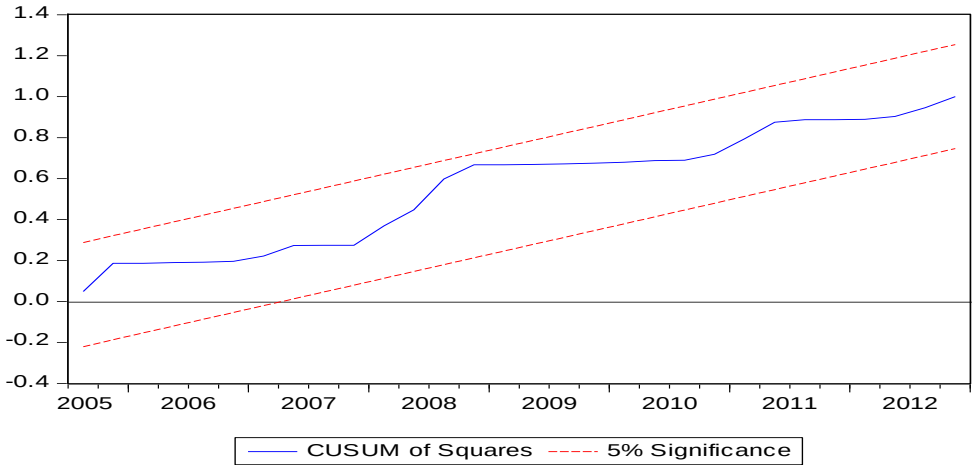
We also test the residuals for serial correlation. Using the Breusch-Godfrey serial correlation LM test, we examine the null hypothesis of 'no autocorrelation' among the residuals. For the estimated model, we are unable to reject the null hypothesis of 'no autocorrelation'. There is robust evidence that the residual are free from autocorrelation at the 5% level.

In conducting the Breusch Pagan-Godfrey test for heteroscedasticity, we examine the null hypothesis that the residuals are homoscedastic. Again, we find that that we cannot reject the null hypothesis at the all the conventional levels, suggesting that the residuals of the variables are homoscedastic and that they are independent of one another.

4.8. Parameter stability

Testing the parameter stability of the model, we use the Cusum2 Test where the null hypothesis of no sudden shift in the model. A function is deemed stable if the Cusum squared statistics remain within the 5% critical bounds. We find that we are unable to reject the null hypothesis that there is no sudden shift in the model indicating that the model is stable (Figure 2).

Figure 2: CUSUMSQ test results for HCPI



When testing the stability of the model, we also conducted the Ramsey RESET test where we test that the null hypothesis of the coefficient on the powers of fitted values are all zero. The results showed that the null hypothesis of normally distributed mean and variance of one is rejected at 5% level. This is likely to be caused by problems associated with the relatively small sample size.

4.9. Variance Decomposition

In this section, we estimated the variance decomposition and impulse response analyses where we explore the relative strengths of the various impacts through which the explanatory variables impulses are transmitted to the price level. Variance decomposition indicates the size of the fluctuations in a given variable attributed to different shocks. The variables entered are in the following order: $\Delta ln\mathrm{HCPI}_t$ $\Delta lnGS_t$, $\Delta lnM1_t$ and $\Delta lnNEER_t$. We calculate the variance decomposition of $\Delta ln\mathrm{HCPI}_t$ for a forecast horizon of 10 periods, with one to four quarters representing the short-term while, 6 to 10 periods are horizon for medium to long term. Table 7 presents the findings for HCPI.

Table 7
Variance decomposition

Variance Decomposition of Δ *ln* HCPI:					
Period	S.E.	Δ *ln* HCPI	Δ *ln* GS	Δ *ln* M1	Δ *ln* NEER
1	0.0179	100.0000	0.0000	0.0000	0.0000
2	0.0204	78.1105	5.7429	1.9639	14.1827
3	0.0234	59.7462	15.4484	1.5813	23.2241

4	0.0246	56.2926	17.2050	1.4426	25.0598
5	0.0255	54.7900	16.8844	1.6261	26.6995
6	0.0266	53.4130	18.5703	1.6059	26.4107
7	0.0279	52.8378	18.7174	2.0509	26.3939
8	0.0293	50.3251	19.5421	1.8703	28.2625
9	0.0301	48.7770	19.1755	2.0014	30.0461
10	0.0310	47.5245	19.1983	2.0222	31.2550

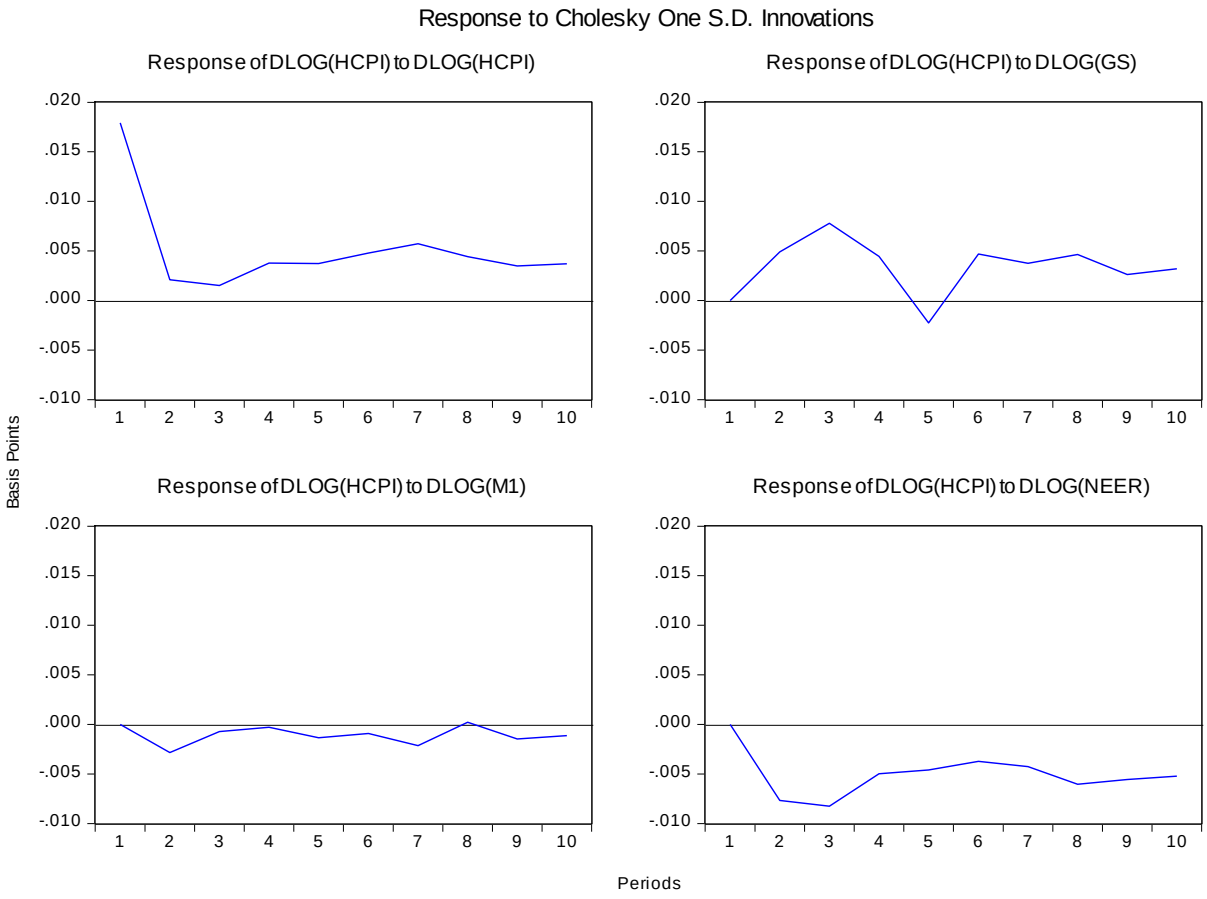
Source: Authors' own calculations
Cholesky Ordering: Δ *ln* HCPI Δ *ln* GS Δ *ln* M1 Δ *ln* NEER

Results obtained in the variance decomposition indicate that the variance of inflation is dominated by its own shocks, followed by fluctuations in the nominal exchange rate then the government spending, and narrow money. The result for narrow money reflects the weak transmission of narrow money into impacting the magnitude of inflation movements in the economy, which was consistent with the previous finding on the monetary transmission paper preliminary findings, (see Especkerman-True *et al*., 2014). After 2 years, 28% of the variation in inflation was explained by the nominal effective exchange rate and 19% is accounted for government spending whilst narrow money spending explained 2%. This is consistent with our findings in the previous sections confirming that the variables under this framework do affect inflation in the medium-run. Meanwhile, in the short-run, changes in inflation are caused by immediate inflation expectations in the first two quarters of the forecasted period and, to a lesser extent, by the nominal effective exchange rate of 14%.

4.10. Impulse response analysis

The aim of this section is to trace the responsiveness of the dependent variable (HCPI) when there is a one standard deviation innovation or a shock to the economy through each of the explanatory variables. The time taken for HCPI to respond to these shocks is of importance for policy decisions. For investigating the impulse response function by the Choleski decomposition, we adopt the same ordering of variables as for the variance decomposition analysis. These are illustrated in Figure 3.

Figure 3: The Impulse response function of Δ*ln* HCPI



Source: Authors' own plot

From the results, the inflation positively responded to changes in government spending within the first three quarters after which, negative responses followed for the next two quarters till the end of the fifth quarter then inflation responded positively in the sixth quarter then impact becomes small and negligible. Theoretically, this one standard deviation shock takes a year and a half for the impact to be fully absorbed in the economy, which reflects spending patterns and aggregate demand, and eventually translates to inflation. This is consistent with the previous finding that government spending affected inflation only in the long run. on the hand, inflation negatively responds to a one SD innovation in narrow money within two quarters but the effect dies out after the third quarter. This was consistent with the negative relationship in the short run, reflecting weak monetary transmission mechanism in the economy to affecting inflation. Finally, inflation negatively responds to a one SD innovation in the nominal effective exchange rate (which implies an appreciation) within

two quarters but the effect dies out after one year. This reflected the short run impact of NEER to HCPI.

5. Conclusion and Policy Implications

The literature and empirical findings regarding the determinants of inflation is vast. However, very little has been produced in the context of the Solomon Islands.

The goal of this paper is to explain the determinants of inflation in the Solomon Islands. Our findings are 1) there is a long-run relationship between inflation, money supply, government spending and the nominal effective exchange rate; 2) in the long-run, narrow money and government spending are statistically significant determinants of inflation whilst in the short-run, the lag or dynamics of narrow money and the nominal effective exchange rate demonstrated statistically significant relationships with HCPI; 3) the speed of adjustment in prices to any shock was found to be 31% for each quarter, implying that it will take about a year for HCPI to adjust back to its long-run equilibrium should there be a shock to the system or any of the three variables; 4) in the short-run, changes in inflation are mainly explained by itself although in the medium term, over two thirds of the variation can be attributed to money supply and the NEER; 5) the impact of explanatory variables on inflation starts to take place after the first two quarters and dies out within the sixth quarter.

The policy implications emerging from our study are as follows; 1) in addition to monetary policy, fiscal policy, as defined by government spending, is an important determinant of inflation and should be monitored regularly; 2) the exchange rate is also found to be a driver of inflation via its pass-through effects from imported prices and dependency on imported goods; therefore, an important instrument for tackling imported inflation and, indirectly, domestic inflation (through the second round effects).

However, like with all empirical studies, this research is constrained by data limitations and findings should be taken with some caution. Headline inflation in Solomon Islands only covers that of prices in Honiara and does not capture prices in the other eight provinces; thereby, not reflecting the landscape of national prices. Recent work carried out in the CBSI Provincial Price Survey (2013) provided indicative findings to suggest that prices across provinces can vary significantly suggesting that the use of a Honiara-based index may downplay or exaggerate price movements in other provinces. Work on this is important in order to understand the true inflation rate of the country.

Further additional work on demand conditions such as the role of wages, understanding supply-side factors, and unpicking the inflation expectations channel would help to enhance CBSI's ability to tackle inflation as and when levels are deemed unsuitable.

REFERENCES

Al Raisi, A., Sitikantha P., (2003). Pass-Through of Exchange Rate Changes to Domestic Prices in Oman. *Central Bank of Oman Occasional Paper* No. 2005–1.

Bonato, L., (2007). Money and Inflation in the Islamic Republic of Iran. *IMF Working Papers 07/119,* (Washington: International Monetary Fund, 2007).

Cottarelli, C., Griffiths, M., Moghadam, R., (1998). The Nonmonetary Determinants of inflation: a Panel Data Study. *IMF Working Paper 98/23,* (Washington: International Monetary Fund, 1998).

Darrat, A., (1985). The Monetary Explanation of Inflation: The Experience of three Major OPEC Economies. *Journal of Economics and Business*, Vol. 37, pp. 209–21.

Dhakal. D., Kandil. M., Sharma. C. Subhash., Trescott. B. Paul., (1994). Determinants of the inflation rate in the United States: A VAR investigation. *The Quarterly Review of Economics and Finance, Volume 34, Issue 1*, Spring 1994, Pages 95-112

Dickey, D., Fuller, W., (1979). Distributions of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74, 427–431.

Dickey, D., Fuller, W., (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49, 1057–1072.

Especkerman-True, K., Ragimana, E., Samani, P., Takana, V., (2014). A Money Demand Function of the Solomon Islands. *Central Bank of Solomon Islands Working Paper*, Honiara.

Fanizza, D., Soderling, L., (2006). Fiscal Determinants of Inflation: A Primer for the Middle East and North Africa. *IMF Working Paper 2006/216,* (Washington: International Monetary Fund, 2006).

Hall, A., (1994). Testing for a unit root in time series with pretest data based model selection. *Journal of Business and Economic Statistics*, 12, 461–470.

Jayraman, T.K., Chen, H., (2013). Do budget deficit causes inflation in the Pacific Island Countries? An empirical study of Fiji. *School of Economics Working Paper no 2013/02*.

Johansen, S., (1988). Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control*, 12 (2/3), 231-254.

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.*

Kandil, M., Morsy, H., (2009).Determinants of inflation in GCC. *IMF Working Papers 09/82*, (Washington: International Monetary Fund, 2009).

Kandil, M., and Ida Mirzaie, (2002). Exchange Rate Fluctuations and Disaggregate Economic Activity in the US: Theory and Evidence. *Journal of International Money and Finance*, Vol. 21, no. 1, February, pp. 1-31

Kandil. M., and Hanan, M., 2009, "Determinants of Inflation in GCC". *IMF Working Paper 09/82*, (Washington: International Monetary Fund).

Kuijs, L., (1998). Determinants of Inflation, Exchange Rate, and Output in Nigeria. *IMF Working Paper 98/160,* (Washington: International Monetary Fund,1998).

Lim, H C., Papi, L., (1997). An Econometric Analysis of the Determinants of Inflation in Turkey. *IMF Working Paper 97/170,* (Washington: International Monetary Fund,1997).

Liu, O., Adedeji, S. O., (2000). Determinants of Inflation in the Islamic Republic of Iran- A Macroeconomic Analysis. *IMF Working Paper 00/127,* (Washington: International Monetary Fund, 2000).

Monetary Transmission Mechanisms and Inflation Dynamics in Solomon Islands
http://www.imf.org/external/pubs/ft/scr/2011/cr11360.pdf

Ragimana. E., Baragamu. L., (2013). 'Price Survey'. *Central Bank of Solomon Islands Working Paper*.

The Central Bank of Solomon Islands Act. (2012, December). pp.11