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DO PRICE CONTROLLED BASIC FOOD ITEMS AFFECT INFLATION IN FIJI?

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ABSTRACT

This note examines the effects of price-controlled perishable food items on inflation in Fiji. We study year-on-year changes in headline inflation and disaggregate measures of inflation in the form of food and non-alcoholic beverages and vegetables against three perishable food items used daily by Fijian households, namely, potatoes, onion, and garlic over the period 2019:01-2022:08. We also follow Narayan *et al.* (2023), allowing for the lags and leads framework in examining Fiji's inflation. Our results show that the leads and lags model explain 22%, 27% and 65% of headline, food and non-alcoholic beverages and vegetables inflation rates, respectively, over the period 2019-2022. However, as expected, none of the price-controlled perishable food items can explain Fiji's inflation.

Keywords: Inflation; Price-controlled; Food items; Fiji.

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I. INTRODUCTION

The price ceiling policy is temporarily used by governments in low-income nations to moderate the effects of escalating prices of certain commodities which are regarded as necessities. In several nations, like Fiji, where price controls in the form of price ceilings are persistently used to regulate the prices of necessities to improve consumer welfare, the role that this policy plays in combating inflation becomes blurry.

In this respect, we take the case of Fiji to investigate whether the price ceilings imposed are in effect moderating inflation. We pay attention to perishable food items, which are heavily consumed and are mainly imported. To this end, the study uses unique data that the Fijian Competition and Consumer Commission (FCCC) collects on three perishable commodities, namely potatoes, onion and garlic. These commodities are mostly imported from Australian and New Zealand.¹ In Fiji's context, perishable goods are not sourced locally and considered staple and therefore, regulated.

This note is motivated by Narayan *et al.* (2023) and develops testable models of headline inflation and two of its disaggregates. Narayan *et al.* (2023) show that over an extended time (sample) period (1996-2020) expectations of forward-looking and backward-looking agents alone explains 85% of the changes in Fiji's inflation rate. The authors use several external and internal factors to develop a hybrid New Keynesian Phillip Curve (NKPC) model as well as establishing the mediating role of capital controls and the political crisis.

We contribute to this literature which is still at its nascent stage for Small Island Developing States (SIDS) by examining the implications of perishable food items (which are price controlled and heavily imported) on headline inflation and some of its disaggregate measures which are relevant here, namely, food and non-alcoholic beverages and vegetables, which is a subset of the former. Indeed, perishable items feature in the food and non-alcoholic beverage category and its sub-category, vegetables. In the shopping basket of an average Fijian consumer, food and non-alcoholic beverages, of all consumer spending items, are most important. In the calculation of the consumer price index, food and non-alcoholic beverages takes a weighting of 34.7% at the national level. At the division level, the northern (50%) division of Fiji gives more importance to food and non-alcoholic beverage, followed by western (35.6%) and central (31.5%) divisions (Fiji Bureau of Statistics, 2023).

II. EMPIRICAL ANALYSIS

A. Our Model

Our empirical model has roots in Narayan *et al.* (2023) in that we propose the baseline model allowing for the expectations of forward-looking and backward-looking agents, which is then extended to include the perishable food items:

¹ <https://www.potatopro.com/fiji/potato-statistics>; <https://www.selinawamucii.com/insights/market/fiji/garlic/#import-quantities>; <https://fijilive.com/onion-shortage-due-to-delayed-harvesting/>

$$INF_t = \alpha_0 + \sum_{i=1}^t \alpha_1 INF_{t-i} + \sum_{i=1}^t \alpha_2 INF_{t+i} + \epsilon_t \quad (1)$$

Here, α s are the parameters to be estimated. INF captures the headline inflation and its disaggregates, such as food and non-alcoholic beverages and vegetables. As explained in Narayan *et al.* (2023), $\sum_{i=1}^t \alpha_1 INF_{t-i}$ captures the lag effects which depict expectations building of the backward-looking agents and $\sum_{i=1}^t \alpha_2 INF_{t+i}$ captures the lead effects, which depict expectation building of forward-looking agents. ϵ_t is the error term.

Model (1) is extended to include prices of perishable food items which are represented in Z_t :

$$INF_t = \alpha_0 + \sum_{i=1}^t \alpha_1 INF_{t-i} + \sum_{i=1}^t \alpha_2 INF_{t+i} + \alpha_3 Z_t + \epsilon_t \quad (2)$$

The lag and lead structures are determined using the Akaike Information Criteria. The models are developed as stationary form.

B. Data

The study employs monthly data over the period 2019:01-2022:08. Fiji felt the impact of the pandemic from 2020 to 2021 with its recovery effort in 2022. We allow for a 12-month period pre-COVID-19 for comparison purposes. Price ceiling on perishable items continued to be adopted throughout our sample period.

Inflation data are sourced from the Reserve Bank of Fiji (RBF), while perishable food price is sourced from the FCCC. The food prices are monthly averages of prices collected from a few field visits conducted by FCCC as part of their review each month.

The common statistics on the variables to be used in proposed models are presented in Table 1, Panel A. All inflation variables are created as a year-on-year percentage changes of the respective indices. Over the period 2019:01-2022:08, headline inflation ($HINF$) took the mean value of 0.5% while vegetables and food and non-alcoholic beverages ($FBINF$) averaged 4.7% and 3.4%, respectively. In terms of volatility, the headline inflation is the most volatile and vegetables seems to be one of the main contributors. Vegetable inflation is more volatile than that of food and non-alcoholic beverages.

For the perishable food items, represented in terms of per kg price, garlic is the most expensive (\$4.55), followed by potatoes (\$1.87) and onions (\$1.92). Potato prices are most volatile, followed by onion and garlic. Figure 1 further clarifies the evolution of the variables over recent times.

Figure 1.
Inflation and Perishable Food Prices

The first three charts depict the headline inflation (HINF), food and non-alcoholic beverages (FBINF) and vegetable inflation (VINF). The other three charts display the evolution of garlic, onion and potato prices (in Fiji Dollars).

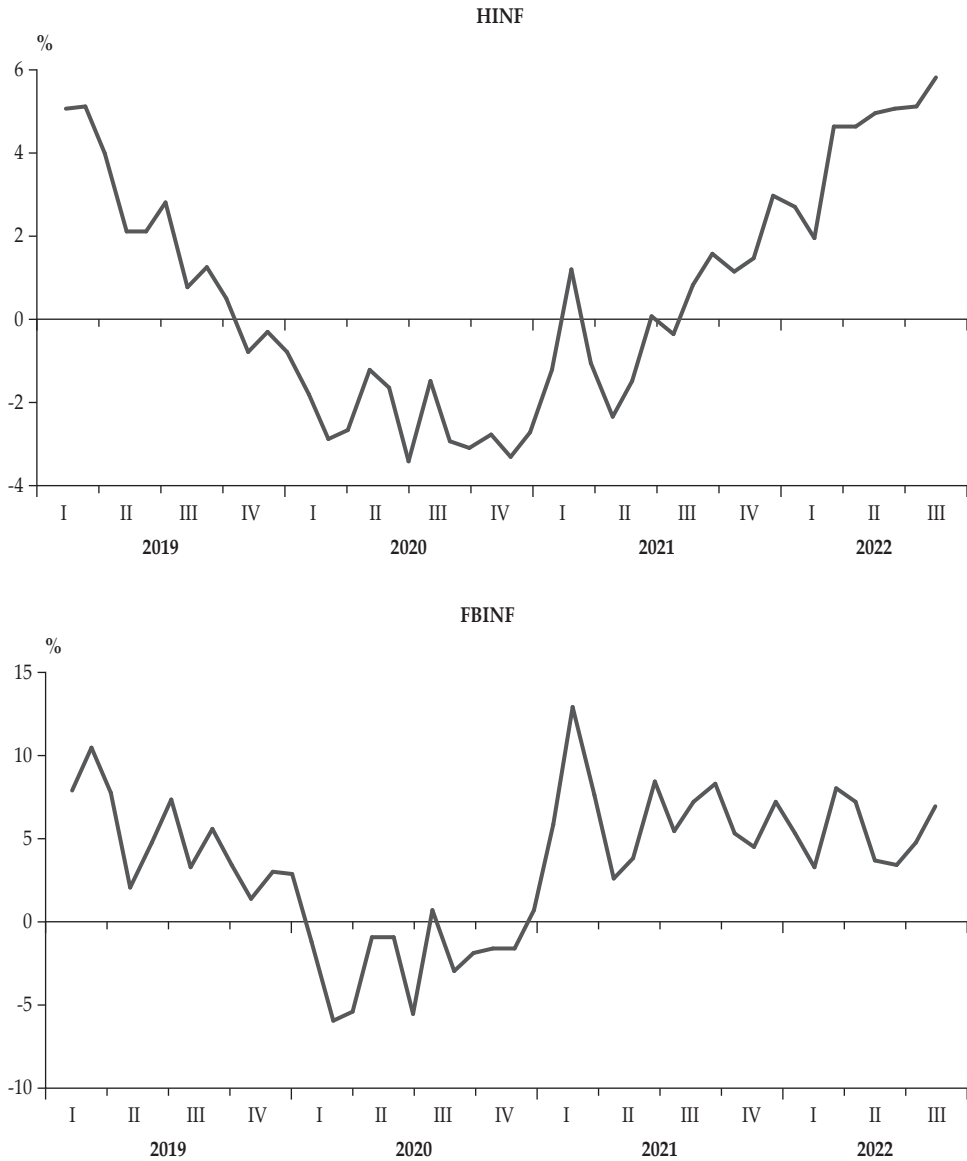


Figure 1.
Inflation and Perishable Food Prices (Continued)

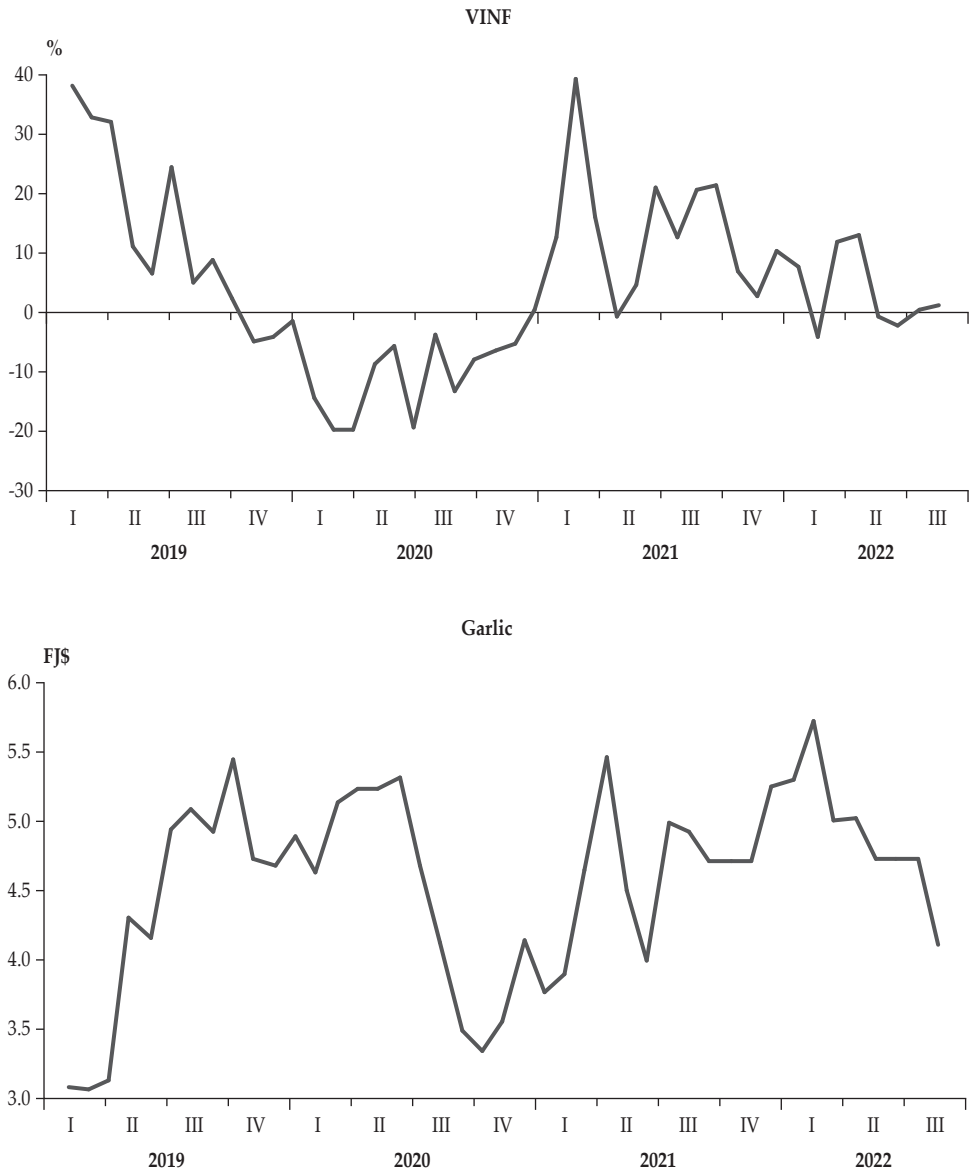
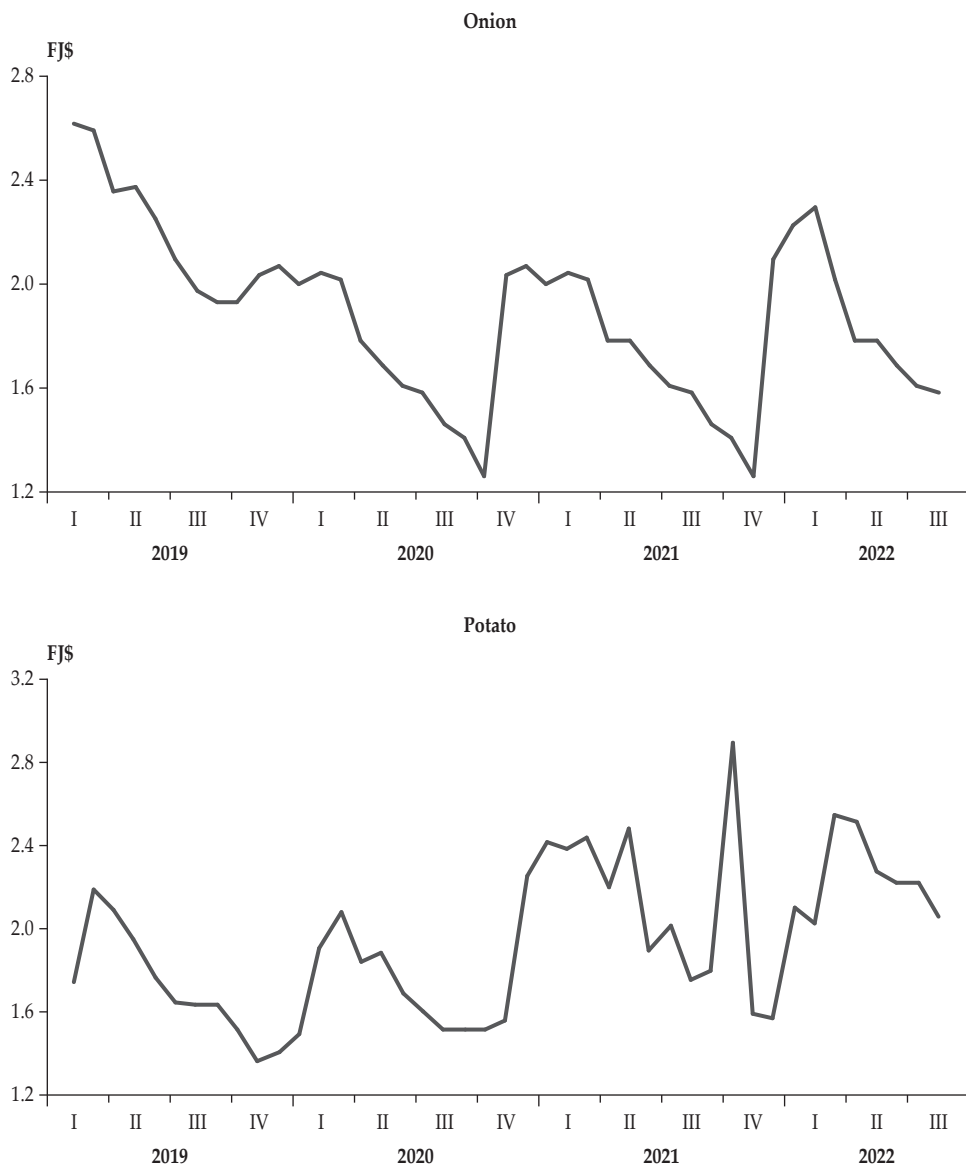


Figure 1.
Inflation and Perishable Food Prices (Continued)



Source: Reserve Bank of Fiji, FCCC

The unit root test results are displayed in Table 1, Panel B. Notice that *HINF*, *FBINF* and log of onion prices are non-stationary or I(1) variables while the rest are I(0) variables. Since all variables appear in the model in stationary form, all I(1) variables are differenced once. The graphs suggest structural breaks in the data. In response, we performed the Narayan and Popp (2010) structural break

test. Narayan and Popp (2013) explain the advantage of this structural break test, which is endogenous, and selects break dates with greater precision. This is useful because precision of break date selection brings efficiency in testing the null hypothesis of a unit root (see Narayan and Popp, 2013).

Table 1.
Descriptive Statistics and Stationarity Results

This table displays the common statistics (Panel A) and the unit root test results (Panel B). We conducted the ADF unit root test and provide the test statistics and the corresponding probabilities in parenthesis. LGARLIC, LONION, and LPOTATOES are, respectively, the natural logarithm of garlic onion and potatoes. HINF, FBINF and VINF are, respectively, headline inflation, food and beverage price inflation, and vegetable price inflation.

Panel A. Descriptive Statistics						
	HINF	FBINF	VINF	GARLIC	ONION	POTATO
	%	%	%	Per kg (\$)	Per kg (\$)	Per kg (\$)
Mean	0.503	3.358	4.732	4.548	1.872	1.922
Median	0.438	3.617	2.323	4.700	1.921	1.882
Maximum	5.174	12.937	38.978	5.720	2.609	2.888
Minimum	-3.525	-6.076	-20.292	3.040	1.250	1.351
Std. Dev.	2.783	4.395	14.821	0.689	0.329	0.371
C.V.	553.570	130.874	313.166	15.157	17.584	19.293
Observations	43	43	43	43	43	43
Panel B: Unit Root Test Results						
	HINF	FBINF	VINF	LGARLIC	LONION	LPOTATOES
I(0)	-1.216 (0.659)	-2.694 (0.083)	-3.284 (0.022)	-3.0358 (0.040)	-2.782 (0.070)	-3.193* (0.027)
I(1)	-5.928 (0.000)	-7.232 (0.000)			-6.466* (0.000)	

C. Empirical Results

The relationship between headline inflation (*HINF*) and perishable food items (*GARLIC*, *ONION*, *POTATIOES*) are explained using Models (1) and (2) and results are presented in Table 2. Notice that headline inflation is explained by expectations of economic agents by 22%. This is lower than Narayan *et al.* (2023) which covered a much larger sample and used underlying inflation rate, which excludes large price changes. The models' explanatory power increases with the addition of the perishable food prices to 48%. Yet, perishable food prices are not having any significant impact on the headline inflation of Fiji.

Table 2.
Headline Inflation and Perishable Items

This table presents the headline inflation (HINF) model with and without the price controlled perishable food items. The lags ($t-1$) and leads ($t+1$) in the models are determined using the Akaike Information Criteria (AIC). D denotes first difference of the variable. * denotes significance at the 5 % or better.

Variable	Coef.	Prob.	Coef.	Prob.
Dependent Variable: Headline Inflation				
C	0.799	0.359	-2.581	0.587
DHINF($t-1$)	-0.426	0.192	-0.737	0.077
DHINF($t-2$)	-0.331	0.343	-0.671	0.179
DHINF($t-3$)	0.085	0.847	-0.503	0.409
DHINF($t-4$)	0.512	0.253	0.254	0.630
DHINF($t-5$)	0.683	0.101	0.416	0.372
DHINF($t-6$)	0.606	0.118	0.318	0.453
DHINF($t-7$)	0.670	0.090	0.561	0.190
DHINF($t-8$)	0.560	0.153	0.680	0.078
DHINF($t+1$)	-0.743*	0.039	-0.775*	0.050
DHINF($t+2$)	-0.757	0.071	-0.670	0.173
DHINF($t+3$)	-0.661	0.229	-0.408	0.546
DHINF($t+4$)	-0.127	0.815	0.359	0.637
DHINF($t+5$)	-0.051	0.921	0.549	0.451
DHINF($t+6$)	0.035	0.945	0.241	0.682
DHINF($t+7$)	0.308	0.439	0.608	0.184
DHINF($t+8$)	0.244	0.520	0.356	0.329
LGARLIC(t)	0.600	0.798		
LONION(t)	3.816	0.120		
LPOTATO(t)	3.012	0.058		
Adjusted R-squared	0.222		0.477	

Table 3.
Disaggregated Inflation Measures and Perishable Food Items

This table presents the disaggregate measures of inflation by: Food and non-alcoholic beverages (FBINF) and vegetables (V) models with and without the price controlled perishable food items. The lags ($t-1$) and leads ($t+1$) in the models are determined using the Akaike Information Criteria (AIC). D denotes first difference of the variable. * denotes significance at the 5 % or better.

Variable	Coef.	Prob.	Coef.	Prob.
Panel A. Dependent Variable: Food and Non-alcoholic Beverage Inflation				
C	-0.118	0.804	8.309	0.164
DFBINF($t-1$)	-0.205	0.183	-0.224	0.133
DFBINF($t-2$)	-0.374*	0.012	-0.397*	0.006
DFBINF($t+1$)	-0.227	0.159	-0.344*	0.040
DFBINF($t+2$)	-0.371*	0.016	-0.415*	0.006
DLONION(t)			-0.835	0.820
LGARLIC(t)			-7.254	0.063
LPOTATO(t)			4.287	0.087
Adjusted R-squared	0.271		0.337	

Table 3.
Disaggregated Inflation Measures and Perishable Food Items (Continued)

Panel B. Dependent Variable: VINF				
Variable	Coef.	Prob.	Coef.	Prob.
C	-0.152	0.954	-20.231	0.585
<i>VINF(t-1)</i>	0.673*	0.017	0.519	0.110
<i>VINF(t-2)</i>	-0.373	0.204	-0.355	0.236
<i>VINF(t-3)</i>	0.028	0.917	-0.118	0.699
<i>VINF(t-4)</i>	-0.046	0.858	0.048	0.873
<i>VINF(t-5)</i>	0.443	0.110	0.667	0.080
<i>VINF(t-6)</i>	-0.346	0.244	-0.368	0.231
<i>VINF(t-7)</i>	0.369	0.252	0.134	0.751
<i>VINF(t-8)</i>	-0.185	0.525	0.286	0.547
<i>VINF(t+1)</i>	0.492*	0.047	0.371	0.199
<i>VINF(t+2)</i>	-0.170	0.448	-0.168	0.474
<i>VINF(t+3)</i>	0.047	0.835	-0.129	0.644
<i>VINF(t+4)</i>	-0.016	0.964	0.558	0.324
<i>VINF(t+5)</i>	0.387	0.328	0.204	0.667
<i>VINF(t+6)</i>	-0.540	0.158	-0.487	0.240
<i>VINF(t+7)</i>	0.801*	0.015	0.960*	0.021
<i>VINF(t+8)</i>	-0.450	0.132	-0.345	0.271
<i>LGARLIC(t)</i>			4.926	0.862
<i>DLONION(t)</i>			-22.005	0.295
<i>LPOTATO(t)</i>			16.949	0.387
Adjusted R-squared	0.653		0.656	

Next, the disaggregate inflation, in terms of food and non-alcoholic inflation and vegetable price inflation, again, the immediate effects of expectations of economic agents are prevalent, more so than in headline inflation. This can explain 27% and 65% of the changes in food and non-alcoholic inflation and vegetable inflation. While adding the perishable items increase the model's explanatory powers, and some perishable items like potatoes show some impact on inflation, this is not significant at the 5% level or more.

Overall, results are as expected, that price ceilings on perishable items helps soften the effects of inflation in Fiji.

III. CONCLUDING REMARKS

The study examines the effects of price controlled perishable food items on headline inflation, food and non-alcoholic price beverage inflation and vegetable price inflation over the period 2019:01 to 2022:08. Our results show that prices of perishable food items like onion, potatoes, and garlic are insignificantly related to inflation and its disaggregates. This result implies that price controls, which have been placed to improve consumer welfare, is not contributing to inflationary pressures in Fiji. To maintain this and for FCCC to continue to play a complementary role to monetary policy in Fiji, strengthening fiscal-monetary policy coordination

(between FCCC and the RBF) is recommended. Further discussions on this subject will be of policy interest.

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