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AN EMPIRICAL STUDY OF THE INTERRELATIONSHIPS, INTEGRATION AND THE EFFICIENCY OF STOCK AND FOREIGN EXCHANGE MARKETS IN FIJI

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Abstract

This article attempts to examine the integration and efficiency of the pacific country Fiji's stock and foreign exchange markets. The study employed, Unit Root test, Cointegration and Error correction models, and the VEC Grangers causality test, using the daily data of FJ$/USD $, and Fiji's market capitalization index (stock market), from 3rd August 2010 to 10th July 2012. The level form data follows the unit root time series process , and the difference form, and return form data follow stationary process .This broadly supports the 'weak form efficient market' hypothesis. However, the market capitalization index, and FJ$/US$ rates are cointegrated. The cointegrating coefficient of the FJ dollar is positively related to the market capitalization index, and therefore, the FJ dollar appreciation stimulates the Fiji market capitalization index. This is perhaps the first scientific research which shows that for the small open Pacific economy of Fiji, a strong currency supports the stock market by encouraging a low inflation environment and therefore there may be some merit in the argument for aligning to strong neighboring currency of Australian dollar. The changes in the market capitalization index is related to the long run trend factors in FJ dollar index as revealed in the error correction model. The return data of FJ dollar, do not Granger cause the return data of the Fiji stock market return in the short run with out an error correcting factor equation and vice versa as well. This supports the semi strong form of efficient market hypothesis, though more studies on markets integration are recommended by us, and we recommend more policy intervention to create more liquidity and depth in Fiji stock markets.

Keywords: Efficient market hypothesis, stock return, exchange rate return, Buy-Hold strategy, Cointegration and Vector Error Correction Model, Granger's causality test, Normal Distribution , Leptokurtic, strong currency.

JEL Classifications: G15, C32, G14, F31

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1. Introduction and Objectives of the Study

Global investors choose to diversify their funds across the financial markets to reduce the portfolio risk on the assumption that the returns in various financial markets may not be highly correlated. Another related issue is how far the return in one market will enable to predict the return in the other financial market. From the informational efficiency criteria, any past information, even if that information may be pertaining to the return in one financial market, should not enable to predict the future changes in the return in the other financial market. But at the same time, from the rational expectation point of view, all the information including the returns from any other financial markets should be factored into the return of the financial markets. For example, how far the return in the stock market influences the return in the foreign exchange market and vice versa.

Interrelationships, integration, and the efficiency of financial markets, namely, the stock markets, and foreign exchange market have been lively topics of empirical research in the recent years. We observe that very few studies have been done for Pacific Island countries including Fiji Islands. Here we try to do this empirical research for Fiji. The development of the stock markets and the foreign exchange markets is an important policy matter for Fiji. We have worked on the daily data, arranged giving up outlier dates where both markets are not simultaneously working days, and picking up dates where both markets are working, starting date 3rd August 2010, and ending date 10th July 2012, and thereby getting 479 data points. We have taken from the South Pacific stock exchange (Fiji) website, the market capitalized weighted price index, and the Fiji- US dollar rates from a US university website which publishes daily foreign exchange rates. We have taken US dollars per one Fiji dollar as the definition of exchange rates, and thereby any increase of that value is an appreciation of Fiji dollar. Firstly we have examined the stationarity of the data by unit root tests, and if non-stationary have done the cointegration tests, and the Vector Error Correction Models, and the Variance decomposition, and impulse response functions. Cointegration tests can give any long run relationships of these markets. As Fiji follows a pegged exchange rate regime, though one can not expect a full integration of the foreign exchange and stock markets in Fiji, there can still be some interrelationships between these two markets, especially in the long run. Cointegration analysis can throw some light on the aforesaid interrelationships. The direction or the causal relationships of this interrelation between stock and foreign exchange markets is also important, and the sign of the parameters of the cointegrating vector may be of interest to know if the return increases US$ /Fiji dollar depreciates/appreciates, the stock market return increases or decreases. We also have transformed subsequently, following both the conventions of the analysis of financial markets , and also to have stationary series of the same order, the original level for data of prices in to return data of the markets, by finding log differences of the price level data .This return data are used to find the Granger-causality, and thereby to test the weak form efficient market hypothesis of the non- predictability of one market return by looking at the other market return .The descriptive Statistics like Kurtosis, and skewness about the return data can give some ideas about the normal probability distribution features of the Fiji markets We can as well use the unit root tests of the price level data to test the weak form efficient market hypothesis.

2. Interlinkages between Stock and Foreign Exchange Markets in Fiji: Theoretical Underpinnings and the Survey of Some Literature

The linkages between stock market performance and exchange rate behavior has long been debated in the economic literature. The arguments for the linkage have been made at both micro and macro economic levels. At the macroeconomic level, the discussion has been centered around the relationship between aggregate stock price and floating value of exchange rates. This link is seen by models that focus on the current account (Flow Oriented Models, e.g.) (Dornbusch and Fisher, 1980) as well as those that focus on the asset market (Stock Oriented Models, e.g. (Branson & Frankel, 1983), and (Frankel 1983) ,though in different ways. “Flow Oriented” models (Dornbusch & Fisher 1980) of exchange rate determination focus on the current account or the trade balance. This model posits that currency movements affect international competitiveness and balance of trade positions, and, consequently, the real output of the country, which in turn affects the current and future expected cash flows of firms and their stock prices. The detailed logical deduction of this relationship is like this. Changes in exchange rates affect the competitiveness of a firm as fluctuations in exchange rates affect the value of the earnings and cost of its funds because many companies borrow in foreign currencies to fund their operations and hence its stock prices. But this will affect in either way depending upon whether that firm is an exporting unit or a heavy user of imported inputs. In the case of an exporting firm, a depreciation of the local currency makes exporting goods more attractive and this leads to an increase in foreign demand for export of goods and services. As a result, the revenue of the firm and its value will increase which will in turn increase stock prices. On the other hand, an appreciation of local currency decreases profits of an exporting firm because of decrease in foreign demand of its products. Hence the stock price will decrease. This is exactly opposite to the case of an importing firm as exchange rate changes.

However, in the case of domestic firms, devaluation could either raise or lower a firm’s stock price depending upon whether that particular firm is an exporting firm or it is a heavy user of imported input. If it is involved in both the activities, then the stock price could move in either direction. Consider the case of an exporting domestic firm. This firm will directly benefit from devaluation due to increased demand for its output. Since higher sales usually result in higher profit, its stock price will increase, whereas in the case of a user of imported inputs of domestic firm, devaluation will raise its costs and lower its profits. The news of decline in profits may depress the firm’s stock price.

Further, integration of the US stock market with the Pacific basin country’s markets and world markets, led to the requirement of establishing the relationship between stock prices and exchange rates. Thus, an increase in international stock market causes the local stock market to rise, which in turn increases wealth as well as raises interest rates. Higher interest rate will attract foreign capital and lead to an increase in the real exchange rate.

2.1 Existing Empirical Study and Literature on Fiji

Jayaraman et al (2012) have studied with quarterly data for period 1997 Q2 2004 Q4 of Fiji, taking the variables the stock price index (STOCK), Fiji’s real GDP (RGDP), nominal broad

money supply (M2), Treasury Bill rate (TBR), and exchange rate (FJD). They defined as number of FJ dollars per one US dollar. They formed the model:

STOCK = f(RGDP,M2,TBR,FJD)

Jayaraman et al (2012) hypotheses are STOCK and RGDP, M2, and FJD are positively related, and STOCK and TBR are negatively related. In this context, as regards the crucial relation of our study: STOCK, and FJD, Jayaraman et al (2012) postulate that as FJD depreciates, it helps the Stock market to boom and increase in value. Their cointegration results also show the parameter of the FJD is positive and it implies that their hypothesis that the depreciation of Fiji dollar helps in increasing the Fiji stock market value. They found that there is not significant relation between Stock with and the M2 and TBR (interest rates), but significant with respect to GDP, and FJD.

3. Methodology

The discussion in the preceding section reveals that there is neither theoretical nor empirical consensus on any definite pattern or consistent relationship between the stock and foreign exchange markets. Similarly, no conclusive generalization can be made about the causal nexus between these two markets. However, this is a question of vital importance to policy makers as well as investors, in so far as information from one market can be used to predict the behavior of the other market. If stock and foreign exchange markets are related and causation runs from stock market to foreign exchange market, then authorities can focus on domestic economic policies to stabilize the stock market. On the other hand, if causation runs from foreign exchange market to stock market, then the crises in the stock market can be prevented by controlling exchange rates. In the case of Fiji, any causation from stock market to FJ dollar market is suspect because the foreign exchange rates are pegged in Fiji by the Reserve Bank of Fiji with in some given bands. In any case, these can be empirically tested.

In order to examine the dynamic interactions of stock and foreign exchange markets in Fiji, various sophisticated time series econometric techniques are employed. Although there are many approaches to modeling causality or short-term interactions in temporal systems, we first apply the prototype model developed by Granger (1975), and Granger et al (2000) ,not only because it is the simplest and most straight forward but also the existence of causal ordering in Granger's sense points to a law of causation and implies predictability and erogeneity (Abdalla, *et al* 1997)). However, the non-stationary nature of most times series data and the need for avoiding the problem of spurious or nonsense regression calls for the examination of their stationarity property. The study employed Augment Dickey Fuller Test and Phillips Perron test to remove the unit root problems among the variables both at without trend and intercept and with trend and intercept level respectively.

Unit root tests help also in testing the weak form efficient market hypothesis. If the data of the market variable in level form follows a unit root process, the difference form of the variable follows a random process, and the change in market variable cannot be predicted from the previous history of the variable, and in that sense the market is said to be weak form efficient. The market cannot be predicted from the previous trends in the data.

If the data generating process is following a unit root and therefore non-stationary , then the data has to be transformed in to first differences and unit root tests have to be repeated. If the

data in first differences follow a stationary process, if the data in difference form is stationary, then the variables in levels form have to be tested for any cointegrating relationships(Engel and Granger 1987) and Johansen.and Juselius (1990) . If in the level form, there is cointegration, the Vector Error correction model is to be run, and the Granger causality can be tested, and Variance decomposition, and impulse response function can be tested.

4. Variables Description and Data Points

To examine the dynamic interrelationship between stock and foreign exchange markets in Fiji, the study considered two variables such as stock price return and exchange rate(USD/FJ)) return. To represent the Fiji stock market, though the present study considered two liquidity indices here such as Market Capitalization Index, and Equal Weight Price Index and to represent the Foreign exchange market, we have taken into consideration the nominal bilateral exchange rate of Fiji dollar versus US $. But finally, the equal weight index was given up as it does not give any meaningful results. Market Capitalization index of the Fiji stock index, and nominal FJ$/USA$ are the two variables used on the level for unit root test, and cointegration test.

The cointegrating relation tested is of the following form:

$S_t = f(E_t)$

and $E_t = f(S_t)$

E is nominal exchange rate US $/ FJ $

S is the market capitalization Fiji stock index.

The stock return and exchange return is defined as following.

$RS_t = \ln(S_t) - \ln(S_{t-1})$

$RE_t = \ln(E_t) - \ln(E_{t-1})$

where, RS_t and RE_t represents the stock price return and exchange rate return and S_t and S_{t-1} are the stock prices of time period t and t-1 and E_t and E_{t-1} are the exchange rate of time period t and t-1 respectively.

We have worked on the daily data, arranged giving up outlier dates where both markets are not simultaneously working days, and picking up dates where both markets are working, starting date 3rd August 2010, and ending date 10th July 2012, and thereby getting 479 data points. We have taken from the South Pacific stock exchange (Fiji) (website Data reference for Stock prices 2012), the market capitalized weighted price index, and the Fiji- US dollar rates from a US university website which publishes daily foreign exchange rates.(Website Data Reference for Foreign Exchange rates 2012)

6. Estimated Equation and Result Interpretation

At the outset, before undertaking any time series econometric analysis of the data, it would be useful to see the broad trends and behavior of the variables, which may help in interpreting the model results later. For this purpose, time series plots are drawn for all the variables. Figures 1 to 4 plot the daily movement of stock indices and the exchange rates and the rates of return on their respective indices and exchange rate over the sample period. As can be

expected, the daily data on most of the variables exhibit trends (both stochastic and deterministic) and considerable volatility, which varied over time. It is also quite clear from these figures that the returns exhibit pronounced clustering, a fact consistent with the observed empirical regularities regarding the asset returns as well as the exchange rate returns. However, the stock returns exhibit more clustering.

In the next step, we have computed the descriptive statistics of the stock return and exchange rate return. The summary statistics are presented in the Table 1. It can be seen from the table that the stock index return data (RET_MARKET) do not much follow the Normal Distribution. However, exchange rate return though also is not normal and more peak than in normal distributions is more normal than stock return. Stock returns are skewed to the right and Leptokurtic It means that though mean returns are near zero as predicted by the finance theory, there are bigger returns than normal occasionally though more frequent (mode) returns may be of small size

Table 1.

	RET_MARKET	*RETURN_FJDOLLAR*	*RETURN_PRICEINDEX*
Mean	-0.000364	9.19E-05	7.95E-05
Median	0.000000	0.000000	0.000000
Maximum	0.101042	0.042668	0.069534
Minimum	-0.038198	-0.047684	-0.014982
Std. Dev.	0.006272	0.009221	0.003860
Skewness	7.121229	0.159587	12.68985
Kurtosis	152.2316	9.169177	226.4434
Jarque-Bera	448522.3	761.6223	1009314.
Probability	0.000000	0.000000	0.000000
Sum	-0.174120	0.044035	0.038103
Sum Sq. Dev.	0.018802	0.040644	0.007120
Observations	479	479	479

The practical implication for the trading and investing community in the financial markets is that the return is near normal distribution as we have observed FJ dollar return (FJ$/USD $), the investing and trading strategy can be to buy and hold for a long span of time and there will be some certain profit out of the foregoing strategy. But if the return distribution is not normal as we have observed in the case of stock market in Fiji, this strategy of 'buy and hold' for a long time may not necessarily yield any clear profit. Therefore, in financial markets which are not normal, 'convex trading strategies' where the trader may buy in a market which is already appreciating and sell in a market which is depreciating. However, we can tell that if more liquidity and depth in Fiji stock market can be developed, and the market returns can become normal distribution, it will further encourage long term investors to buy and hold for long time.

To examine the stationarity property of all the variables used in our study, we have carried out the ADF unit root test. All the tests have been conducted both with intercept alone and with intercept and time trend.[3] The null hypothesis is that there exists a unit root or the underlying process is non stationary. The results of unit root tests are given in Table 2. The optimum lag

[3] Eviews 6.0 package was used for the unit root tests.

length in the case of ADF and PP tests is chosen on the basis of AIC and FPE criterion. From the table, we can see that the null hypothesis is accepted (there is unit root) at the original level for both market capitalization index, and Fiji $/US $ i.e. and the unit root hypothesis is rejected at the difference form of both variables. Though we have not again reported at the return level both variables are stationary. Therefore, the OLS regression can be run with the data and variables at the return level without the fear of yielding spurious parameter.

Table 2.1.

Null Hypothesis: MARKETCAPINDEX has a unit root

Level form		
Augmented Dickey-Fuller test statistic		**--2.80135**
Test critical values:	1% level	-3.443776
	5% level	-2.867354
Difference form Market_CAP Index		**-22.09185**

Table 2.2.

USA/FJ$ level form follows a unit root

Augmented Dickey-Fuller test statistic		**-2.795223**
Test critical values:	1% level	-3.977372
	5% level	-3.419250
	10% level	-3.132200
USA$ /FJ$ difference form has a unit root		**-16.61153**

Table 3. Johansen-Juselius Cointegration Results

Variables included in the cointegration vector: FJ Dollar /US $, and Market capitalization index				
Null	Alternative	**Trace Statistics**	95% critical value	P-value
R= 0	r≥ 1	12.56303	12.32090	0.0455
R≤ 1	r≥ 2	0.036350	4.129906	0.8760
		Maximum Eigen Statistics		
R=0	r≥ 1	12.52668	11.22480	0.0294
R≤1	r≥ 2	0.036350	4.129906	0.8760

Interpretation: First null hypothesis (R=0) states no cointegration (i.e. no long run association between variables) we reject this hypothesis at 5% level since p-value is less than 0.05.Hence, above results indicates 1 cointergrating equation(s) at the 0.05 level.

As shown in Table 3 above, both the trace statistics and Eigen value clearly show that there is one cointegrating vector , and the Fiji $/USA$, and Market_ Capitalization index are cointegrated. The sign of the coefficients of the cointegrating vector shows that there is a positive relation between those variables (it becomes opposite in sign to unity of cointegrating vector). The sign of the coefficient, given our definition of the variable of the number of US$ per one Fiji $ means that the appreciation of the Fiji dollar stimulates the Fiji stock market, and is contradictory to the findings of Jayaraman's (Jayaraman 2012) study cited earlier.

When we look at the Tables 4.1 and 4.2 below, we can see that the Granger-causality exists in both directions between market capitalization index, and FJ $/US$ as the error correcting factor is negative and significant, in both tables below. However, the coefficient of the cointegration vector is statistically significant only when the market capitalization is the dependent variable and not when the FJ dollar is the dependent variable. The long term trend appreciation of the FJ dollar has a positive effect on the market capitalization. The FJ dollar appreciation stimulates the stock market. But when the FJ dollar is dependent variable and market capitalization of the Fiji stock exchange is independent variable, the cointegrating coefficient is not significant. That is more in line with theory and expectations. The Fiji dollar is pegged and the rate is controlled by the authorities. In any case it appears that in the long run FJ dollar appreciation can stimulate much of the Fiji stocks. The strong FJ dollar may be producing low inflation and less tight monetary policy environment in Fiji, which can be conducive to the stock markets in Fiji.

Table 4.1. Change in FJ dollar is the dependent variable VEC model

Cointegrating Eq:	CointEq1	
FJDOLLAR(-1)	1.000000	
MARKETCAPINDEX(-1)	-8.74E-05 (0.00011) [-0.77726]	
C	-0.460935	
Error Correction:	D(FJDOLLAR)	D(MARKETCAPINDEX)
CointEq1	-0.030698 (0.01248) [-2.45923]	36.76075 (17.1334) [2.14556]
D(FJDOLLAR(-1))	-0.393154 (0.04604) [-8.53898]	-45.34276 (63.1954) [-0.71750]
D(FJDOLLAR(-2))	-0.111110 (0.04595) [-2.41809]	-53.10634 (63.0682) [-0.84205]
D(MARKETCAPINDEX(-1))	1.67E-05 (3.3E-05) [0.50008]	-0.018664 (0.04596) [-0.40610]
D(MARKETCAPINDEX(-2))	1.49E-05 (3.3E-05) [0.44577]	-0.003486 (0.04597) [-0.07583]
C	8.95E-05 (0.00022) [0.41432]	-0.400717 (0.29660) [-1.35104]

Table 4.2. Change in market cap index is the dependent variable VEC model

Cointegrating Eq:	CointEq1	
MARKETCAPINDEX(-1)	1.000000	
FJDOLLAR(-1)	-11437.72 (3954.23) [-2.89253]	
C	5272.045	
Error Correction:	**D(MARKETCAPINDEX)**	**D(FJDOLLAR)**
CointEq1	-0.003214 (0.00150) [-2.14556]	2.68E-06 (1.1E-06) [2.45923]
D(MARKETCAPINDEX(-1))	-0.018664 (0.04596) [-0.40610]	1.67E-05 (3.3E-05) [0.50008]
D(MARKETCAPINDEX(-2))	-0.003486 (0.04597) [-0.07583]	1.49E-05 (3.3E-05) [0.44577]
D(FJDOLLAR(-1))	-45.34276 (63.1954) [-0.71750]	-0.393154 (0.04604) [-8.53898]
D(FJDOLLAR(-2))	-53.10634 (63.0682) [-0.84205]	-0.111110 (0.04595) [-2.41809]
C	-0.400717 (0.29660) [-1.35104]	8.95E-05 (0.00022) [0.41432]

Long run Granger causality Vector Error Correcting model: (Table 4.1) With FJ $ as dependent variable. Here, the coefficient of the Market cap index is not statistically significant. But the error correcting factor is negative and significant. Therefore, a trend in the booming stock market is strengthening changes in the FJ dollar. And in the next Table, (4.2) the dependent variable is market capitalization index. Another important finding is that the error correction coefficient as expected is negative and significant but the size of the coefficient is too small less

than 0.3 per cent when the change market cap index is used as dependent variable, and therefore it takes long time for equilibrium adjustments, and it is understandable as these are daily data.

In Table 4.2 long run Granger causality with Market cap index dependent variable. In this table the coefficient of the FJ dollar index is positive and statistically significant when market cap index is dependent variable. The trend in the strengthening FJ dollar is causing in the long run changes of the booming stock market. But equilibrium adjustments take long time as explained above because of the size of the error correction coefficient is very small.

It is also noted in table 4.1 and 4.2 that in the VEC models, the short run independent variables in changes form are insignificant and there is no short run Granger causality between FJ dollar and market cap index; and this in way supports the semi form efficient market hypothesis as it is not possible to predict the outcome/return in another market by looking at the return of any particular market. But the long run Granger causality is more evident that the changes in stock market is caused by the long run trends in the FJ dollar market's strength of appreciation.

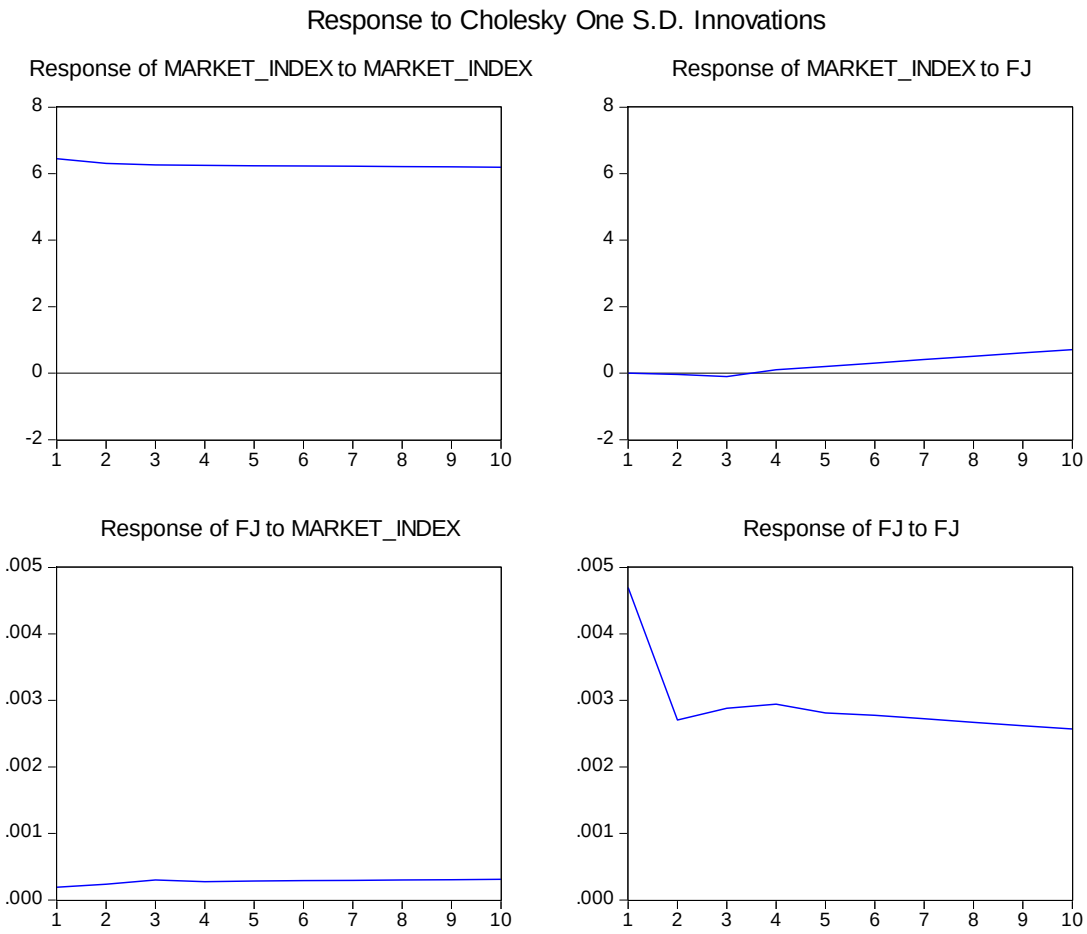

Figure1. The impulse response function of the market cap index due to innovation in FJ dollar

The impulse response function shown above clearly shows that the market cap index appreciates continuously for some time due to one standard deviation shock in FJ dollar. And also very interestingly, the FJ dollar also mildly appreciates for some time due to shocks in market capitalization. This corroborates the results in VEC model, and the cointegrating equations.

However, in the Table 5 (below) the variance decomposition results show that the per cent explained in both variables: market cap index variations, and FJ dollar variations by the respective other variable, is very low.

Table 5. Variance decomposition from VEC

Variance Period	Decomposition / C S.E.	Chlosky ordering market index, FJ$ MARKET_INDEX	FJ
1	6.450762	100.0000	0.000000
2	9.022459	99.99800	0.001995
3	10.98441	99.99052	0.009485
4	12.63912	99.98579	0.014211
5	14.09671	99.96881	0.031188
6	15.41536	99.93574	0.064257
7	16.62834	99.88438	0.115622
8	17.75796	99.81633	0.183670
9	18.81984	99.73179	0.268206
10	19.82533	99.63143	0.368567
Variance Period	Decomposition of $ S.E.	 MARKET_INDEX	 FJ
1	0.004700	0.164916	99.83508
2	0.005428	0.311538	99.68846
3	0.006153	0.480524	99.51948
4	0.006827	0.552091	99.44791
5	0.007389	0.619945	99.38005
6	0.007899	0.678514	99.32149
7	0.008360	0.730229	99.26977
8	0.008781	0.778798	99.22120
9	0.009168	0.824993	99.17501
10	0.009527	0.869661	99.13034

Now we discuss the return variables and some further results of them.

Table 6.

Pair wise Granger Causality Tests
Date: 09/12/12 Time: 08:50
Sample: 1 480
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
RETURN_FJDOLLAR does not Granger Cause RET_MARKET	477	0.24706	0.7812
RET_MARKET does not Granger Cause RETURN_FJDOLLAR		0.10233	0.9027

As discussed in Table 6 the Granger- causality through vector auto regressive model is done (This Granger causality test is vector auto regression with return form data with out an error correcting factor from the cointegrating equation and therefore a pure short run Granger causality with stationary data), and the results show that there is no Granger causality in either direction from the market capitalization return to FJ dollar return or vice versa. The implications of the aforementioned result is very profound, but conclusions can vary from one extreme view to another: it supports the semi-strong form of efficient market hypothesis that the publicly available information from one market should not enable the investor to predict the return in another market for future dates. Obviously, the return from the FJ dollar market information does not Granger cause the return in the Fiji stock market or vice versa. But, this implies the financial markets are very efficient in Fiji in a way. However, the aforesaid inference should be drawn with a caveat that it is based on the assumption that the markets are otherwise very integrated between each other both in the short run and in the long run. But here we have empirical evidence only to show that Fiji dollar markets and Fiji stock markets are cointegrated in the long run only, and therefore integrated for long term trend factors, and our results for the short run are inconclusive to say the least. Therefore, markets may not be integrated in the short run for many cyclical factors.

Conclusions

The original variables FJ dollar / US $, and the index of the market capitalization follow a unit root process and hence non stationary; but their difference form, and return data form (log differences) follow a stationary process. This supports broadly the weak form efficient market hypothesis for the financial markets in Fiji.

However, the probability distributions of the returns in the financial markets, as revealed in the descriptive statistics of the returns namely the skewness and kurtosis, especially of the stock markets in Fiji, is far from the normal distribution, as it is highly positively skewed with couple of bigger returns , and most frequent smaller returns. This may be due to low level of liquidity in the market. But relatively, the probability distribution of returns in the foreign exchange market is near normal if not fully normal. This can be due to the higher liquidity in the foreign exchange markets.

There is cointegration and therefore long term trend relations between FJ dollar / US dollar, and the market capitalization index of Fiji, though the two series wander like random walk. The current changes in the market capitalization index of the stock market is influenced by the past trend changes in the FJ $/US $ through an error correction mechanism. The cointegrating coefficient of the FJ$ is also statistically significant when we take the market capitalization index as the dependent variable. The error correcting factor is negative and significant as expected in

theory, though the size of the coefficient is very small and it takes very long time for full equilibrium adjustments. That is understandable because these are daily data. . But the cointegrating vector, when normalized the FJ dollar as the unity (dependent variable), and the market capitalization is taken as the independent variable, the coefficient of the market capitalization though with positive sign, is statistically insignificant .However, the error correcting factor has the negative sign and statistically significant. This makes a conclusion indeterminate, when the market capitalization is taken as independent variable. However, it is very natural and expected that when the stock market is strengthening, it can attract more capital inflows and the FJ dollar then strengthens. Therefore, broadly our results are quite opposite of that of Jayaraman et al (2012) conclusion that the FJ dollar depreciation stimulates the FJ stock market. The long term trend appreciation of the FJ dollar has a positive effect on the market capitalization. This is by encouraging a low inflation and less tight monetary policy environment in Fiji. Ours is perhaps the first scientific research which shows for a small open Pacific economy of Fiji that a strong currency supports a strong stock market. This in a way supports the argument of some Pacific academics that for Fiji it may be better to peg to a very strong close neighbor currency of Australian dollar. But it should be mentioned that our conclusion about the Granger causality is based on the long run trend relations seen from the negative sign and statistically significant coefficient of the error correcting factor and not based on short run Granger causality from the signs and statistical significance of the differenced variables as done by Jayaraman et al (2012). And that study dealt with much an earlier period of 1997 to 2004 quarterly data, even using interpolated series of quarterly GDP data for Fiji, where as there is no official data for quarterly GDP for Fiji.

From the return data, we do not observe any Granger causality in either direction between FJ dollar return or the market capitalization return of the stock market. This broadly supports the semi-strong form of the efficient market hypothesis in Fiji financial markets, as the return in one market should not continuously enable the investor and analyst to predict the return in another market if the markets are efficient. But this methodology is based on a premise that the markets are otherwise well integrated in the long run and short run. Our results from the descriptive statistics throw some doubts on this premise of the integration in the short run, though the cointegration results show that there are some long run trend relations between these markets. The policy makers should strive to make Fiji stock markets more liquid and deeper so that the returns there approximate to a more normal distribution. Needless to mention the research about the integration and other aspects of Fiji financial markets has to continue.

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