

Dropping the Zeroes: Between Hope and Reality for Sierra Leone: A Critical Review of the Literature

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How to cite this paper: Kargbo, B. I. B., & Gbolonyo, E. Y. (2023). Dropping the Zeroes: Between Hope and Reality for Sierra Leone: A Critical Review of the Literature. *Modern Economy*, 14, 163-177. <https://doi.org/10.4236/me.2023.142011>

Received: December 8, 2022

Accepted: February 25, 2023

Published: February 28, 2023

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Abstract

Many developing and transitional economies have attempted to embark on currency reforms including redenomination. There are various reasons to redenominate a country's currency but the most important factor is inflation. The primary objective of this research is to perform a critical evaluation of the literature in a bid to broadly understand the efficacy of currency redenomination and why some countries face the difficulty of redenominating several times in order to attain stability but still not successful and lessons to be drawn in the context of Sierra Leone. Based on the literature, redenomination will be ineffective where it is employed on a very weak economy base or macroeconomic stabilization policies are just underway. Redenomination is not a panacea to economic woes as it does not work in isolation but is a component of other broad based macroeconomic stabilization policies. Thus, redenomination is a means to an end and not an end in itself.

Keywords

Sierra Leone, Currency, Redenomination, Macroeconomic Stability

1. Introduction

Redenomination is the metamorphosis of a country's currency, typically as a result of inflation and currency devaluation, whereby old currency units are exchanged for a new one at a fixed rate. Other justifications for redenomination are joining a currency union or decimalization¹. If inflation is the *raison d'être*

¹Decimalisation is the process of translating a system of currency or weights to units related by powers of 10 with one basic currency unit and subunits to the power. Almost all countries have decimalized their currencies with the exception of Mauritania and Madagascar.

for redenomination, the conversion ratio is much greater than 1, often a positive integral power of 10, such as 100, 1000, 10,000, etc. In simple terms, redenomination refers to the dropping or removal or cutting of zeroes. In the case of hyperinflation, the ratio can go as high as millions or billions, to a point where scientific notation is employed to demonstrate clarity. Accordingly, redenomination will affect all economic values such as prices of goods and services, financial assets and liabilities, salaries, court fines, shares, stocks, treasury bills, fixed deposits, pensions and other social benefits, etc. The name of the currency may change or the original name may be used with a temporary qualifier such as “new” after redenomination. After a few years, the word new may or may not be abandoned. Under certain situations, the new unit may be given an entirely new name, or a “recycled” name from a prior redenomination or from the past.

In terms of exchange rate, redenomination is symbolic as it does not have an impact relative to other currencies but it does have a psychological boost as segments of the population may think that inflation is over and the local currency regains its respect. The monetary authorities implement redenomination approaches to advance their monetary sovereignty and control the likelihood of currency substitution. If citizens do not value or lose faith in their local currency (effect of currency on national identity), they begin to use international currencies to facilitate domestic transactions such as rentals of vehicles and houses, even contracts are often quoted in dollars in such a situation. These tendencies sometimes lead to the dollarization of the domestic economy².

Some researchers argue that, redenomination is merely figurative and not a strategy for ensuring economic stability. Redenomination, in particular, can be employed as part of a stabilization process, that is, to alter citizens’ inflationary expectations (Mosley, 2005; Lianto & Suryaputra, 2012; MirHosseini & Rad, 2011; Ullah et al., 2017). Consequently, redenomination frequently occurs in the aftermath of economic calamities, as governments and monetary authorities try to convince citizens and investors that hyperinflation is relegated to the dustbins of history. If the timing of the redenomination process is correct, it can reduce excessive levels of inflation in some situations. In other countries, authorities are unable to achieve outstanding inflation results immediately after redenomination, leading to several attempts at currency reform as was the case in Zimbabwe in 2006, 2008, 2009; Argentina and Brazil during the 1980s and early 1990s (Mosley, 2005).

This paper seeks to provide a critical evaluation of the literature in order to broadly establish the historicity of redenomination narrative in addition to gauging the potential effects of redenomination from across some of the countries that have implemented this policy. Thus far, Sesay et al. (2022) have examined the possible impact of currency redenomination in Sierra Leone. Following the introduction, the next section focuses on the outlook of the Sierra

²Dollarisation occurs when a country’s own currency loses its effectiveness as a means of exchange and the citizens and businesses start demanding for dollar quoted payments on transactions such as rent, contracts, sale of vehicles or houses etc.

Leonean economy considering selected macroeconomic variables, then followed by an appraisal of the extant literature and then the conclusion.

Overview of Sierra Leone's Economy and the Leone

In order to examine the potential effect of a proposed policy such as a redenomination, it is imperative to look at the specific characteristics of the economy within which such policy is implemented. This section presents a brief overview of the economy of Sierra Leone narrowing down on three key macroeconomic indicators, inflation, gross domestic product and exchange rate (**Figure 1**). The reason for the selected variables is because, the success of redenomination will be assessed *inter alia* against these macroeconomic indicators, low inflation rate, sustained economic growth and exchange rate stability. This is also consistent with the objective of the Bank of Sierra Leone.

Sierra Leone's economy made considerable gains towards post-war economic growth between 2002 and 2014, which was mostly supported by agriculture and mining, following a civil conflict that lasted from 1991 to 2001 and resulted in unfavourable and unstable economic activities. The country gained a double-digit GDP growth of 15.18 percent in 2012 as a result of the boom in iron ore extraction and exportation, as well as government investment in infrastructure development and agricultural funding. And in 2013, it grew significantly by 20.72 percent, the highest since 2002, making it one of the world's fastest-growing economies. However, growth plummeted by negative 20.60 percent in 2015 owing to the Ebola outbreak and the dip in the iron-ore price in 2014. In 2016, the economy began to improve and grew by 6.06 percent, when the country was pronounced Ebola-free (World Development Indicators, 2018; Duramany-Lakkoh et al., 2022).

Inflation was estimated to pick up to 17 percent in 2020 from 14.8 percent in 2019, because of supply chain disruptions and transportation restrictions but

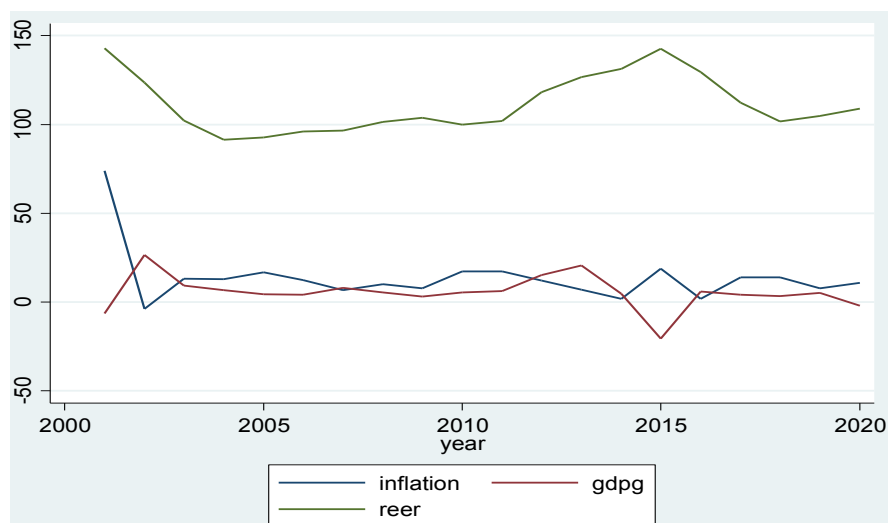


Figure 1. Trends in selected macroeconomic indicators from 2002-2020. Source: Authors construction using data from World Bank Indicators (WDI).

ended up being 13.49 percent. Inflation eased to 11.84 percent in 2021 and expected to hover around 11.3 percent in 2022. As a result of renewed supply chain disruptions and other shocks, inflation in the first half of the year averaged 21.92 percent whilst the rate for June 2022 was 27.95 and July was 29.47 (Stats SL). It is expected to soar up to the end of 2022. Additionally, the exchange rate remained stable at SLL 9725 to the US dollar at the end of 2020 and averaged SLL 13,120 as at June 2022 (BSL) before the July 2022 redenomination. In recent times, the economy of Sierra Leone has struggled due to a variety of causes including the drop in exports, the continuous increase in imports, sluggish growth in foreign direct investments, and Covid-19 pandemic disruptions halting most economic and social activities (Sesay et al., 2022).

The plot in **Figure 1** shows the interaction between inflation, *gdp* growth and real effective exchange rate (*reer*) for the period 2000 to 2020. It can be observed from **Figure 1** that when the *gdp* growth is negative (in 2015), inflation peaks, as well as the real effective exchange rate. It can also be seen that inflation is higher than *gdp* growth in most of the years for the selected duration. Supply-side restrictions and the global financial crisis of 2008, which increased inflationary pressures by impacting global prices notably for food and oil, are the main underlying drivers of the inflationary surge. Consequently, as the price of petroleum products in Sierra Leone increased, other essential items also saw an increase in price (Mansaray-Pearce & Liu, 2015)

On August 11, 2021, the Governor of the Bank of Sierra Leone (BSL), Prof. Kelfala Murana Kallon issued a proposal to redenominate the Leone (Le) by removing three zeroes from the currency and issuing more coin denominations in order to ensure macroeconomic stability, increase the credibility of the currency, and improve the payment system. The highest currency note as at the time of this policy pronouncement was 10,000. Many citizens were taken aback by the statement, which sparked heated debate among Sierra Leoneans and non-Sierra Leoneans both within and out of the jurisdiction. While some believe the BSL deserves praise for taking such an audacious move, others believe the entire measure should be rejected because of political variances. This reaction especially by the public is unsurprising. In fact, a similar atmosphere was experienced in Ghana when the government switched from the “cedi” (¢), to the “new Ghana Cedi” (GH¢) as the study of Opare-Henaku et al. (2013) revealed both positive and negative consequences of switching the currency³. While there are different reasons why countries redenominate their currencies, it has been observed that the majority of countries that have done so in the past and in recent times is in response to poor macroeconomic performance, particularly hyperinflation (Dogarawa, 2010).

The policy to redenominate the Leone as pronounced by the Bank of Sierra Leone became effective in July 1, 2022. In addition to the removal of three zeroes from the currency, a higher currency bill of 20 was introduced as the highest, re-

³Ghana provides sufficient reference point in recent times to have redenominated in West Africa sub-region coupled with available empirical studies.

placing the previous highest calibration of 10,000. This renders the effectiveness of the argument of portability sterile as the volume of notes remains the same except one is encashed in 20 Leone bills.

2. Survey of the Literature

Redenomination dates as far back as 1892 when Austria-Hungary formed a monetary union and shift from silver to gold standard⁴. Since then, many countries have embarked on the redenomination path for varying reasons. On the surface, the decision to redenominate and issue a currency appears to be more technical than political, yet a government's control and regulation of its currency and transactions within its domain is one of the trademarks of the modern nation-state especially during times of civil unrest or economic ruin (Woodruff, 1999). Currency redenomination could be part of a wholistic portfolio of economic reforms as is the case for Afghanistan, Turkey, Angola, Mozambique, Brazil, Argentina⁵ etc. There is always a tendency for economies that have embarked on currency redenomination to suffer from *redenomination-mania* i.e., to always feel the pressure of embarking on another round of redenomination and in some instances, it is done in quick successions⁶. The reason being that the activity itself if done in isolation is a mere makeup of the currency.

Theoretically, redenomination affects the face value of all banknotes (and coins) in circulation as all prices in the economy are adjusted to the same value. Accordingly, redenomination will affect all economic values such as prices of goods and services, financial assets and liabilities, salaries, court fines, shares, stocks, treasury bills, fixed deposits, pensions and other social benefits, etc.

It should be noted that no market subject is directly impacted (advantaged or otherwise) by this economic surgical procedure as it is basically a makeup of the national currency. In countries that have successfully implemented redenomination, it is often used after hyperinflation or in a situation where the economy is significantly affected by dollarization and the central bank is conscious about

⁴The Krone or korona was the official currency of Austria-Hungary from 1892 until the dissolution of the empire in 1918. It replaced the Austro-Hungarian gulden as part of the adoption of the gold standard. The Gulden or forint was the currency used by the Austrian Empire from 1804 to 1867 and the Austro-Hungarian Monarchy after 1867. It was eventually replaced by the krone/korona as part of the introduction of the gold standard. In Austria, the Gulden was initially divided into 60 Kreuzer and in Hungary, the forint was divided into 60 krajczár.

⁵Many countries around the globe (approximately 60) have undertaken redenomination and for some of them on more than once. These include notably Argentina, Brazil, Bolivia, Hungary, Germany, Zimbabwe, Venezuela, Greece, China, Russia, Angola, DRC, Mozambique, Turkey, Afghanistan, Brazil, Argentina and Ghana etc Hungarian redenomination in 1945-1946 became the highest in the entire history of the world financial system as a consequence of hyperinflation. The country's economy was destroyed by the war, prices doubled every 15 hours and it became impossible to control their turnover. The largest pengo bill at the time of redenomination was 1 sextillion (billion trillion or 10^{21}). On August 1, 1946, the Forint was introduced at an exchange of 4×10^{27} (400 octillion). In general, along with other measures, the reform was successful.

⁶A total of 32 countries, *circa*, have suffered from **redenomination-mania** with the highest being Yugoslavia (eight times), followed by Brazil (seven times), Argentina and Soviet Union is six apiece, Angola and Hungary is four times each. Zimbabwe, Sudan, Serbia, Poland, Latvia, Equatorial Guinea, Nicaragua, Haiti, DRC and China have all redenominated thrice.

maintaining stability. What is clear is that high prices cause many inconveniences in the economy such as, challenges with expressing nominal values of goods and services, accounting, statistical evidence, working with software, and payment systems of banks. Redenomination can be seen as a step that crowns the actions of the monetary authorities to curb instability in the growth of prices in the economy. For instance, in Poland and Bulgaria, redenomination was implemented following a convincing success of their stabilization programs. In Turkey, redenomination was initially adopted in 1998 but inflation remained high at that time and had to be delayed. In December 2003, the parliament passed legislation allowing the removal of six zeros from the currency and paving the way for a new currency (New Turkish Lira), and the redenomination took effect on January 1, 2005.

Redenomination as recognized by Mosley, has been actively implemented in some jurisdictions to save the currency from total abandonment and restore a feeling of national identity (Turkey, Argentina and Romania). Turkey had a 20,000,000 bank note in circulations while nations like Mozambique, Lebanon and Vietnam had 100,000 units in circulation. The most recent exception is the case of the repeated Zimbabwean redenomination which by 2009 had multiples of trillions in circulation⁷. This has the tendency to improve the monetary sovereignty of the country and lessen the urge for currency substitution.

Credibility gains on the part of a regime in power are one factor identified in the literature as one of the reasons for redenomination (Armijo, 1996). The electoral fortunes of the regime in power are strengthened if there is macroeconomic stability and overall economic growth as rational citizens will consider these variables in their choice of a given a regime. Given an enhanced credibility status, the government credit rating is also improved. Closely related to credibility gains is the “feelgood” factor that comes with the makeup of the currency. There is the inclination from the citizens to consider redenomination as revaluation hence leading to a psychological effect that the value of the currency has been improved (Dogarawa, 2010).

Some of the challenges of redenomination process identified in the literature (Tarhan, 2006) include; changing prices in labels/catalogs/menus/laws/ and regulation, changing balance sheets/accounting records, financial software. Other significant costs include printing new notes, minting new coins, cost of disposing the old notes and coins, cost of public education especially penetrating rural communities, psychological effects of low-income levels and extra cost to the economy if multiple zeroes are reverted back to as a result of renewed inflationary attacks⁸.

⁷Zimbabwe was initially hit by an inflationary crisis that transgressed to hyper inflation by 2009. The monetary authorities after many trials of redenomination and the last being at an exchange of 1 trillion to 1 and also allow currency substitution especially allowing the South African Rand the US Dollar, subsequently abandoned and replaced with Zimbabwean bond notes and the Zimdollar in February 2019.

⁸Public education and sensitization is key in the drive to bring the entire citizenry especially those in hard to reach rural areas where there is complete lack of access to print and electronic media to a level of understanding on the effects and transactions to be affected by the redenomination process.

With respect to accounting records and reporting, redenomination has dual implications; at the subsidiary ledger level and at the general ledger level (where transactions are summarised and presented in the form of financial statements). The conversion process will be particularly challenging for companies that process significant volumes of transactions and maintain many ledger accounts. Be that as it may, since redenomination basically requires extraction of zeroes; the already existing accounting methods, principles and standards used by organisations will not be violated.

2.1. Conditions/Reasons for Redenomination

Broadly, economic policy is influenced not only by international capital markets (Mosley 2003), but also by foreign central banks. According to Mosley (2005), rationale for redenomination rests in a combination of economic and political factors, including inflation, governments' concerns about credibility, and the effect of currencies on national identity. While it is common knowledge that, the important factor in the implementation of redenomination is the prevailing economic condition during the time (Pambudi, Juanda, & Priyarsono, 2014), most scholars have acknowledged that inflation is the most important factor that drives redenomination (Mosley, 2005). As an example, Opere-Henaku et al. (2013) revealed some reasons why Ghana redenominated the cedi in 2007. They pointed out that daily transactions using the Cedi (Ghana's old currency) had become difficult and cumbersome due to the devaluation of the Ghanaian currency coupled with a hike in commodity prices. Additionally, the heightened wave of robbery, fraud and other forms of crime experienced during periods of high consumer spending was attributed to the bulky nature of the Cedi. In other words, businesses and consumers were inconvenienced by having to carry huge sums of money for transactions, making them vulnerable to criminals. The Bank of Ghana also claimed that the old note regime placed a significant burden on the economy, which was reflected in high transaction costs for cashiers, accounting irregularities, and incompatibility with data processing software, citing the significant strain on the ATM (Automated Teller Machines) payment system as another reason for the financial adjustment.

2.2. The Expected Costs of Redenomination

Some of the challenges of redenomination process identified in the literature (Tarhan, 2006) include; changing prices in labels/catalogs/menus/laws/ and regulation, changing balance sheets/accounting records, financial software. Other significant costs include printing new notes, minting new coins, cost of disposing the old notes and coins, cost of public education especially penetrating rural communities, psychological effects of low-income levels and extra cost to the economy if multiple zeroes are reverted back to as a result of renewed inflationary attacks⁹.

⁹Public education and sensitization is key in the drive to bring the entire citizenry especially those in hard to reach rural areas where there is complete lack of access to print and electronic media to a level of understanding on the effects and transactions to be affected by the redenomination process.

Other related uncertainties might emerge as a result of redenomination (Dogarawa, 2010) especially in a typical developing country. Private and economic agents might launch speculative attacks on the new currency even before its rolling out. The increased speculation might lead to a depreciation of the currency, capital flights, drop in foreign remittances, increased risk aversion, adoption of “wait-and-see” attitude by investors.

Redenomination makes a currency more portable leading to a significant reduction in the dead weight of the money people carry and the associated risk, such as attack by robbers. Redenomination also reduces the phenomenon of money illusion that people suffer from when there are many zeros (citizens being millionaires), which even tends to generate inflationary pressure.

As mentioned earlier, many countries have redenominated their currencies from South America, Europe, to Asia and to Africa. Review of the literature on the impact of redenomination clearly shows that it is ineffective where it is employed on a very weak economy base or macroeconomic stabilization policies are just underway. Hence redenomination cannot be a remedy to economic difficulties (Caballero, 2002). Historical empirical evidence proposes that redenomination has been successful in jurisdictions where there is an environment of macroeconomic stability including stable exchange rate, declining inflation, fiscal restraint and prudence (Dogarawa, 2010).

The true significance of redenomination is still being debated amongst academics. On the positive side, the portability, security, ease of transactions associated with the new currency particularly makes it more attractive to the consumer. In Wibowo (2013)’s view, an effect that will come into view because of currency nominal change is the emergence of psychological bias so called “money illusion”. Most people will assume that prices of goods are cheaper because of the omission of zeros from the previous currency. As an illustration, when there is an escalation of price as much as of Le 5000, consumers will find this very difficult. However, after redenomination, the escalation is only Le5 and consumers will find it trouble-free while they have exactly the same value. Consumers may pay less attention to the re-scaling process of the old Leone nominal value to the new one. Money Illusion will affect the consumers more when they review the real value of goods they have bought because of the simultaneous nominal change. As a consequence, redenomination drives into bigger consumption behaviour. New prices are perceived cheaper because of money illusion and consumers’ willingness to pay increase prices. Based on this behaviour, producers will escalate the price up to consumers’ tolerated limit.

2.3. Empirical Strands

Some of the benefits of the redenomination revealed in the literature include: the contribution to a stabilized economy; increase in safety and reduced cases of robbery; facilitation of exchange; time saved per transaction; having cleaner notes; reduced dead weight of zeroes; reduced volume of currency and reduced

inflation. However, studies reviewed have indicated conflicting results. For instance, in Angola, Congo and Nicaragua, despite employing redenomination, high rate of inflation still persists.

Despite the myriad of potential advantages that redenomination brings, some researchers such as Dogarawa (2010) argue that, aside from the one-time transition expenses it imposes on governments, redenomination has minimal economic impact, and that, in the dearth of solid monetary reforms, it will neither stop inflation nor modify individual behaviour. In addition, redenomination may also result in a false resolution of the monetary illusion problems associated with multiple zeroes, as well as a loss of currency credibility due to a false sense of abundance with inflation as monetary units grow larger. To this end, De Santis (2015) noted that a possible systemic risk is eminent if redenomination is not applied carefully. As a consequence, embracing redenomination at the conclusion of a reform exercise, has a tendency to reassure citizens and investors.

According to Ioana (2005), redenomination should have no decisive effect on inflation since the basic indicators that affect inflation remain unaltered. The only possible exception is the effect of rounding up new prices, which can be insignificant at times. However, in practice, prices are usually seen in both versions (old and new) and redenomination should in actuality not lead to rounding up of prices. As Mosley (2005) pointed out, these could affect redenomination indirectly by reducing inflationary expectations as the economic agents might perceive that inflation was a negative component of the old currency that would not re-emerge with the new currency. The players in the market may be swayed that the central bank authorities are serious in their war against inflation and that waning nominal values of the currency is an effort in managing inflation to an acceptable level.

Lianto & Suryaputra (2012) employed a Structural Equation Modelling on sample of 100 respondents to examine the impact of redenomination in Indonesia. Specifically, the authors analysed this effect from the citizens' point of view. They found that redenomination is desired by the people to raise the country's credibility. This finding is accentuated by Ifunanya et al. (2021) who observed that redenomination restore sanity, credibility and facilitates transactions with smaller denominations that have increased value, as it lowers inflationary pressure.

However, Purwana et al. (2012), who assessed the potential impact of redenomination from 90 people of the middle-lower income community in Jakarta, revealed that people from Jakarta, experienced money illusion. There was no change in the shopping pattern, but the spending increased. Similarly, the study of Pambudi et al. (2014) used historical data on 30 countries and showed that there is no difference in the society's consumption pattern, but people had doubts about their government's ability to control hyperinflation of post-redenomination. Hence, there could be heterogenous impacts of redenomination across countries. In a case study comprising in-depth interviews with Indonesian industry players from a variety of industries and sectors, Prabawani & Prihatini (2014) discov-

ered that redenomination would boost economic growth if it was handled with effective socialization and avoided political influence.

Karnadi & Adijaya (2017) analysed the effect of redenomination on inflation rate, real GDP per capita and real currency exchange rate for 164 countries from 1960 to 2015. By employing fixed effects estimators, the researchers found that redenomination significantly decreases estimated rate of inflation, increase in estimated real GDP per capita. However, there is no significant effect of redenomination on real currency exchange rate. Further, Ullah et al. (2017) investigated the psychological impact of redenomination using data from five countries; Israel, Argentina, Poland, Turkey and Brazil. The authors used line graphs and simple percentages to analyse the impact of redenomination on inflation. The results showed positive impact of redenomination on the economies of Israel, Poland and Turkey while negative impacts were found only in Argentina and Brazil in 1983 and 1996, respectively.

In their study on the impact of currency redenomination on inflation in Turkey, Židek & Chribik (2015) revealed that redenomination in Turkey aided disinflation and had a direct impact on inflation in the country. They discovered a fracture in inflation development using the Chow test and the Vector Auto regression model. They came to the conclusion that the redenomination procedure had a direct impact on inflation in the country. Similarly, Obuobi et al. (2020) evaluated the impact of currency redenomination on the Ghanaian economy. Their study conducted a pre- and post-performance of the country using 2007 as the benchmark. By adopting a quantitative research technique based on ex-post factor design and secondary data over a 20-year period spanning from 1997 to 2017. Results from the analytical techniques of both descriptive statistics and independent sample currency redenomination pinpoint that redenomination is beneficial to an economy's growth. In a similar study, Opere-Henaku et al. (2013) employed a quantitative approach to examine Ghanaians' personal experiences since adoption of the new Ghana Cedi. Their study revealed that over forty percent (40.8 percent) of the respondents indicated that there were benefits associated with the redenomination. However, 13.8 percent thought that the redenomination was of no benefit to the country, and about 45 percent were uncertain whether there were any benefits of the redenomination.

Suhendra & Handayani (2012) investigated the nexus between redenomination policy and the inflation rate, exchange rate, economic growth and export value. Result from the analysis indicated that the economic indicators of 27 countries that redenominated, prove inflation and economic growth were two variables significantly influenced by currency redenomination. Meanwhile, the high inflation rate was the most dominant driving factor for a country to decide to redenominate its currency. This finding is consistent with Mosley (2005) that the current and past inflation are the most crucial determinants whether or not to redenominate.

In summary, analyses of other countries' currency redenomination experiences have revealed that it is not a technique that works in isolation from the

economy's real productive sector. Cohen (2004), Caballero (2002), the International Monetary Fund (2003), and Calomiris (2007) all concur that no currency redenomination theory can restructure the economy when mass unemployment persists, the currency depreciates in value, imports surpass exports, local businesses collapse, and manufacturing costs are exorbitant. As revealed, the debate on the performance and usefulness of currency redenomination remains inconclusive (see Table 1), depending on the existing economic fundamentals as at the time of redenomination and other complimentary policies.

Table 1. Summary of empirical studies.

Author(s)	Country	Data/Methods	Findings
Lianto & Suryaputra (2012)	Indonesia	Structural Equation Modelling on sample of 100 respondents	Redenomination increased the country's credibility from citizen's perspective
Pambudi et al. (2014)	30 countries	OLS regression	No change in consumers' patterns but doubt persists about governments' ability to control hyperinflation
Karnadi & Adijaya (2017)	164 countries from 1960 to 2015	Fixed effects estimators	Redenomination decreased inflation, increased estimated real GDP per capita but no significant effect of redenomination on real currency exchange rate.
Ullah et al. (2017)	Israel, Argentina, Poland, Turkey and Brazil	Descriptive analysis	Positive effect on inflation in Israel, Poland and Turkey but negative impacts in Argentina and Brazil
Židek & Chribik (2015)	Turkey	Chow test and the Vector Auto regression model.	Redenomination reduced inflation
Suhendra & Handayani (2012)	27 countries	Hosmer-Lemeshow test	Among indicators; inflation rate, exchange rate, economic growth and export value, inflation and economic growth are mostly affected by redenomination
Prabawani (2018)	Indonesia (Semarang, Kudus, and Banjarnega)	Cramer's V-test for a sample 600 respondents	Redenomination triggered money illusion
Ifunanya et al. (2021)	Nigeria	Descriptive analysis of 153 respondents	Respondents expect redenomination of the naira to reduce inflation rate
Opore-Henaku et al. (2013)	Ghana	Descriptive analysis of 130 respondents	40.8 percent of the respondents claim redenomination was beneficial, 13.8 percent indicated that the redenomination was of no benefit while 45 percent were indifferent
Obuobi et al. (2020)	Ghana from 1997 to 2017	Descriptive study	Redenomination is beneficial to economic growth.
Matsumoto (2018)	Ghana	Chow Test and Vector Autoregression (VAR) using monthly data from January 2000 to September 2017)	No evidence that redenomination directly affected inflation
Marimuthu & Maama (2021)	Ghana	Generalized method of moments (GMM) from 2002 to 2012	While redenomination improved firm's profitability (returns on asset), firm's value (Tobin's Q) decreased

Continued

Gunadi et al. (2018)	Turkey	Wilcoxon Test, Mann Whitney U-Test, and Multiple Linear Regression	Redenomination did not improve firms' performance. It decreased the firms' profitability in the whilst sales increased.
Karnadi & Adijaya (2017)	Indonesia	Fixed effect estimator	Redenomination reduced inflation; increased GDP per capita but had no significant effect on real exchange rate
Astrini et al. (2016)	Indonesia	Experimental methods	Redenomination had no influence on prices and economic transactions in a country.
Sesay et al. (2022)	Sierra Leone	Descriptive analysis (115 respondents)	Redenomination is expected to reduce inflation and add value to the Le

Source: Authors' compilation.

3. Conclusion

Redenomination makes a currency more portable and can lead to a substantial decline in the dead weight of the money people carry and the attendant risk, such as attack by robbers. Redenomination also reduces the phenomenon of money illusion that people become burdened with when there are many zeros (citizens being millionaires), which exacerbates inflationary pressure. As perused in the literature, many countries have redenominated their currencies among others including countries in Europe (e.g., Romania, Turkey, Italy, France, Spain, Germany) (Ioana, 2005; De Santis, 2015), South America (Argentina, Brazil) (Ullah et al., 2017), Asia (Indonesia) (Lianto & Suryaputra, 2012), and Africa (Ghana, Nigeria)¹⁰ (Opore-Henaku et al., 2013; Dzokoto et al., 2010; Ifunanya et al., 2021). Further, the review of the literature on the impact of redenomination also shows that it is ineffective where it is employed on a very weak economic base or macroeconomic stabilization policies are just underway (Mosley, 2005). Hence, redenomination cannot be a remedy for economic difficulties (Caballero 2002). Some of the reviewed literature suggests that redenomination has been successful in jurisdictions where the environment is macroeconomically stable including stability in exchange rate, declining inflation, fiscal restraint and prudence.

Redenomination will never be effective if it is treated in isolation but has to be part of a broader macroeconomic reforms as it is a means to an end rather than a goal in and of itself. The policy must transcend beyond the superficial arguments of psychological and portability effects. It should be supplemented by strong and disciplined fiscal policies and other strategies that lead to national output expansion, export promotion, reduced national joblessness and overall poverty. Redenomination usually comes at the termination of a broader economic reform process, rather than at the beginning, so it may be seen as much less contentious than other economic policy options as both political and economic variables do often play a critical role. Our paper has a few limitations and

¹⁰See Salimi (2012) for a comprehensive list of countries that undertook redenomination.

therefore offers room for future research. First, due to the limited scope of this research will not allow for the testing of hypothesis as revealed in Mosley (2005). This is essentially because redenomination of the Leone is fairly recent and thus future studies can consider, where data is available, using econometric methods to examine the impact of currency redenomination on macroeconomic indicators as has been done in previous jurisdictions. Moreover, our study did not take into the institutional and geopolitical factors that can potentially drive or gauge the effectiveness of redenomination.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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