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Abstract

The present paper updates the question: the study revolves to analyze the exchange rates of CNY with its major trading partners including USD, JPY, EUR, and GBP. It was assumed that CNY have a major relation with USD and in order to find out such impact, a set of observations of 2060 have been taken for consideration in a form of five different currencies rate. Augmented Dickey Fuller Unit root test has been applied in order to find out the trend and checked non-stationary at several levels (at level, at Log & at 1st difference of Log). After that Multiple Regression had been applied on stationer observations and then for finding better impact some non-impacting variables were eliminated. Result revealed that USD and JPY have a significantly impact on CNY whereas EUR and GBP do not have it. It was also found that CNY currency regime let itself change its exchange rate due to some internal factors. Other currencies as variables could be taken for further research in recent study in order to analyze other currency regime, represents the scope of research.

*Keywords: A.D.F. Unit Root test, Stationarity, Currency rates*

1. Introduction

Some countries have major trade relation with china like Japan, United States, British and Hong Kong and other European countries but there are no major economic players that use a fixed exchange rate (except the countries using the euro and the Chinese Yuan). The most recent such country to discontinue their fixed exchange rate was the People's Republic of China, which did so in July 2005. However, as of September 2010, the fixed-exchange rate of the Chinese Yuan has already increased 1.5% in the last 3 months (Figure 1).

A Reuters explains; Recently China took another step towards turning the Yuan into a global currency by doubling the size of its trading band against the dollar due to which Chinese Yuan circulate globally and they would have found Chinese Yuan into other countries reserves account. By peeling back trading restrictions on the Yuan, Beijing is working toward its goal of having a currency that trades relatively freely, or is basically convertible, by 2015. China has been claiming for many years about supporting flexible currency regime where as many different authors have attempted in order to investigate about the factual vision of this claim.

An authentic research has been found that china increased its currency rate from 1980 to 1995 from around 2 to 9 Yuan per US$ (Figure 1) and then they controlled it but in the late of 90s they claimed to following variable exchange rate regime that reduced currency value from 8 to 6.5 recently.

Figure 1: US$/CNY Over the Time Period
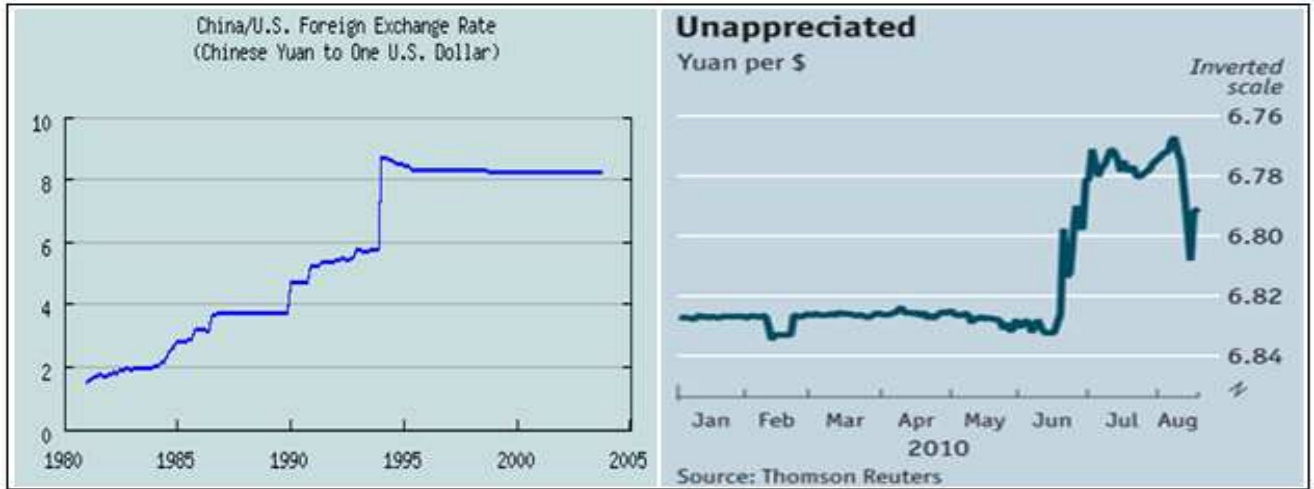
As it is coated before that for many years, people republic of China has been changing their currency regime and exchange rates that put a drastic impact on other currencies, one of them is US $.

Figure 2: US$/CNY in a half year of 2012
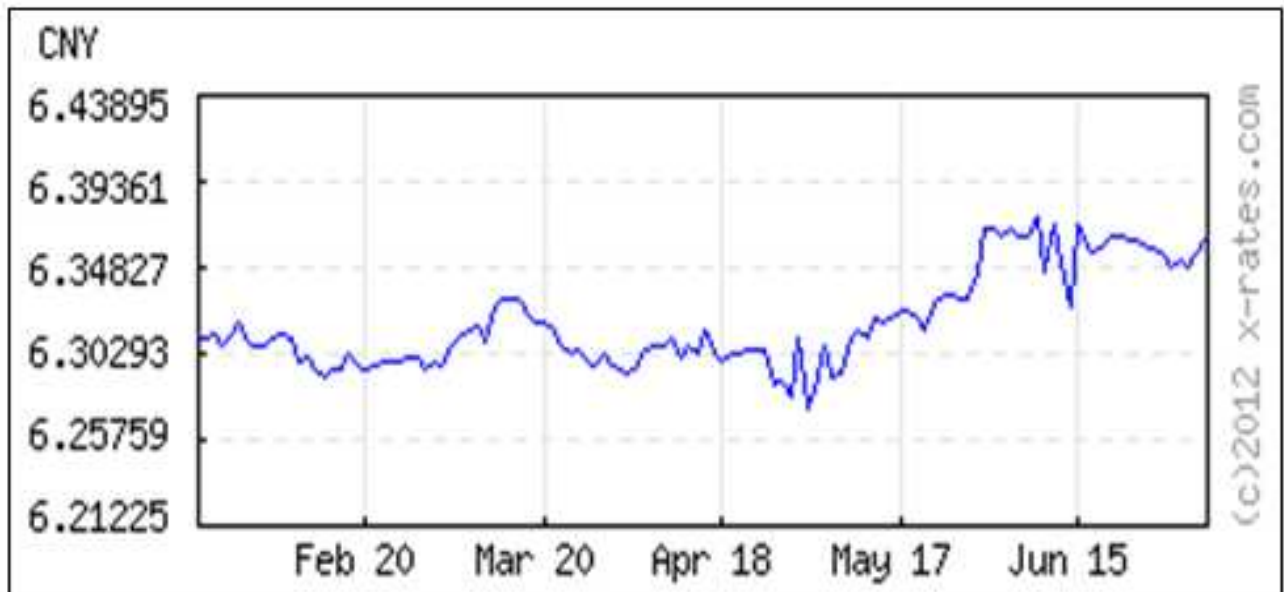
As per latest observations of 2012 (Figure 2), Lowest rate at (May2) is 6.275 has been obtained from source whereas highest rate at (June 8) is 6.3752.

2. Timeline of Chinese Exchange Rate Regime:

1988: China sets up swap centers in a country to allow Chinese firms to trade the Yuan, also known as the renminbi or "people's currency", at a rate that better reflects market demand.

1994 – Jan: China unifies its dual exchange rates by aligning official and swap centre rates, officially devaluing the Yuan by 33 percent overnight to 8.7 to the dollar as part of reforms to embrace a "socialist market economy".

1994 – Apr: China sets up the (China Foreign Exchange Trade System) in its first interbank currency market in Shanghai. Beside this China also keep fixed the Yuan's value and it's around 8.28 to the dollar.

1996: China allows the Yuan to be fully convertible under the current account.

1994 - 1996: The Yuan was appreciated from 8.7 to the dollar to around 8.28.

1997 – 1999: China wins wide praise for keeping the Yuan stable during the Asian financial crisis and was boxed between 8.2770 and 8.2800 for about three years.

2000: China allows the Yuan from 8.2760 to 8.2800 against the dollar throughout the year.

2001 - Dec: China joins the World Trade Organization and pledges to gradually adjust its currency regime.

2003: Huge trade surplus with the United States and the rest of the world that leads international pressure on Beijing to let the Yuan rise to balance global trade.

2004 – Dec: Premier Wen Jiabao says China will move gradually towards a flexible currency regime.

2005 – Jul: China revalues the Yuan and revises rules governing its currency. It has shifted to a managed floating exchange rate regime.

2007 - May: China widens the Yuan's trading band against the dollar to 0.5 percent from 0.3 percent.

2008 – Jul: China's central bank effectively pegs the Yuan against the dollar in order to survive its economy from global financial crisis.

2009 - Jul: China lauch a pilot programme and intention towards internationalizing the Yuan that allows imports and exports in Yuan.

2010 - Jun: China resumes reforms its two-year peg currency; the Yuan exchange rate and increasing currency flexibility.

2012 - Feb: The Yuan increases up to 6.2884 per dollar.

2012 - Mar: China allows all local firms to import and export in Yuan in order to make it international currency.

2012 - Apr: China widens the trading band for the Yuan against the dollar.

3. Literature Review

The Chinese central bank says the dollar, euro, yen and Korean won are the main currencies in the basket. Others include the Singapore dollar, sterling, Malaysian ringgit, Russian rouble, Australian dollar, Thai baht and Canadian dollar. Several attempts in order to find Chinese currency regime have been done previous with many suggestions. Use of equilibrium model and several alternative methods for explaining China's role in American trade deficit and it have been found in reducing capital account and make exchange regime more flexible by China *Soofi* (2009). Another attempt was the relation of Chinese exchange regime with unemployment and result has been found in no correlation between variable whereas unemployment rate was higher at lagged due to currency appreciation. It is also noted that there are several other factor that put an impact on unemployment. Few tests were applied on research data like unit root test, Johansen co-integration analysis and vector error correction model in order to analyze China's exchange rate regime over the time period *Fu and Lin* (2012).

Different countries manipulate their currency value in order to get unfair advantage. A research consisting of two parts, first part explained several economic variables that affect in fluctuation of currency and second part is on the basis of bilateral trade balance explained the exchange rate regime of China. Whereas result found that China followed de facto regime that put virtually all weight on the dollar *Frankel and Wei* (2007). A research is to identify Chinese exchange rate regime, it used two techniques; one was to estimate currency weight and second was to estimate exchange rate flexibility of China. Beside these it also analyzed old techniques and compare it with new techniques with deployed several models that helped in providing new estimation with

old technique and new technique. Finally it has been identified that China converted their regime from pegged to managing float regime *Frankel* (2009).

4. Methodology

Time series Data of 8 years have been used in study that are 5 currencies rates including Chinese Yuan (CNY), Euro (EUR), Japanese Yen (JPY), U.K. Pound Sterling (GBP), and U.S. Dollar (USD) taken from Jan 2, 2004 to Dec 30, 2011 those having a major trade relation with Republic of China since last many years. For gathering data, Sample size was 2060 observations have been considered and picked up. It was assumed that the maximum prediction of Chinese Yuan is by American Dollar and having strong relation between both currencies. Keeping the view of assumption, the Augmented Dickey Fuller unit root test has been applied in order to analyze trend of giving timeline, well non-stationary investigated at zero level so it needed to be applied on log of variables. Unfortunately non-stationary investigated at log of variables and then unit root test applied again on difference of log of variables. It was investigated that stationary is presence in data at difference of log of variables, so then this data is available for further consideration. After that Multiple liner regression has been applied on it in order to find prediction of Chinese Yuan with other countries' currencies that have a major global trade with china. Those variables who do not predict significantly, eliminated from list of consideration with constant also neglected in order to find better impact of those variables who predict significantly. Beside these it was kept in mind while working on variables, there should not be issue of presence of multi-co-linearity among variables.

Econometrical Model:

By the following methodology and hypothesis, the econometrical model has been deployed, representing the research scope i.e.

$$\Delta\log CNY = \alpha_1 + \beta_1\Delta\text{Log USD} + \beta_2\Delta\text{Log EUR} + \beta_3\Delta\text{Log GBP} + \beta_4\Delta\text{LogJPY} + ET$$

Here:

$\Delta\log$ is difference of log

α is alpha co-efficient of constant

β is beta co-efficient of variables

ET is error term.

5. Findings and Conclusions:

Table 1: ADF Unit Root Test:

Variables	At level	At Log	At 1st difference of Log
CNY	0.9204	0.9024	0.0000***
USD	0.2068	0.2073	0.0000***
JPY	0.9384	0.9214	0.0000***
EUR	0.2673	0.2614	0.0000***
GBP	0.8615	0.8464	0.0000***

(*significant at 10%) (**significant at 5%) (*** significant at 1%)

Stationary has been found in data of all variables at 1st difference of log whereas it was not found at log and at level. It was also noted that data was quite stationer because of having significance at 1% instead of 5% or 10% and beside these data at 1st difference of log was accepted in further consideration and checked impact of currencies of major trading partners of republic of China (i.e. USD, EUR, GBP and JPY) on Chinese currency (i.e. CNY = Chinese Yuan) and their exchange rates. As it is mentioned earlier in assumption that the major impact on CNY is caused by USD and by keeping the eyes on it, the following charts have been obtained for CNY and USD.

Figure 3: CNY at level and at 1st difference of log
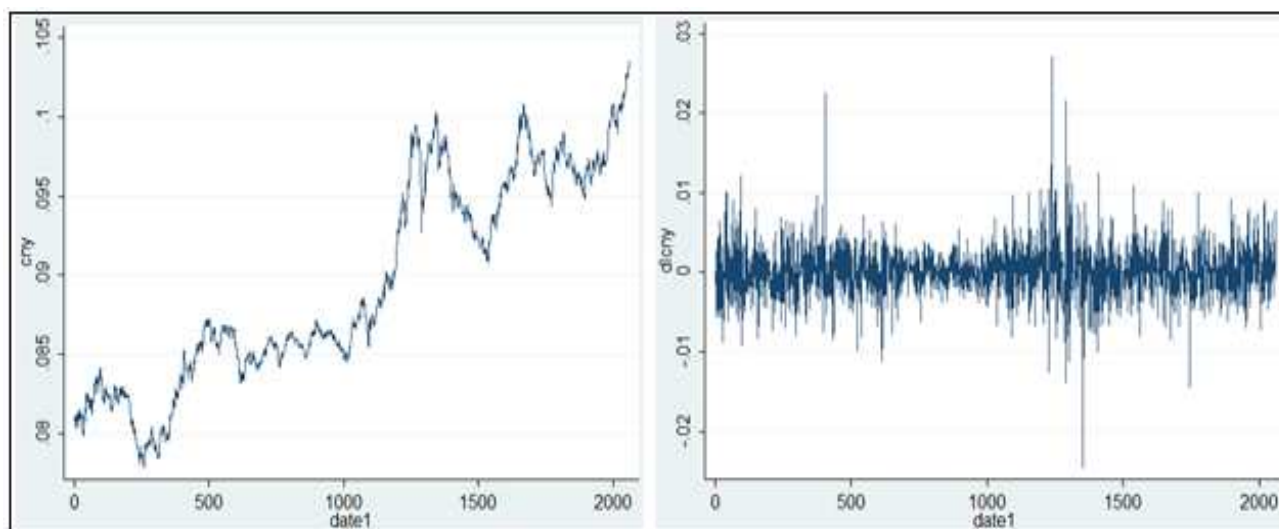
A whole chart shows non-stationary and stationary of CNY over the time period respectively. A left chart shows non-stationary at level that was obtained from original observations of currency data whereas as right chart was obtained after transforming data into stationary at 1st difference of log.

Figure 4: USD at level and at 1st difference of log
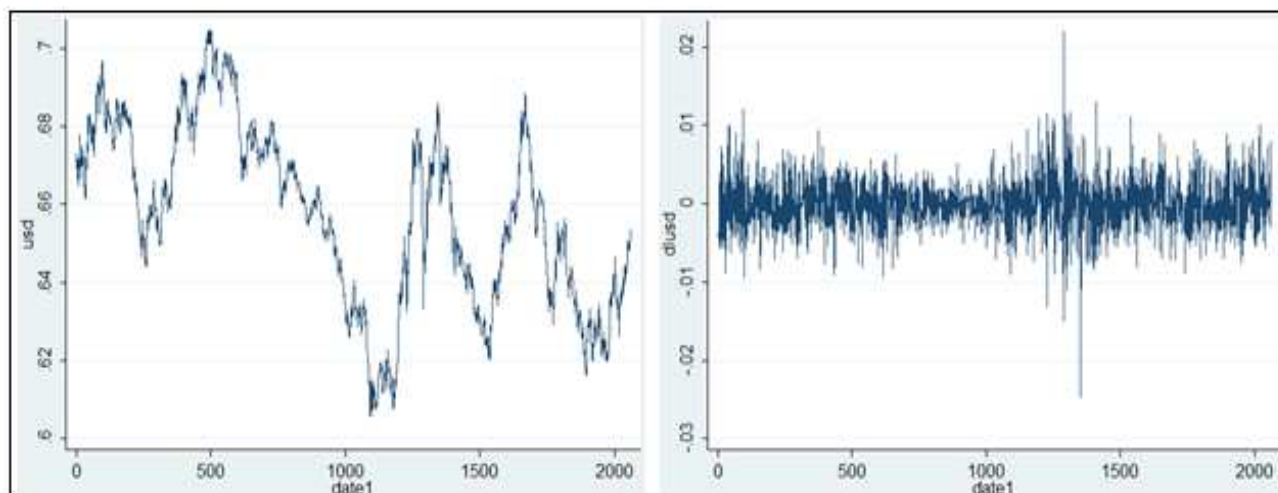
In a same manner as above a chart represents non-stationary and stationary states of USD in several time periods. A pace of study shows that data was transformed into stationary from non-stationary to bring it from at level to at 1st difference of log by ADF Unit root test.

Table 2: Regression Estimate at 1st Difference of Log:

Variables	With all variables				Without constant	
	Co-efficient	T-stats	Co-efficient	T-stats	Co-efficient	T-stats
USD	0.8879945***	60.59	0.8811933***	92.54	0.8808493***	92.12
	(0.0146565)		(0.0095228)		(0.0095617)	
EUR	0.0087145	0.70	-	-	-	-
	(0.0124143)		-		-	
GBP	-0.0014943	-0.20	-	-	-	-
	(0.0073451)		-		-	
JPY	0.0109931**	2.08	0.0104251**	2.18	0.0108824**	2.27
	(0.0052919)		(0.0047795)		(0.0047980)	
Constant	0.0001293***	4.18	0.0001312***	4.24	-	-
	(0.0000310)		(0.0000310)		-	

(*significant at 10%) (**significant at 5%) (***significant at 1%)

The major significantly impact on Chinese Yuan has been found by US Dollar at 1% rejection chance as it was assumed whereas second most predictable currency is JPY that put an impact at 5% rejection chance. EUR and GBP were not having an impact due to insignificance result was found against these currencies. Beside these a vital result has been found by so-efficient of constant showing, without having all these predictors, CNY put an impact on it by itself and change its value without intervention of any other currencies. The maximum impact on CNY is found by USD of having 88.80% of co-efficient whereas around 1.1% is by JPY and only 0.1% by itself. After finding some vital results, those variables was eliminated from considerations that were not had an impact on CNY in order to find better result of impact. For a same purpose, constant was also removed from tables for making dominant of remaining variables.

The assumption was found right that CNY is nearly fixed to USD. It would not be wrong of saying that both currencies are highly correlated with each other. As a part of it, it was also found that USD and JPY having a positive impact on CNY. By considering a major predictor (i.e. USD), Chinese currency regime is very attached with American currency regime and both of them have a positive relation with each other. A further research can be possible in recent study by applying the test of heteroscedasticity for measuring the deviation and working on reducing of it also checking the impact on CNY by many other currencies of world that have a trade relation with Republic of China and would better help in future for assessing Chinese exchange regime and other counties' currency regimes that have been used in study.

Reference

Eichengreen B. (2006), "China's Exchange Rate Regime: The Long and Short of it". *University of California Berkeley* (working paper).

Frankel J. A. & Wei S. (2007), "Assessing China's exchange rate regime", *Economic Policy*, 22 (51), 575–627

Frankel J. A. (2009), "New Estimation of China's Exchange Rate Regime", *Pacific Economic Review*, 14 (3), 346–360

Fu T. & Lin M., (2012) "Interest rate, unemployment rate and China's exchange rate regime", *International Journal of Emerging Markets*, 7 (2), 177 – 190

Shah A. and Zeileis A. & Patnaik I. (2005),"What is the New Chinese Currency Regime?", *ePubWU Institutional Repository* (working paper).

Soofi A. S., (2009) "China's exchange rate policy and the United States' trade deficits", *Journal of Economic Studies*, 36 (1), 36 – 65