Macroeconomic Implication of Currency Management in Nigeria: A Synthesis of the Literature

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Abstract

Currency management covers currency recalibration, redenomination and restructuring and it forms part of a broad package of economic and political reforms to strengthen the monetary sector of an economy. This paper reviews the likely impact of policy of currency restructuring by the Central Bank of Nigeria (CBN) in the context of macroeconomic implication for Nigeria and in comparison with other nations. The synthesis of the literature suggests that currency management in Nigeria, when viewed from the macroeconomic perspective, is significantly low and in most of the selected countries. The findings also support the literature that the policy may not propel inflation in an open economy. The results, however, suggest that currency denomination in whatever form is only possible in a country with high level of output, of which Nigeria is yet to achieve. The paper therefore recommends that, before embarking on currency restructuring policy, government ought to put in place appropriate fiscal and monetary policies to promote production so as to enhance the economic base of the nation for sustainable monetary sector.

Keywords: Monetary Sector; Currency Restructuring; Macroeconomic Indicators
JEL Classification: E00; E52; E58

1. Introduction

Currency management means many things in monetary policy. It covers currency redenomination, recalibration, redenomination and restructuring. Currency redenomination as defined by Dogorawa (2007) is the process where a new unit of money replaces the old unit with a certain ratio by removing zeros from a currency or moving some decimal points to the left. Mosley (2005) states that redenomination involves the process whereby a country's currency is recalibrated through reduction in the number of zeros in the currency with a view to achieving a set of given economic and fiscal objectives. The terms, redenomination, revaluation and appreciation are sometimes used interchangeably. Currency revaluation, however, refers to currency appreciation, while currency redenomination refers to the removal of some zeros that do not increase the strength of a currency in relation to other currencies. Some authors use currency reform and redenomination almost interchangeably (Leijonhufvud, 2000; Mas, 1995). Others use the term to refer to exchange rate-based stabilizations, rather than to the specific act of removing zeros from a currency (Bernholz, 1995).

In addition, upward revaluation of the currency can be defined as an increase in the value of a national currency with respect to other currencies under a fixed exchange rate system. The reduction of the value of a currency compared with other currencies under a fixed exchange rate system is referred to as devaluation. Under a market mediated and in a floating exchange rate system, the terms currency appreciation and depreciation represent the rise and reduction, respectively, in the value of a currency. It is a public policy measure that simplifies the understanding; use and management of the national currency through its expression in a new and smaller equivalent scale (Central Bank of Venezuela 2007).

From the preceding discussion, we can thus define currency management as a monetary mechanism of redesigning and remodelling currencies available in an economy. The mechanism is used to reduce the flow of currency in circulation. The mechanism is also used to reduce the transaction costs in monetary management. We view that this type of mechanism is rarely used in monetary policy except when the flow of money in circulation becomes difficult to estimate or when the flow of fake currency overweighs official currencies resulting in macroeconomic disequilibrium.

In Nigeria, the Central Bank of Nigeria (CBN) plans to induce new currency denominations of ₦5,000 (Five Thousand Naira), and also converts ₦5 (Five Naira), ₦10 (Ten Naira), ₦20 (Twenty Naira), and ₦50 (Fifty Naira), into coins. The new monetary policy is to enhance the quality, integrity, incorporate more effective features for the visually challenged, and also introduce new security features on the redesigned banknotes. Furthermore, the introduction of a higher bill is expected to complement the bank's cash-less policy, as it will substantially reduce the volume of currency in circulation in the long term, and substantially reduce the transaction costs in currency production (CBN, 2012).

Furthermore, recent experiences of the emerging economies in the South American and African countries suggest that a detailed analysis of the effect of the policy be made before a final decision is taken. In the context of this, the paper thus attempts to review the literature on Nigeria, lessons from other countries and submit some recommendations that could shape the policy for sustainable economic growth in the emerging economies. The remaining part of this paper is structured as follows. Section 2.0 focuses on the relevant literature, drawing inferences from Nigeria and some selected nations. This section also covers sub-sections 2.1 and 2.2. Section 3.0 presents the discussions on the lessons from the literature and offers some recommendations. In the next section, the review of the synthesis literature is presented.

2. A Synthesis of the Relevant Literature

There is sufficient evidence in the literature on the reasons adduced by monetary authorities for considering the restructuring of their currencies. Mosley (2005) and Ajayi (2007) submit that one of the reasons for currency restructuring and redenomination is to provide a platform for a broad package of economic and political reforms and restoration of credibility of the currency with a view to combating hyperinflationary pressures. Historical evidence also suggests that redenomination had been very successful in an environment of macroeconomic stability, declining inflation, stable exchange rates, fiscal restraint and prudence and rational expectations of policy credibility as indicated by Ishiekwene (2007) and cited by Dogarawa (2007).

It has been indicated in the literature that one of the reasons adduced for currency restructuring is the need to fight inflation. The literature, has however established that, the fundamentals of the economy which determine sustainable economic growth are prudent fiscal and monetary policies. In effect, currency restructuring will work only in concert with an economic stabilization programme involving exchange rates, price level and overall level of interest rate. Therefore, the concerns being expressed on the new currency policy is that the high value of ₦5,000 in Nigeria being proposed for introduction will generate inflation.

The literature also suggests that large denominations are psychologically less fungible than smaller ones, allowing them to be used as a strategic device to control and regulate spending. This supports the arguments for larger denominations since the likelihood of spending is lower when an equivalent sum of money is represented by a single large denomination, relative to many smaller denominations (Raghubir & Srivastava, 2009).

Several countries including Nigeria had adopted currency redenomination, and this policy in some countries had been implemented as far back as 19th century. Mosley (2005) traced 70 instances of this exercise among developing and transition nations during the 1960-2005 periods. The redenomination is said to vary in size. In nine instances, six zeros were removed, and in eleven occasions one zero was removed from the currency. The average redenomination was the removal of three zeros, dividing the currency by 1000. In terms of frequency, ten countries have redenominated twice while nineteen countries have used redenomination on only one occasion each. The most frequent users of redenomination are Argentina, the former Yugoslavia/Serbia, Brazil, Iraq, and now Nigeria.

To enable us have a abroad idea of the behaviour of currency management in Nigeria and other nations, the paper provides the synthesis of the literature of selected countries on regional basis as follows: Africa (Nigeria, Ghana and Zimbabwe), Europe (European Monetary Union Netherland, Russia and Ukraine), Middle East (Israel), South America (Argentina, Nicaragua and Venezuela), and Asia (Indonesia, North Korea, Taiwan and Vietnam). This is as follows:

2.1 Currency Denomination in Nigeria

The historical literature on currency denomination and calibration indicates that, prior to the establishment of the West African Currency Board in 1912, Nigeria had used Cowries and Manilas as forms of money (CBN, 2012a). The decimalisation of the currency took place in January, 1973 when the Naira, which as the major currency unit replaced the Pound and was made to be equivalent to ten Shillings. Kobo was designated as the minor unit with 100 kobo making one Naira. CBN (2012a) reports the introduction of coins in denominations of ½, 1, 5, 10 and 25 kobo, with the ½ and 1 kobo in bronze and the higher denominations in cupro-nickel also in 1973.

A banknote denomination of the value of 20 Naira was issued on 11th February, 1977. On July, 1979, new currency notes of three denominations, namely, (₦1), (₦5), and (₦10) were introduced. In response to the expansion of economic activities and to facilitate an efficient payments system, the CBN introduced ₦100, ₦200, ₦500, N1000 in 1999, 2000, 2001 and 2005 respectively In 1991, smaller 1, 10 and 25 kobo coins were issued in copper-plated-steel, along with nickel-plated-steel 50 kobo and 1 Naira (Dukor (2012). The CBN (2007) announced the issuance in 2007, of new coins in denominations of 50 kobo, 1 and 2 Naira, with the 1 and 2 Naira bimetallic. The ½ kobo to 25 kobo coins were withdrawn from circulation with effect from February 2007.

At independence of Nigeria in 1960, the major macroeconomic variables stood as follows: foreign exchange rate of the Nigerian Pound to the US$ in 1960 was 0.66; interest rate was 4%; inflation was 0.14 and GDP per capita stood at $91.37. By 1962, the major macroeconomic variables stayed largely flat except for GDP per capita which rose to $102.42. A cursory review of the currency management strategy of CBN in relations to the performance of the economy between 1999 and 2005 when large currency notes were introduced reveal that the variations in the GDP per capita ranged from 27 per cent to 288 per cent.

Similarly, in 2005 when the N1,000 banknote was launched, inflation dropped by about 26 percent and 23 percent in 2006 and 2007 respectively. The attempt at currency redenomination in 2007 in which the 100 Naira was to become 1 new Naira was part of a comprehensive Financial System Strategy (FSS) of the CBN. The other components of the plan included the adoption of inflation-targeting framework for the conduct of monetary policy, sharing part of the Federation Account (FA) funds in US Dollars in order to deepen the foreign exchange market and the liberalization /convertibility of the Nation's current account. However, the redenomination of the naira was cancelled due to political pressures. Also jettisoned then was the plan by the CBN to make the Naira fully convertible against foreign currencies by 2009.

The most recent effort of the Nigerian monetary authority in 2012 was the planned introduction of the ₦5,000 note and conversion of the ₦20, ₦10, and ₦5 notes to coins. The CBN (2012) indicates that this help will for effective monetary management in terms of reduction in large volume of currency, helps in the sustainability of cash-less policy and lubricate macroeconomic variables positively.

In supporting the decision, the CBN (2012) and some students of financial economics submitted that there was no correlation between currency revaluation or calibration in Nigeria on the one hand, and economic growth on the other. It has no negative effect on inflation. The empirical results of the study by Egbuna & Obikili (2013) on the issue of the higher bank note in Nigeria, support this assertion that none of the currency restructuring policy embarked upon in Nigeria has no negative effect on inflation, but with some negative macroeconomic effects. The empirical results concluded that the change in inflation expectations more than completely dissipates by the second month after which there is no subsequent effect.

Obadan (2012) contradicted the attempt at correlating the issuance of large denominations by CBN with the fall in inflation rates in subsequent years. He contended that foundation of inflation in Nigeria had been laid on the altar of the monetisation of oil export earnings, increased monetary expansion and government's large fiscal deficits. Large Naira denominations therefore do not reduce the money supply and hence have no direct effect on reduction of inflation.

Meristem Securities (2012) suggests that the signalling effect of the policy may lead to low level of inflation in the future. Also, the signalling effect will enable the monetary authorities to manage the general price level and boost the confidence of investors in the capital market. It will not only herald in an era of low level of interest rate but will also boost investment in the Nigerian capital market that will instil confidence in the nation's economy.

However, Ndanusa (2012) submits that since the introduction of the Naira in 1973, the value of Naira has continued to decline, such that the smaller denominations (half kobo, one kobo, five kobo and twenty kobo coins) have gone into extinction. Ndanusa (2012) submits further that the continued drift in the value of the Naira is due mainly to 'too much of it' being pumped into the economy by the CBN (Ndanusa, 2012).

Oyejide (2012) argued that, while it may be suggested that currency management may not impact negatively on inflation, the multiplier effect of the policy could have negative consequences in the overall economy. He cited the results of this policy in some Latin American countries and Africa. He concluded that if the policy is implemented, it might precipitate other negative economic consequences that might defeat the objective of the policy (Oyejide, 2012).

From the preceding discussion, it can be deduced that the policy has no negative effect on inflation, but has some negative impact on the economy. In other words, the result is inconclusive as far as Nigeria is concerned. To enable us compare the behaviour of this policy in the context of macroeconomic implication with other countries, the paper presents evidences from the literature as they relate to them. This forms the basis for discussion in the next section.

2.2 Currency Management in Some Selected Countries

Ghana's currency (Cedi) was devalued several times consequent upon the implementation of International Monetary Fund Structural Adjustment Programs initiative in 2001 as a result of debt-relief collaboration between the IMF and the World Bank (Bargawi, 2004). The currency denomination exercise in Ghana as part of the country's monetary policy, wiped four zeroes off the national currency in 2007. The old currency (Cedi) had been rendered almost worthless by years of inflation that hit double digits a year for almost three decades (Mansah, 2007). Bawumia, (2010) reported that the combined monetary and fiscal policies have led to reduction in inflation rates.

The Zimbabwe restructuring policy on three occasions produced some macroeconomic problems. For instance, the Central Bank of Zimbabwe (2006) to recall currency notes in exchange for new notes with three zeros slashed from the currency. In 2008, 10 zeros were removed (The Z$10 billion was redenominated to be Z$1). The third redenomination dropped 12 more zeros from the currency in 2009 (Hanke, 2008). The Zimbabwean experience produces hyperinflation rate of about 12,875% per year. Foreign currencies have replaced the Zimbabwe dollar and the "dollarization" process was legalized in late January 2009, although the Zimbabwe paper money remnant circulates alongside foreign currencies with very little value (Hanke, 2008). The resulting lack of confidence in the currency is in the same league as several countries including Panama, Ecuador and El Salvador, which currently use the United States dollar as their official currency.

In Venezuela (2007), the policy of currency redenomination and restructuring was adopted to facilitate the reduction in the quantities of money, simplify the arithmetic calculations of amounts expressed in national currency, and facilitate the transactions made with coins and bills to achieve a more efficient use of calculation and accounting record systems. These policies left behind the negative consequences of inflation on the currency.

Netherlands' currency management crisis was partly responsible for what is known in economic literature as 'Dutch Disease'. Corden (1984) blames the sluggish performance of the Dutch economy in the 1970s on the rise of the importance of the public sector, which followed the gas discovery, resulting in a crowding out of investment by the private sector. The government was forced to print large bills in response to the needs of the public exchanges when inflation crossed the border 100 per cent. The short term monetary supply contraction was achieved by removing four zeros from its banknotes (Mehdi, & Reza, 2012). The prudent monetary and fiscal policies deployed by the government accounted for the macroeconomic stability of the nation thereafter.

Ukraine also faced similar problem during her economic transition. Landy (1997) submitted that in the early days of the transition, the centrally planned economy was bedevilled by an authoritarian and paternalistic political superstructures. The Communist governments acted with impunity in every sphere. In the financial sphere, the communist government could confiscate household and enterprise deposits with banks and other financial institutions with impunity. In an attempt to fight inflation, government embarked on confiscatory currency redenomination, and limits were put on amount and timing of the money exchange. The consequence of this was a decline in financial intermediation which later manifested in the country's unstable macroeconomic environment.

Russia's policy of monetary restructuring and redenomination in 1998 gave her citizens just a few days to trade in their Soviet-era Roubles. The resulting panic led to further damage in the peoples' confidence in the Rouble. Compounded partly by the government's inability to service its huge debt obligations, it had to devalue its currency six months later with inflation rate growing up to 85.7 per cent in 1999 from 14.6 per cent the previous year (Ioana, 2005).

Argentina (2002) also adopted currency restructuring policy and redenomination by giving the depositors the option to withdraw their deposits from banks in US Dollar. The consequence of this policy allowed widespread circulation of US dollar in the Argentine economy which then facilitated the flight of US dollars to foreign countries. Comparing Mexico's policy of devaluation to that of Argentina's without debt redenomination between 1994 and 1995, Calomiris (2007) found that devaluation benefited tradable firms, while the dollar debt redenomination in Argentina benefited high-dollar debtors. The findings also show that the investment behaviour in Argentina contrasts with the experience of Mexican firms in the aftermath of Mexico's large devaluation, in which non-tradable producers with high dollar debt displayed significant relative reductions in investment.

Nicaragua, as reported by Mosley (2005), suffered hyperinflation of 4,770 per cent in 1989 which escalated to 7,485 per cent in 1990 despite the redenomination of its currency in 1988 as a result of civil war in the country. The macroeconomic indicators are poor. As for

Taiwan, Li (2005) conducted an investigation on Taiwan's role in the currency conversion during the post-war of 1946 to 1950 and the results show that the policy produced severe hyperinflation that the government nearly exhausted the country's reserves to cover much of its deficit. The inflation arose from suppressed pent-up demand, due to rationing and price control during the war. In addition, Shangai's retail price index moved from 130 to 1819 between 1945 and 1948 respectively. In the end, government had to introduce the Gold standard in order to engender public confidence in the currency which had plummeted, resulting in social unrest.

In 1985, Vietnam adopted the monetary policy of currency restructuring called, the General Adjustment of Price on Wage and Money. The policy adversely affected monetary system, such that it brought about paucity of cash and funds for ordinary operation of public firms. The policy could not curtail the runaway inflation between 1986 and 1987. However, by late 1980, the government had complimented the stabilization programme with a combination of various supply-side policies to offset the adverse effects of the use of these instruments. In addition, the government also engaged in prudent fiscal and monetary policies to ease the pressure occasioned by the policy.

The Indonesia's experience of currency restructuring in 2010 produces positive impact on the monetary sector and the domestic currency. Noland's (2010) paper on Indonesia's experience shows that the policy was confiscatory in content and was made to punish those who were opposed to communist regime. The confiscation of "excess" cash was meant to reduce the money supply in order to control inflation; to focus on groups engaged in market activities that generate cash earnings, and also require cash balances. The mechanism was instituted to redistribute assets in the society so as favour asset allocations to groups who were closely connected to the party and punish enemies of the ruling party. To correct the monetary disequilibrium arising from the policy, the programme was abandoned in 2005 and reverted to more direct monetary controls in an effort to revive the socialist sector by limiting the sphere of private activity, and control inflation (Haggard & Noland, 2009; Park, 2009). The North Korea's experience of 2002 produced high inflation of over 100 per cent (Lianto & Suryaputra, 2012)

The Europe Monetary Union (EMU) redenomination policy was to provide a platform upon which the participating countries convert their currencies into new values in order to be in exchange parity with other currencies (Somoye, 2003). Angeloni, Aucremanne, & Ciccarelli (2006) investigated the impact at whether EMU has altered the behaviour of price setters and/or the dynamics of inflation. The study finds no evidence of such change in inflation rate in 1999, when the euro was introduced as an electronic unit of account. Although the average magnitude of price changes fell when the paper currency came into play, both variables 'quickly settled back to the earlier patterns' and there was no evidence of a permanent decline in the persistence of inflation after the mid-1990s. The policy provides stable macroeconomic indicators.

Israel is a good example of the countries that backed up the redenomination if its currency in 1985 by removing 3 zeros with a stringent economic stabilization program. The currency reform was made in just a short while after the stabilization programme was launched and the programme yielded positive results. The Annual inflation rate in 1990 crashed from 386.4 per cent to 17.6 per cent in 2004 and by 2005, the inflation was 2.39 per cent (IMF, 2005).

The preceding synthesis of currency calibration or denomination suggests inconsistent results. While the policy of currency management provides some macroeconomic stability, it impacted negatively on the economy of most of them, particularly in the emerging economies. In actual fact, the review suggests that the policy may be a useless and expensive “cosmetic surgery” performed on the national currency unless collateral macroeconomic programmes such as increase in production and employment, and appropriate fiscal and monetary policy are put in place (Ioana, 2005). In the next section, we present the discussions on the findings and make recommendations.

3. Discussion and Recommendations

The review of the literature suggests that the policy of currency redenomination is usually informed by disequilibrium in the macroeconomic fundamentals of the country essentially on the basis of poor macroeconomic performance, in particular hyper-inflationary level. The success or otherwise of the currency recalibration depends on several other factors.

Firstly, the perception of the citizen is crucial. In Poland, for example, the January 1995 redenomination of Zloty was seen by the polish as a robbery attempt by the government to take away the population’s savings and this led to loss of confidence in the exercises. Similar distrust was experienced by the citizens of autocratic nations including North Korea, Russia, Zimbabwe and Ukraine due to the stealth manner of implementation. The consequences were fuelled inflation in the short term. The 1998, redenomination of the Russian Roubles was partly responsible for the inflation rate growing up to 85.7 per cent in 1999 from 14.6 per cent the previous year (Ioana, 2005).

Also, the denomination effect which is contingent on individual's desire to lessen the pain of paying associated with spending. This is because large denominations are psychologically less fungible than smaller ones, allowing them to be used as strategic device to control and regulate spending. This supports the arguments for larger denominations since the likelihood of spending is lower when an equivalent sum of money is represented by single large denominations relative to many smaller denominations (Raghubir & Srivastava, 2009).

Furthermore, one of the reasons adduced for currency restructuring is the need to fight inflation. The literature, has however, established that, the fundamentals of the economy which determine sustainable economic growth are prudent fiscal and monetary policies. In effect, currency restructuring will work only in concert with an economic stabilization programme involving exchange rates, price level and overall level of interest rate. Therefore, the concerns being expressed that the high value of ₦5,000 being slated for introduction in Nigeria will generate inflation is generally inconclusive.

For example, countries like Singapore, Europe, and Japan, China, whose highest denominations do have low inflation rates, apart from the fact that these are highly industrialized countries, many of their economic sectors are functioning optimally, giving them multiple streams of revenue. Nigeria, on the other hand, is monoculturally and heavily dependent on crude oil exports.

In the emerging economies of which Nigeria is one of them, the literature indicates that the policy of currency redenomination produces some positive macroeconomic results, while a lot of them witnessed macroeconomic disequilibrium due to ineffective or weak monetary and fiscal policy, low production level and hyperinflation. The failure of the currency denomination

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policy also led to political instability in some of these countries as indicated in Appendix 1. In addition, the absence of non-usage of coin for transactions in Nigeria may result in their fading out of existence, thereby precipitating inflation in the long-run.

From the macroeconomic perspectives, the indicators, such as Gross National Product (GNP) and Human Capital Index indicated in Appendix 1 are poor, mostly in the developing nations including Nigeria, indicating that currency management has not brought much economic significance to these countries. Thus, effective currency restructuring policy must be accompanied by other prudent fiscal and monetary policy and an increase in the level of production.

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Appendix 1: Synthesis of the Literature on Currency Restructuring

Continent/ Country	Author	Period of Study	Study	Results	GNP Trend	Exchange Rate Trend/ USD	HDI Index Ranking 2011	HDI Value 2011
AFRICA								
Nigeria	Central Bank of Nigeria (2012). Dogarawa. (2007) Meristem Securities (2012) Obadan. (2012) Oyejide (2012) Egbuna & Obikili (2013)	1958 - 2012 2007 2012 2012 2012 2013	*Currency Management: History of Nigerian Currency *The Economics of Currency Redenomination: An Appraisal of CBN *Redenomination Proposal *Redenomination of the Naira. CBN'S currency Restructuring Proposal. Currency Reform and Naira Restructuring	Stable Inflation	Stable	Depreciates	156	0.549

Ghana	Bargawi (2004) Dzokoto & Mensah (2007), Mansah (2007) Bawumi (2010)	2001- 2008	The Effect of Monetary and (including Redenomination of the Currency) on the Ghana Macroeconomy	Impact of Monetary policy has reducing impact on inflation	Reducing	Depreciates	135	0.541
Zimbabwe	Hanke (2009)	2003-2008	Zimbabwe: From Hyperinflation to Growth	Inflation stood at 31 digits; Dollarization was legalized.	Reducing	Depreciates	173	0.376
EUROPE								
European Monetary Union	Somoye (2003)	1927-2003	Cost-benefit of Monetary Union in West-Africa" The Proposed Second West Africa Monetary Zone (WAMZ)	Monetary Integration in West Africa not possible & Imminent Global Financial Crisis in Europe	Increasing	Stable	25	0.867
	Angeloni, Aucremanne & Ciccarelli (2006)	1998-2006	Price Setting & Inflation Persistence: Did EU Matter	No Permanent change in Inflation rate				
Netherlands	Mehdi & Reza (2012)	1959 - 1976	An Investigating Zeros Elimination of the National	No Permanent change in Inflation rate			3	0.91

			Currency and Its Effect on National Economy		Increasing	Stable		
Russia	Ioana (2005)	1998 - 1999	The National Currency Re-Denomination Experience in Several Countries: A Comparative Analysis.	Inflation rate growth 14.6 % to 85.7 %	Stable	Stable	66	0.755
Ukraine	Landy (1997)	1996 - 1997	Developing Sound Banks in Transitional Economies: Structural Reforms in Ukraine.	Unstable macro environment.	Reducing	Depreciates	77	0.729
MIDDLE EAST								
Israel	Ioana (2005)	1983 - 2003	The National Currency Re-Denomination Experience in Several Countries: A Comparative	Redenomination coupled with economic stabilization programme led to Inflation	Increasi	Appreci	17	0.888

	Mehdi1 & Reza (2012)	1985 -2005	Analysis. An Investigating Zeros Elimination of the National Currency and Its Effect on National Economy (Case study in Iran)	crash from 386.4 % (1985) to 2.39% (2005)	ng	ates		
SOUTH AMERICA								
Argentina	Calomiris (2007)	2002 - 2005	Devaluation with Contract Redenomination in Argentina.	Dollarisation led to widespread circulation of US dollar which facilitated the flight of US dollars to foreign countries	Reducing	Depreciates	45	0.797
Nicaragua	Mosley (2003)	1985-1991	Dropping Zeros, Gaining Credibility? Currency Denominations in Developing Nations	Hyperinflation 1989 (4770%), 1990 and (7485%)	Reducing	Depreciates	129	0.589

Venezuela	Bank of Venezuela (2007)	2007 - 2009	Fundamental Aspects of Currency Redenomination	Increased inflation from 14% in 2007 to 25.1% in 2009 to 27.6	Increasing	Depreciates	73	0.735
ASIA								
Indonesia	Lianto & Suryaputra (2012)	2010	The Impact of Redenomination in Indonesia from Indonesian Citizens' Perspective	The greatest impact of redenomination according to Indonesia citizens is restoring the credibility of Indonesia	Increasing	Stable	124	0.617
North Korea	Haggard & Noland (2009) Noland (2010)	2002 – 2005	Famine in North Korea . The Winter of Their Discontent: Pyongyang Attacks the Market	Inflation increased in excess of 100 % annually	Reducing	Depreciates	N/A	0.776
Taiwan	Li (2005)	1946 – 1950	The Currency Conversion in Post-war Taiwan: Gold Standard from 1946 to	Price stability attributable to the combined impact of the gold standard	Increasing	Stable	22	0.882

			1950	and the fiscal policy of tax revenue revival.				
Vietnam	Vo, D. L (1994) Nguyen (1999)	1979 - 1986	Hyper inflation	Hyperinflation	Reducing	Depreciates	128	0.589

Source: Compiled by the Authors