

# How Billionaires Become Valuable Millionaires? Psychological Impact of Redenomination on Economy

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## Abstract

The study aims to investigate the psychological impact of deleting zeroes from the value of national currency. The data were collected from five countries: Israel, Argentina, Poland, Turkey and Brazil to investigate the impact of deleting zeroes. Line graphs and simple percentages were used to analyze the impact of redenomination on inflation. The results revealed almost positive impact of redenomination on economy in all cases. Negative impacts were found only in two events of the countries i.e. Argentina and Brazil in 1983 and 1996 respectively. It was concluded that the redenomination can be used to create value and to control inflation.

**Keywords:** Currency Redenomination, Value Creation; Inflation, National Economy; Psychological Impact

## 1. Introduction

Several countries use to delete three or more than three zeroes from their national currency. This event happens many times in several countries like Israel, Argentina, Poland, Turkey and Brazil. However, it is noted that elimination of zeroes from national currency can only be effective if at the similar spell, disinflation policies are carried out simultaneously. However, positive effects and the psychological dimensions can be applied to create value and to control inflation (Mehdi, Safdari, and Reza, 2012). However, the economics' positive effects can be used in liquidity management and anti-inflation policy until than it can be used to lapping several zeroes from the national currency in the monetary policy objectives of the country (Mas, 1995).

The currency value of country depends upon many factors like securing the costs and government efficiency, judicial and legal stability for inviting outside investments, being in line with the worldwide changes and noting the international law and regulation, etc. national currency devaluation leads to several psychological and social effects. When the currency is being depreciated, public feels some kind of mortification with respect to other strong money. Additionally, variations in currency value and its volume carry about too many hygienic effects (Mahdavi, 2011).

When the people show an inclination of using foreign currency for daily exchange along with national currency devaluation, "currency replacement" phenomenon occurs. A very important use of removing zeroes from national currency is to maintain the national currency value. Deleting zeroes from the domestic currency is political and technical measure by the governments instead of experts and it is considered as a subpart of economic reforms package (MirHosseini and Rad, 2011).

The important factors to control inflation through redenomination are main question of the study. From 1350-1389, in Iran, consumer price index of services and goods in constant prices is nearly 570 times and in 1389, the largest bill to cut is from 10,000 Riyals to 100,000 Riyals. In 1389, cut bills increase the price, the highest and the biggest 6,000,000 Riyals coins were almost 20,000 Riyals. Actually, lessening the money's purchasing power has accumulated to about four eras. In the economic activity and transactions settlement, if the acute problem is not observed, the central bank will be unable to use for a long period of time, because of legal problems and temporary solutions in its monitoring (Kianpoor, 2011).

### 1.1 Backdrop and history of lopping zeros from currency in the world

The resolution of deleting zeroes from the currency is generally used in those countries having too many zeroes in their national currency. Since 1960's, the governments of the developing countries have been enforced to delete

several zeroes from their domestic currency.

After the World War II, Germany was first time experienced the deleting zeroes from their currency. Under the pressure of economic after World War II and stayed harm, the nation of Germany faced a massive inflation that forced the maker of policies to delete the zeroes from national currency. Since the last 50 decades, 19 countries have deleted zeroes from their domestic currency and this happened twice in 10 countries. The zeroes have been deleted from the national currencies 6 times in Brazil, 5 times in Yugoslavia, 4 times in Argentina, 3 times in Belgium, Russia, Ukraine and Poland, two times in Bolivia, and only once in Korea, Island, Ghana and Turkey (MirHosseini and Rad, 2011).

### *1.2 Reasons behind deleting zeroes*

When the money value is reserved by the public trust instead of silver and gold, the government of a country starts to feel harder responsibility to maintain either position or value of their domestic currency. Because of eliminating zeroes from the national currency the inflation is enumerated. Liquidity growth and supply of money fuel growth of inflation and government may slash the zeroes from its domestic currency to control the rising inflation. Countries facing a huge rate of inflation and devaluated domestic currency have embarked on shedding zeroes from their bills to streamline commercial and economic transactions in addition to reduce costs of printing process of banknotes. However, most of the economists believe that slashing zeroes only from the banknotes does not influence the demand and supply parity as well as economic indicators but its affects restricted to psychological impacts on society. Therefore, lopping zeroes can only be effective when it is accomplished with other preventive measure such as government's fiscal and monetary policies, otherwise psychological impacts caused by the eliminated zeroes will be invalidated soon enough and they will recall more powerfully than ever (Kianpoor, 2011 and Mass, 1995).

### *1.3 Effectiveness of cutting zeroes*

Investigations explain that slashing zeroes from domestic currency can only be effective when: the government of a country restricts unnecessary expenditures, the rate of currency is stable, inflation is on the decline, and the confidence in the society is high in policies of government.

If a government of a country does not execute sweeping and comprehensive economic reforms and only cuts zeroes from their national currency, not only the policy of eliminating zeroes from the currency will be ineffective, but also currency changes values are lost to happen quickly.

### *1.4 Redenomination in Theory*

The meaning of redenomination is that the face value of coins and bank notes in circulation is changed (in practice decrease). With the redenomination of currency, all prices are declined by the same value, in the economy. No one subject is affected directly in the market by this process. By issuing new bank notes in the economy or by stamping the old ones, this process is accomplished usually. When the economy of a country is affected seriously by dollarization or when there is hyperinflation in the country, the redenomination of currency is applied. Many difficulties occur in the country due to high level of prices, as for example – statistical evidences, difficulties with communicating nominal values of services and goods, with accounting, banks payment system, dealing with the software and the like (Zidek and Chribik, 2015).

According to the redenomination of currency theory, there is no direct impact of redenomination on the inflation because redenomination does not change any basic indicators that impact inflation directly. The rounding of prices could be small and only exception; the new prices in the market could be rounded up slightly (Ioana, 2005). Actually, in the both versions (new and old), prices are depicted. But there is an indirect impact of currency redenomination on inflation in the form of decreasing expectations of inflation (Mosley, 2005).

### *1.5 Significance of study*

There is an important role of this measure in boosting up the confidence of public in governments. In self-governing regimes, slashing zeroes from a country's national currency can play an important role in electing again for a specific party. If in national currency, people drop their confidence, they will begin to use currency of other countries and this will leave a massive psychological and economic pressure on the governments. Therefore, the government's economic policies will be affected by foreign financial markets and international central banks will influence policies of economic of a country. Thus, cutting zeroes from national currencies will foreclose the penetration of international currencies in the consequences and in the country's economy.

### *1.6 Objectives of eliminating zeroes from national currency*

There are several reasons because of which a country makes decision to change their national currency, some of them are mentioned below:

- i. To reduce the inflation pressures and to control currency market.

- ii. To obtain the international credit.

## 2. Literature Review

Overall 19 countries have used the currency redenomination one time, in 10 countries this happened twice. The zeroes have been removed from the national currencies 6 times in Brazil, 5 times in Yugoslavia, 4 times in Argentina, 3 times in Belgium, Russia, Ukraine and Poland, two times in Bolivia, and only once in Korea, Island, Ghana and Turkey (MirHosseini and Rad, 2011). According to Tarhan, (2006), Argentina redenominated 13 zeroes in 4 times (1992, 1985, 1983, 1970); Brazil 18 zeroes in 6 times (1994, 1993, 1989, 1986, 1970, 1967); in 4 times (1985, 1980), Israel 9 zeroes; Bolivia 9 zeroes in 2 times (1987, 1963); only one time (1993), Mexico redenominated 3 zeroes; Poland in one time (1995), 4 zeroes; Ukraine in one time (1996), 5 zeroes; 3 times (1998, 1961, 1947) in Russia; Iceland redenominated 2 zeroes in one time (1981); and Peru redenominated 6 zeroes in 2 times (1991, 1985) (Layna, 2010).

The redenomination of currency is generally happened when the countries are facing pressures of hyper-inflation which makes the currency of a country unattractive. A strong case of hyper-inflation is cited by Tarhan, (2006) in Turkey, where cost of Toyota corolla was 32 billion (32,900,000,000 TL), cost of drinking a bottle of water 0.0003 billion (300,000 TL), Ticket of a movies 0.0075 billion (7,500,000 TL), and the gross domestic production in 2002: 273 quadrillion (273,463,167,795,000,000 TL), redenominated by slashing 6 zeroes before the of old Lira. Similarly, Aluko (2007) cited the experienced years of Zimbabwe that influenced by inflation 1200% in a year.

### 2.1 Israel

The policy of slashing zeroes from the national currency implemented along with the programs of stabilization and can be at various rates of inflation. Israel, a country where the stabilization programs were successful, the redenomination of currency was made in very short period of time after the program of stabilization was launched.

Table 1: Israel Annual Inflation Before, During and After Removing Zeroes

Year	Inflation	Year	Inflation
1979	111%	1985*	185%
1980*	133%	1986	20%
1981	102%	1987	16%
1982	132%	1988	16%
1983	191%	1989	21%
1984	445%	1990	18%

(\*) indicates redenomination year

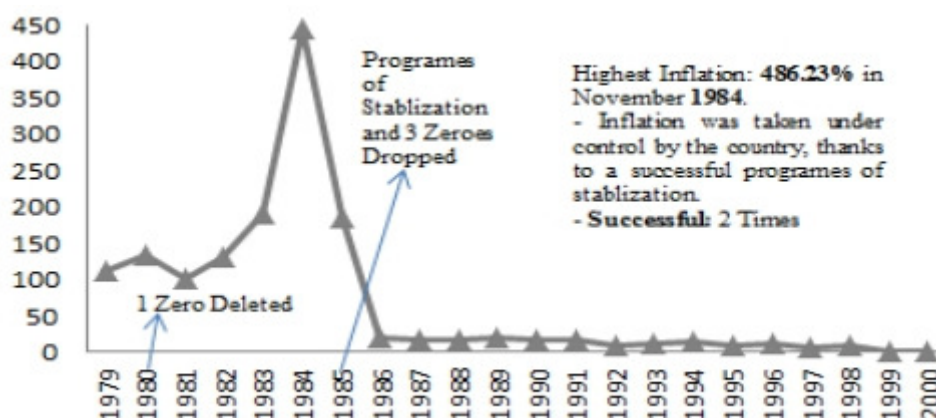


Figure 1: Israel Annual Inflation

In the literature of economic, Dutch disease was a familiar term. In 1980, in Israel, the sudden appearance of revenue resources from the gas exploitation resulted in irregular inflation. The government of Israel was forced to satisfy the needs of people in their daily exchanges by publishing large bills. For the time being, the rate of inflation increased 100% plus.

Israel has removed a total of 9 zeroes from its currency during 1948-1985. In 1980's, Israel removed one zero from its currency and successfully controlled the inflation. In 1984, when the inflation rate went up to 445%, the government of Israel decided to eliminate three more zeroes from its currency, the operation took place in 1985 and the country had deleted 3 zeroes successfully and 1,000 old Sheqalim became equal to 1 new Sheqal. This time country was also controlled the inflation (Nahidi and Ahmad, 1995). (see Figure 1, Table 1).

## 2.2 Argentina

In Argentina, downturns of economic considerably devalued its currency and in 1992 it carried out dollar crisis. So, government of Argentina had to accept economic improvements by deleting zeroes from the currency to control the sharply rising inflation. In the year of 1960, 1100-3500 pesos of Argentina was equal to one US dollar. When Argentina shed two zeroes from its national currency, the peso value of Argentina fixed to the value of dollar. During the 1980's, 18000-180000 pesos were exchanged with one dollar. Thus, in 1983 government of Argentina decided to eliminate 4 zeroes from its national currency but failed, and in 1990's, subsequently to the monetary policy, by deleting 4 zeroes from its currency, Argentina was reached to the desired goal and it declined the rate of inflation dramatically (Calomiris, 2007 and Zidek and Chribik, 2015). (see Figure 2, Table 2).

Table 2: Argentina Annual Inflation Before, During and After Removing Zeroes

Year	Inflation	Year	Inflation
1983*	434%	1990	4924%
1984	688%	1991	5648%
1985*	385%	1992*	84%
1986	82%	1993	18%
1987	175%	1994	7%
1988	388%	1995	4%

(\*) indicates redenomination year

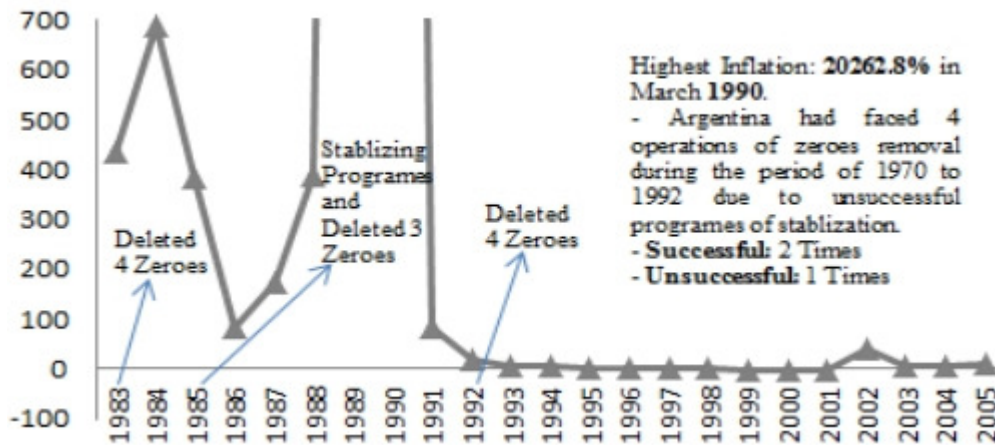


Figure 2: Argentina Annual inflation

## 2.3 Poland

In January 1995, the redenomination of Zloty took place in Poland under the name of “the slashing of four zeroes” and according to the international standards the Polish currency was made convertible. But the mathematical procedures were found as a stealing attempt by the country's government. In Poland the zeroes deleting policy was implemented only when the impacts programs of stabilization were observed positive. Today, this approach is recommended.

Table 3: Poland Annual Inflation Before, During and After Removing Zeroes

Year	Inflation	Year	Inflation
1991	77%	1997	15%
1992	45%	1998	12%
1993	375%	1999	7%
1994	33%	2000	10%
1995*	28%	2001	5%
1996	20%	2002	4%

(\*) indicates redenomination year

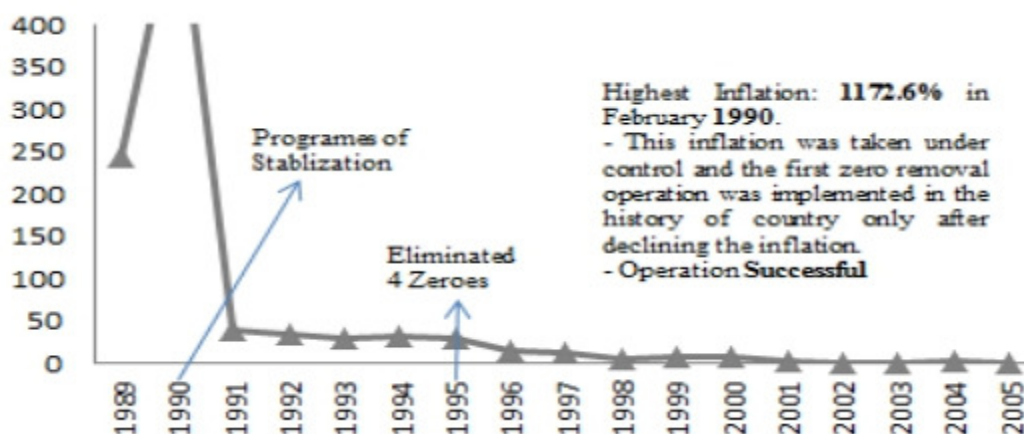


Figure 3: Poland Annual Inflation

When the zeroes deleting policy was implemented in Poland, the inflation was not less enough but it was continued at a moderate level by 5% per annum during the period of 1995 to 1997. It happened because a major liberalization and restructuring of country’s economy was already completed by Poland, because of which the redenomination of currency was successful. In 1995, after deleting four zeroes from national currency, 10,000 Zlotych were equal to 1 Zloty and the currency was renamed as “New Zloty” (Ncube, 2007). (see Figure 3, Table 3).

#### 2.4 Turkey

Turkey is a European country while having the grounds like other developing countries. The Turkey has suddenly eliminated 6 zeroes from the currency in the year of 2005. In the beginning of 1980’s, inflation started in Turkey. In 1988, one United States dollar was equal to 1422 Turkish old Lira, and in 2003 it went above 5.1 million Liras. In Turkey, the price of one sandwich was three million old Liras. From 1981, there was a need of having large notes after every two years. In a cycle of 25 years, the highest bill of Turkey went from 5000 Lira to 1 million Liras, after this it reached up to multi trillion Liras due to which Turkish people faced many problems. According to a survey report of 2000’s, a piece of bread price was multi trillion Liras in Turkey. On the first day of January 2004, the instructions were presented to slash 6 zeroes from national currency of Turkey, but it was executed on the first day of January 2005, the new coins and the bills were entered in market, and the new name of Turkish currency was “New Lira”. Zero deleting from the currency of Turkey became coincidental with full inflation inhibition by using different tools of economics. Consequently, the new Turkish Lira came to be able to meet its responsibilities as a new unit of exchange (Central Bank of the Republic of Turkey, 2005).

Turkey has executed mitigating and reformative measures for more than two times. Some volatilities of inflation were results of Turkey’s mitigating plans. These plans were executed as a political package. Turkey observed the sequence of these plans and finally they tracked realization of independence of its central bank through improving its system of banks. The disciplined budget announcement by the country’s government was linked with the surplus of budget for some years in the country. Thus, deleting some zeroes from national currency of Turkey was not resulted in negative effects of allocation/distribution. But in turn, it has reformed the mechanisms of economic allocation via getting confidence of general public and attaining reputation for the Turkish government (Central Bank of the Republic of Turkey, 2005). (see Figure 4, Table 4).

Table 4: Turkey Annual Inflation Before, During and After Removing Zeroes

Year	Inflation	Year	Inflation
2000	39%	2006	10%
2001	68%	2007	9%
2002	30%	2008	10%
2003	18%	2009	6%
2004	9%	2010	6%
2005*	11%	2011	10%

(\*) indicates redenomination year

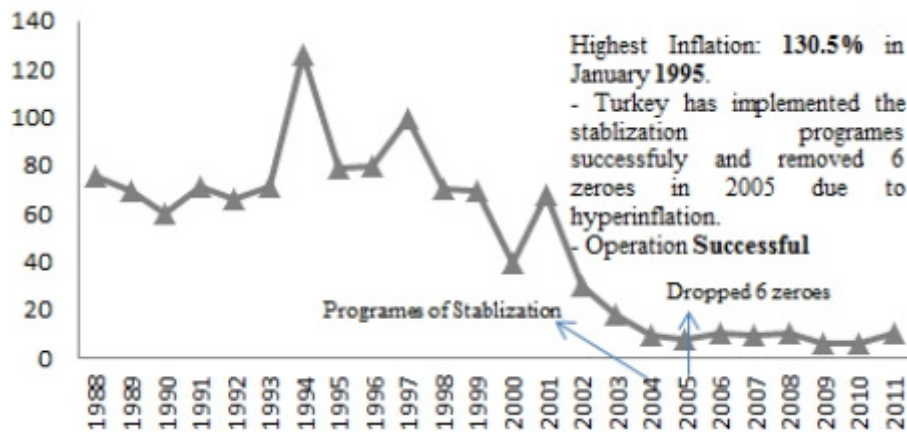


Figure 4: Turkey Annual Inflation

### 2.5 Brazil

Brazil faced one of the greater inflation in the period of 1960's and 1970's because of which the value of national currency of Brazil was decreased 30 to 40 per cent every month. Earlier that, the name of Brazil's currency had changed two times in between 1930-1942. In the period of 1967, Brazil deleted three zeroes from its national currency named "Cruzeiro" and the new name of Brazilian currency was "New Cruzeiro". Though, the government of country failed to control inflation, and in 1981 the inflation went up to 151 per cent, during this period Brazil slashed three zeroes again from its national currency. The inflation rate increased again and went 1972 percent in 1989, and the government of Brazil deleted three more zeroes from the national currency and changed the currency name. When the inflation rate reached about 2000 percent in 1993, the Brazilian government removed another three zeroes from its national currency. But this time, Brazil controlled the inflation. Although, Brazil is a country which is still considered most expensive country among the American countries. From 1930 to present, Brazil has been eliminated total 18 zeroes from its national currency in 6 periods of times and has been changed the currency name 8 times (Martinez, 2007) and (MirHosseini and Rad 2011). (see Figure 5, Table 5).

Table 5: Brazil Annual Inflation Before, During and After Removing Zeroes

Year	Inflation	Year	Inflation
1985	242%	1991	473%
1986*	80%	1992	1119%
1987	363%	1993*	2477%
1988	980%	1994*	916%
1989*	1972%	1995	22%
1990	1621%	1996	10%

(\*) indicates redenomination year

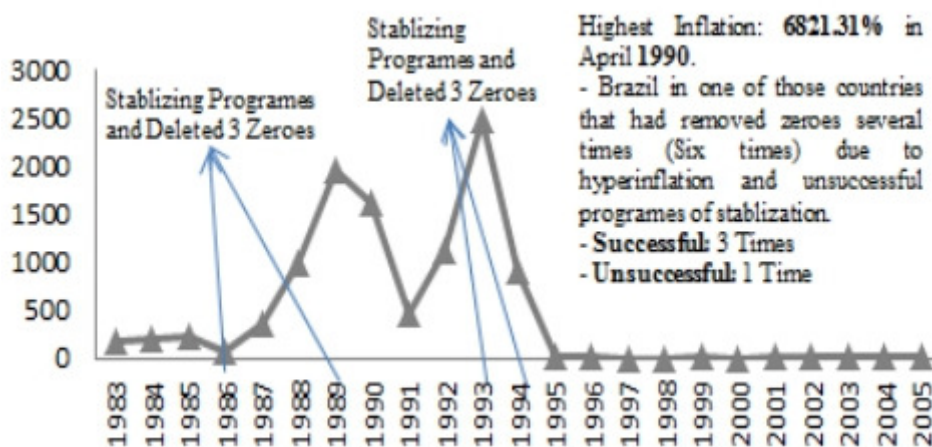


Figure 5: Brazil Annual Inflation

### 3. Research Design and Methodology

#### 3.1 Data Sources, Sample and Study Period

The present study conducted on five countries that had deleted several zeroes from their national currency. The sample countries were Israel, Argentina, Poland, Turkey and Brazil. In Israel, the sudden appearance of revenue resources from the gas exploitation resulted in irregular inflation. The government of Israel was forced to satisfy the needs of people in their daily exchanges by publishing large bills. In Argentina, downturns of economic considerably devalued its currency and in 1992 it carried out dollar crisis. So, government of Argentina had to accept economic improvements by deleting zeroes from the currency to control the sharply rising inflation. When the zeroes deleting policy was implemented in Poland, the inflation was not less enough but it was continued at a moderate level by 5% per annum during the period of 1995 to 1997. The Turkey has suddenly eliminated 6 zeroes from the currency in the year of 2005. In the beginning of 1980's, inflation started in Turkey. Brazil faced one of the greater inflation in the period of 1960's and 1970's because of which the value of national currency of Brazil was decreased 30 to 40 per cent every month. Earlier that, the name of Brazil's currency had changed two times in between 1930-1942. To make comparison of selected countries, the data of during, before and after redenomination year had been analyzed. The secondary data were used in this study. The data had been gathered from different sources like World Bank, International Monetary fund, International Financial Statistics, Global Economy and Trading Economy.

#### 3.2 Construction of Hypothesis

**H<sub>0</sub>:** *Deleting zeroes have positive impact on inflation.*

**H<sub>1</sub>:** *Redenomination has positive impact on currency market.*

#### 3.3 Data Analysis

The descriptive study technique was used to analyze the data. The simple percentages and line graphs were applied to analyze comparative effect of redenomination on sampled countries. Israel, Argentina, Poland, Turkey and Brazil were taken as sampled countries for the analysis.

Table-6 reported the empirical evidences from the sample countries. Overall 11 events were taken in to account to check the impact of deleting zeroes from the national currency on the inflation as well as the national economy. The results revealed that almost positive impact in all the cases. Negative impacts were found only in two events of the countries i.e. Argentina and Brazil in 1983 and 1996 respectively.

Table 6: Empirical Evidence from Sample Countries

Country	Year*	Operation	Result
Israel	1980	Successful	Positive
	1985	Successful	Positive
Argentina	1983	Unsuccessful	Negative
	1985	Successful	Positive
	1992	Successful	Positive
Poland	1995	Successful	Positive
Turkey	2005	Successful	Positive
Brazil	1986	Unsuccessful	Negative
	1989	Successful	Positive
	1993	Successful	Positive
	1994	Successful	Positive
Total Operations/Results: <b>11</b> Successful Operations/Results: <b>9</b> Unsuccessful Operations/Results: <b>2</b>			
Note: (*) indicates the year in which zeroes were deleted			

### 4. Results and Discussions

Since past half century, an economist of America in his analytical paper 71 cases referred of redenomination from national currency over the world (Layna Mosla, 2010). He is a professor at American University in North Carolina. Mosla (2010) wrote an article titled "analysis and review of eliminating zeroes from national currency" and believed redenomination can be used as an instrument to control inflation of countries. This instrument is more effective with in the sequence of important economic reforms in his opinion and that must be done. Furthermore, he recommended redenomination to control the inflation and increase the national economic credibility that will attract the foreign investment and through which national spirit be promoted.

The latest case is the Zimbabwe, whose government had been eliminated 10 zeroes from their country's currency. Turkey had changed their currency name from old Lira to new Lira in January 2005. The Turkish government sent a message to the international and national community that economic policies of government had been incorrect in the past. It is noted that zeroes elimination from the national currency can be effective only when

it is attended by the government's policies of anti-inflation and asceticism measure in the financial regularities, financial policies of the government of a country and efforts to get rid of deficits of long-term budget and dependence on revenues. If not, elimination of zeroes will lose its psychological impacts very soon and will return back with more strength. The better solution to execute the programs of economic stability and to control the rising inflation is central bank's independence from the government of a country and eliminating the problematic policies of economic. Results of the study were in line with the recommendations of L. Mosla (2010) as he considered an important pressure of deleting zeroes on national economy of developing countries.

In two ways, the eliminating of zeroes from the national currency can be helpful to reduce inflation. First, at the end of economic stability program, the slashing zeroes from the currency of a country can be done to provide confidence to private agencies and to the people that the period of greater inflation has gone. It is totally symbolic to remove zeroes in such a condition because inflation has been controlled due to other factors and cutting zeroes from the currency will not lead to minimize the inflation on its own. Secondly, it will gain the confidence of foreign investors and thus facilitating the economic growth process, attracting the foreign direct investment for countries. Finally, to increase the national currency value, economic power should also be increased. In fact, with the help of powerful economy, national currency value can be stronger and by controlling inflation, positive measure would be taken in long term.

In the political systems of democratic, elimination of zeroes from the national currency can have negative effect on the re-election of a party. Evidently, deleting zeroes from currency leads to the failure of a government party and the policies of economy, and can have negative effect. The current study found this negative effect in two countries in two cases Argentina (1983) and Brazil (1996). According to opinion of many experts, exchange is facilitated by the money in the economy. Some experts trust that money is not only a medium of exchange; it also impacts the authority of state and the national identity of citizens. So, money can be considered as a tool that strengthens the national politics and national identity. Thus, national identity and economic status may be affected by the elimination of zeroes from national currency. To create the national currency value, the government of a country should increase the confidence of their citizens and to stop their citizens from foreign currency dealings. If the people of country highly use foreign currency in their routine dealings, it means the confidence of public is low in the national currency and the government should take decision regarding deleting zeroes.

On the basis of model statistics, removing zeroes from the national currency affects the exchange rates and inflation. In actual practice, there is a significant association between exchange rates, inflation and redenomination of currencies. The national policy of cutting zeroes is influenced by the democratic political system and democracy as well. The pressure of IMF to the implementation national currency programs is another point of deleting zeroes from national currency. Moreover, if in the past, the policy of deleting zeroes from national currency has used, the next government of a country may be forced to implement this policy.

## 5. Conclusion

It is noted that zeroes elimination from the national currency can be effective only when it is attended by the government's policies of anti-inflation and asceticism measure in the financial regularities, financial policies of the government of a country and efforts to get rid of deficits of long-term budget and dependence on revenues. If not, elimination of zeroes will lose its psychological impacts very soon and will return back with more strength. The better solution to execute the programs of economic stability and to control the rising inflation is central bank's independence from the government of a country and eliminating the problematic policies of economic. In two ways, the eliminating of zeroes from the national currency can be helpful to reduce inflation. Firstly, at the end of economic stability program, the slashing zeroes from the currency of a country can be done to provide confidence to private agencies and to the people that the period of greater inflation has gone. It is totally symbolic to remove zeroes in such a condition because inflation has been controlled due to other factors and cutting zeroes from the currency will not lead to minimize the inflation on its own. Secondly, it will gain the confidence of foreign investors and thus facilitating the economic growth process, attracting the foreign direct investment for countries. Finally, to increase the national currency value, economic power should also be increased. In fact, with the help of powerful economy, national currency value can be stronger and by controlling inflation, positive measure would be taken in long term. Therefore, the opinion of public should be organized before any task in order to be habituated with new money and conditions. In simple words, a good way for successfulness of this policy is giving opportunity and engaging people to be accustomed with new money and conditions. So, before implementation of this policy, establishing the issue in universities, colleges and schools, role of media, testing the micro scales plan are very much important.

Other people, on the other hand, believe that countries that have deleted zeroes from their domestic currencies in instable and unsafe conditions without implementing stable and political reclamations have failed to achieve their desired results, but the countries that have changed their currency by using stabilizing and reformative measure and has used this policy as final and complementary measure to send an indicator to the people and market has achieved their desired goal. Slashing zeroes from the national currency of a country should be carried out after



conducting reformative and stabilizing measures. So, intense control and supervision has vital importance in the implementation of this policy.

### 5.1 Suggestions and Propositions

In the economy of a country, we have to shift towards electronic transfer and trade via banking systems, ATM's etc. so that money transfers moving towards e-banking in future.

For application of this project, there is need to provide necessary grounds. If a country cuts zeroes from its national currency, it can create some kind of confusion in the data of financial reports. This problem can be minimized by providing proper definition of new and old currencies and by proper development of culture. Before implementing the policy of redenomination it is very important to proper make the advertisement of the policy well in time. Otherwise the policy will miss some parts of its benefits.

The prices might witness some inflation while applying the projects of dropping zeroes. Along with the alteration in the domestic currency some people want to maximize the prices of their goods. In the meantime, result of declining the basic currency might be in the shape of rounding off the prices to get rid of small coins which leads to the inflation. By providing necessary information and proper supervision, this problem can be minimized in order to avoid tangible effects on the economy of a country.

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