What Next with NIFA? A Lesson from Trends and Contests behind the Currency Convergence in South Asia

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ABSTRACT

New International Financial Architecture (NIFA) introduce as a framework to prevent from financial crisis after the East and South-East Asian economic crisis in 1990s. Dominance of U.S. dollar as world currency and capital account liberalization are two major aspects commence by NIFA. It formulates drawbacks for subordinate regions such as South Asia to peg their currency beneath the super power of U.S. dollar. However, NIFA failed to defend the capitalist giant; U.S from financial crisis in 2007/08. This study has done a financial analyze for South Asian region to identify the role of NIFA behind the monetary integration of region. Required data has been obtained by the World Bank from 1972-2013. One of interesting finding is that the level of determinants of South Asian currencies against U.S. dollar became more and more dissimilar after the establishment of NIFA as an international framework. Results from summery statistics and hierarchical cluster analysis have proven that the pre-crisis and the post-crisis periods show completely different results of the magnitudes of exchange rate differences among countries. Comparison for currency co-movements of six South Asian countries demonstrates that the co-movements are relatively high with Indian rupee rather than U.S. dollar.

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1. INTRODUCTION

The global financial crisis in 2008 was considered as one of the worst economic crisis in the world. It paralyzed lot of economic activities in the world and generated negative results after the *Great Depression*[1] of the 1929/30s. The crisis played a major role in the failure of key businesses and declines in consumer wealth in trillions of U.S. dollars. Therefore, lot of intellectual as well as public discussions takes place in various countries to identify the key issues behind this crisis. Moreover, lot of post-crisis studies intends to figure out appropriate and immediate actions to get rid of negative consequences from particular crisis.

New International Financial Architecture (NIFA) becomes a one of popular topics among those studies and conversations. According to the 'Report of the Task Force of the Executive Committee on Economic and Social affairs of the United States' in 1999, NIFA was introduced as a framework to prevent from financial crisis. They commence this framework after the East and South-East Asia economic crisis in 1990s. Moreover, as in their report they identified that "*... the enormous discrepancy that exists between an increasingly sophisticated and dynamic international financial world, with rapid globalization of financial portfolios, and the lack of proper institutional framework to regulate it*".

However this framework failed to stop the global financial crisis in 2008. According to the economists who believe in *heterodox approach*[2] of Economic discipline, NIFA become

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[1] The Economic crisis and period of low business activity in the U.S. and other countries, roughly beginning with the stock-market crash in October, 1929, and continuing through most of the 1930s.

[2] Heterodox economics provides an alternative approach to mainstream economics that may help give explanation to economic phenomenon that don't received widespread credibility.Schools of heterodox economics includes socialism, Marxism, post-Keynesian and Austrian and often combine the macroeconomic outlook found in Keynesian economics with approaches critical of neo-classical economics.

a one of decisive reason to convert this type of financial issue in a country to a world economic crisis. Especially this framework has been developed under the Neo-liberalize perspective with favor to capitalist dominions in the world. Therefore NIFA intend to promote U.S dollar as the global currency with generating an artificial trust on the value and validity of particular currency. Then lot of countries intends to prefer dollar rather than local currency in their national savings and accounts. Therefore, financial shocks or crisis in the United States can be affect significantly to the financial basis of other countries as well.

The global financial crisis has affected both developed and least developed countries in the world. South Asian countries also faced negative consequences. According to the Asian Development Bank (2008), *"The global economic and financial crisis is impacting South Asia at a time when it was the adverse effects of a severe terms-of-trade shock and strong inflationary pressures."* Therefore South Asian countries face various impacts during the period of crisis and those impacts are not end till today. Changes and the effects on real exchange rates of South Asian countries are examples of them. One of the imperative needs for monetary integration in a region is *convergence in real exchange rates*[3] among its member states. This paper intends to figure out whether there was a convergence or divergence in real exchange rates in South Asian countries after the financial crisis. It used Hierarchical Clustering analyze and two different time series methods to test the convergence of currencies in South Asian countries. Clustering analysis and the time series method have been used for identifying convergence of real exchange rates of regional members. Moreover, it examines the price co-movements between each South Asian country with the United States.

[3] Convergence is a coming together of two or more distinct currencies in to a common exchange rate to a given CPI for a certain time period.

2. LITERATURE REVIEW

2.1 NIFA and role of the United States beneath Capitalist ideology

New International Financial Architecture is a specified framework maintain by Neo-classical disciplines of economics to manipulate the world financial arena. It maintains among the international political surface in line with capitalist ideology. Here the political economy behind the NIFA can understand through three imperative issues such as;

- Relationship between the United States and free capital mobility.
- *Dollar Wall-street regime*[4] and the crisis of global capitalism.
- Dollar Wall-street regime and the capital account liberalization.

2.1.1. Relationship between the US Policies and Capital Mobility

NIFA open the gates for any country to access with free capital mobility within global arena. However this particular policy provides high chances for most of developed countries in the world. Developed countries with higher ability of hybrid industrial and financial sectors have more chances to dominate such arena. Therefore, the financial activities control through the administration of the United States exceeds three million U.S. dollars per a day.

Moreover, it stimulates inflows and outflows of foreign direct investments in the United States after 1990s. According to Hiscox (2004), *"In aggregate there has been an impressive expansion in total outward and inward investments in US manufacturing - total assets of foreign affiliates of American firms rose from $560 billion to $1.7 trillion between 1982 and 1996... while assets of US affiliates of foreign firm rose from $169 billion to $ 633 billion..."*. These kinds of imperative evidences help to recognize the political economy behind NIFA

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[4] This system is referred to as the DWSR, as it is dependent upon the US dollar and the key actors on the Wall-Street.

and related policies. NIFA stabilize the opportunities for the capitalist states such as United States and other developed nations to accomplish their financial needs in the easiest way.

2.1.2. Dollar Wall Street Regime and the Crisis of Global Capitalism

After the end times of *Bretton Woods Regime*[5] in the early 1970s, the new international monetary system created by the Nixon's administration. According to Gowan (ND), the series of breathtaking moves to restructure international monetary and financial arrangements instead of devaluation of dollar against gold made the preliminary stages of 'Dollar Wall Street regime'. Then it drives the United States financial market to decide and manipulate world financial activities through observations, recommendations and regulatory actions. In more words, according to Gowan (ND), "... *the new centrality of the dollar turned people towards Wall Street for finance. Because the dollar has been the dominant world currency, the great majority of states would want to hold the great bulk of their foreign currency reserves in dollars...*".

Therefore majority of people and the states believe in dollar in line with most of their financial decisions. It creates tradition of valuating their national currency with respect to the U.S. dollar. Therefore financial shocks or sudden changes in the United States monetary base will negatively affect other states depends on dollar. Then it makes huge impact within world financial market and become a world economic crisis later on.

2.1.3. Dollar Wall-street Regime and the Capital Account Liberalization

According to Henry (2007), Capital account liberalization is a movement from closed capital account regime to an open capital account system where capital may move freely in

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[5] Major outcomes of the Bretton Woods conference included the formation of the International Monetary Fund and the International Bank for Reconstruction and Development and, most importantly, the proposed introduction of an adjustable pegged foreign exchange rate system. Currencies were pegged to gold and the IMF was given the authority to intervene when an imbalance of payments arose.

and out of the country. Therefore this is one of suggestion made by *Global North to the Global South*[6] in line with NIFA framework. Then it cleared the way for capitalist powers such as the United States to make direct investments in developing countries. Ultimately this procedure becomes another alternative method to stabilize the dominance of U.S. dollar over the world, especially among the third world countries.

Therefore NIFA plays a decisive role within world financial market towards maintaining the capitalist domain of the United States. It has made various impacts on regional behaviors of other nations. Superiority and reliability of U.S. dollar can influence exchange rate values and currency convergence of different regions. South Asia as a region that consists under developed countries is affected by U.S. dollar in different directions.

2.2. NIFA and South Asian context

As a consequence from NIFA, each and every South Asian country believed U.S. dollar within their international financial activities. Appreciation or depreciation of domestic currency with respect to U.S. dollar becomes a decisive factor to make strategic decisions in the financial market. Therefore Exchange rate plays an imperative role in such arena.

2.2.1. Global Financial Crisis and South Asia

When the global financial crisis takes place in 2008, monetary policy in South Asian countries faces several tight spots. Net capital imports are declining due to the increasing of spreads and the drying up of international liquidity as a result of higher Emerging Market Economies (EME) risk perception. On the other hand, falling exports together with the

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[6] Generally, definitions of the Global North include North America, Western Europe and developed parts of East Asia. The Global South is made up of Africa, Latin America, and developing Asia including the Middle East. The North is home to four of the five permanent members of the United Nations Security Council.

slowdown in the inflow of remittances increases the current account deficit of South Asian nations. According to the World Bank (2009), this crisis affects South Asia within a terrible period for their regional economic activities. This was the period where South Asian region just recovered from the awful consequences including trade shocks from the global food and fuel price crisis. Moreover, their current account and fiscal balances get in to troubles and inflation has rush forward to extraordinary levels within this period. In more words, *"Growth in South Asia decelerated in 2008, falling from 8 percent in 2007 to 6 percent. It is projected to decline to 5 percent in 2009, before recovering to 6 percent in 2010."* Therefore, financial crisis and the U.S. dollar regime made further assault to the South Asian economic stability with certain negative circumstances.

The Dollar Wall Street Regime; U.S. dollar as the dominant world currency and free mobility of capital makes ideological as well as economical surrender within countries in Global south. Each and every least developed nation has to depend upon the capital investments by developed capitalist giants and the U.S. dollar. Therefore, countries within South Asia also made their decisions in line with certain capitalist agenda promotes beneath the label; New International Financial Architecture.

2.2.2. NIFA and Currency Convergence in South Asia

Currency convergence criteria simply refer to a Common currency instead of different currencies in neighboring countries within a same region. European Union and '*Euro*' provides an imperative example for regional currency convergence. The euro was established in accordance to decisions made by *Maastricht Treaty*[7] in 1992. Then it use as the official currency of the euro zone of 18 of the 28 member states of the European Union.

However one of imperative capitalist favors disciplines made by NIFA; dominance of U.S. dollar as the world currency will not reserve any assistance from regional currency

[7] This undertaken to integrate Europe was signed on 7th February 1992 by the members of the European community in Maastricht, Netherlands.

convergence criteria. Because 'Convergence of currency' built strong co-operate sector within regions. Then it may provide opportunity for regions to make their financial decisions as a common solution with more power. It will gradually reduce the international bargaining power of U.S. dollar. Therefore U.S. dollar can't easily influence common currency rather manipulate single currencies in each countries. And also this type of regional integration may put together things harder for capitalist dominions such as the United States to use sever actions against *Rebellion States*[8] who tries to question capitalism and *Global Hegemonic Stability*[9]. For that reason, most of capitalist nations centered by the United States keep their Eagle eyes on regional decisions formulate by regions consist with emerging economic powers such as East Asia and South Asia.

· South Asian economists have done several studies to identify the relevance and challenges behind the currency convergence in South Asia. Khalid and Rajaguru (2004) provide some preliminary comments on South Asian future perspectives behind global currency. They mention that, "*Researchers anticipate that 60 percent of the world currencies will converge to euro within the next two decades... this will be some kind of Bretton Woods system with three anchor currencies ruling the world...*". Then they suggest emerging economies in South Asian region will have to make a choice for an anchor currency for their financial dealings and transactions. In addition to that recent currency trends the world demonstrate how much U.S dollar, Euro and Chinese Yuan can influence financial behavior of rest of countries in the world.

On the other hand some of economists try to explain the importance of common regional currency rather than lagging behind global anchor currencies individually without any financial integration in particular region. According to Chowdhury et al. (2008), "*It's advantageous to deal with a lesser number of currencies since each time one converts a*

8 Uprising states aimed at destroying or taking over the position of an established authority.
9 It is a theory of International Relations and indicates that the international system is more likely to remain stable when a single leading state or nation is the dominant world power.

currency there is a huge loss... it looks advantageous if SAARC countries could adopt a single currency substantially enhancing their bargaining power together in the world market." Therefore use of common currency regime will be very useful according to them. Their analysis on possibilities and the benefits of a single currency in SAARC verify that "*With uncertainty about exchange rates removed, and transaction costs reduce trade and investment in the region can get a big boost*".

Therefore, it's important to identify the ground reality behind currency convergence criteria in South Asia. Lot of emerging South Asian economies such as India, Pakistan, Bangladesh and Sri Lanka will have to make a choice rather than letting world economic dominions like the United States, European Union or China to bargain their economic or financial identities and feasibilities.

2.2.3. Trends of South Asian Currencies; Convergence or Divergence?

Use of single currency for South Asian region is a good idea for inter-regional and international level development. According to Tripathi (2004), it would be reduce risks for investors and traders. Transaction cost may decline and it would enforce the discipline in the economics and increase transparency. It would broaden the pool of resources available to the smaller and poor members of the SAARC such as Nepal, Bhutan and Maldives. However, South Asian region suffering from few restrictions against good use of currency convergence such as lower factor mobility, lower degree of inter-regional trade and lack of political integration (See Forhard, 2012).

According to Ramachandran (2013), "In 2003, Prime Minister AtalBihari Vajpayee had mooted the idea of open boarders and a single currency. Vajpayee felt that South Asian countries developing grater economic stakes in each other would create sensitively to shared concerns and promote common interests". Any how this idea has not been debated seriously within India or South Asian region. This idea drew responses elsewhere in Asia, including Japan and China at the 15th ASEAN summit in Thailand in October 2009. South Asia did not take further actions to consider about single currency for whole region. However, the U.S.

dollar is regaining its dominant role within the South Asian financial market and the falling Rupee in India, Sri Lanka and Pakistan made worst hits for regional financial stability.

3. METHODOLOGY

Hierarchical Cluster Analysis (HCA) and imperative time series method are use in this study to test the convergence or divergence trends of currencies and the role of NIFA within the South Asian region. The HCA is an imperative statistical method use for determine the similarity and dissimilarity of currencies and to split them in to different groups according to their similarities. Then the time series method use second order auto-regression process proposed by Alesina et al. (2002) for measure currency co-movements of currencies in the South Asian countries. Required data obtain for the time period 1972– 2014.

3.1. Hierarchical Cluster Analysis

Hierarchical cluster analysis is a major statistical method for finding relatively homogenous clusters of cases based on measured characteristics. The basic principle behind the cluster analysis is *"Countries that are similar to one another should be in the same group and the countries that are dissimilar should be in different groups"*. As Lim (2009) mention in his study, there are two types of HCA methods. They are agglomerative clustering method and divisive clustering method. In this study, The Hierarchical Agglomerative Cluster Analysis is used according to '*Ward's method*' (see Lim, 2009). Therefore Ward's method joins the groups of countries data to maximize an error sum of squares objective function. The distance between two clusters is defined by following equation.

$$D_{ij} = \sum_{t=1}^{T}(x_{it} - x_{jt})^2 \qquad (1)$$

WHAT IS d? Where x_{it} is the real exchange rate value for country *i* at time *t*.

This study constructs few '*Dendrograms*' and it is a branching diagram that represents the relationship among a similar group of entities. It starts with each case as a separate cluster.

Then it combines clusters in order and reduces the number of clusters at each step until only one cluster is left. The vertical axis represents the objects and clusters. The horizontal axis represents the clusters in the Dendrogram increasing the levels of dissimilarity.

3.2. Co-movements of Currency in South Asian Region

This study uses the second-order auto-regression process proposed by Alesina et al. (2002) for measure the co-movement of currency in different countries in the world with respect to U.S. dollar, euro and Japanese Yen. Then this method followed by Matei (2008) to evaluate the size and persistence of currencies and output shocks between each Central and Eastern European States (CEESs) and euro zone. Similarly, Lim (2009) use this method to measure co-movements of currencies in East Asian region. Therefore, co-movement of currency between countries *i* and *j* can be measure by following second-order auto-regression;

$$\boldsymbol{ln\ P_{i,t}/P_{j,t} = \lambda_0 + \lambda_1\ ln\ P_{i,t-1}/P_{j,t-1} + \lambda_2\ ln\ P_{i,t-2}/P_{j,t-2} + \varepsilon_{ij,t}} \quad (2)$$

Where $P_{i,t}/P_{j,t}$ represent the currency level in country *i* (one of South Asian countries) relative to U.S. dollar noted with *j* in time *t*. Then the estimated residual ($\hat{\varepsilon}^2_{ij,t}$) from equation (2) is used to compute the root mean square error and co-movement of currencies$VP_{ij}$is calculated using the root-mean-squared error.

$$\boldsymbol{VP_{ij} = \sqrt{\frac{1}{T-3}\sum_{t=1}^{T}\hat{\varepsilon}^2_{ij,t}}} \quad (3)$$

Where *T* indicates the number of observations and a higher value of VP_{ij}means less co-movement of currencies between countries *i* and *j*.

4. DATA

The starting date for time series data annually for this study is 1971. The reason is that end of the Bretton Woods system and the suspension of the dollars convertibility in to gold was commenced in 1971 make way clear for dollar to build up its regime in the world financial. Then the NIFA; capitalist framework and the backbone of Wall Street regime introduced in 1990s as a method to prevent from financial or economic crisis. Therefore exchange rate data from 1971 will demonstrate the influence of dollar for the South Asian countries. Data collect in annual average values till 2013.Moreover, Consumer Price Indexes (CPI) for further analysis is collected within the same period of time. All data obtained by the World Bank.

As most countries habitually pegged their currencies against the U.S. dollar, each country's currency is expressed in U.S. dollars. Then it easy to collect data and whole sampling period was divided to two sub periods from 1972 to 2007and from 2008 to 2014to examine the effect of Global financial crisis by May 2008.However, Hierarchical Cluster Analysis may use data from different time periods due to data availability. CPI data are not available for Afghanistan till 2004, Maldives till 2005, Bangladesh till 1986 and Bhutan till 1980. Average annual exchange rates for South Asia can be display within below figure;

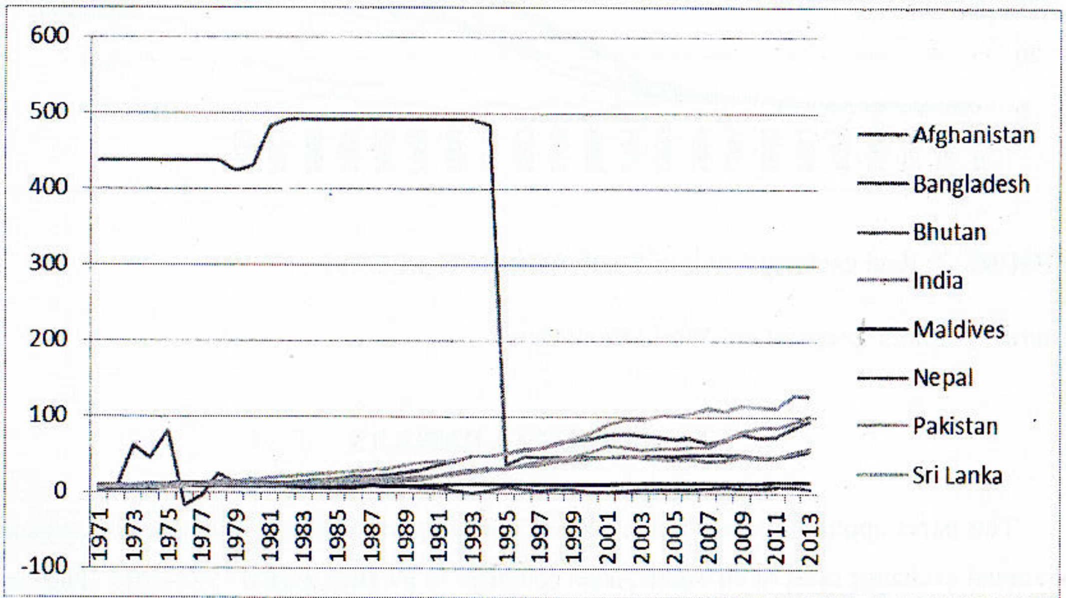

FIGURE 1: Average annual exchange rates of South Asia (Local Currency Unit per US$)

Source: Authors' preparation: World Bank Data

Then the real exchange rate values are calculated by using annual exchange rate values of South Asian countries. Nominal values multiplied by the price indices of the two countries as in following procedure.

Real Ex-rate = (Nominal exchange rate × Domestic price)/ (Foreign price)

Annual Consumer Price Indexes are use as the price of either domestic or foreign countries.

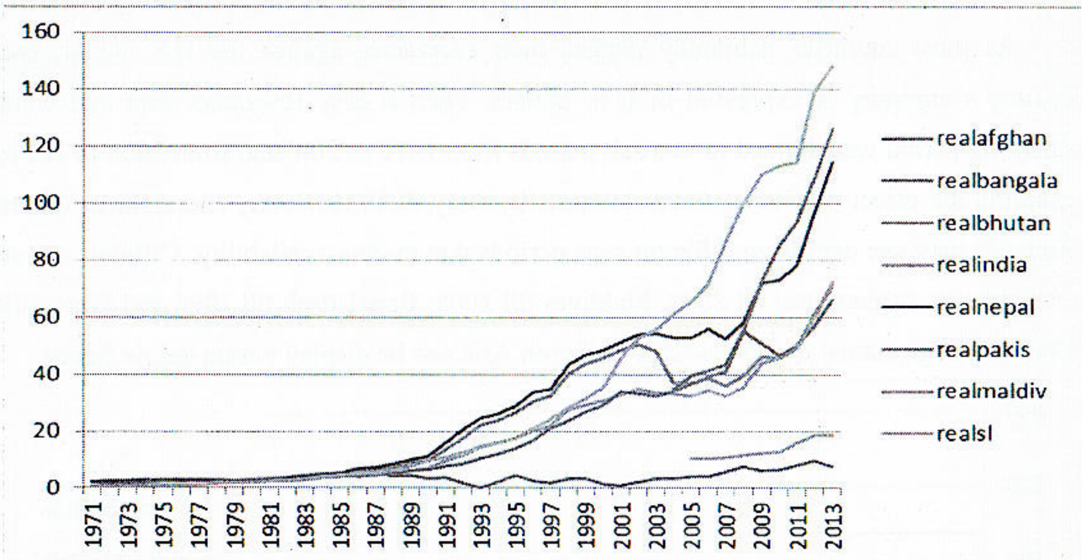

FIGURE 2: Real exchange rates of South Asia (LCU per US$)

Source: Authors' preparation: World Bank Data

5. EMPIRICAL RESULTS

This paper applies the hierarchical cluster analyzing method to examine the convergence of annual exchange rates of all South Asian countries in the time period 1972-2013. Then use the time series method to examine the convergence of currencies of six major South Asian countries in the time period 1986-2013.

5.1. Graphical Analysis and Summery Statistics

This analysis basically use annual exchange rate values; units of domestic currency for one U.S. dollar. Then those nominal exchange rate values convert in to real terms by using annual average values of Consumer Price Indexes of all countries. Then the first lag of real exchange rate values is obtained to summarize the changes of real exchange values in terms of continues compounding within the time period 1972-2013.

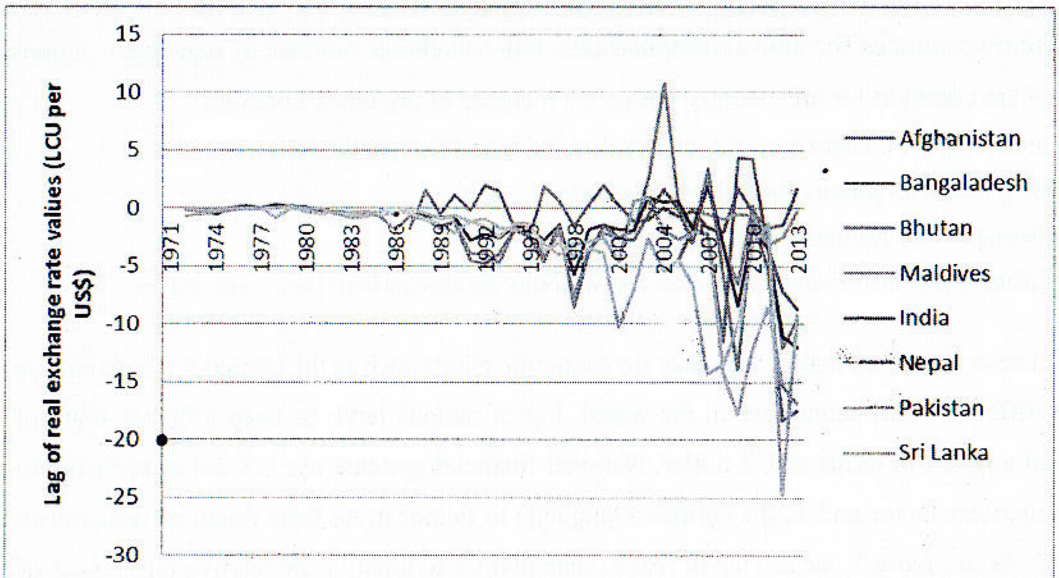

FIGURE 3: Lag of real exchange rates for South Asian countries

Source: Authors' preparation: World Bank Data

Here we can observe that, how the annual differences of real exchange rates of South Asian countries vary over time. A decline in values implies that the real exchange rate of previous year is higher than the current rate. On the other hand an improvement of values implies that the real exchange rate in previous year is lower than the current rate. Therefore the overall trend of South Asian real exchange rates demonstrates an increase of the number of units of domestic currencies to pay for one unit of U.S. dollar when the currency ratio was adjusted yearly. However we can observe few significant differences and similarities within individual behavior of each countries real exchange rate. Bhutan shows the highest appreciation of domestic currency in 2004. Sri Lanka shows the highest depreciation of domestic currency in 2012. Moreover, behavioral pattern of real exchange rate differences are pretty similar and closely move among South Asian countries except Bangladesh till 1999.But it differs from 2000 and South Asian countries show significant differences of their value margins and annual changes of real exchange rates. Here it's imperative to remind that NIFA introduce as a frame work in 1999.

Then it is imperative to understand the nature of causal factors which can be affected in different economies for above dissimilarities. NIFA includes number of regulatory actions which are common for any country who are a member of the United Nations.

- Increasing the transparency of countries data and economic conditions.
- Help Countries prepare for a global capital flow.
- Strengthen the National Financial System.
- Ensuring that the Private sector takes responsibility for its decision when crisis strikes.

These regulators makes way easy for economic giants such as the United States to engage with different local economies in the world. Lot of nations tends to keep a bigger share of capital account in terms of US dollar. National financial systems use US dollar as their key measurement factor and as the common language to demonstrate their financial behavior to world. As in Figure 3, we use lag of real exchange rates to identify the relative differences of South Asian currencies. Therefore the magnitude of Nominal exchange rate of each country and differences between CPI indexes of each South Asian country against US CPI are act as the main determinants of verities in real exchange rate values.

Since 1970's onwards, there's a trend of improvement of CPI values of all South Asian countries and it's vary between 122 and 132 in 2013. Meanwhile the USA CPI is 106. This is a common difference between developing and developed nations where developing nations demonstrate high inflation rates. Therefore this tends to be a one of factor to depreciate exchange rates for South Asian economies. Then the value of nominal exchange rate may decide whether it is appreciation or depreciation and even which level of depreciation it should be. As a result of those different policy frameworks of South Asian economies may cause the difference of exchange rate values. According to Aizenman and Ito (2014), this policy framework divergence can be occurred under three major categories.

This is a financial hypothesis which Therefore varieties of macroeconomic performance of South Asian economies may reflect its policy frame work. Therefore this '*Trilemma Triangle*' was designed as a combination of three major policy goals, financial openness; exchange rate stability and monetary interdependence. Then each country can choose two of above three policy goals according to their macroeconomic performance.

In context of South Asia, India, Sri Lanka and Pakistan now maintain floating exchange rates. But the degree of trade openness or monetary interdependency via the US financial market is different to each country. Then the corner solutions for each countries are difference from each other till peg each currencies against the US dollar. Bangladesh has a moderately flexible exchange rate which policy framework targets an intermediate solution somewhere within the triangle. Maldives currency is pegged to the US dollar and Bhutan and Nepal pegged their currencies to the Indian rupee where Bhutan and Nepal are very less in the degree of financial openness. Therefore the divergence of policy frameworks against the US financial market can be identify as one of crucial factor which can affect the divergence patterns presence within the exchange rates.

Then this study use average measure (mean value) for lags of real exchange rates of each South Asian countries within the time period 1972-2013 and also for the time period 1972-2007 as the pre-financial crisis stage and 2007-2013 as the period of post-financial crisis. Finally those average lags of real exchange rates use for hierarchical clustering analyze. As Table 1 shows, here we can observe negative values for all mean values of lags of real exchange rates after the suspended of Bretton Wood regime. Which means that the domestic currencies are demonstrate a depreciation trend within the whole time period after the free movement of U.S. dollar. Moreover, the time period before World financial crisis and also the post-crisis period similarly show negative signs of mean values of all South Asian countries. But when we compare the magnitudes of mean values, post-crisis period shows significant improvement in depreciation of domestic currencies with compared to period before the crisis.

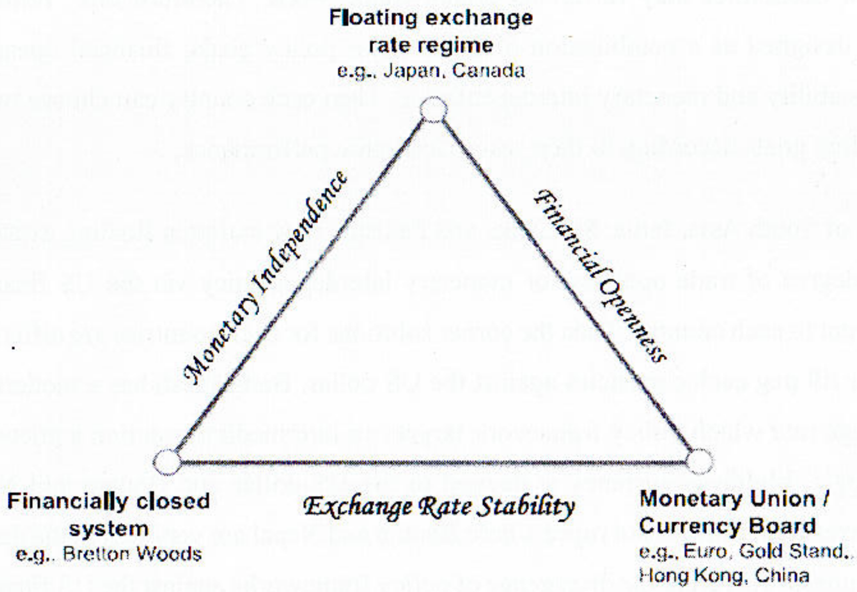

FIGURE 4: The Trilemma Triangle

Source: Aizenman and Ito (2014)

TABLE 1: Summery Statistics (Lag of real exchange rates)

Country	Obs:	1972-2013		Obs:	1972-2007		2008-2013 (6 obs: each)	
		Mean	Std.Dev		Mean	Std.Dev	Mean	Std.Dev
Afghanistan	9	-3.45	5.38	3	-2.87	1.37	-3.74	6.73
Bangladesh	27	-.147	1.416	21	-.089	1.38	-.348	1.65
Bhutan	33	-2.06	3.83	27	-1.22	3.19	-5.82	4.485
India	42	-1.676	2.87	36	-.84	1.37	-6.678	4.42
Maldives	8	-1.035	1.15	2	-.24	.305	-1.3	1.23
Nepal	42	-2.66	4.496	36	-1.39	2.13	-10.32	7.21
Pakistan	42	-2.98	4.91	36	-1.12	1.315	-14.12	3.4
Sri Lanka	42	-3.51	4.99	36	-2.38	3.15	-10.31	8.39

Source: Authors' Calculations

5.2. Hierarchical Cluster Analysis

The hierarchical cluster analysis uses the similar data set and time periods which represent by the Table 1. Therefore the mean values of lag of real exchanges rates are used to construct Dendrogram for each time period.

This Dendrogram also provide an additional dimension to identify the convergence of currency in South Asian region. When this study considers *bifolious (Clade with two leafs in a Dendrogram)* clusters within the region, Afghanistan and Sri Lanka shows the lowest dissimilarity between the mean of lag values. Bangladesh and Maldives clustered within one with the highest dissimilarity. All the South Asian countries are clustered under the dissimilarity measure of 3.5. Therefore the impact of U.S. dollar makes severe restrictions against the currency convergence of South Asia by absorbing different weights of valuation by each country.

However Figure 6 and 7 uses for identify the impact of U.S. dollar on domestic currencies before and after the global financial crisis. Here the period before crisis show comparatively low dissimilarity value; less than 3 to integrate as a common currency valuation for U.S. dollar. Although the individual characteristics and clusters become difference within the region such as the cluster of Afghanistan and Sri Lanka with the lowest dissimilarity for whole time period here becomes the *bifolious* cluster with highest difference.

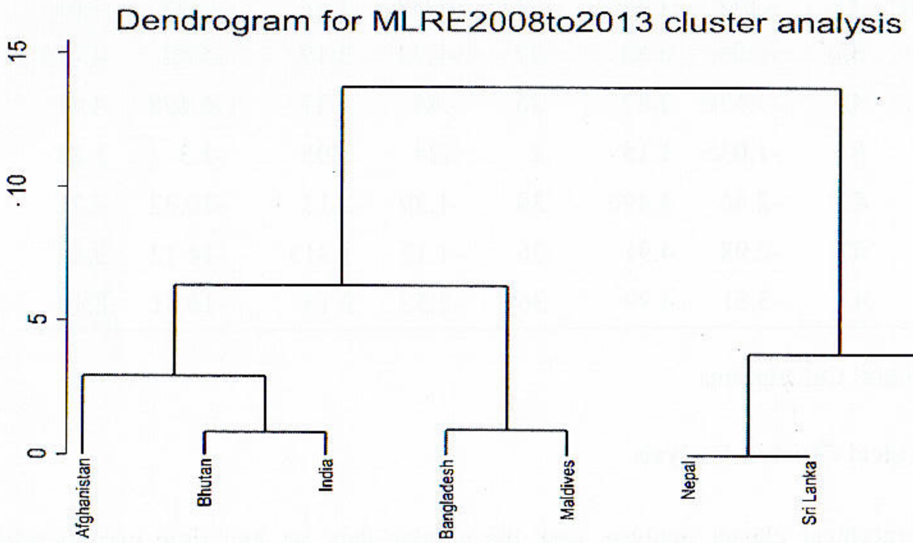

FIGURE 5: Dendrogram for mean of lag values of real ex: rates (1972-2013)

Source: Authors' preparation: World Bank Data

Then the post-crisis situation provides totally different story and shows very high dissimilarity value for South Asian countries; around 14 to integrate in same clade with respect to U.S. dollar. Which means that the differences among South Asian countries currency values against U.S. dollar is significantly increase at the post-crisis period.

Moreover, two countries; Afghanistan and Pakistan are clustered as *Simplicifolious* [10]currencies with higher dissimilarities by other countries.

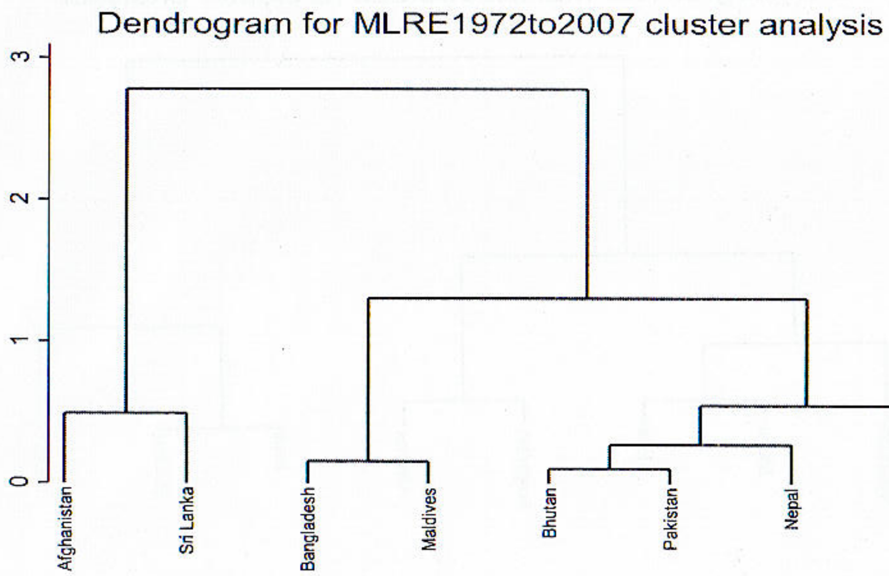

FIGURE 6: Dendrogram for mean of lag values of real ex: rates (1972-2013)

Source: Authors' preparation: World Bank Data

So the different results, which are elaborate through the magnitudes of real exchange rate differences among countries clearly shown that there is to be some reason for such difference. Sri Lanka and Pakistan are two countries which represent highest dissimilarity measure at the post crisis period. This is because of the floating exchange rate policy which tends to peg their national currency against the US dollar and higher the divergence through higher the degree of depreciation. For an example, Sri Lankan exports are mostly textiles and garments as 40% of total exports. Therefore changes and trend in apparel exports can make huge impact on total exports. After the loss of GSP (+) around 2010, share of apparel exports to United States

[10] Clades can have just one just one leaf or single leafed in a Dendrogram

shows increasing trend. This shows that how a country likes Sri Lanka cannot get rid of relationships with US market and it tend to depreciate local currency in high manner.

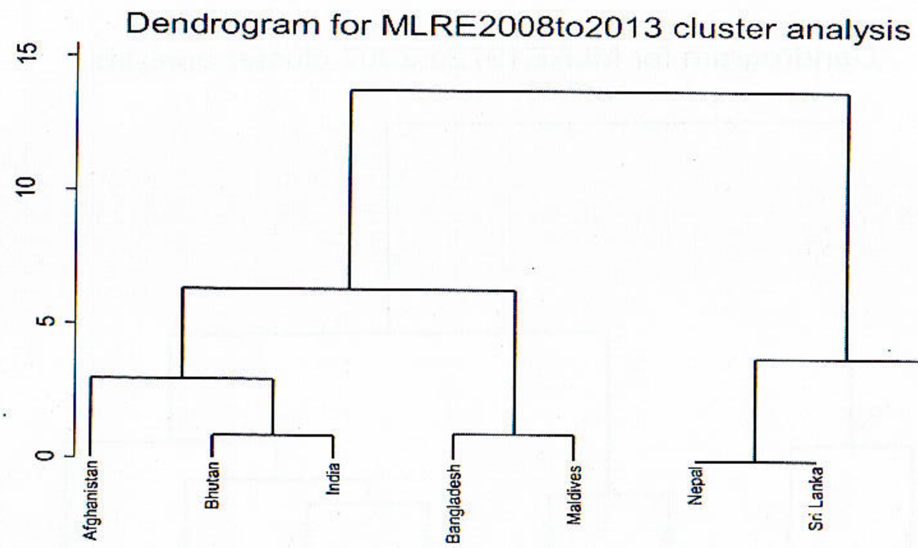

FIGURE 7: Dendrogram for mean of lag values of real ex: rates (2008-2013)
Source: Authors' preparation: World Bank Data

Therefore these hierarchical analyses express the effect from NIFA against the currency convergence of South Asian region. Dominion of U.S. dollar and free mobility of capital make road for the United States to fulfill its gaps and to reshape its failures through the high appreciation of U.S. dollar after the financial crisis. In addition to that it makes huge dissimilarities within subordinate regions such as South Asia by manipulate and eliminate opportunities to integrate as a region for common currency.

5.3. Currency Co-movements

This part of the analysis use time series method; second-order-auto regressive function to measure the co-movement of South Asian currencies with U.S. dollar. Here this study use consumer price indexes within the time period 1986-2013 for six South Asian countries excluding Afghanistan and Maldives due to the non-availability of data. Then the logarithms of are used in time series analysis. Lower the value of estimatedVP_{ij} will higher the co-movement of prices between two countries (i^{th} country and U.S.).

Here the highest co-movement of South Asian currency with U.S. dollar shows by Bangladesh and the lowest by Nepal according to the values ofVP_{ij} . On the other hand Nepal shows the highest co-movement with Indian rupee and Sri Lanka represents the lowest co-movement value. Here a high co-movement means the degree of tendency to observe similar dynamics among the currency units.

For an example, Nepal demonstrates the highest co-movement with India due to the higher level of economic integration in terms of trade relationships and mutual trust for the currency. Moreover, each and every co-movement of South Asian countries in the sample is higher with Indian rupee compared to the U.S. dollar.

TABLE 2: Co-movement of currency with U.S dollar and Indian rupee

Country	U.S. dollar	Indian rupee
Bangladesh	**0.1402**	0.1234
Bhutan	0.2126	0.1169
India	0.2370	-
Nepal	0.2448	**0.0248**
Pakistan	0.2429	0.0824
Sri Lanka	0.2074	0.1987

Source: Authors' Calculations: World Bank data

Therefore South Asian countries have better co-movement with Indian currency rather than the U.S. dollar. However, since Indian rupee is not a hard currency and has high tendency to depreciate, policy perspective should not peg South Asian currencies beneath the Indian rupee. It may generate more issues when Indian economy faces any shock in future. Therefore the better way is to integrate as a region for common currency unit for South Asia while using Indian rupee as an anchor currency.

3. CONCLUSIONS

This study use both Hierarchical cluster analyze and time series method with more graphical analysis to examine the convergence or divergence trends of South Asian countries. It mainly tries to identify the nature of trend and the impact of NIFA for that kind of result. One of interesting finding is that the level of determinants of South Asian currencies against U.S. dollar became more and more dissimilar after the establishment of NIFA as an international framework. Therefore the divergence trend of South Asian currencies had improved after new neo-liberalize settlements beneath the guidance of United Nations. Moreover, the results from summery statistics and hierarchical cluster analysis has proven that the period before the financial crisis 2007/08 and the post-crisis period show completely different results about the levels of exchange rate depreciations of the South Asian countries. Indian, Sri Lankan, Nepal and Pakistan currencies are depreciate in higher values against the U.S. dollar after the financial crisis.

This has been occurred within particular period, because the United States needs to stimulate their financial operations to get rid of dreadful effects on their financial market. Therefore appreciation of U.S. dollar will make more opportunities for them to increase their financial surpluses. However this would be not a good thing for subordinate regions and countries such as South Asian region, because appreciation of U.S. dollar made their domestic currencies depreciate and also enlarge the divergence trends of currencies with the bilateral affairs with the United States. Here another interesting result by cluster analysis tend to prove this fact, because South Asian countries face a dissimilarity measure lower than 3 to be clustered together against the U.S. dollar and post-crisis period increase it into 14 by widening the gaps within regional currencies.

Then the time series analysis provide an interesting result within the comparison of currency co-movements of six major South Asian countries with the U.S. dollar and Indian rupee. The results show that the whole co-movements of South Asian countries are relatively high with India. Thus this result is questioning the political economy behind the currency convergence within particular region. South Asian countries have high opportunity to use Indian rupee as their anchor currency rather than depend under the superiority of U.S. dollar. However, NIFA and related neo-liberalize tools narrow down opportunities for subordinate regions such as South Asia to get use of common currency against U.S. dollar. Because, it is widening the gaps within individual currency values and implies a divergent trend. Therefore the role of NIFA not suitable for avoid global economies from financial crisis and also wider the opportunities of South Asian region to make use of common currency in line with regional monetary integration.

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