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THE ANALYSIS OF RELATIONSHIP BETWEEN INFLATION AND FOREIGN EXCHANGE RATES IN THE NORTHERN REGION OF IRAQ FOR THE PERIOD (2008 - 2016)

Farhang Abdulkareem AQRAWI

YÜKSEK LİSANS TEZİ

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SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜ'NE

Siirt Üniversitesi Lisansüstü Eğitim-Öğretim ve Sınav Yönetmeliğine göre hazırlamış olduğum "The Analysis of Relationship Between Inflation and Foreign Exchange Rates in The Northern Region of Iraq for the Period (2008 - 2016)" adlı tezin tamamen kendi çalışmam olduğunu ve her alıntıya kaynak gösterdiğimi taahhüt eder, tezimin kağıt ve elektronik kopyalarının Siirt Üniversitesi Sosyal Bilimler Enstitüsü arşivlerinde aşağıda belirttiğim koşullarda saklanmasına izin verdiğimi onaylarım.

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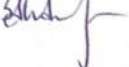
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ÖZET
YÜKSEK LİSANS TEZİ

KUZEY IRAK'TA ENFLASYON VE DÖVIZ KURLARI ARASINDAKI
İLISKININ ANALIZI (2008-2016 DÖNEMI)
Farhang Abdulkareem Elias AQRAWI
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Bu çalışma, Irak Kürdistan Bölgesi'nde (ABD Doları, Avro, Türk Lirası) para arzı ve gayri safi yurtiçi hasılasının (GSYİH) enflasyon ve döviz kurları arasındaki ilişkiyi 2008-2016 dönemi için incelemek amacıyla yapılmıştır. Bölgenin 2003 yılında eski Irak rejiminin düşmesinden sonra yüksek enflasyon oranı ve döviz kurlarındaki dalgalanmalardan muzdarip olması dikkat çekicidir.

Çalışma sonuçları, vektör hata düzeltme modeli parametresinin pozitif ve anlamlı olmasından dolayı, aynı dönemde enflasyon oranı ile döviz kurları, para arzı ve gayri safi yurtiçi hasıla (GSYİH) arasında uzun dönemli ilişkiler bulunduğunu göstermektedir. Çalışma ayrıca, ABD doları döviz kurları arasında, belirtilen dönem boyunca bölgedeki enflasyona karşı uzun vadeli ilişkiler bulunduğunu göstermiştir.

Çalışmada, ABD Doları'nın Irak dinarına ve Kürdistan Bölgesi'ndeki enflasyona karşı döviz kuru (2008-2016) arasında uzun vadeli bir ilişki bulunmuştur. Bunun yanı sıra, dönem içinde Avro'nun Kürdistan Bölgesi'ndeki enflasyona karşı döviz kurları ile döviz kuru arasında uzun vadeli bir ilişki bulunmaktadır (2008-2016). Çalışmada, Türk lirasının döviz kuru ile enflasyon oranı arasındaki dönemde (2008-2016) bölgede uzun vadeli bir ilişki bulunmuştur. Ancak, GSYH ile enflasyon arasında dönem boyunca (2008-2016) olumsuz uzun vadeli bir ilişki bulunmaktadır. Bu ilişki t-testine göre istatistiksel olarak anlamlı değildir ve sıfırdan farklı değildir.

Ayrıca, çalışma, para arzı ile enflasyon arasındaki dönemde uzun vadede olumsuz bir ilişkiyi (2008-2016) gerçekleştirmektedir. Bu ilişki t-testine göre istatistiksel olarak anlamlı değildir ve sıfırdan farklı değildir. Para arzı ile enflasyon oranı arasındaki ilişki önemli değildir; çünkü 2014 yılında KGR'nin para arzı arzında, bağımsız olarak ihraç edilen petrolün gelirlerine bağlı olması, yani Irak ekonomisindeki para arzına dayanmamaktadır.

Anahtar Kelimeler: Enflasyon Oranı, Döviz Kuru, Dolar, Euro ve Türk Lirası, Para Arz ve GSYİH.

ABSTRACT
MASTERS THESIS
THE ANALYSIS OF RELATIONSHIP BETWEEN INFLATION AND FOREIGN EXCHANGE RATES IN THE NORTHERN REGION OF IRAQ FOR THE PERIOD (2008-2016)

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This study purpose is to examine the relationship between the inflation and foreign exchange rates of the major currencies namely (US dollar, Euro, Turkish lira) money supply and gross domestic product (GDP) in the NRI during the period (2008-2016). It is notable that the region suffers from the high inflation rate and fluctuations in foreign exchange rates after the fall of the former Iraqi regime in 2003.

The study results indicated that there are long-run relationships between inflation rate and foreign exchange rates, money supply and gross domestic product (GDP) in the region during the same period because of the result of a vector error correction model parameter positive and significant. The study also showed that there are long-run relationships between the exchange rate of the US dollar, against the dinar to the inflation in the region during the period indicated.

While the study found a long-run relationship between the exchange rate of the US dollar against the Iraqi dinar and inflation in the NRI during the period (2008-2016). Besides, there is an adverse long-run relationship between the exchange rate of the Euro against the dinar and inflation in the NRI during the period (2008-2016).

While the study also found an adverse long-run relationship between the exchange rate of the Turkish lira against the dinar and inflation in the NRI during the period

(2008-2016). However, there is an adverse long-run relationship between GDP and inflation during the period (2008-2016). This relationship is not statistically significant according to the t-test, and it does not differ from zero.

In addition, the study realizes an adverse long-run relationship between money supply and inflation during the period (2008-2016). This relationship is not statistically significant according to the t-test, and it does not differ from zero. The relationship between the money supply and the inflation rate is not significant because the NRG during the period 2014 till now in money supply depends on revenues of oil exported independently which means it does not depend on the money supply in the Iraqi economy.

Keywords: Inflation Rate, Foreign Exchange Rate, Dollar, Euro, and Turkish Lira, Money Supply, and GDP.

DEDICATION AND ACKNOWLEDGMENT

ABBREVIATION AND SYMBOLS

Abbreviation	**Explanation**
CPI	: Consumer Price Index
INF	: Inflation
ER	: Exchange Rate
FDI	: Foreign Direct Investment
GDP	: Gross Domestic Product
MS	: Money Supply
PPP	: Purchasing Power Parity Theory
NRG	: Northern Regional Government
NRI	: Northern Region of Iraq
ADF	: Augmented Dickey-Fuller
PP	: Phillip – Perron
AIC	: Akaike Information Criterion
SC	: Schwarz Criterion
FPE	: Final Predictor Error
VECM	: Vector Error Correction Model
EU	: European Union
US	: United States
UK	: United Kingdom

Symbol	**Explanation**
%	: Percentage
$	: US Dollar
€	: Euro of Europe
₺	: Turkish Lira

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INTRODUCTION

The purpose of this master thesis is to analyze the relationship between inflation and foreign exchange rates, money supply, and GDP in the Northern Region of Iraq (NRI) during the period (2008-2016). So, inflation has become a recurring phenomenon in all developed and developing economies equally. Nevertheless, in developing economies, it is becoming more severe compared to developed economies.

As for foreign exchange rates, the distinction between international trade and domestic trade is the monetary systems adopted in each country of the world. Because there is no standard monetary unit at the global level, so it is necessary to have a foreign exchange rate (Smaail, 2008). About the relationship between the four variables, the inflation, foreign exchange rates, money supply, and GDP appear in most economies of developing countries, including Iraq and the Northern Region of Iraq.

Therefore, the problem of thesis study is that the economy of the Northern Region of Iraq, since 2003 suffers from high inflation rates and fluctuations in foreign exchange rates. However, it is essential to pay attention to these phenomena and knowledge of the occurrence and factors that facilitated to exacerbate in light of the financial crisis experienced by the region, to help the provincial government to take necessary action to address these problems (Badawah, 2015).

Although, this study purposed to identify the type and direction of the relationship between inflation and foreign exchange rates for major (US Dollar, Euro, Turkish Lira) in the Northern Region of Iraq. Also, present some wizards with fluctuating inflation rates and foreign exchange rates fluctuations in Iraq and its northern region.

However, the study hypothesizes that the existence of a positive long-run relationship between the foreign exchange rates of the US dollar and inflation during the period (2008-2016). More, the existence of an adverse long-run relationship reversing the trend of euro exchange rates to inflation during the same period. Additionally, the existence of a long-run relationship that is moving from the exchange rate of the Turkish lira to inflation during the same period mentioned above. To verify the validity of the hypothesis and to reach its goal, use the method of quantitative analysis using the co-integration between the inflation and foreign exchange rates in the region.

However, the study concludes that the lowest annual rate of change in the exchange rate of the Turkish lira against the Iraqi dinar was in 2014 where it reached minus -24.41 percent. This decline is due to the gradual decrease of the Turkish lira against the Iraqi dinar because the owners of capital began to switch their savings to significant currencies to increase demand on the dollar or euro in the Turkish markets. Although the highest annual rate of change of the Turkish lira was in 2010 by 4.44% so, that states the rise back to the end of 2008. The global economic crisis began to affect Turkey. However, the Turkish economy grew by 0.7% in 2010, 2009 by 4.8%, but soon regained growth and rose to 9.2% in 2010, and this fluctuation of the Turkish economy directly related to the price of the Turkish lira against the price of the Iraqi dinar in the Iraqi exchange markets (NRG, 2017).

As indicated, there is a positive long-run relationship between the exchange rate of the US dollar against the Iraqi dinar and the inflation in the Northern Region of Iraq (NRI) during the period (2008-2016) and this relationship is statistically significant according to the t-test. Alternatively, the devaluation of the dinar leads to higher inflation rates because the high exchange rates for the US dollar would make imported expensive and carries a higher inflation rate in the region.

However, there is an adverse long-run relationship between the exchange rate of the Euro against the Iraqi dinar and the inflation in the northern region of Iraq during the period (2008-2016), and this relationship is statistically significant by t-test. Any reduction in the value of the euro, will lead to prices drop for European goods. Thus, the increasing of imports leads to the increasing rates of imported inflation in the NRI.

In the same regard, the estimate shows an adverse long-run relationship between the exchange rate of the Turkish lira against the Iraqi dinar and the inflation in the region during the period (2008-2016). This relationship is statistically insignificant according to the t-test and it does not differ from zero. Nevertheless, time series data or observations are small, so this might be the reason what Turkish lira is statistically insignificant. However, the Turkish lira was not playing a dynamic role in Iraqi and in the northern region stock exchange; it means that there is no lira's significant impact in economic activities in the region.

Regarding the correlation test, the study found that there is an adverse long-run relationship between GDP and inflation during the period (2008-2016). This relationship is not statistically significant according to the t-test, and it does not differ from zero. The relationship between GDP and inflation is insignificant because the production of goods and services in the region is almost non-existent, but it depends on imports of goods and services from neighboring countries, especially Turkey and Iran.

Moreover, there is an adverse long-run relationship between money supply and inflation during the period (2008-2016). This relationship is statistically insignificant according to the t-test, and it does not differ from zero. However, time series data or observations are small, so this might be the reason that money supply is statistically insignificant. The relationship between the money supply and the inflation rate is not significant because the NRG during the period 2014 till now in money supply depend on revenues of oil exported independently which means it does not depend on the money supply in the Iraqi economy.

Furthermore, the model significant, so, changes in the major currencies (US dollar, euro, Turkish lira), money supply and gross domestic product (GDP) in the region accounted for about 77% of changes in inflation and the remaining 23% were due to other factors. Also, the results of the estimate demonstrate that the study variables account for about 77% variation in the inflation rate in NRI over the period 2008-2016 besides 23% can be due to other factors not taken in the model. However, taking into thought the degree of freedom, the adjusted R-squared indicates that 64% of the dependent variable clarified through the explanatory variables.

In this context, the studies structured to reaching its goals and verify the hypothesis, hence, divided into three chapters, the first chapter dedicated the theoretical framework of inflation and foreign exchange rates, money supply, and GDP, through two sections, the first topic inflation rate concept, origin, reasons, types, and effects. The second topic dealt with foreign exchange rates, money supply, and GDP, concept, types, significance, effects, specific factors, exchange rate systems. Chapter two analyzed the inflation and foreign exchange rates, money supply, and GDP, in the NRI for the period mentioned. Through the observing the inflation rates first, while the second section included the analysis of foreign exchange rates, money supply, and GDP.

The third chapter devoted to measuring the relationship between the inflation and foreign exchange rates, money supply, and GDP, in the region included two sections; first, study the measuring tools used in this study. While the second focus presented the results of the assessment of the relationship between the inflation and foreign exchange rates of the major currencies (US dollar, euro, and lira), money supply, and GDP, in the region for the period 2008-2016, besides this chapter comprised a set of conclusions and proposals.

CHAPTER ONE

THE THEORETICAL FRAMEWORK FOR THE STUDY INFLATION AND FOREIGN EXCHANGE RATES

The purpose of this chapter is to reveal the analysis of inflation and foreign exchange rates, and the essential types of their theories, besides their effects on the economy of the country are discussed. In this, the study will deal with the following subjects: The first topic: the inflation rate such as concept, origin, causes, types, effects, methods of treatment. The second topic: foreign exchange rates namely: concept, types, effects, determinants, exchange rate systems. In addition to the statement of the concept of the equilibrium exchange rate which is achieved through the supply and demand for the foreign exchange rate.

1.1. LITERATURE RESEARCH

The relationship between the inflation rate and foreign exchange rates has raised the interest of many economists at the global and international level, so, the current study will review some studies that related to the topics of the study as follows:

Edwards (2006), this research examines the relationship between inflation targeting and exchange rates. While it addresses three specific issues: first, examine the effectiveness of nominal exchange rates as shock absorbers in countries with inflation targeting. Second, the research also investigates whether exchange rate volatility is different in countries with an inflation targeting regime than in countries with alternative monetary policy arrangements. Moreover, third, discuss whether the exchange rate should play a role in determining the monetary policy stance under inflation targeting. Further, the results revealed that countries that have implemented inflation targeting had experienced deterioration in the pass-through from exchange rate variations to inflation.

Asari (2011), researched by applying a (VECM) to examine the relationship among interest rate, inflation rate, and exchange rate instability in Malaysia during the period 1999-2009. While it used time-series VECM, so, the approach of the stationarity test, co-integration test, stability test and Granger causality test. Impulse Response Function (IRF) has also generated to clarify the response to shock between the

variables. However, the results demonstrate that the inflation rate affects the interest rate as shown by Granger-cause. Then the interest rate affects the exchange rate as revealed through the Granger cause test. Also, a long-run relationship, interest rate moves positively while inflation rate goes negatively towards exchange rate volatility in Malaysia.

Adeniji (2013), this research is about to studies the effect of exchange rate volatility on inflation in Nigeria during the period 1986-2012. The research used VECM, and test outcomes indicate that all variables are stationary at first difference, while Maxi Eigenvalue demonstrates a long run relationship between the variables. However, VECM result established a positive and significant relationship between inflation, exchange rate volatility, money supply and fiscal deficit, while gross domestic product shows a negative relationship.

Deyshappriya (2014), this study essentially efforts to classify inflation dynamics in Sri Lanka. Also, its elements over the period of 1983-2010 based on the quarterly data. However, this research employed both Johansen co-integration test and VECM to test the existence of long-run equilibrium together with the short-run dynamics. While, outcomes demonstrate that, long-run inflation in Sri Lanka is mostly driven by monetary development while price ricing primarily accounts for the most of short-run dynamics in inflation. Other factors such as GDP, unemployment and exchange rate inversely affect the price level in Sri Lanka.

Alam and Haque (2017), this study is about Determinants of Economic Growth in Saudi Arabia: An Economic Analysis using the Vector Error Correction (VEC) Model. The study purposed to econometric analysis using co-integration shows a long-run equilibrium relationship between gross domestic products as the dependent variable and three variables namely gross fixed capital formation, exports and imports as explanatory variables. Additionally, the estimated long-run relationship shows that while gross fixed capital formation and exports boost up (GDP), imports cause a fall in it in the long term. Public expenditure on education does not have any significant impact on (GDP). The results of VECM validates that there is a long-run equilibrium relationship between the above mentioned four variables in Saudi Arabia.

Al-Qaisi (2005), this study is about stimulating the monetary policy in tackling inflation with particular reference to Iraq for the period 1981-2001. The study purposed to motivate the monetary policy in the dealing inflation and in particular the inflation witnessed by the Iraqi economy through determining the extent of alignment between monetary policy options and the unusual economic trends experienced by the Iraqi economy. As a result, the study found that this is evidenced by the increase in the ratio of internal public debt represented by treasury transfers to the Iraqi central bank, where this ratio represented 99.7% of the total public debt with the Iraqi banking system. The central bank of Iraq had the most significant percentage, 63.8%. However, the various data indicate that the monetary policy in Iraq did not abate the effects on real variables, but receded in their effect on monetary variables toward tackling inflation due to dependency on monetary policy to the fiscal policy set by the central decisions. While the researcher argues that individuals keep the money for reserves and speculation rather than deposit in savings deposits and with the high cost of keeping the money as a result of the rise in the total level of prices, individuals are increasing their demand for goods, which leads to a rise in prices again.

However, a study conducted by Hanzi (2006), effort to examine the impact of exchange rate fluctuations on some macroeconomic variables in some developing countries. Thus, the researcher analyzed the impact of exchange rate fluctuations on some macroeconomic variables such as trade, capital flows, inflation, economic growth, employment, and poverty, also compared with the impact of exchange rate stability of the Bretton Woods system.

Consequently, the study found some conclusions, most notables are the exchange rate fluctuations adversely impact the volume of trade in three countries of the sample and this reinforces the hypothesis of opposing impact discussed by many economists. Accordingly, these fluctuations were positive in some other countries (five countries) this is because both exporters and importers have compared the expected returns from trade and the costs they incur as a result of exchange rate fluctuations.

Although, it seems they expected revenues increase costs resulting from exchange rate fluctuations resulting in a positive relationship between exchange rate fluctuations and the volume of trade in these countries. Furthermore, in the rest of the sample, the

impact of exchange rate fluctuations in the volume of trade has less significance, because exporters and importers may not particularly interest in exchange rate fluctuations, especially when they expect.

In the same context, a study conducted by Abbas (2008), that investigated the impact of inflation on the exchange rate of the Iraqi dinar for the period 1990-2005. As the researcher mentioned that this study aimed to confirm the study's planned hypothesis and therefore to identify the errors of economic policies taken at the time. Besides, try to develop solutions to address them that prevents a repeat by adopting balanced monetary and fiscal policies that work in an integrated manner to reflect economic performance, thus reflecting positively on the stability of the exchange rate.

The study reaches some conclusions most essential the existence of a substantial impact of inflation on the exchange rate of the Iraqi dinar against the US dollar during the period the take to analysis. Also, government expenditure not justified by the previous regime and misguided economic policies impact in increasing inflation. Lower rates of GDP impacted negatively on the dinar exchange rate/dollars. However, the study found that the actions of the monetary authorities represented by the establishment of a public auction for the sale of foreign currency in the stabilization of the exchange rate of the dinar/dollar.

While Smaail (2008) tested the impact of the exchange rate of the Iraqi dinar in trade (internal and external) for the city of Erbil for the period 1994-2006. So, this study aims to analyze or show the impact of the changes that occurred in the exchange rate of the Iraqi dinar on the commercial movements in the province of Erbil, and thus through the practical analysis for the period indicated.

The study found that the fluctuation occurred to the exchange rate of the Iraqi dinar old edition known as Swiss edition and the new edition so-called Bremer edition for the period between 1994-2006 directly affected the general level of prices of food and other consumer goods. Moreover, this effect reflected in the movement of business and the reason for this to the circumstances experienced by the city of Erbil during the period mentioned in the study. Further, the study revealed that changes in the exchange rate of the Iraqi dinar in the markets of Erbil during the period 2003-2006 affected the fluctuation in the level of prices of (building materials, cars, electrical materials and

woodworking materials), with the increase and decrease. Which imported from abroad after the lifting of the second economic sanctions was imposed on it, as well as the exchange of the dinar currency in the new dinar.

However, a study conducted by Khanjar (2010), this study effort is to highlight and focuses on the paths of inflation in the Iraqi economy for the period 1990–2007 and future trends. As the researcher argued that this study aims to stand on the pathways of inflation in the Iraqi economy by tracking the causes and consequences of structural imbalances in the economy. Besides, assess the effectiveness of economic policies to rein in inflation or to contribute to inflationary pressures. Also, defining a vision for future economic policies that ensure the continuation of the process of development and reconstruction while at the same time reducing inflationary pressures.

Subsequently, the study found some conclusions most notables are the rise in food prices responsible for more than (50%) of the volume of inflation in consumer prices, in addition to the impact on the rise in prices of other goods cumulatively, which led to the collapse of real incomes of low-income earners. Further, the study revealed that during the period (2003-2007), the high inflation rates in the fuel and lighting section had had a significant impact on the inflation wave that affected most economic sectors such as transport, rents, and housing rents. However, during the period (1996-2002), the deterioration of the Iraqi dinar exchange rate became a priority in influencing inflation rates. As well as continued commodity scarcity due to problems and constraints encountered in the implementation of the memorandum of understanding

In this regard, a research conducted by Al-Wondawi (2010) which measured the impact of the general level of prices and money supply on the dinar for the period 1980-2002. Based on the researcher argues this study purpose is to examine the economic factors that had a more significant impact on the Iraqi dinar exchange rate against the US dollar. Hence, the Consumer Price Index (CPI) chose as an indicator of general inflation, as well as money supply in the narrow sense (M1) to express money circulating in the economy. While the researcher reported that the exchange rate for the general price level slight flexibility in the short term but becomes flexible in the long term, further argued that the narrower view of money less influential in its interpretation of the deterioration of the exchange rate in the short term, but in the long term so that

exchange-rate flexibility for the money supply is high. However, the money supply of money supplies a significant reason for the explanation of the deterioration of the Iraqi dinar exchange rate against the US dollar.

Al-Mahmore and Zubaidi (2013), investigated the impact of exchange rate fluctuations on the general index of stock prices applied study in the Iraqi stock market for the period (2005-2011). As the researchers mentioned that this study purposed to know the impact of fluctuations in the Iraqi dinar exchange rate on the world index of the prices of shares of companies listed in the Iraqi market for securities and clarify the type of relationship between these fluctuations and the general index of stock prices. Consequently, the study reaches some conclusions most important are any fluctuation in the exchange rate will reflect in the stock market because the exchange rate is one of the factors affecting the functioning of the stock market as the determinants of economic activity. Nevertheless, the impact of exchange rates on the stock markets varies from country to country and within the same country to another within the same sector.

The researchers also reported that the results of the stability test showed that the time series of the exchange rate and the general index of stock prices in Iraq are at the root of the unit and that they are not stable at the general level, whereas these variables become stable in the first differences.

Test results showed that stability contains time series for the exchange rate and stock prices general index in Iraq on the root of unity and unstable at a general level, while these variables become stable in first differences. According to the expanded Dicky-Fuller test, which is a first-class integral. The co-integration test using the Johansson-Jesleus methodology revealed the existence of a vector for the joint integration of the exchange rate and the indicators mentioned in Iraq.

However, the study found that the results of the vector autoregression of the vector indicate that exchange rate fluctuations have a different effect and different trends on the general index of stock prices from month to month and according to the period studied for the sample of the study.

In this context, Eas (2013), also analyzed the inflation rates in Iraq for the period 2000-2010. The study aims are to explaining the relationship between the inflation rate and the exchange rates of the Iraqi dinar against the US dollar by estimating the model

of the function which is considered to be the relationship using the appropriate statistical methods and by using the SPSS program in interpreting the results.

As a result, the study indicated that the relationship of the Iraqi dinar exchange rate with the rate of inflation, the dinar showed less than its proper value in the budget market during the 1990s. Moreover, the foreign currency (the US dollar) began to play its role in the Iraqi economy where most of the transactions and commercial transactions held through it. Besides, the highest rate of inflation in Iraq in 2006, 53.1% that caused by high prices of oil derivatives, and this were clear through the data of the bulletin of the central bureau of statistics for the data records. Also found that Iraq's inflation rate fell in 2010 to 2.5 percent due to the decline in the price of petroleum products, improvements in national currency. Besides, the absence of customs fees, in addition to the low rate of annual inflation in food prices and prices of the role of rented housing.

Though, a research conducted by Badawahi (2015), this study is about to analysis the relationship between foreign exchange rate and inflation rate an applied study of the province of Erbil for the period 2008-2014. As the researcher argued that this study aims to find out the neuter and direction of the relationship between the exchange rate of the Iraqi dinar against the US dollar by using quantitative methods. Provide some wizards for exchange rate fluctuations and inflation in the Iraqi Kurdistan region. The study found some conclusions; most notables are the Johansen test showed an equation for long-run co-integration between the dollar/dinar exchange rate and inflation during the study period. There is a long-run reversal between the high inflation rates and the depreciation of the dinar against the dollar.

The results also show that the rise of inflation by 1% leads to a decrease in the value of the Iraqi dinar against the dollar by 0.16%. Further, the study showed that there is a long-run balance between the exchange rate of the dinar and inflation, and this relationship is moving from inflation to the exchange rate. So, the analysis of impulse response function and random repulse confirmed an inverse relationship between inflation and the exchange rate, and variance analysis confirms high explanatory power for inflation in the interpretation of the exchange rate.

Badawahi and Ismail (2015), research to examine the impact of foreign exchange fluctuations in the general budget of the Iraqi Kurdistan region for the period 1997-2013. However, based on the researchers mention the study aims to clarify the effects that foreign exchange fluctuations can have on the general budget of the region during the period indicated. To reach the best characterization of the standard models of the impact of foreign exchange fluctuations in the general budget, which will help in developing appropriate economic policies for the region.

As the results, the study showed the impact of exchange rates on the general budget through its influence on the components of the general budget represented by public expenditures and public revenues, and the impact is indirectly through changes in local prices. The study also revealed that there is an inverse relationship between the exchange rate of the US dollar and the general budget deficit, i.e., the low exchange rate of any country leading to high demand for its exports. The decline in the US dollar exchange rate leads to a rise in the budget deficit of the NRG.

Omar (2017), investigated the consumer price indexes in Erbil governorate for the period 2009-2015, while this study aims at the reasons and direction of changes in consumer price indices as well as the direction of changes in inflation rates. Consequently, the study reaches some conclusions the most important are the average of the annual inflation rate and the exchange rate reached (63.6) and (5.874%), respectively. So, the increase in incomes has played a prominent role in rising prices. Besides, the implementation of the policy of consumer support by the government, especially for water, electricity, and transport reflected on the record numbers of prices and not exceeding (100) as a record for the base year length of study (there are exceptional cases). After reviewing the previous studies, it noticed that they meet in the follow-up of foreign exchange rates and the inflation rate regarding concepts and types and the relationship between them, but this study is distinct from previous studies, especially on the studies carried out in the Kurdistan region with the following points:

   a) Report on the relationship between the foreign exchange rates of the major currencies (US Dollar, Euro, and Turkish Lira) and the inflation rate in the region.

b) The first master in economic sciences at the level of universities in the Kurdistan region dealt with the standard relationship between foreign exchange rates and inflation rate.

c) The thesis used the method of co-integration to achieve its objectives in measuring the relationship between the inflation rate and foreign exchange rates.

1.2. THE CONCEPT OF INFLATION

The concept Inflation, inflation is one of the most important economic topics, so it is necessary to introduce the concept of the inflation rate, and in this direction, there are many definitions of inflation vary from one researcher to the other.

According to Dawood (2010, p. 161) inflation refers to the elevation and communicates in the general price level to decline in purchasing power of money and hampered by the fully functioning. While, (Mishkin, 2004, p. 632) argues that it is a long-run monetary phenomenon, a situation of continuous price increases.

Samuelson (2001) defined the rate of inflation as a percentage change in the general level of prices, which means that inflation occurs when the general level of prices rises. Then calculated using indices weighted averages for the prices of thousands of individual products, so, the consumer price index measures the market cost of a consumer basket of goods and services compared to the cost of that package of goods and services in a given year. Samulson and William (2001, p. 337)

Inflation is an economic phenomenon characterized by rising prices resulting from the imbalance of available supply of goods, services and sufficient demand, a gap between supply and demand coupled with purchasing power which exceeds the available supply (Kafre, 2004). Although, inflation is a process in which the price level is rising and money is losing value, not in the price of a particular product or service. Ghosh and Maity (2017, p. 1).

Thus, the researcher argues that the above definitions of inflation indicate that there is a significant similarity between them regarding:

− The continuous of prices rising.

- − Low power purchasing of money.
- − A long-run monetary phenomenon.
- − The imbalance of available supply of goods, services and product demand.
- − The increase in the money supply and credit increases the price.

However, the researcher defines the inflation as a weak purchasing power of the currency due to an increase in the volume of money in the market, which results in loss of real value of currencies offset by an increase in the price of goods and services.

1.2.1. Inflation Theories

1.2.1.1. Inflation Surplus Demand

Inflation of demand is the traditional theory of inflation, and there are many explanations for the appearance of this type and the reasons behind its appearance. In the framework of classical analysis, the theory of the amount of money, the level of prices depended on the amount of money and linked to it directly. Besides, high inflation rates are due to the following factors (Hinaea, 2000, p. 94):

1. Increased consumer spending and investment.
2. Expansion of the opening of credit by banks.
3. Inadequate banks in realizing the wishes of individuals to save.
4. Financing of the military operations.
5. The budget deficit.
6. High wage rates.

1.2.1.2. Inflation Through Costs Increasing

In this type of inflation, the rise in prices is due to the increase in expenditure of production components with the stability of the level of demand. The component of production, which is representative of increasing cost, is the labor component of the opinion of capitalist economists, and the inflation of the payment of costs usually associated with the following phenomena:

Increase in wages: The increase in labor costs often translated into an increase in wage rates due to the workers' demand for higher wages, in addition to the high wage rates, the inflation of costs is linked to other factors caused by them. (Jalol and Amin (2008, p. 106)

1. Wage increase: an increase in expenses of workers often interprets an increase in wage rates, and this worker demanded higher wages plus rising wage rates, inflation costs associated with other factors causing them.
2. High-profit margin: Increase the volume of profits obtained by businessmen by widening the gap between the selling price of productive units and production costs.

1.2.1.2.1. Structural Inflation

It is a conventional of relationships and fixed ratios spanning time, place, quantities and economic currents associated with the productive process, and the distribution of financial and material resources within the community. Inflationary pressures have their effects on demand, expenditure, production, and are reflected in the behavior of structural or structural elements of the economy such as population, the form of projects or the structure of markets, or the rigid relations between these elements (Shexa, 1985, p. 597). A simple shift in demand from one sector to another lead to higher prices and wages in the developing sector without offsetting the same reduction in prices and wages in the shrinking sector. As a result, the average level of prices and wages will rise.

1.2.1.2.2. Imported Inflation

Imported inflation means the importer's inflationary international economy transmission to the national economy; by purchasing goods and services from abroad, this inflation described as multiple inflation (i.e., generated and imported), which increases its rates (Shexa, 1985, p. 597).

1.2.2. Classification of Inflation Types

1.2.2.1. Inflation by Severity

Inflation creeping, is a moderate inflation, which refers to the upward movement in the general level of prices, which is slow gradation and does not result in sharp rises in prices, that is, it rises at moderate rates, permanently and continuously, so, this type of inflation is continuous even if rapid increases in aggregate demand. Besides, growth rates often obtain into extended lax demand, has spread this type of inflation in the United States and most European industrialized countries during the period from WWII until the early 1970s (Al-Dulaimi, 1989, p. 633).

Galloping inflation: a situation that the general price level rises very quickly and severely reduced the cash value, also, which currency may collapse entirely, as happened to Germany after WWII, double-digit inflation rate (20%-100%-200%). So, over a period where few industrial States suffered like; Italy, Japan and many Latin American countries such as Brazil and Argentina where inflation rate rose from 50% to 700% annually during the 1970s and 1980s. Consequently, in a case like that, the currency loses its value quickly and worth trying individuals in the course of disposing of their money because the interest rate has become very low that is, the real interest rate is less than the nominal interest rate (Samuelson, 2006, p. 341).

1.2.2.2. Inflation by State Intervention

In this type of inflation, we have the repressed inflation, where despite large volume in aggregate demand but prices are not rising much through regulation and impose compulsory pricing legalization processes the whole challenge of total spending and turning without high prices apparently due to administrative constraints. However, still stand out in other forms reflecting the existence of the inflationary gap between supply and demand, the most important of which are the waiting lines for obtaining goods and the emergence of the black market. Sayed and Jamil (1995, p. 93).

However, open inflation is one of the most severe types of inflation and shows the result of an excessive and sharp increase in the amount of money traded with a significant shortage in the amount of commodity supply due to weak economic or

political situation. Moreover, prices may rise by more than 50% per month or 1000% Money, and money almost ceased to work as a repository of value or as a tool for saving. If these conditions persisted, it could lead to the collapse of the monetary system and the currency. So, this occurred in the 1920s in Austria, Russia, Poland, Hungary and Greece in the 1940s, combined with wars, economic crises, besides, social instability. Sayed and Jamil (1995, p. 93).

1.2.2.3. Inflation by Targeting

The desired inflation is the official announcement of the determination of the rate of inflation, and this rate is low and stable, a goal pursued by monetary policy. Although target inflation may not always be desirable, European banks consider it a prime target as the government and the central bank declared that monetary policy is doing its best to make the inflation rate close to a specific numerical target. The target includes one to three percent per annum.

Unwanted inflation is a natural result of the inflationary recession, the crisis of the arrival of inflation rates for negative numbers begins with an inflationary recession, which means low economic growth and high unemployment, i.e., recession, accompanied by inflation. Moreover, occurs when there is no growth in the economy, but there is a rise in prices, and the indices 'static recession, and negative inflation' is an economic situation is not desirable. Samulson and William (2001, p. 400).

1.2.2.4. Other Types of Inflation

The decadal inflation is an expression that illustrates the situation in which both unemployment and inflation are very high. So, this phenomenon occurred in the mid-1930s in the United States of America, but it came back more clearly in the seventies and the most important explanations for the phenomenon of inflation or stagnant recession inflation: Thomas and Duncan (1984, p. 287)

- The prices rise of energy sources and the rest of the prices of raw materials, manufactured and semi-finished goods prepared for consumer or investment purposes.
- The obliteration of the governmental control system on wages and prices.

- The increase in production costs led to a decrease in the profits of production projects.
- State support for some sectors, such as agriculture, led to significant price increases, which led to the demand for workers to raise wages.
- The weak agricultural production and the low elasticity of demand for agricultural products led to higher prices and as the latter used as inputs in the industrial sector, which led to higher prices.

Inflation due to the deficit is caused by the emergence of a deficit in the government budget due to insufficient resources available to cover the tunnels and thus to bridge the gap by creating new money or increasing credit (Pasha, 1990, p. 349).

1.2.3. Measurement of Inflation

1. The Implicit (Reduced) Price Index of GDP

A record is used to measure the rate of change in the prices of all private goods and services in the calculation of gross domestic product is a general measure of inflation rates per year and calculated as follows (Yas, 2013, p. 49):

$$\text{GDP price deflator} = \frac{\text{Nominal Domestic Product NDP}}{\text{Real Gross Domestic Product GDP}} * 100$$

2. Consumer Price Index

A statistical means of measuring changes in prices of goods and services purchased by the consumer. It is important to note that changes in consumer prices are affected by several factors, the most important of which are retail prices. While, other factors are changes in the quality and quantity of goods, services and the amounts spent on them. Therefore, the consumer price index is a measure of price changes only and not a measure of changes in the cost of living.

Though, according to (Al-Ghazali, 2003, p. 10) the consumer price index also differs from the retail price index, in that the concluding relates to the prices of all goods included in the retail trade. Where the interest in the consumer price index focuses on goods and services purchased by the consumer, which is limited to measuring the change over a period in the cost of a fixed set of goods and services called the consumer basket.

3. Wholesale Price Index

The prices used in this standard are the prices of goods exchanged in the prices of the product. The variation in prices here is the price of a single commodity or a group of commodities or a mixture of commodity prices. Hence, the wholesale price index requires sample surveys, such as consumer prices or living expenses. Statisticians use the importance of this figure. It is usually to survey the prices of 2600 commodities, in the middle of each month, and separate prices calculated for the goods according to their classification.

While, (Al-Ghazali, 2003, p. 11) argues that one of the essential classifications is classification according to the applied stages of the commodity, where the goods divided into commodities of raw materials, intermediate goods, and finished goods. There is a classification of production of agricultural fields, which divided into fresh goods, poultry and livestock. The wholesale price index calculated in the weighted average mean of the price levels

1.2.4. The Inflation Effects

Inflation as a monetary phenomenon has economic and social effects beyond its monetary value, and these effects vary according to the quality of inflation.

1.2.4.1. Economical Effects

Effects in the price system, where the impact of inflation on absolute prices and tend to rise, which leads to the deterioration of the efficiency of the price system in the process of allocation and distribution of resources in the economy, thus away from the economic efficiency. Mohammed, Yaqub, and Hisham (2005, p. 34).

1. Effect on the Structure of Production

Inflation and the consequent rise in price and wage levels, besides profits on consumer production sectors, that will lead to attracting capital to those sectors to invest and stay away from productive activities and investment. Which is essential for economic growth, and that leads to overcapacity in the consumer and production sectors

which need to operate at high operating rates which leads to an imbalance in the economy of the urban.

2. The Effect of the Structure of Marketing and Distribution

Inflation leads to the revitalization of the trading cycle and speculation, this sector flourishes in cases of inflation and increase channels of marketing and the superiority of the increase in retail prices more significant than the increase in wholesale prices, and beyond the commercial profit industrial profit, intermediaries and high marketing expenses. Mohammed, Yaqub, and Hisham (2005, p. 34)

3. Effect of the Monetary System

When the individual feels that there is a rise in prices and a decline in the value of money, which leads individuals to the trend towards consumption and the abandonment of savings. Which is characterized by the effect that inflation accompanied by an increase in the issuance of cash or expansion in bank credit, that the increase in the amount of money corresponds to an income that reflects an actual increase in economic activity.

4. Implications for the External Sector of the Economy:

In the case of inflation, there is an increasing domestic purchasing power that not adequately channeled into domestic production. Increasing the export bias, reducing the economy's ability to export, weakening the value of the national currency for foreign currency, increasing the prices of national commodities for foreign goods and reducing the marginalization of exports.

Thus, the balance of payments deficit is increasing for the inflationary economy, foreign resources and the international monetary reserve of the domestic economy. Mohammed, Yaqub, and Hisham (2005, p. 34)

1.2.4.2. The Social Effects of Inflation

According to (Al-Jalal, 2006, p. 35) the successive increases in local price levels contribute to the impact on the standard of living of individuals in society by:

1. Redistribution of Incomes and the Intensification of the Differentiation Between Classes

Successive rises in price levels to increase the real incomes of a small group in the community represents the category of producers and capitalists, considering the enormous profits achieved by the increase in demand for their products and changes in prices. At the same time, the second category, which represents the majority of society members, including fixed-income and pensioners, bondholders, savings deposit holders and other individuals whose income is low due to high inflation, is suffering.

As a result, inflation increases the wealth of the first category as a result of higher returns, while the second category suffers as a result of the decline in real cash income, which leads to the intensification of differentiation between the classes of society. The profits of producers are sensitive to inflationary pressures, as their profits increase as a result of higher selling prices of their products, while inflation severely degrades incomes of fixed income earners because of the increase in price levels not matched by an increase in the same percentage of income levels (Al-Jalal, 2006, p. 35).

2. The Prevalence of Bribery and Administrative Corruption

The rise in domestic price levels lead to a decrease in the purchasing power of money, and the inability of the wage system to increase the same proportion of the increase in the general level of prices, causing the emergence of many negative phenomena in society, including the spread of bribery.

While, fixed income earners often resort to this means of counteracting the decline in their real income levels to compensate for the decline in their real cash incomes by doing some work, providing appropriate services for money or doing some illegal get paid (Al-Jalal, 2006, p. 35).

Figure 1.1. Economic and Social Effects of Inflation

- **Economic and Social Effects of Inflation**
- Adversely affect the limited income
- Low-interest rate
- Low savings and high consumption
- Limited investment
- High unemployment rate
- The high rate of poverty
- The proliferation of social problems
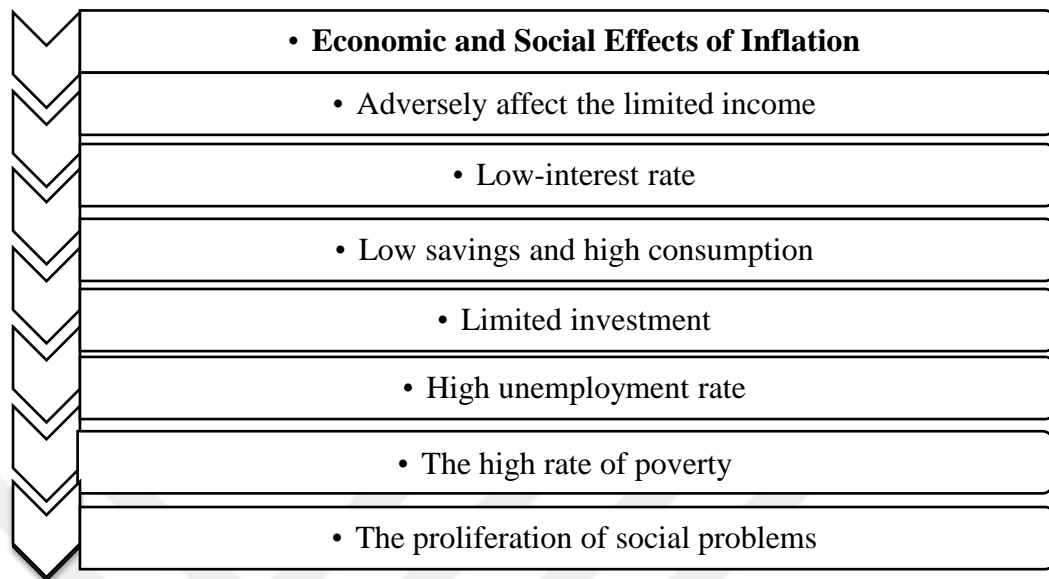
Source: Prepared by the researcher based on the above literature

1.2.5. Inflation Action Methods

According to Abdullah (2015, p. 14) governments exercise these powers through monetary, fiscal or price policies.

First, Monetary Policy: Governments can influence the overall supply of money through one or more of the following:

- Reduce the State budget deficit financing through the critical issue.
- Raising interest rates on deposits in banks.
- Raising the price of re-discounting the securities.
- Entry of the Central Bank into the stock market.
- Raising the legal reserve ratio in commercial banks.

Second, Fiscal Policy: So, through this policy, the state can reduce the total supply of money and trade with one or more of the following means:

- The imposition of additional taxes or raise the proportion of taxes based on profits, wages, and salaries.
- Focus on progressive taxes to absorb the upper segments of incomes.
- Reduction of government spending, including subsidies and subsidies.

Finally, government authorities can intervene directly in product price policy and monitor its implementation as well as higher and minor wages and salaries and control the levels of spending and wages and prices.

1.2.6. Examples of Inflation Cases

1. Inflation in Germany

As (Al-Bakri, 2011, p. 120) argues Germany's loss in the WWI resulted in huge compensations imposed by the victorious countries of Germany, besides, the collapse of the German economy. So, this was mainly due to the rapid deterioration in the value of the German currency and its purchasing power, as well as the loss of public confidence in the prices of goods and services also, in turn, made the government issue more brands.

Moreover, the monetary reform sought by Germany was, in fact, a monetary reform aimed at establishing a reasonable relationship between the monetary mass and the commodities offered, i.e., between the amount of cash and quantity of goods whose gap was widening. At that time, the currency became a currency until it reached the amount of currency (60) trillion mark in 1923 along with 30 trillion marks posed as Treasury-deductible by the German central bank that is leading to a return to the natural economy to the barter system.

2. Inflation in Iraq

The Iraqi economy is witnessing severe inflation unprecedented. So, by the overall economic studies related to this aspect as well as the concrete facts on the ground, the real value of money in the Iraqi market has fallen significantly.

Besides, no significant quantities are enough to buy a pure commodity or service, the increase in the prices of goods and services in Iraq to estimate their rates of operation is beset by difficulties, because of the continuous increase in prices. Therefore, the inflation rates announced in Iraq are conflicting between what is announced by the Central Bureau of Statistics and Information Technology (CBSIT) in the Ministry of Planning and the Central Bank of Iraq and what it touches ordinary people on the ground (Al-Ward, 2017).

Consequently, after the end of the Iran-Iraq war in 1988, the consumer price index rising throughout the duration of (112.8%) in 1971 (397.3%) in 1988, registered at an annual rate of 11.3% and thus increased money supply (625.6) million dinars in 1975 to about (2650.2) million and average towards total (29%). Then, we conclude from the analysis and monetary confiscation view components to Iraq's case before the siege indicates that crude oil export process became equal to printing paper money. Where there was a picture of the automatic link between current expenditure and investment operations, national oil origin money creation, the resultant expansive effect on money supply in general and particularly in currency trading. Money supply continued to rise from 5 and 3645.5 million Iraqi dinars in 1981 to 8316.7 million dinars in 1987 to average annual growth (18%).

Nevertheless, after 1990, as a result of the economic embargo and its surrounding conditions. The surplus demand for commodity supply increased at a rate of 115.6%. Of the money supply increased from (24670) million in 1991 to (298189) million in 2003 with a compound annual growth rate of (44.3%) while GDP did not increase at constant prices at a rate of (10.8%). So, this means that the inflationary pressure during the period (1991-2003) was 33.5% which is indeed a significant percentage (Al-Ward, 2017).

3. Inflation in Zimbabwe

On 18 April 1980, the Republic of Zimbabwe achieved independently from the former British colony of South Rhodesia. So, the Rhodesian dollar was replaced by the Zimbabwe dollar in nominal terms.

When they gained independence, the Zimbabwean dollar was more valuable than the US dollar at official exchange rates, but this value did not reflect reality, and its value on the black market was lower. In its early years, Zimbabwe experienced substantial growth and development. Hence, wheat production in non-drought years was relatively higher than in the past. The tobacco industry also flourished. The country's economic indicators were strong (Sikwila, 2013, p. 6).

However, after inflation steadied in the first five months of 2005 by about 130% in June rose to 164% and 45% of the parallel market premium in January 2005 to 100%

with early July by easing monetary policy tightening and reduced availability of cash auction system and desecrations in the receipt requirements.

So, it was not enough reserves to cover 0.1 months, as was the informal sector 40% of the workforce it was targeted at urban areas and is a primary source for most Zimbabweans, displacement of 700, 000 people and indirectly affected 2.4 million others. Which impact negatively on GDP and increasing inflation in August to 1373% after June 394%, and raising the legal reserve hindered the ability of the financial sector to support growth, and at the beginning of 2006 stayed negative real interest rates. Besides, the parallel exchange rate reached 135 thousand per dollar, and in September the Zimbabwe Bank Prints Z \$20.5 trillion to buy foreign currency to pay debts amounting to \$90 million, and in June was printed 60 trillion to finance salary increases-300% for police officers and soldiers and 200% for civil servants. With the threshold of hyperinflation surging, the tax base eroded and the government turned to the banking system for funding. With the threshold of hyperinflation eroded tax base, the Government turned to the banking system in search of financing.

Accordingly, to transfer the surplus of banks to the treasury bills at a rate of 200% for two years or to be deposited with the Bank of Zimbabwe for 30 days at a rate of 0%, and it may exceed inflation for 1000% for the first time was announced on July 1, 2006. The parallel price jumped from 500 thousand to 650 thousand after the announcement. The money supply rose from 570.7% in January 2006 to 862.6% in July, and the second launched in the second half of 2006. Money supply in December reached 1416.5% March 2007 Inflation reached 2200% (Sikwila, 2013, p. 6).

Therefore, President Mugabe ordered the printing of one trillion Zimbabwe dollars to meet the increase of 600% for employees and 900% of the armed forces. The control of prices and control and the freezing of wages tightened. Production of manufacturing decreased by more than 50%. The inflation rate dropped to 6592.8% in August from 7634.8 in July. However, the parallel market returned to prosperity, and in November 2007 the money supply reached 58 trillion, and the country hit the shortage of liquidity and allowed individuals and companies to withdraw the equivalent of 4 and 14 dollars, respectively. The country ranked last in the investment climate according to the Global Competitiveness Report.

FDI inflows were $160 million in 2006-2008, down to $15 million in the first quarter of 2009 as capital flight inflated. Consequently, the Zimbabwe reserve bank blamed economic sanctions imposed by the United States, the International Monetary Fund (IMF), and the European Union. Then blamed them for hyperinflation (Sikwila, 2013, p. 6)

4. Inflation in Turkey

After the failure of disinflationary policies of the 1980's and 1990's based on nominal securing, monetary targeting or exchange rate is securing; the inflation targeting has since become the dominant framework of monetary policy (Gürbüz, Jobert and Tuncer (2008, pp. 127-146). Thus, the Turkish economy has practiced reasonably high inflation coupled with unsuccessful disinflation programs during the past 30 years. Although yearly inflation was over 100% in individual years, it never reached hyperinflationary levels but increased in a stepwise manner over time: the average annual inflation rate was 20% in the 1970s, 35–40% in the early 1980s, 60–65% in the late 1980s and early 1990s, and around 80% before the government launched yet another disinflationary program in 1998. Kibritcioglu, Rittenber, and Selqu (2002).

In July 1998, Turkey began to implement a disinflation program under the direction of an IMF Staff-Monitored Program (SMF). The program achieved some improvements regarding the inflation rate and monetary imbalances, but it could not discharge the pressures on the interest rates. Gürbüz, Jobert, and Tuncer (2008, pp. 127-146). However, during the first half of the year 2000, the economy enjoyed a rapid decline in real interest rates and an increase in the real GDP growth rate. Therefore, the monthly inflation rate also gave the impression that it was converging to the monthly percent change in the exchange rates. Though, given the record of the country in implementing IMF programs, there was increasing concern among market participants about the government's willingness to carry out the program.

The daily biased average overnight interest rates speeded up to 2000% on a simple annual base on February 20, and 4000% on the following day. The government replied by reducing its exchange-rate controls early on February 22, 2001. Hence, the Turkish lira fell 40% in value against the US dollar. The change in the exchange rate between February 19 and May 30, 2001, is around 65%. Accordingly, monthly inflation

in March (calculated from the wholesale price index) was 10%, followed by monthly inflation of 14% in April, Kibritcioglu, Rittenber and Selqu (2002).

In January 2002, Turkey approved implicit inflation targeting as monetary policy. The short-term interest rate of the Central Bank of the Republic of Turkey would serve as an instrument and should affect the secondary market interest rate. The world financial crisis in 2008, has fraught the continuation of a one-digit inflation rate in Turkey. Hence, the Inflation rose to 10.1 percent in 2008, then returned to drop to number one in 2009 and 2010. After an annual inflation rate of 6.4% in 2010, causing a sudden demand shock on unprocessed foods, oil, and gold – which had no control over monetary policies – inflation reached 10.45% in 2011. However, inflation fell to 6.16 percent in 2012, the lowest level since 1968. Anak Suther, who is an expert in Turkey, during speaking for Bloomberg, said that the index excludes volatile goods such as food and energy, the highest level in more than 13 years, at 11.8%.

Consequently, the continued high inflation in Turkey limited the ability of the central bank to cut interest rates. Suther commented by saying; For a long time, there have been expectations that the central bank will reduce the cost of its loans to banks with expectations of a slowdown in inflation next year considering the level of core inflation, these expectations have become impossible.

1.3. FOREIGN EXCHANGE RATES

This section aims to illustrate the general concept of the exchange market, the exchange rate, its types and the factors affecting it, as well as the concept of the equilibrium exchange rate, which achieved through the supply and demand of the foreign exchange rate.

1.3.1. The Concept of Foreign Exchange Market

The foreign exchange market is known as the place where the offers and requests on foreign currencies. This place is not defined, while, it is a network that connects the exchange agents to different banks in the world using the telephone, telex, and electronic networks. Also, the real gathering of the exchange agents within a hall dedicated to exchange transactions. Besides, the goal of the exchange market to

facilitate international transactions by determining the exchange rates of various currencies, and to achieve this, must be these currencies to be transferable (Qudai, 2003, p. 108).

1.3.2. Elements of the Exchange Market

Central Bank, so, this bank intervenes to conduct open market operations in foreign currencies, on the other hand, to implement the orders of the government as a state bank. In regards to transactions in currency, intervened to protect the local currency and control center exchange rate fluctuations because it is responsible for currency exchange rate and exchange operations (Benyani, 2011, p. 37).

Commercial banks and financial institutions, enter the market to execute their customers' orders and for their account. The exchange agents are working with these banks to collect the sale orders or the currencies of their customers. They carry out an initial clearing at the bank level to determine the net balance or sale of each currency.

Accordingly, the surplus market of the offer or demand of currency are available on the automatic media to include the latest rates applied between banks in various local squares, and the exchange agents can get the best prices and the gains of their banks, and banks open accounts with foreign correspondents. Where the local bank opens an account with a foreign bank, which is considered a correspondent and registers its balance of hard currency and allows the reporter to request the local bank to carry out the disbursements he wants. The local bank also opens an account for the foreign bank which is its correspondent.

However, Exchange brokers, they are intermediaries whose job is to collect purchase orders or sell currency for the benefit of several banks and other dealers. They ensure communication between the banks and provide information on the pricing applied to the sale and purchase without disclosing the names of these institutions selling or buying these currencies. So, In exchange for their work as a brokerage commission. (Benyani, 2011, p. 37)

1.3.3. Types of Foreign Market

According to Bukhari (2010, p. 12) Exchange market can be divided into two parts:

First, primary exchange market, this is a market where the exchange rate dealt with where the delivery date is two days at the most from the date of the sale or purchase of foreign currency. Besides, is characterized by the intensity of operations and continuity of activity. The spot rate is determined freely by the mechanism of supply and demand for currencies (Marghit, 2012, p. 9). The exchange market is balanced through some of the operations carried out by the participants (Marghit, 2012, p. 9):

1. Arbitrage, this process involves buying currencies in low-priced markets and reselling them in high-priced markets to obtain a profit within a few minutes.
2. Clearing, the exporters deal with the banks resident in their countries where the latter sell and buy between them or exchange brokers, in this case, the bank is a clearing between the amounts of credit and amounts receivable each according to the currency that the source wants to obtain (Al-Ainan, 2006, p. 9).

Second, exchange market forward exchange operations it is buying or selling currencies prevailing price a second contract, delivery, and payment at a later date is known as the liquidation date. From this definition, it appears that the difference between spot and forward transactions lies in the date of delivery and payment. In the first, it is instantaneous or at most two days, while in the second it is postponed to a later time in the future (Marghit, 2012, p. 21).

1.3.4. The Concept of the Exchange Rate

The foreign exchange rate is the unit price of a foreign currency denominated in units of the local currency, also, is the rate at which one currency is exchanged in another currency in the foreign exchange market (Sharafi, 2015, p. 23).

While, Mousa, Al-Hunaiti, Zarkan and Saadeh (2011, p. 124) defined foreign exchange rate, as the unit price of foreign exchange expressed in a unit or units of the national currency.

The foreign exchange rate is the number of units of the foreign currency that is equal to one unit of the national currency, or the number of national monetary units equal to one unit of foreign currency (Al- Husri, 2010, p. 90). Nevertheless, according to (Boukhari, 2010, p. 120) the exchange rate is the price of a currency in another currency or the exchange rate of two currencies, one of which is considered a commodity and the other currency is considered a price. While, (Abdel Salam, 2010, p. 120) defined the foreign exchange rate as a price of one currency compared to the exchange rate of another currency. In other words, how many dinars of other countries national currency should waive in exchange for one dollar.

Consequently, from previous definitions of foreign exchange rate the researcher observed that there is an essential similarity between them regarding:

- The foreign exchange rate is the unit price of the foreign currency denominated in units of the national currency.
- Exchange of one currency in another currency in the foreign exchange market.
- Some foreign exchange units equal to one unit of national currency.
- The price of a currency in another currency.
- The price of one currency compared to the exchange rate of another currency.

The researcher defined exchange rate as a ratio or the price of a currency exchange in another currency, it is the number of units of foreign currency that can obtain against a unit of the national currency. Likewise, the exchange rate is the relative price of a currency in comparison to another currency, so, one of the two currencies commodity while the other is the price of cash for them.

1.3.5. Determinants Factors of Foreign Exchange Rate

The foreign currency exchange rate is determined, either by the interaction of supply and demand market mechanism, as well as the prices of other goods and services or is determined administratively by the central bank that determines the amount of its change upwards or downwards. The supply and demand forces will be focused on how to determine the exchange rate through the following (Ali, 2008, p. 30):

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1.3.5.1. Demand for Foreign Exchange

Importers determine the demand for foreign exchange in the exchange market to obtain foreign currencies to import goods from other countries. So, any obligation by the state to pay abroad will increase the demand for foreign exchange, either reducing local balances of foreign exchange placed in foreign banks or by increasing foreign deposits placed in local banks (Al-Tai, 1999, p. 194).

Therefore, (Snider, 1967, p. 294) argues that the demand of foreign exchange is a derivative demand in most cases because it not bought as soon as it is held only for speculative purposes. Usually, the relationship between the exchange rate and the demand is inverse. The exchange rate increases the number of local currency units paid for one unit of foreign currency, as revealed in figure 1.2.

Figure 1.2. Demand for Foreign Exchange
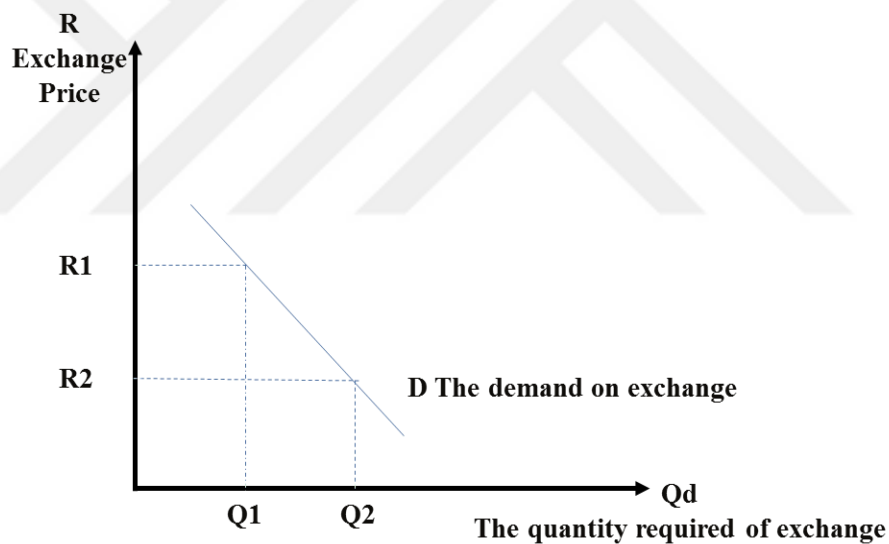
Source: (Snider, 1967, p. 292)

1.3.5.2 Foreign Exchange Supply

The foreign exchange supply exporters to obtain foreign currency to meet export goods abroad, and that any obligation paid by foreigners to the local merchants will lead to increase the supply of foreign exchange (Snider, 1967, p. 294). Hence, increasing local stocks in foreign banks or foreign deposits lower deposited in local banks, foreign

exchange supply is a series of exchange rates along with quantities of sellers, accordingly, the relationship between the exchange rate and supply is a direct correlation, high exchange rate means increasing the number of units of local currency, any quantity of foreign exchange, as shown in figure 1.3.

Figure 1.3. Foreign Exchange Supply

Source: (Snider, 1967, p. 294).
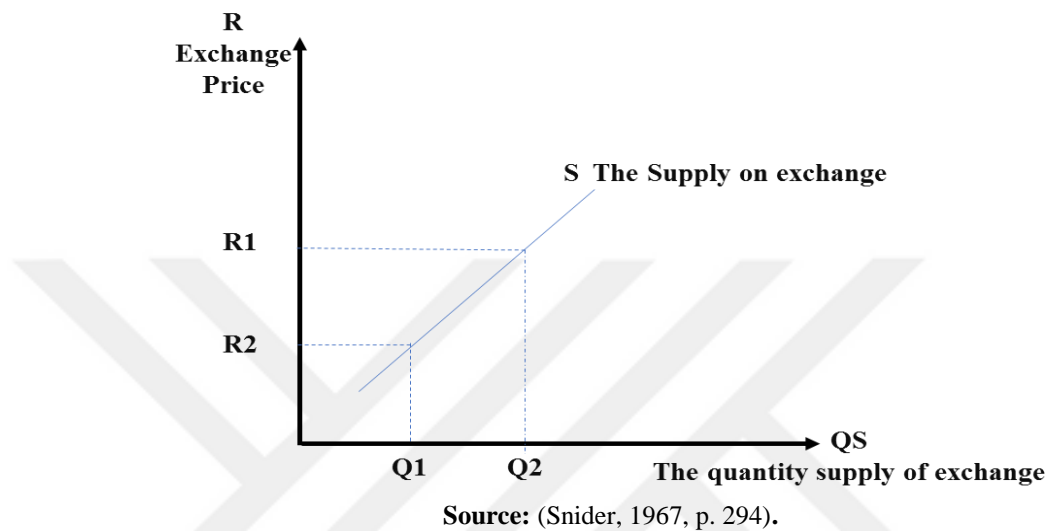
1.3.5.2. The Equilibrium Exchange Rate

The equilibrium exchange rate is the price at which the supply of foreign exchange is equal to the demand for it and the elimination of any surplus or deficit (Sadq, 1997, p. 23). This equilibrium occurs at the point where the foreign exchange supply and demand curve intersects. And found in point (A) (R*) and the quantity of the equilibrium (The equilibrium price determines Q*) Through the interaction of supply and demand, if there is an imbalance between supply and demand on foreign exchange, the exchange rate will change or increase in accordance with the change in supply and demand. However, the cross-curve of supply determines the market, demand (Gwartini and Astrup (1988, p. 549) as a Figure 1.4. Illustrate this.

Figure 1.4. The Equilibrium Exchange Rate
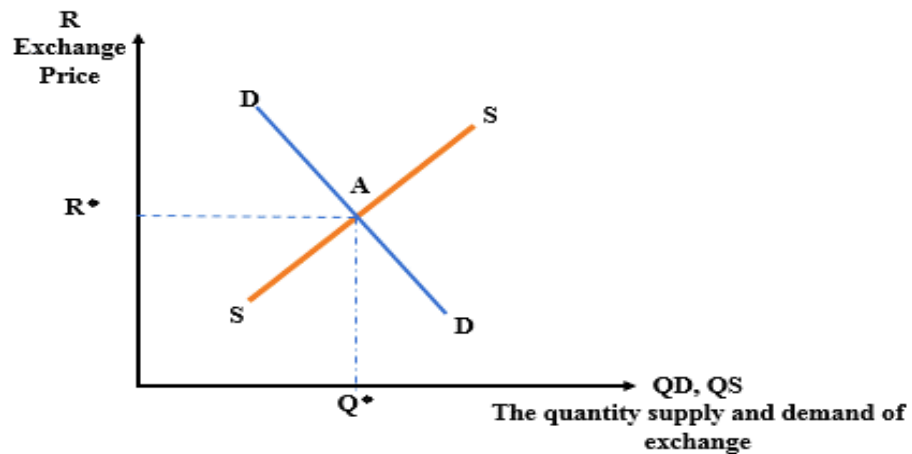
Source: James and Werigard (1988, p. 549).

1.3.5.3. Other Influential Factors in Foreign Exchange Rates

Several factors affect foreign exchange rates as follows:

1. Interest Rates

The interest rate affects the exchange rate through attracting foreign capital when real interest rates higher than nominal interest rates would lead to attracting foreign investment into the country, hence, increase the demand for the local currency and its purchasing power against foreign currencies (Smaail, 2008, p. 32).

2. Discount Price

When the discount rates in the country rise, it will lead to a drop in the local exchange rate against other foreign currencies. Therefore it leads to the flight of national and foreign capital out of the country (Smaail, 2008, p. 32).

3. Money Supply

The increase in the money supply leads to substantial changes in the value of the currency and its exchange rates. However, an increase in the supply of money leads to higher domestic prices, which weakens the country's competitiveness in domestic

commodities in the international market. So, this increases the demand for foreign goods and services that become less expensive than goods and services. Therefore, increasing the demand for them, which in turn affects the exchange rate of the local currency that is falling. Thus, it should note that it is not wise to link decisions on currency prices money supply without specifying the general direction of this supply. Therefore, must provide information on the concepts of the presentation of cash and determine the impact on the exchange rate of foreign currency is the primary determinant of the exchange rate (Ali, 2008, p. 43).

4. Balance of Payments

When the balance of payments is positive (surplus), it means the appreciation of the local currency and the increase in demand in foreign markets, which leads to an improvement in the exchange rate against foreign currencies. The balance and imbalance in the balance of payments among the most critical factors influencing the exchange rate is a link that reflects the country's relationship with the outside world. However, talking is not focus on the balance and accounting imbalance because this will be due to the use of the method of double-entry in the recording of the balance of payments data, but is centered around the balance and economic imbalance in it.

Consequently, it can be said that there an imbalance in the balance of payments in the event of a discrepancy between the country's receipts and payments with the outside world during a specific period, usually one-year estimates (Moussa, 1989, p. 138).

5. Trade Balance

There is a close relationship between trade balance and the exchange rate of the currency of the country when the value of exports relative to imports will leave the currency to rise as a result of increased foreign demand. Consequently, become the country's commodity prices are high for foreigners leading to lower external demand. Thus this will cause the imbalance in the trade balance. In this case, to return to the state of equilibrium, it is necessary to encourage imports from abroad. If the exchange rate is set too low, it will lead to an expansion of exports in exchange for a decrease in imports; there is an imbalance Trade balance, often resulting from these imbalances

inflationary pressures contribute to the continuing imbalance in the balance (Smaail, 2008, p. 41).

6. The General Budget and Fiscal Policy

The general budget of the state includes two aspects, the revenue and the expenditure side, which includes wages, capital transfers, and the public revenue, which relies on various taxes and fees and capital revenues such as local loans from banks or public loans.

The deficit or surplus of the general budget is directly related to changes in the exchange rate, and perhaps that relationship seems more evident whenever the state is pursuing liberal policies in the field of foreign trade. The status of the state budget reflects the status of the balance of trade, as the deficit in the balance of trade balance of payments is a direct result of public deficit and that deficit is leading automatically to external deficits. However, fiscal policy in the state tend to influence the exchange rate, fiscal policy restricted budget surplus because it reduces aggregate demand, which leads to reduced economic activity leading to lower imports and increased exports and the current account surplus, all of this leads to raising the value of the price (Khader, 2012, p. 52).

7. The Political and Economic Turmoil

The lack of political and economic stability in the country will reduce the confidence in the exchange rate of the local currency compared to foreign currencies because it leads to fluctuations in the exchange rate of the local currency and low purchasing power towards foreign currencies (Smaail, 2008, p. 33).

8. The War

In times of war, the state's demand for military and civilian goods and services, which affect the exchange rate under these circumstances, is increased. The government apparatus controls the resources of foreign exchange and restricts its use to serve the purposes of war, which negatively affects the purchasing power of the local currency in internal and external financial markets. However, when experiencing the state of war,

the purchasing power of the local currency price drop down towards foreign currencies (Smaail, 2008, p. 33).

1.3.6. Types of Foreign Exchange Rates

Foreign exchange rates can divide into several types

1. Nominal Exchange Rate

The nominal exchange rate of a currency is set for the currency depending on the demand and supply in the foreign exchange market at a given moment. While, changes depending on the change in demand and supply, and regarding the exchange system adopted in the country, the higher the price of a currency affects foreign currencies. The nominal exchange rate divided into formal and nominal exchange rate and nominal exchange rate (Babeker, 2014, p. 15):

2. Real Exchange Rate

The nominal exchange rate defines the exchange rate of one currency regarding another currency. So, the real exchange rate will equal the nominal exchange rate adjusted according to the differences between the relative levels of domestic prices and the relative rates of foreign exchange. While, the real exchange rate define as the number of units of commodities foreign exchange needed to buy one unit of domestic goods, meaning that the real exchange rate is a real concept measures the relative prices of two commodities. The price even if we assumed that the general price level in a country is (P) and a foreign country (P*) in the foreign country and we assume that the nominal exchange rate (E), the real exchange rate know as follows (Khader, 2012, p. 20):

$$e = \frac{EP*}{P}$$

Where "e" reflects international prices regarding domestic prices.

3. Actual Exchange Rate

The actual exchange rate is the average of several bilateral exchange rates, such as the average price of a currency for a group or basket of foreign currencies. It indicates the evolution of currency for the currency basket. The currencies of countries that are not significant in international trade give a low weight, while the currencies of important countries are given international trade and often uses a basket of foreign currencies from 20 to 25 foreign currencies.

Consequently, the actual exchange rate determined by two factors: the number of foreign currencies selected in the currency basket and the relative weights given to each foreign transaction. Amari and Bonasseri (2016, p. 20).

4. Real Effective Exchange Rate

The fact that the actual exchange rate is a nominal price because it reflects an average of several bilateral exchange rates. For this indicator to be relevant to the country's competitiveness abroad, this nominal rate must be corrected by removing the effect of relative price changes (Ghalebi, 2011, p. 32). We conclude from this definition that the real effective exchange rate measures how a country's exchange rate changes the direction of its trading partners relative to a given base period, while nominal price movements do not indicate any change in the competitiveness of the country's export commodities.

For example, the nominal exchange rate of a given country has remained unchanged, but the level of prices in that country has increased in the direction of trading partners for a given base period. However, this means that the country's export goods will become more expensive relative to the export prices of its trading partners and become a currency the country overvalued, putting pressure on the country's trade balance (Salma, 2015, p. 11).

5. Adjusted Exchange Rate

It is the price that relates to the reality of the balance of payments which are relevant to exports-imports, the following formula can be adapted to extract (Hussein, 2008, p. 37):

$$AER = F \left(1 + \frac{(M-X)}{X}\right)$$

As:

AER: an exchange rate adjusted.

F: Current export price.

M: Value of exports calculated in local currency.

X: The value of local currency denominated deposits.

We conclude that the exchange rate has many types that vary according to the importance and variables that govern it.

6. Cross Exchange Rate

The transactions and transfers are linked with two prices, the price of the sale and purchase for each currency with the corresponding currencies. However, the exchange rates linked to each other according to the concept of the balanced triangle, which is known as the balanced triangle of buying and selling one currency against another and ending with the return of the original currency to achieve the highest profits. (Hussein, 2008, p. 37)

Besides, the existence of this triangle often makes some currency rates achieve certain surpluses (assuming the cost of transactions neglected), on the assumption that there are only four currencies, the dollar, the euro, the Turkish lira and the Iraqi dinar, each currency will have three exchange rates with the other currencies. So these four currencies put us in front of twelve exchange rate, and the number of these prices is subject to the rule:

n (n-1) where the cross-price matrix can set as follows:

Where it can read from the matrix that one dollar traded by 1260 dinars in the same matrix, one dinar sold at 0.008 dollars and speculators often convert their currencies to other currencies to make profits (Hussein, 2008, p. 37).

Whereas:

R1 = New exchange rate.

R0 = The old exchange rate.

N1 = The index of changes in domestic prices.

N2 = The index of changes in world prices.

However, among the criticisms of this theory, we find the follows: (Amari and Bonasseri (2016, p. 36)

a) The idea of indices is not free of theoretical and scientific difficulties, and it is difficult to establish an acceptable basis for composition indices.

b) This theory cannot calculate an equivalence limit by dividing price levels in one country at levels prices in the other country due to the presence of some goods do not fall within the scope of the foreign exchange into account when installation records.

c) Purchasing power parity theory does not give importance to interest, dividends, and capital transfers except regarding tight.

d) Assume that the change in the exchange rate is due only to the change in purchasing power of money, but the change in consumer perceptions, appearance, and alternative commodities has no considerate in determining the exchange rate.

e) This theory applies to the long-run rather than the short term.

f) This theory considers that currencies are only required to purchase goods and services, but that the desire to obtain currency is sometimes for other purposes such as tourism.

2. The Balance of Payments Theory in Determining the Exchange Rate

The basis of this theory is the changes in the balances of payments, if the state's balance of payments balance is positive, meaning an increase in the value of exports from imports. While, this implies increased demand for national currency leading to a high external value of the currency, if the balance of the balance payment is negative, meaning the value of imports exceeding the value of exports.

So, this indicates an increase in national currency presented, leading to low external value, if achieved balance of payments equilibrium, this shows a balance in local currency, display, and demand which leads to steady state value for local currency (Salma, 2015, p. 39).

However, this hypothesis validated during the WWII. The value of the Deutsche mark was not affected, despite the large increase in the amount of money and its turnover, as well as the high level of prices, due to the stability of trade balance of Germany, which was reflected in the balance of payments equilibrium (Smaail, 2008, p. 44). So, this theory can formulate as follows:

$$F1 = F2 \, [1 + (M - X) / X]$$

Whereas:

F1: Rate of exchange (balance of payments).

F2: Exchange rate.

M: Imported in local currency.

X: Exports calculated in local currency.

3. Monetary Theory in the Determination of Exchange Rates

This theory is based on monetary supply by the monetary authorities and demand by other countries. If the total supply of money is equal to the total demand for money, the exchange rate will be balanced. On the assumption that there are two states: the first country has increased its monetary authority by 10%, and the other has not changed its monetary policy, i.e., the supply of cash and demand fixed. In this case, will be expected to increase the level of prices by 10% in the first country, and this affects the exchange rate of the currency against the currency of the other country, where the value will decrease by 10%.

Nevertheless, this increase in the money supply in the first state will lead to lower interest rates, and this is what encourages the entry of financial investments from another state, where the decline in the value of its currency also leads to lower prices for exports versus prices. Hence, the second state exports and other states demand from abroad for their exports, which increase demand for local currency to the first state by

foreigners. While rising levels of prices of domestic and imported goods and services within it, due to the low purchasing power of exchange rate and this, in turn, reduce their demand on imports, if the monetary authority in the first State to reduce the view (Hassani, 1999, p. 167).

This theory based on the following relationships:

$M_d = KPY$ The demand function for money in the local economy.

$M^*_d = K^*P^*Y^*$ Demand for money in the foreign economy

$L^* = M^*$, $L = M_s$ Balance in the money market in the two countries

$P = E \times P^*$ The law of one price or purchasing power parity

Whereas:

M_d: Demand for Money.

M_s: Cash supply

E: Foreign Exchange Rate.

Y: Income

K: Cash preference ratio

$(*)$: Indicates the variable in the foreign country

By substituting Equations 2,1 in Equation 4 and rearranging them,

$$E = \frac{P}{P^*} = \left(\frac{M_d}{KY}\right)/\left(\frac{M^*_d}{K^*Y^*}\right)$$

Assuming that K fixed

$$E = \left(\frac{M_d}{M^*_d}\right)\left(\frac{Y}{Y^*}\right)$$

However, among the criticisms of this theory we find as follows:

a) The monetary method has failed to clarify movements in exchange rates.

b) The exaggerated emphasis on the role of money and neglected the role of trade as an essential factor in determining the exchange rate, especially in the long term.

c) Assumed that domestic and foreign financial assets such as permissions are a complete alternative and this is unacceptable.

d) Price elasticity for the flexible price monetary model and full replacement hypothesis between domestic and foreign goods and assets.

e) This has opened the floodgates for the appearance of another model to determine the exchange rate significantly eased these restrictions.

f) Taking into consideration the wealth as one of the determinants of demand for money function which neglected the Keynesian paradigm and monetary models.

g) Emphasizes that the supply and demand factors determine the exchange rate in the market asset in the near term only and that the exchange rate is the primary determinant of the current account and the price level. (Hassani, 1999, p. 167).

4. Portfolio Balance Theory to Determine the Exchange Rate

The portfolio balance model, which includes the contributions of Poster, Isard Doole, and Kouri (1974) that employs the idea underlying the monetary exchange rate models of demand and supply of local currency against foreign currency supply and demand. Moreover, assumed the portfolio model foreign currency and financial assets individual foreign bonds, which can replace in the national currency and domestic financial assets, a replacement but incomplete between domestic and foreign financial asset.

In this way, individuals have in their portfolio different assets in different currencies, and the demand for currencies compounded, and more complicated than that adopted a cash method. Where you enter another selector to an exchange rate caused by full-replacement between domestic and foreign assets, and that exchange rate changes are affecting her wealth of owners of financial assets (Khader, 2012, p. 41).

The model contains the following equations.

1. Budget constraint $\qquad$ $W = M + B + E.F$

2. Equation of equilibrium in the national money market $\quad M = f(i,i^*,y,p)\ W$

3. Equation of balance in the domestic securities market $\quad B = b(i,i^*,y,p)$

4. Equation of balance in the foreign securities market $\quad F = h(i,i^*,y,p)\ W$

Whereas:

W Represents wealth.

M   Local Money Market.

B   Domestic financial assets.

E.F   Foreign financial assets.

i   Domestic interest rate.

I*   Foreign interest rate.

y   Income.

p   Price level.

This method assumes that the increase in the money supply in the local state leads to a decrease in the local interest rate. This decrease moves the demand for domestic bonds to foreign currency and foreign bonds.

The move to foreign financial assets reduces the national exchange rate, which stimulates local state exports and reduces imports. For a surplus in the balance of trade and a rise in the value of the local currency, which corrects the deterioration in the value of the local currency. (Khader, 2012, p. 41)

1.3.8. Foreign Exchange Systems

1. Fixed Exchange System

This system is also called the gold exchange rate system. While, fixed exchange rates are divided into two types (Abed, 2001, p. 321):

a) Fixed Exchange Rate System Under the Gold Base (1850-1914)

Where the dominant system during that period was the gold base and adopted most of the industrialized countries in that period, this rule by 1850, and that rule works through linking or equating the value of the currency with the value of a particular weight of gold. So, the currency can exchange for gold or the reverse at a fixed official price. It evident that if there are two currencies or more going on the base of gold in the sense that each currency equivalent to a specific weight of gold, the exchange rate determined automatically and the exchange rate between the two currencies is the ratio between the weight of gold in both currencies.

If the net weight of the US dollar = 1,50467 grams of the net weight of the French franc = 0,29032 grams of gold, the exchange rate between the two currencies

determined by dividing the net metal weight of both currencies, and the dollar $= \frac{1.50467}{0.29032}$ 5.181 French francs (Al-Hajjar, 2002, p. 105).

b) Fixed Exchange Rate Regime Under the Mandatory Paper Rule (1914 - 1945)

In that period, most countries emerged from the WWI, the imbalance in the balance of payments as a result of the significant expenditure on the war and the disruption of production in those countries, expansion of money creation, and the high value of some currencies and other depreciation.

Nevertheless, this period was characterized by fluctuations in the exchange rate of the pound sterling against the U.S. dollar as a result of reflection that deflationary policy adopted in the 1920s on price, wage and unemployment levels, prompting Britain to leave the gold in 1931 and 1933 and France 1936, (Mahruf, 2005, p. 293) besides governments were forced to stop the paper currency terms to gold, therefore became the paper money has the power of libel derived from the state that issued (Al-Hajjar, 2002, p. 105).

Then the war led to the inflation of the value of those paper currencies, where they valued these currencies more than their real value and purchasing power before the war, that the currency does not reflect the purchasing power or even its equilibrium exchange rate, and the market exchange rate exceeded the official price between the dollar. Moreover, the pound, Britain to lower domestic prices to restore the old trading price between 1925-1919, and by the end of 1928 most countries adopted the official value of gold (Awdhallah, 2003, p. 134).

It can say that the system which prevailed after the first world war features from its predecessor in that it is more flexible with expanded international economic transactions. Besides, regarded as a transition to switch from gold to a system that supports the role of the US dollar as the base for international liquidity, increased interest in how to manage the policies of the world central banks. To keep reserves of gold and banknotes convertible into gold and to control the global monetary system by the increasing role of the US dollar as a means of international payments.

2. The Regulated Exchange Rate System (Bretton Woods System)

In 1941, Keynes, the adviser to the British Treasury, and Mr. White the US Treasury adviser prepared an independent plan to build a new global monetary system after WWII. That after a series of discussions on their common points found plans concentrated on (Khader, 2012, p. 28):

a) Exclude the system of free exchange rates.

b) Not absolute dependence on a gold base.

c) Relative freedom for the states parties to the convention to exercise limited control on capital transfers for short periods.

Thus, as a result of what happened in the 1930s of violent fluctuations affecting exchange rates, and the states of cuts to their exchange rates to promote exports and reduce imports, regardless the imbalances in international economic relations and the restrictions on foreign trade, parties to bilateral trade, because of foreign exchange controls. Which led to the instability of international economic relations, both America and Britain saw at the beginning of 1943 that they were building a new monetary system that would be the basis for post-war monetary relations.

However, based on the above, the Bretton Woods conference was held in May 1944, when 44 states met under the auspices of the United Nations in New Hampshire. The conference included the following topics: (Khader, 2012, p. 28)

a) Guarantee the freedom of transfer between different international currencies.

b) Achieves the stability of the balance of payments.

c) The establishment of the system of exchange rates to prevent violent fluctuations between them.

d) Study the side of international reserves to provide international liquidity.

e) International management of the new international monetary system.

Nevertheless, the Bretton Woods system collapsed when US President Nixon officially announced broke the dollar-gold relationship in 1971. So, this was due to the worsening US trade deficit, the overvalued of the dollar, the accumulation of government budget deficits as a result of the Vietnam War, and growing investment outside the United States.

3. The Free Exchange Rate System

The exchange rate that defines as the naturally strong interaction of demand and supply for foreign exchange or local in the absence of government intervention the market volatility continues, and the forces influencing these fluctuations maintain their effectiveness through financial mechanisms and therefore no change in government cash balances.

So, under the mandatory paper money rule, called clean float, the system has been in place for non-interference by the state; in fact, it exists only rarely. The system faced some criticism, including the possibility that governments could manipulate exchange rates in a way that would serve their country at the expense of other countries. The clean float did not find any importance in the practical aspect as they did not deviate from any system of exchange rates of the intervention of the monetary authority, especially in light of monetary crises (Al-Freiji, 2006, p. 10).

4. Managed Flexibility System

This system based on giving a great deal of flexibility to the exchange rates. At the same time, the central expenses in the foreign exchange markets enter into the sale and purchase of foreign currencies to avoid sharp fluctuations in foreign values and achieve national interest at the expense of other countries. Subsequently, the central banks support the national currency.

If its foreign value is to reduced by buying it from the exchange market against reserves of foreign currencies on the contrary, the central bank enters a local currency (foreign currency) buyer in the foreign exchange market to keep it from the continuous rise in its foreign value (Suleiman, 2004, p. 28).

5. A System of Multiple Exchange Rates

Some countries use more than one exchange rate to settle their foreign transactions, and the method of determining exchange rates varies from country to country. Exchange rates determined through official intervention may coexist with a freely determined exchange rate, besides differences between exchange rates may vary

widely, but may not exceed several percentage points in some countries, while they may be several times the official price declared in other countries (Hussein, 2008, p. 38).

The Multiple exchange rates show in a country for two reasons:

- States may want to use different exchange rates for various transactions, such as buying foreign currencies at an exchange rate lower than the exchange rate of selling them, as a catalyst for monetary policy to achieve some goals. Such as increasing the proceeds of exports of goods and services or hindering some transactions by the private sector in the field of import or reduce the cost of government procurement of foreign exchange for import and debt servicing.

- Multiple exchange rates may arise as a result of the purpose of controlling foreign exchange rates. If its international assets deteriorate and its external indebtedness deteriorates dangerously. In this case, the country often has two foreign exchange markets. One official where the value of the national currency is high. The second is the informal market, which relies on the mechanism of balance between demand and supply on foreign exchange. Making them prices higher than official prices advertised in the official market.

1.3.9. The Relationship Between Inflation and Foreign Exchange Rates

Inflation is one of the factors affecting the exchange rate, and that their relationship comes from several channels, the most critical Badawahi (2015, p. 141):

The first channel, which confirms the validity of the purchasing power parity theory. According to this theory, the exchange rate of the local currency against other currencies tends to decline at the same rate that increases the price level if the prices doubled in the country (A). While the price situation did not change in other countries, the value of the parity of its currency will become half of what it was before and works the commodity budget to rebalance when the imbalance.

The second channel, which comes from the inflation rate at the exchange rate is the devaluation channel, that is, the exchange rate increase, which leads to higher prices due to the rise in the prices of imported goods in local currency. As the effects of devaluation raising the exchange rate on macroeconomic variables depend mainly on how nominal wages and prices respond to that reduction. (Badawah, 2015, p. 141)

However, the higher the increase in nominal wages as a result of the depreciation of the currency, the less change in real wages. Thus, in light of the high degree of correlation between the effect of the general price level and in an economy that tends to open up, the effect of nominal exchange rate changes on real wages, Therefore, linking wages to the general price index requires exchange rate flexibility.

Finally, the impact of higher domestic price level compared to world prices, lead to increase both imports and demand for foreign exchange and reduced both exports and foreign exchange supply, pushing the exchange rate to rise.

CHAPTER TWO

ANALYSIS OF INFLATION RATES IN THE NORTHERN REGION OF IRAQ FOR THE PERIOD 2008 – 2016

This chapter aims to analyze the inflation and foreign exchange rates of the major currencies namely: (The Dollar, the Euro, and the Turkish Lira), money supply, and GDP, in the northern region of Iraq during the period 2008-2016. While this chapter divided into two sections as First: Analysis of inflation rates in the northern region of Iraq for the period 2008-2016. The second topic: Analysis of exchange rates in the northern region of Iraq for the period indicated.

2.1. Inflation Rate in Erbil Governorate

As summarized in Table 2.1. that the inflation rate in Erbil governorate for the period 2008-2016, where it found that the highest rate of inflation for goods and services during the study period in Erbil governorate is in 2014 by (64.69%) (NRG, 2017). So, this is due to the political crisis between Region and the Federal government in Baghdad.

While, the lowest inflation rate was in 2016 by (-5.76%) so, this is due to the imposition of compulsory savings system on public employees by the NRG in the region, which led to a decrease in demand for goods and services and increase taxes and drawings in general (Omar, 2017, p. 217). Though, the highest inflation rate during the period 2008-2013 was (57.54%) in the food items due to the increased demand for foodstuffs which cannot dispense with the lowest rate of inflation during this period (4.34%) in the services segment because the NRG supports the services.

In this context, the highest inflation rate during the period 2014-2016 was (46.48%) in the food items, and this decrease in inflation is due to the imposition of mandatory savings system on the one hand. Moreover, taking measures by the government to reduce the wholesale prices in the markets of the region and the lowest inflation rate during these (12.78%) in the services segment or section that this rise in the inflation rate in the prices of services is due to the lifting of subsidies by the government for services (Badawah, 2015, p. 141).

Conversely, the highest inflation rate during the period 2008-2016 by (53.85%) in the items of foodstuffs because foodstuffs are essential commodities and cannot extricate. The lowest inflation rate during this period was (7.15%) in the services part. The NRG supports it besides the inflation rate during the period of study (2008 - 2016) by (37.73%) (Omar, 2017, p. 217), as revealed in the figure below 2.1.

Table 2.1. The Inflation Rate in Erbil Governorate for the Period 2008-2016

Periods	Inflation Rate %					
	Foodstuffs	Alcoholic beverages & Tobacco	Semi-durable goods	Services	The household items and maintenance	Goods and services
2008	50.98	2.35	21.00	6.06	21.71	28.26
2009	52.47	3.86	25.35	7.06	13.42	23.30
2010	48.20	2.68	24.56	5.09	17.32	24.87
2011	54.07	6.28	29.42	0.09	20.29	34.27
2012	67.81	8.79	46.29	10.69	25.54	50.89
2013	71.71	16.40	55.68	-2.93	30.60	55.73
2014	79.65	29.20	62.84	11.75	35.17	64.69
2015	70.88	31.20	66.00	19.00	36.16	63.36
2016	-11.08	29.70	-9.47	7.58	-2.69	-5.76
Inflation Rate 2008 - 2013	57.54	6.73	33.72	4.34	21.48	36.22
Inflation Rate 2014 - 2016	46.48	30.03	39.79	12.78	22.88	40.76
Inflation Rate 2008 - 2016	53.85	14.50	35.74	7.15	21.94	37.73
Inflation Rate (2007 = 100%)						

Source: Prepared by the researcher based on the data from **(NRG, 2017)**

Figure 2.1. The Inflation Rate for Goods and Services in Erbil Governorate for the Period (2008-2016)

Years	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inflation Rate	28,00	23,30	24,87	34,27	50,89	55,73	64,69	63,36	-5,76
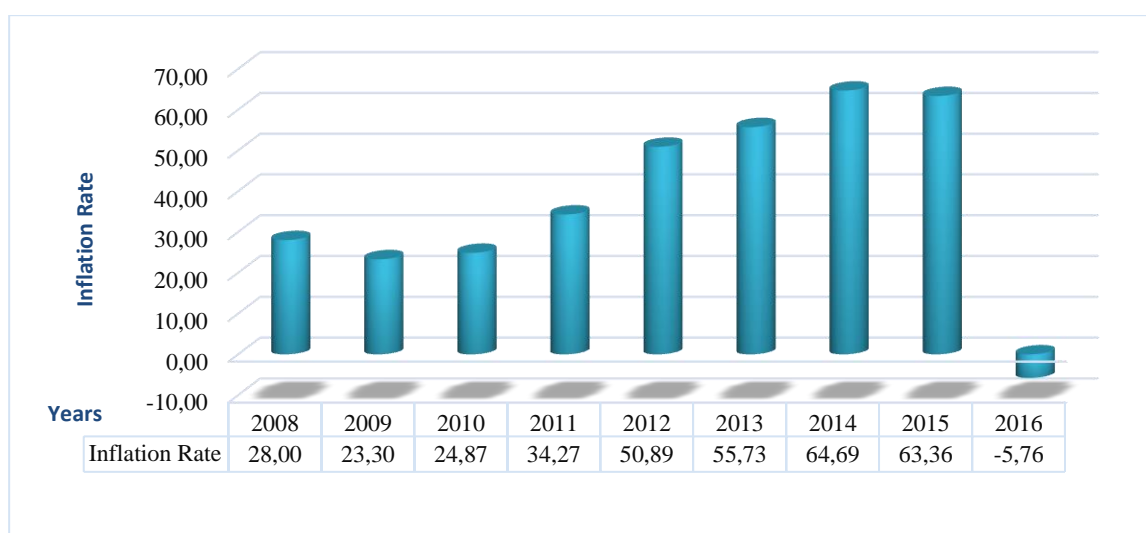
Source: The table above 2.1.

2.1.1. Inflation Rate in Sulaimaniyah Governorate

As revealed in Table 2.2. the inflation rate in Sulaimaniyah governorate for the period 2008-2016 indicates that the highest inflation rate for goods and services during the period of study in Sulaimaniyah governorate in 2015 was (40.83%) due to increases in money supply in Sulaymaniyah governorate. The lowest inflation rate was in 2016 by (-2.59%) due to the decrease in the money supply in Sulaymaniyah governorate (NRG, 2017).

However, the highest inflation rate during the period 2008-2013 by (48.95%) in the services section. That shows the political stability and economic conditions, as well as the sale of the US dollar auctioned by the central bank of Iraq, led to a rise in the purchasing power of the dinar against the US dollar (Central Bank of Iraq Annual Report, 2018). Moreover, reflected positively on the standard of living of individuals and increase their demand for the basic needs of water, clothing, and housing.

The highest inflation rate also during the period 2014-2016 (32.44%) in the foodstuffs and the lowest rate of inflation during this period in a year (7.43%) of the services this decrease was due to the introduction of compulsory savings by the NRG. In this regard, the highest inflation rate during the period 2008-2016 was (39.40%) in the foodstuffs and the lowest rate of inflation during this period (14.77%) in the household items and the reform due to the existence of the crisis and the recession (Omar, 2017, p. 217).

As for the inflation rate in Sulaimaniyah governorate for the period 2008 -2016 (28.83%), less than the inflation rate in the Erbil governorate. Because the Sulaimaniyah governorate closer to the border crossings with Iran compared to the Erbil governorate, as well as the decline of the number of monopolists in the Sulaimaniyah governorate (Badawah, 2015, p. 141), as shown in a figure below 2.2.

Table 2.2. The Inflation Rate in Sulaimaniyah Governorate for the Period 2008-2016

Periods	Inflation %					
	Foodstuffs	Alcoholic beverages & Tobacco	Semi-durable goods	Services	The household items and maintenance	Goods and services
2008	28.68	43.67	21.95	300.23	18.77	37.2
2009	36.05	34.7	27.65	18.08	22.31	27.85
2010	41.86	33	27.22	8.11	23.25	28.49
2011	44.96	22.11	26.75	-9.47	12.26	24.64
2012	52.91	25.21	30.71	-11.76	14.59	30.54
2013	52.85	24.6	36.14	-11.48	17.48	35.03
2014	51.96	24.6	37.89	-1.05	18.43	37.48
2015	49.95	28.56	33.46	6.16	18.46	40.83
2016	-4.6	10	9.19	17.18	-12.57	-2.59
Inflation Rate 2008-2013	42.88	30.55	28.4	48.95	18.11	30.63
Inflation Rate 2014-2016	32.44	21.05	26.85	7.43	8.11	25.24
Inflation Rate 2008-2016	39.4	27.38	27.89	35.11	14.77	28.83
Inflation Rate (2007 = 100%)						

Source: Prepared by the researcher based on the data from (NRG, 2017).

Figure 2.2. The Inflation Rate for Goods and Services in Sulaimaniyah Governorate for the Period 2008-2016.

Years	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inflation Rate	37,20	27,85	28,49	24,64	30,54	35,03	37,48	40,83	-2,59

Source: The table above 2.2.

2.1.2. The Inflation Rate in Dohuk Governorate

As presented in Table 2.3. that the inflation rate in Duhok governorate for the period 2008-2016 where it found that the highest inflation rate for goods and services

during the period of study in Dohuk governorate is in 2015 was (45.22%). So, this due to the presence of displaced people IDPs from Mosul governorate to Dohuk (NRG, 2017).

The lowest inflation rate is in 2016 was (-0.27%) so, this due to the imposition of a compulsory savings system which led to a decrease in the money supply in Duhok governorate. While, the highest inflation rate during the period 2008-2013 at the rate of (52.87%) in the foodstuffs, however, this indicates the political stability and economic conditions, high living standards of individuals and increased demand for basic needs (Badawah, 2015, p. 141).

The lowest inflation rate during this period (-5.01%) in the services sector because of the support of the services by the government. Moreover, the highest inflation rate during the period 2014-2016 was (43.84%) in the foodstuffs due to the imposition of compulsory savings system and the lowest rate Inflation during this period (-3.04%) of services due to the increase in government support for services. Consequently, the highest inflation rate during the period 2008-2016 was (49.36%) in the part of foodstuffs and this is because foodstuffs of essential goods cannot dispense (NRG, 2017).

Moreover, the lowest inflation rate during the same period was (-4.35%) in the services sector, and the inflation rate in the Dohuk governorate for the period 2008-2016 was at the rate of (31.43%), less than the inflation rate in the province of Erbil. Besides, more than the inflation rate in the Sulaimaniyah governorate, so, the Dohuk governorate near from the border crossing, Ibrahim Khalil, which affected the decline in prices (Omar, 2017, p. 217), as revealed in a figure below 2.3.

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Table 2.3. The Inflation Rate in Dohuk Governorate for the Period 2008-2016

Periods	Inflation %					
	Foodstuffs	Alcoholic beverages & Tobacco	Semi-durable goods	Services	The household items and maintenance	Goods and services
2008	38.36	1.9	27.82	20.74	30.56	26.77
2009	45.62	1.28	22.03	10.32	30.85	29.83
2010	51.73	4.33	18.43	-5.12	23.3	30.27
2011	57.19	15.07	26.71	-16.9	23.74	32.96
2012	61.25	15.55	29.38	-19.66	26.33	36.26
2013	63.07	18.23	36.32	-19.44	27.59	37.93
2014	69.36	17.37	42.1	-20.09	34.6	43.9
2015	70.47	23.94	26.15	-2	30.8	45.22
2016	-8.31	28.6	0.58	12.98	-5.81	-0.27
Inflation rate 2008-2013	52.87	9.39	26.78	-5.01	27.06	32.34
Inflation rate 2014-2016	43.84	23.3	22.94	-3.04	19.86	29.61
Inflation rate 2008-2016	49.86	14.03	25.5	-4.35	24.66	31.43
Inflation Rate (2007 = 100%)						

Source: Prepared by the researcher based on the data from (NRG, 2017).

Figure 2.3. The Inflation Rate for Goods and Services in Dohuk Governorate for the Period 2008-2016.

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inflation Rate	26,77	29,83	30,27	32,96	36,26	37,93	43,90	45,22	-0,27
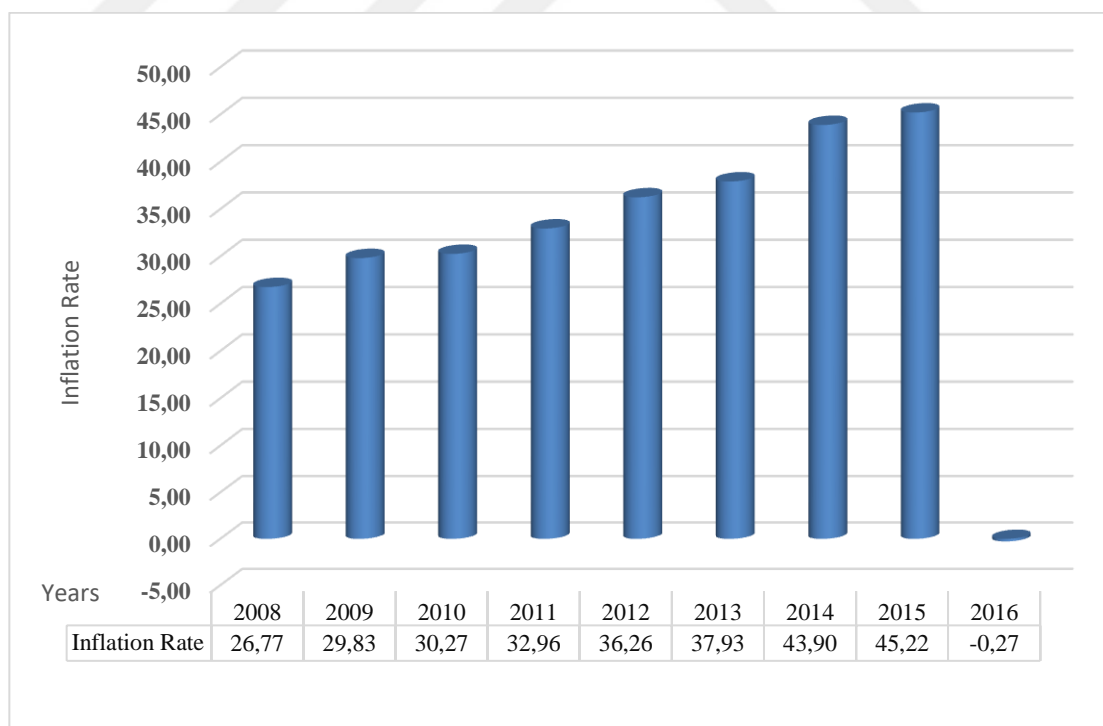
Source: The table above 2.3.

2.1.3. The Inflation Rate in the Northern Region of Iraq

Table 2.4. summarize that the inflation rate in the Northern Region of Iraq for the period 2008-2016. That the highest inflation rate was of goods and services during the period of study in the Iraqi Region was in 2015 by (50.06%), and this is due to the increase in the money supply by the federal government to the NRG (Omar, 2017, p. 217). So, if we look at the same table, we can note that the lowest inflation rate was in 2016 (-3.27%) due to the imposition of compulsory savings system by the NRG, which led to decrease in demand for goods and services and increase taxes and drawings in general (NRG, 2017). However, the highest inflation rate during the period 2008-2016 by (46.26%) in the foodstuffs items because foodstuffs are essential commodities and cannot extricate. Although, the lowest inflation rate during the same period was (16.62%) in the services sector. The NRG supports it and the inflation rate in the Northern Region of Iraq for the period 2008-2016 was at the rate of (32.77%), as revealed in a figure below 2.4.

Table 2.4. The Inflation Rate in the Northern Region of Iraq for the Period (2008-2016)

Periods	Inflation %					
	Food	Alcoholic beverages & Tobacco	Semi-durable goods	Services	House Supplies, Appliances &Maintenance	Goods & Services
2008	38.9	19.8	22.81	133.97	22.29	31.75
2009	44.09	16.42	25.64	12.41	20.2	28.05
2010	46.24	15.89	24.42	4.26	21.07	27.02
2011	50.85	14.81	27.73	-7.48	17.59	29.91
2012	60.14	17.3	36.14	-5.2	21.13	39.31
2013	61.71	20.25	43.41	-10.12	24.41	43.28
2014	65.78	24.82	47.96	-0.26	27.94	48.88
2015	61.5	27.18	47.12	9.22	27.53	50.06
2016	-12.83	21.1	74.72	12.77	-13.1	-3.27
Inflation rate 2008-2013	50.32	17.41	30.03	21.31	21.11	33.22
Inflation rate 2014-2016	38.15	24.36	56.6	7.24	14.13	31.89
Inflation rate 2008-2016	46.26	19.73	38.88	16.62	18.78	32.77
Inflation Rate in 2007 was 100%						

Source: Prepared by the researcher based on the data from (NRG, 2017).

Figure 2.4. The Inflation Rate for Goods and Services in the Northern Region of Iraq for the Period 2008-2016

Years	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inflation Rate	31,75	28,05	27,02	29,91	39,31	43,28	48,88	50,06	-3,27
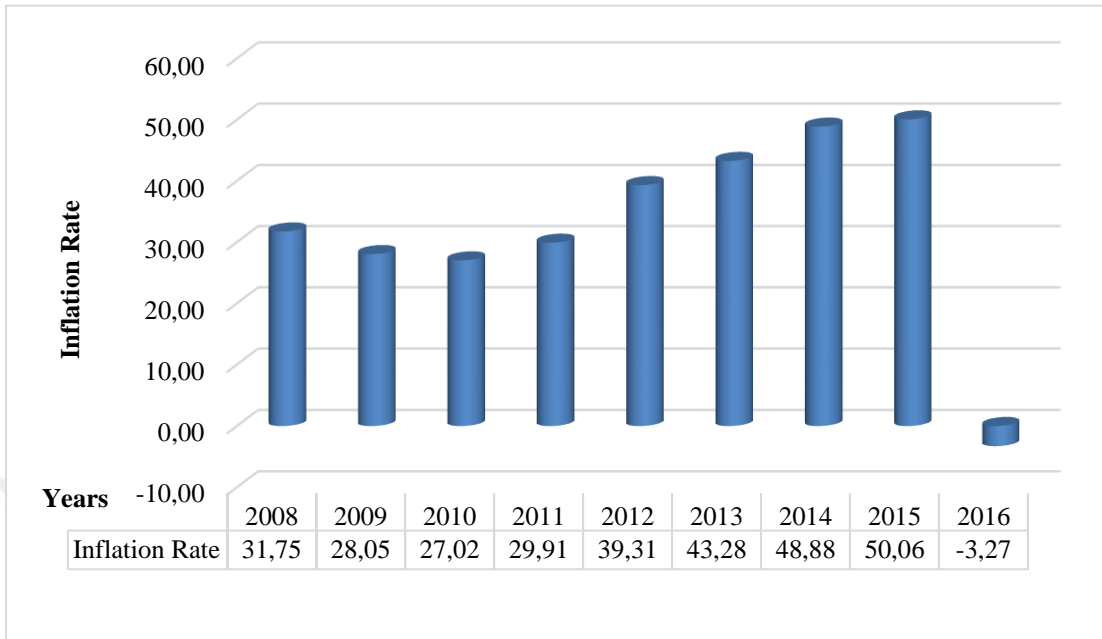
Source: The table above 2.4.

2.1.4. Other Factors Affecting the Inflation Rate in the Region of Iraq

2.1.4.1. Gross Domestic Product GDP

The GDP is one of the essential indicators for particular the level of economic growth in the country. While, this indicator in Iraq fluctuated clearly during the period (2008-2016), since of the circumstances of the war in Iraq, and international oil revenues and prices govern this fluctuation. The volume of GDP grew during the period 2008 to 2013, reaching about 131 trillion Iraqi dinars in 2008, and then increased to 234 trillion dinars in 2013 with an annual growth rate of 13.60 %. After this period, the size of the gross domestic product declined during the period 2014-2016, reaching about 228 trillion dinars in 2014 to about 171 trillion dinars in 2016 with an annual growth rate of 9.51% (Central Bank of Iraq Annual Report, 2018).

Where the lowest annual rate of change of GDP is in 2015 at an annual growth rate of (-21.38) because OPEC's share of the oil supply fell to about 35.8% of the total world oil production, which indicates that the golden age of OPEC. However, the highest annual rate of change is in 2011 at an annual growth rate of 34.10 due to the

stability of Iraq politically and economically (Janabi, 2015, p. 64), as revealed in Table 2.5, and Figure 2.5.

Table 2.5. The Iraqi Growth Rate of GDP During the Period 2008-2016

Periods	GDP	The Annual Change Rate
2008	131613661510.48	-
2009	111660855042.74	-15.16
2010	138516722649.57	24.05
2011	185749664444.44	34.10
2012	218000986222.64	17.36
2013	234648370497.43	7.64
2014	228490506548.90	-2.62
2015	179640210726.45	-21.38
2016	171489001692.05	-4.54
The growth rate 2008 - 2013		13.60
The growth rate 2014 - 2016		-9.51
The growth rate 2008 - 2016		4.93

Source: Central Bank of Iraq, Annual Report, (2018).

Figure 2.5. The Growth Rate of GDP During the Period 2008-2016

	2009	2010	2011	2012	2013	2014	2015	2016
-	-15,16	24,05	34,10	17,36	7,64	-2,62	-21,38	-4,54
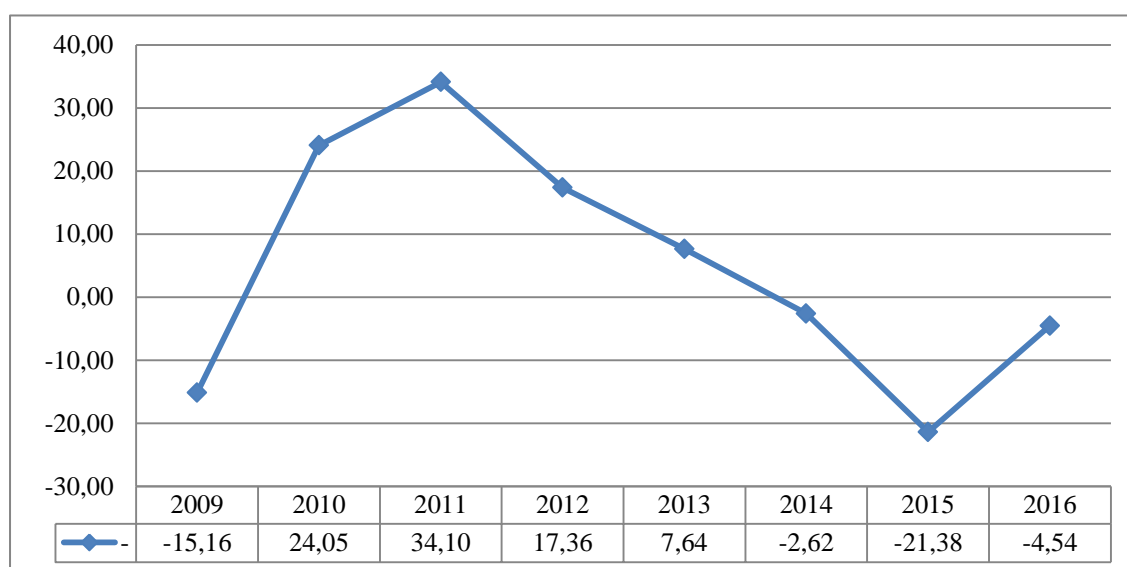
Source: Central Bank of Iraq, Annual Report, (2018).

2.1.4.2. Money Supply

As shown in Table 2.6. the money supply for the period 2008-2016, the year 2010 witnessed an expansion in the money supply, which recorded an increase of 36.10% compared to the previous year, which exceeded the increase in the rate of growth achieved in GDP, by 24.05%. So, this increase in the money supply is due to the increase in oil revenues, which increased government expenditure (Central Bank of Iraq Annual Report, 2018).

The lowest growth rate decreasing in 2015 by -1.06% because of the wars of ISIS, and regarding the money supply growth rate during the period 2008 – 2013, by 23.33% due to the state's cash position during the same period that played by expansionary (17879) billion dinars. Which resulted from rising government debt rose (4911) billion dinar, and subsequent from expansion in public expenditure funded from government revenues and expansion factors included net foreign assets balance rose by (5997) billion dinars, with the emergence of the expansionary effect of debt. However, the growth rate of the money supply during the period 2014-2016 decreased by 1.72 due to the political and economic situation in the country (Al-Ward, 2017), as revealed in the table and Figure 2.6 below.

Table 2.6. The Growth Rate of Money Supply During the Period 2008-2016

Periods	Money Supply	The Annual Change Rate
2008	352475144.00	-
2009	475832613.00	35.00
2010	647630281.00	36.10
2011	763164936.00	17.84
2012	866237776.00	13.51
2013	989378508.00	14.22
2014	1051844295.00	6.31
2015	1040687300.00	-1.06
2016	1039786106.00	-0.09
The growth rate 2008 - 2013		23.33
The growth rate 2014 - 2016		1.72
The growth rate 2008 - 2016		15.23

Central Bank of Iraq, Annual Report, (2018)

Figure 2.6. The Growth Rate of Money Supply During the Period 2008-2016

	2009	2010	2011	2012	2013	2014	2015	2016
-	35,00	36,10	17,84	13,51	14,22	6,31	-1,06	-0,09
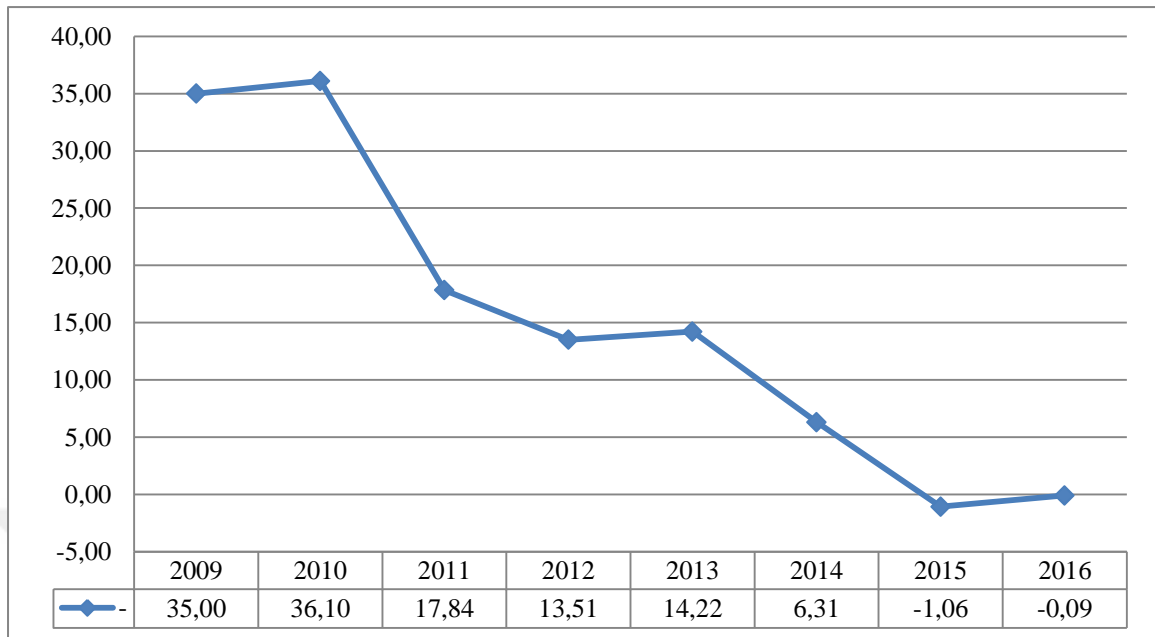
Source: Central Bank of Iraq, Annual Report, (2018).

2.2. ANALYSIS OF THE EXCHANGE RATES IN THE NORTHERN REGION OF IRAQ FOR THE PERIOD 2008 - 2016

2.2.1. Analysis of Exchange Rate Fluctuations of the US Dollar Against the Iraqi Dinar in the Northern Region of Iraq

As presented in Table 2.7. that the exchange rates of the US dollar against the Iraqi dinar in the Region for the period 2008-2016, where it appears as follows:

The exchange rates of the US dollar against the Iraqi Dinar in the Iraqi region for the period 2008-2016, were indicated that the lowest annual change of exchange rates falls in 2009 by (-2.14%) So, this reduction attributed to the Iraqi central bank continued to put dollar amounts per day (NRG, 2017). Meanwhile, the dollar devalued globally due to the financial crisis in the united states. While the highest annual exchange rate is in 2012 by (2.67%) because of the deterioration of the value of the Iraqi dinar against the US dollar despite the substantial Iraqi oil revenues in 2012 the price of one dollar is 1260 dinars. The reasons for this decline are not only related to the Iraqi government's monetary policy, but also to political developments in the Middle East. Under the Western sanctions imposed on its neighbors Syria and Iran, the Iraqi

region is the only outlet for these two countries to get the dollar and the recovery of reserves are cash.

The growth rate of the exchange rates of the US dollar against the Iraqi dinar during the period (2008-2013) reached (0.47%). So, this is due to the following reasons (Badawah, 2015, p. 141):

1. Increase the demand for the dollar instead of the dinar, which reflected negatively on the reality of the economy in the Iraqi region.

2. A high percentage of dollarization in Region's economy, especially in the commercial sector.

3. Increase in demand for the dollar in the region due to increased imports.

4. Activate the trade movement between the provinces of the region and their impact on commercial exchange rate.

5. This rise is due to the stability of economic and political conditions in the Region.

Table 2.7. The Dollar Prices Against the Iraqi Dinar in the Northern Region of Iraq for the Period (2008-2016)

Periods	The Dollar price in Erbil	The annual change rate	The Dollar price in Sulaimaniyah	The annual change rate	The Dollar price in Duhok	The annual change rate	The Dollar price in Region	The annual change rate
2008	1213.17	-	1206.67	-	1207.92	-	1209.25	-
2009	1183.25	-2.47	1183.17	-1.95	1183.83	-1.99	1183.42	-2.14
2010	1185.83	0.22	1186.58	0.29	1183.83	0.00	1185.42	0.17
2011	1199.75	1.17	1199.50	1.09	1207.08	1.96	1202.11	1.41
2012	1234.75	2.92	1231.92	2.70	1235.83	2.38	1234.17	2.67
2013	1237.25	0.20	1236.25	0.35	1238.17	0.19	1237.22	0.25
2014	1219.33	-1.45	1219.67	-1.34	1220.50	-1.43	1219.83	-1.41
2015	1250.83	2.58	1249.08	2.41	1255.83	2.89	1251.92	2.63
2016	1281.92	2.49	1283.75	2.78	1285.50	2.36	1283.72	2.54
The growth rate 2008 - 2013		0.41		0.50		0.51		0.47
The growth rate 2014 - 2016		1.21		1.28		1.28		1.26
The growth rate 2008 - 2016		0.71		0.79		0.80		0.77

Source: Prepared by the researcher based on the data from (NRG, 2017).

The annual growth rate of the exchange rate of the US dollar against the Iraqi dinar during the period (2014-2016) amounted to (1.26%), due to the following reasons:

a) Weak political and economic conditions in Iraq, including the Region, which led to a weak purchasing power (exchange rate dinar) against the US dollar.

b) The intervention of the Iraqi council of representatives in the independence of the Iraqi central bank policy by determining the volume of sales from 210 million dollars to 75 million dollars per day and according to the budget law for the year 2015, Ismail and Badawahi (2015, p. 235).

c) The central bank's decision to impose tax and customs insurance on the purchase of the dollar led to speculators impose a margin of interest on the dollar sold in banks and banking companies and then the rise in the dollar (Central Bank of Iraq Annual Report, 2018).

d) Corruption spreads among banks dealing with the central bank to offer the US dollar to individuals.

e) The political crisis between the NRG and the federal government was the cause of the financial crisis in the region.

The annual growth rate of the exchange rate of the US dollar against the Iraqi dinar during the period (2008-2016) reached 0.77% (NRG, 2017), while this is evidence of the stability of the exchange rate of the Iraqi dinar and the primary objective of monetary policy to exploit the inflation target.

Figure 2.7. The Dollar Prices in the Northern Region of Iraq (2008-2016)

Years	2008	2009	2010	2011	2012	2013	2014	2015	2016
The Dollars price of Region	1209,25	1183,42	1185,42	1202,11	1234,17	1237,22	1219,83	1251,92	1283,72
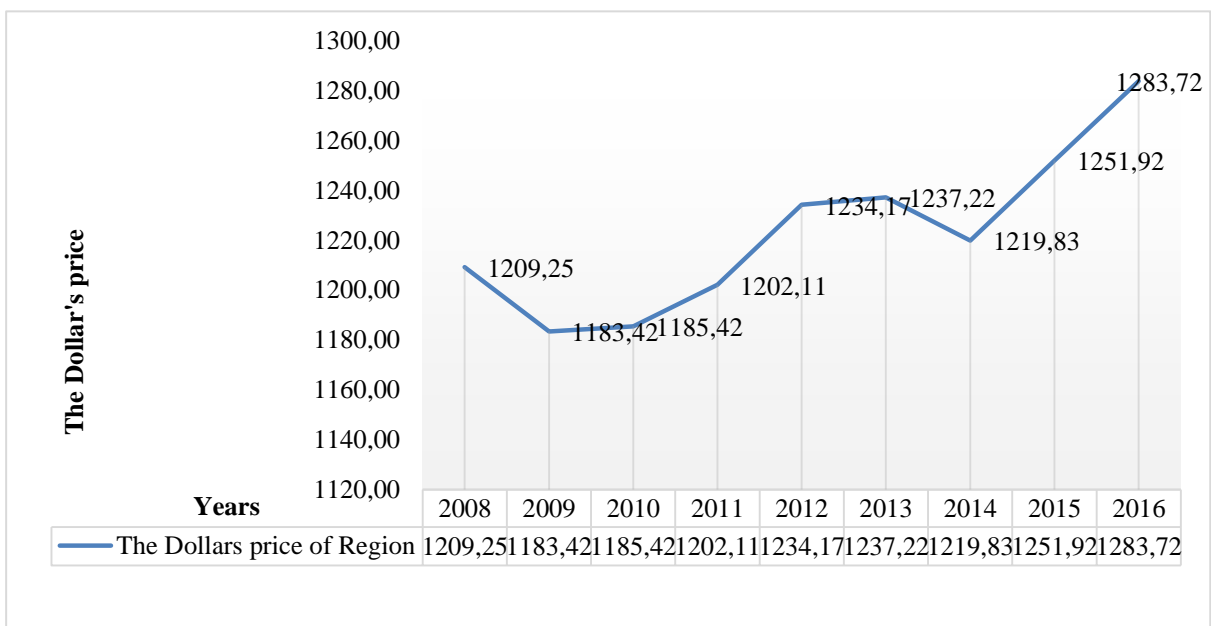
Source: **(NRG, 2017)**.

2.2.2. Analysis of Exchange Rate Fluctuations of the Euro Against the Iraqi Dinar in the Northern Region of Iraq

As shown in Table 2.8. the role of the Euro in economic transactions is less influential in the Iraqi region, where indicated that the lowest annual change of exchange rates in 2015 at (-14.46%). So, this reduction attributed to the Eurozone crisis in European demand declining raw materials exported by developing countries as an example (Iraq) primarily oil. The oil and non-oil countries suffered significant financial losses, the public budget has become in deficit, as well as the strength of the rise of the US dollar against other currencies, while large amounts of the euro put on the market. While the highest annual rate of change occurred in 2011 (5.74%) due to stable political and economic conditions that prevailed and increased the confidence of the population to use foreign currencies after 2010 helped to increase the purchasing power of the dinar against the foreign currency. As well as the decline of the US dollar in the markets due to the decline in growth rates in the US economy (NRG, 2017).

Table 2.8. The Euro Prices Against the Iraqi Dinar in the Northern Region of Iraq for the Period (2008-2016)

Periods	The Euro price in Erbil	The annual change rate	The Euro price in Sulaimaniyah	The annual change rate	The Euro price in Duhok	The annual change rate	The Euro price in Region	The annual change rate
2008	1783.83	-	1788.58	-	1776.42	-	1782.94	-
2009	1647.67	-7.63	1648.00	-7.86	1643.08	-7.51	1646.25	-7.67
2010	1568.00	-4.84	1586.83	-3.71	1573.58	-4.23	1576.14	-4.26
2011	1672.00	6.63	1657.67	4.46	1670.08	6.13	1666.58	5.74
2012	1599.58	-4.33	1605.58	-3.14	1587.75	-4.93	1597.64	-4.14
2013	1660.75	3.82	1660.92	3.45	1641.08	3.36	1654.25	3.54
2014	1630.58	-1.82	1631.75	-1.76	1625.17	-0.97	1629.17	-1.52
2015	1394.58	-14.47	1398.33	-14.30	1387.67	-14.61	1393.53	-14.46
2016	1420.00	1.82	1421.75	1.67	1420.17	2.34	1420.64	1.95
The growth rate 2008 - 2013		-1.27		-1.36		-1.43		-1.36
The growth rate 2014 - 2016		-4.82		-4.80		-4.41		-4.68
The growth rate 2008 - 2016		-2.60		-2.65		-2.55		-2.60

Source: Prepared by the researcher based on the data from (NRG, 2017).

The growth rate of exchange rates of the euro against the Iraqi dinar during the period (2008-2013) (-1.36%), this is due to the following reasons (Badawah, 2015):

a) The price fluctuations of the US dollar against the euro in the global currency trading markets, which in turn affects the price of the euro against dinars in the financial markets of the Region.

b) A financial crisis in Greece and giving false information about the condition of the Greek economy as the New Greek government admitted in 2009 that the previous government had falsified the national accounts, and has become a source of problems for the European Union.

However, the annual growth rate of the exchange rate of the euro against the Iraqi dinar during the period (2014-2016) was (-4.68%) (NRG, 2017). So, this is due to the following reasons:

a) The exit of the United Kingdom (UK) from the European Union.

b) The deterioration of the exchange rates of the euro against the Iraqi dinar in the Iraqi region. Due to rising interest rate by the US Federal Reserve and thus led to a reduction in revenue from European bonds, and then investors to buy dollars instead of euros Euro price decreases.

The annual growth rate of the exchange rate of the euro against the Iraqi dinar during the period (2008-2016) reached -2.6%. So, this is evidence of fluctuations in exchange rates but the declining trend in exchange rates to the euro, as shown in a figure below 2.8.

Figure 2.8. The Euro Prices in the Northern Region of Iraq (2008-2016)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
The Euro's price of Region	1783	1646	1576	1667	1598	1654	1629	1394	1421
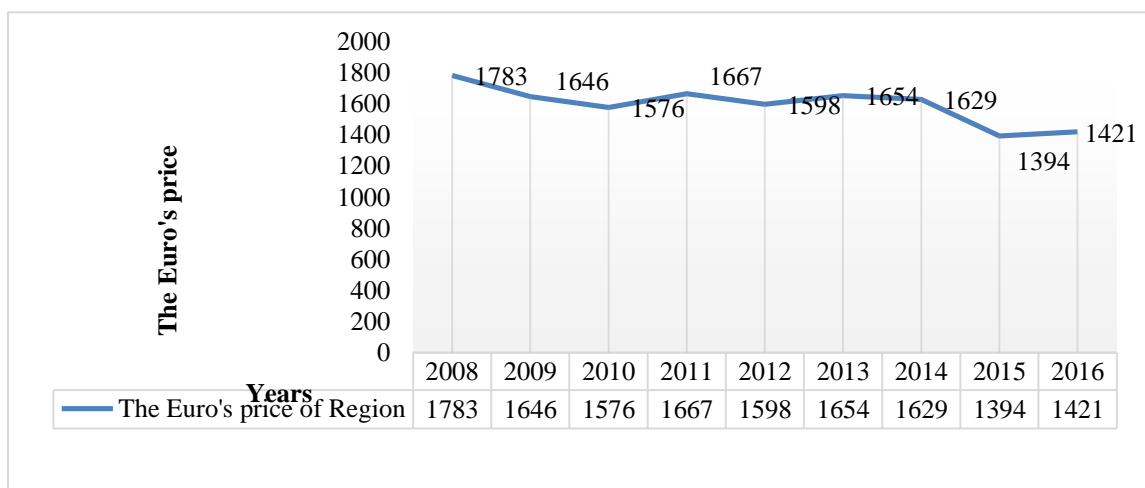
Source: (NRG, 2017)

2.2.3. Analysis of Exchange Rate Fluctuations of the Turkish Lira Against the Iraqi Dinar in the Northern Region of Iraq

The presence of the Turkish Lira in the Region returns to this Turkey's economic position on this side, on the other hand, the exchange rates of the Turkish Lira against the Iraqi Dinar in the region can illustrate via Table 2.9.

While the exchange rates of the Turkish lira against the Iraqi Dinar in the Iraqi region indicated that the lowest annual change in exchange rates fall in 2014 at (-24.41%). So, this reduction was attributed to the gradual decline in front of Iraqi Dinar Turkish Lira because what drives venture capitalists to swap their savings for significant currencies to demand the dollar or euro to the Turkish market.

However, this all changes in the price of Turkish lira for a dollar or euro affects the price of Iraqi dinar vs. lira. While the highest annual change rate was in 2010 with (4.44%) this high back end of 2008 global economic crisis began to affect Turkey, Badawahi and Ismail (2015, p. 235).

Nevertheless, the growth of the Turkish economy in that year rose by 0.7%, while in 2009 it fell by 4.8%, but soon regained its growth and rose to 9.2% in 2010. Thus, this fluctuation of the Turkish economy directly related to the price of the Turkish lira against the price of the Iraqi dinar in the Iraqi exchange markets (Al- Mashhadani, Al-Heti and Al-Taai (2013, p. 20).

As summarized in Table 2.9. The growth rate of the exchange rate of the Turkish Lira against the Iraqi Dinar during the period (2008-2013) reached (-7.49%) (NRG, 2017). Thus, this is due to the following reasons:

a) The start of a new phase for the Iraq and nortern region economy in light of the rise in world oil prices.

b) The remove of six zeroes from the Turkish currency in 2010.

c) Increase economic growth in Turkey.

d) Increase the demand for the Turkish lira by investors with the aim of importing goods and services to the Region.

e) The desire of Turkish companies for investments in the Iraqi region.

The annual growth rate of the exchange rate of the Turkish lira against the Iraqi dinar during the period (2014-2016) was (-12.94%) (NRG, 2017). So, this is due to the following reasons:

a) The reason for the economic and political problems between Turkey and European countries.

b) Expansion of the dollarization phenomenon in the Turkish economy.

c) The European Parliament's decision to stop Turkey's accession to the European Union temporarily and to reduce the financial aid for Turkey's accession to the EU.

d) The low exchange rate of the US dollar against the Iraqi dinar and its impact on the price of the Turkish lira in the exchange markets in the region.

As the same table revealed that the annual growth rate of the exchange rate of the Turkish Lira against the Iraqi Dinar during the period (2008-2016) reached (-9.53%), so, this is evidence of fluctuations in the exchange rates but in the direction of a decrease in the exchange rates of the Turkish Lira. Consequently, this means that the whole period has positive for the Turkish Lira because its decline against other foreign currencies has led to an increase in Turkish exports, especially to the Middle East countries and the European Union countries, thus achieving economic growth of Turkey. However, there are several reasons behind the decline of the Turkish lira against foreign currencies, including (Badawah, 2015, p. 141):

a) Failed coup attempt, which increased investor fears.

b) The decline in tourist activity in Turkey.

c) The rise of the interest rate by the US Federal Reserve.

d) Venture capitalists shifted their savings to the U.S. dollar and the euro.

e) The increase in the bill of energy imports (gas and oil) negatively affected the value of the Turkish lira.

Table 2.9. The Lira Prices Against the Iraqi Dinar in the Northern Region of Iraq for the Period (2008-2016)

Periods	The Lira price in Erbil	The annual change rate	The Lira price in Sulaimaniyah	The annual change rate	The Lira price in Duhok	The annual change rate	The Lira price in Region	The annual change rate
2008	980.17	-	1032.50	-	977.92	-	996.86	-
2009	728.33	-25.69	808.33	-21.71	760.83	-22.20	765.83	-23.18
2010	802.50	10.18	813.33	0.62	783.75	3.01	799.86	4.44
2011	760.00	-5.30	767.58	-5.63	720.00	-8.13	749.19	-6.33
2012	700.42	-7.84	711.25	-7.34	680.83	-5.44	697.50	-6.90
2013	658.25	-6.02	669.42	-5.88	650.00	-4.53	659.22	-5.49
2014	469.92	-28.61	471.25	-29.60	553.83	-14.79	498.33	-24.41
2015	470.33	0.09	452.58	-3.96	473.92	-14.43	465.61	-6.57
2016	430.08	-8.56	429.75	-5.05	427.58	-9.78	429.14	-7.83
The growth rate 2008 - 2013		-6.93		-7.99		-7.46		-7.49
The growth rate 2014 - 2016		-12.36		-12.87		-13.00		-12.94
The growth rate 2008 - 2016		-8.97		-9.82		-9.54		-9.53

Source: Prepared by the researcher based on the data from (NRG, 2017).

Figure 2.9. The Lira Prices in the Northern Region of Iraq (2008-2016)
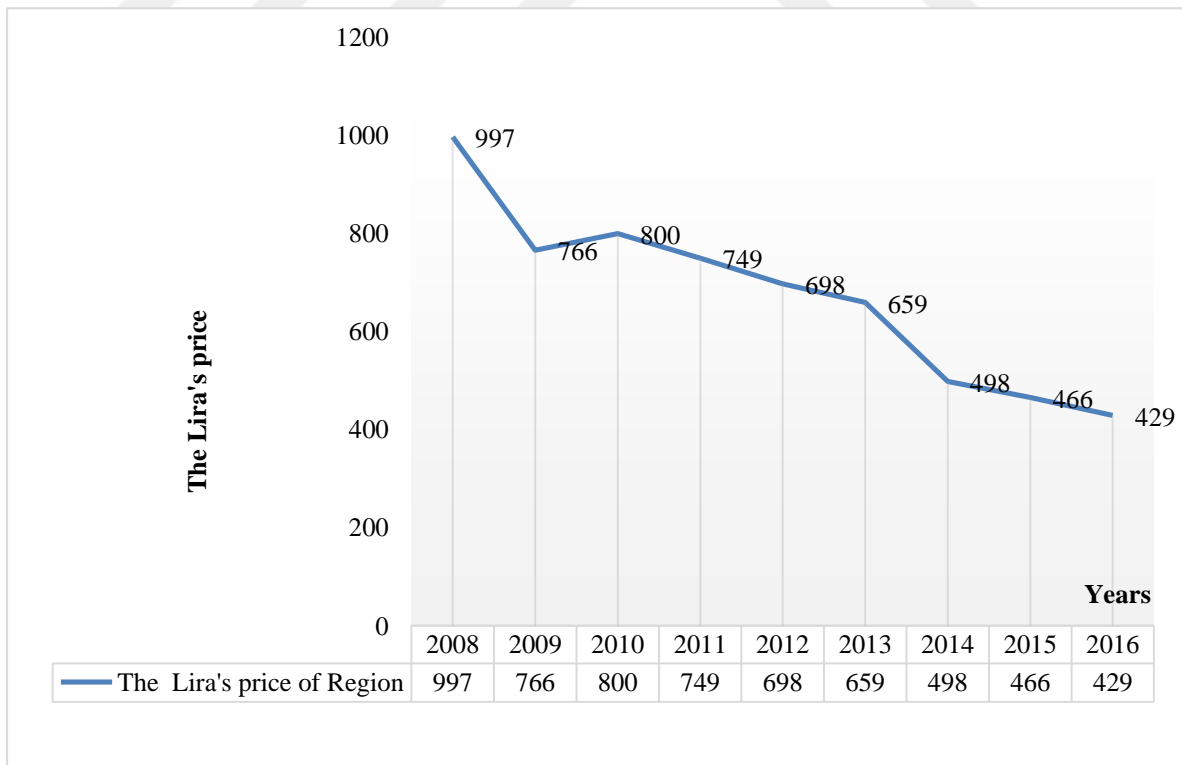
Source: (NRG, 2017)

CHAPTER THREE

MEASURING THE RELATIONSHIP BETWEEN THE INFLATION RATE AND THE FOREIGN EXCHANGE RATE IN THE NORTHERN REGION OF IRAQ

To measure the relationship between the inflation rate and foreign exchange rates of the major currencies in the northern region of Iraq, this chapter divided into two sections: First section: the standard tools used in the study. Second section: Presenting the results of the assessment of the relationship between inflation and exchange rates of major currencies in the Region for the period (2008-2016).

3.1. STANDARD TOOLS USED IN THE STUDY

The most important standard tools used in the study of the relationship between the inflation rate and foreign exchange rates as follows:

3.1.1. Stationary Tests

According to (Battal, 2015, p. 6) the stationary condition is fundamental in the study of time series, and if the time series is not stationary, will not obtain proper results and a stable time series will achieve if the following characteristics achieved:

‒ The stationary of average values over time.

‒ Variance over time.

‒ The existence of a number of vector autoregression of successive time values of the phenomenon:

The reality behind the concept of stationary is that most economic indicators include an upward trend over time and in some cases may be descending direction. So in such a situation, it is difficult to use economic indicators in the analysis and prediction and decision-making economic critical to overcoming this statistical quandary, it is correct to say that statisticians and economists have asked to find solutions that address this problem. Among the most famous of these are engle granger and others. Moreover, one of the most famous methods of treatment is the analysis of

stationary. The concept of stationary used as an expression of the degree of integration of the time series.

However, if the unit root contains the series are integrated and time series that does not contain a root unit or stationary strings be integrated zero-degree. (Hill, Griffiths, and Lim (2011, p. 488). Besides, often we find an economic time series from the degree of complementarity between zero (0) or (1). There are many tests used to detect the degree of integration of the time series, and the extent of stability and more common, which will use in the analysis, are:

1. **Augmented Dickey-Fuller (ADF):** The Augmented Dickey-Fuller (ADF) test is the basis of the stationary tests of the time series, and most of the stationary tests based on this test Dickey and Fuller (1981, p. 1057).

2. **Phillip-Perron(PP):** Phillip-Perron tests the zero hypothesis, which is the existence of the root of the unit versus the static of the direction, but by employing a non-modified test of the Dicky-Fuller formula (which does not add the first differences given to the dependent variable as explanatory variables). Thus addressing the problem of vector autoregression in an alternative way Phillips and Perron (1988, p. 355).

3.1.2. Co-integration Tests

The idea of co-integration based on the economic concept of the statistical characteristics of the time series. The concept of co-integration and the concept of economic theory have linked, especially about the idea of a long-run equilibrium relationship. A co-integration testing procedure requires that all-time series of the model variables be of the same rank. So this test, the second step after determining the level of the co-integration of each variable of the unit root test through variables.

Hence, the next step is to confirm a long-run equilibrium relationship between the variables by the co-integration test. However, the Johansen test is one of the most critical tests of co-integration if there are more than two variables in the model, which uses the Full Information Maximum Likelihood (FIML) method, which treats all variables in the model as internal variables (Janabi, 2015, p. 64).

According to Battal, Ali, and Al-Mashhadani (2014, p. 46) the model of cointegration states that the economic variables that economic theory presupposes a balanced relationship in the long-run not very far apart in the long-run. With the possibility of this balance being broken in the short-run and correcting this imbalance with economic forces that variables to move towards balance in the long-run.

3.1.3. Johansen Co-integration Test

This test excels the Engel-Cringer integrator since it is suitable for small-size samples, as well as if there are more than two variables. More importantly, this test reveals whether there is a unique co-integration, that dependent on independent variables.

However, this is important in the theory of co-integration, that indicating in the absence of a different co-integration, the balance between the variables remains doubtful and questionable. A long-run equilibrium between the two established series tested by testing the combined integration of variables using the Johansen and Johansen-Juselius methods used in models consisting of more than two variables (Abdali, 2007, p. 5).

3.1.4. Optimum Leg

According to Battal (2015, p. 8) to determine the periods of delay is of great importance in determining the level of vector autoregression for time series integrated or vector error correction model. Furthermore, that the correct diagnosis for the delay may give incorrect and inaccurate results did not reflect the reality, so the researcher should always employ some tests to determine the optimal period of delay between the integrated economic variables of these tests are:

1. Akaike Information Criterion (AIC):

This criterion indicates that smaller values are preferred when the testing model that measures the competing models for alternatives, Formula will be as follows:

$$A/C\ (q) = NL_0q(^{SSE}/_N) + 2_q$$

Whereas:

N= Observes

SSE= Set of Residual Boxes

q= Number of parameters

2. Schwarz Criterion (SC)

This criterion used to determine many *(m)* retardation periods when conducting regression, and then test the lower period of underdevelopment that realizes the value of **(Sc)** addition on determining the length appropriate default form and assumes (Schwarz) the following function:

$$Sc = Ln\ (\delta)^2 + mLn(n)$$

As:

δ^2 is Likelihood amount $\qquad \sigma^2 = (\frac{RSS}{n})$

m= Length of underdevelopment

n= Observes

3. Final Predictor Error Criterion (FPE)

According to Naqar and Awad (2012, p. 342) final predictor error criterion gives the following relationship:

$$FPE = (\frac{N + P - n}{n - P.n})^n . \det \Omega(P)$$

As:

Ω = Matrix of variances and estimated changes of condoms

n= Number of internal variables

N= Total Observes

We calculate FPE for the consecutive values of P at $K = \frac{N}{10}$ most, and then

determine the value of the FPE and take the number of periods of deceleration time, i.e.:

$$FPE(P_o) = \underset{P=1}{\overset{k}{Min}}^{FPE(P)}$$

The optimal downtime tested by the lowest value of the above tests.

3.1.5. The Vector Error Correction Model (VECM)

The vector error correction model used to determine the short- and long-run equilibrium relationship between economic variables and can apply in the case of small samples, so unlike previous traditional methods (Hill, Griffiths and Lim (2011, p. 500).

While one of the most important conditions for applying this model is the cointegration according to the Johansen method, the basis of the vector error-correction model (VECM) is a vector autoregression model (VAR), and the vector autoregression model is used to describe the dynamic relationship between stable variables. If we have two economic variables, x_t, and y_t, of a single class, the vector error correction model (VECM) can write as follows:

$$\Delta Y_{t\,=}a_{10+}a_{11}(Y_{t-1} - \beta 0 - \beta 1 X_{t-1})_+ V^y{}_t$$

$$\Delta X_{t\,=}a_{20+}a_{21}(Y_{t-1} - \beta 0 - \beta 1 X_{t-1})_+ V^y{}_t$$

The parameters a_{11} and a_{21} represent the vector error correction coefficient in the equations.

3.1.6. Immediate Response Functions and Variance Components

First, Immediate Response Functions

The immediate response functions show the impact of shocks on a path of balance for a specific period as a result of a sudden shock in the variable itself or another variable. The Cholesky method used to analyze the components of the shock. The variables used are in equilibrium for a given period as long as the stable variables and Integrated. However, according to (Battal, 2015, p. 9) the shock of any of the variables used will lead to affect the position of balance for a period after which the variables return to balance provided that no other shock at the same time.

Second, Analysis of Variance Components

The analysis of variance indicates the relative importance of the random variables in the model. The variance in the future period (t) shows the result of a shock in the same variable or other variables in the current period. This analysis helps to know the

relative importance of the effect of each sudden change in a given variable on all variables within the model Watson and Teelucksingh (2002, p. 247).

3.2. DATA PRESENTATION AND ANALYSIS

The section aims to present the results of the valuation of the relationship between the exchange rates of the major currencies and the inflation rate in the northern region of Iraq for the period (2008-2016).

However, through this section, the researcher tries to reveal the nature of the relationship between inflation and the exchange rates of the major currencies namely (US dollar, Euro, Turkish lira), money supply and gross domestic product (GDP) in the northern region of Iraq. So, by using season's data for some period and thus we have a time series. While the number of observations (36) seasons, and all data obtained from the chamber of commerce and Ministry of planning in the northern region of Iraq.

3.2.1. Stationary Testing

As summarized in Table 3.1. it reveals the results of the stationary testing for the time series of the study variables through using the Phillip-Perron (PP) and the Augmented Dickey-Fuller ADF tests, whereas the results revealed that all the variables are not Stationary at the original level of data based on the PP and the ADF tests. Therefore, the first difference has taken for all the variables as shown in the Table below 3.2.

Table 3. 1. Stationary Tests by Phillip-Perron (PP) and the Augmented Dickey-Fuller ADF Tests for Study Variables

Unit Root Test Table At Level							
PP							
		Dollar	Euro	Lira	GDP	MS	INF
With Constant	t-Statistic	-1.518	-1.764	-1.511	-1.391	-3.268	-1.176
	Prob.	0.513	0.392	0.517	0.576	0.024	0.674
		no	no	no	no	*	no
With Constant & Trend	t-Statistic	-3.617	-2.327	-2.756	-0.749	0.333	-0.869
	Prob.	0.043	0.409	0.222	0.961	0.998	0.949
		**	no	no	no	no	no
Without Constant & Trend	t-Statistic	1.017	-1.731	-3.332	0.192	1.671	-0.99
	Prob.	0.915	0.079	0.002	0.736	0.975	0.282
		no	*	***	no	no	no
ADF							
With Constant	t-Statistic	-1.561	-1.838	-1.485	-1.371	-3.463	-0.968
	Prob.	0.492	0.357	0.529	0.585	0.015	0.754
		no	no	no	no	**	no
With Constant & Trend	t-Statistic	-3.811	-3.995	-2.795	-0.755	0.204	-0.869
	Prob.	0.028	0.019	0.209	0.96	0.997	0.949
		**	**	no	no	no	no
Without Constant & Trend	t-Statistic	1.079	-1.107	-2.711	0.199	1.23	-0.985
	Prob.	0.923	0.238	0.008	0.738	0.941	0.285
		no	no	***	no	no	no

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant

Source: The output of EVIEWS program version 7

When we look at Table 3.2. we can see that all variables become **Stationary** after the first difference has taken according to the PP and the ADF tests. However, the study variables integrated with class (1). So, this means that the Johansen integration test and the VECM test can apply.

Table3. 2. Stationary Tests for The first difference of Study Variables

UNIT ROOT TEST TABLE At First Difference							
PP							
		D(Dollar)	D(Euro)	D(Lira)	D(GDP)	D(MS)	D(INF)
With Constant	t-Statistic	-8.5717	-4.5501	-5.6208	-6.4029	-3.903	-5.6688
	Prob.	0.000	0.001	0.000	0.000	0.005	0.000
		***	***	***	***	***	***
With Constant & Trend	t-Statistic	-14.861	-4.495	-5.554	-6.6507	-5.567	-5.922
	Prob.	0.000	0.006	0.000	0.000	0.000	0.000
		***	***	***	***	***	***
Without Constant & Trend	t-Statistic	-7.333	-4.404	-4.84	-6.437	-2.911	-5.695
	Prob.	0.000	0.000	0.000	0.000	0.004	0.000
		***	***	***	***	***	***
ADF							
With Constant	t-Statistic	-6.74	-4.613	-5.415	-6.433	-3.838	-5.669
	Prob.	0.000	0.001	0.000	0.000	0.006	0.000
		***	***	***	***	***	***
With Constant & Trend	t-Statistic	-7.035	-4.58	-5.387	-6.683	-5.557	-5.911
	Prob.	0.000	0.005	0.001	0.000	0.000	0.000
		***	***	***	***	***	***
Without Constant & Trend	t-Statistic	-6.641	-4.518	-4.845	-6.47	-3.009	-5.695
	Prob.	0.000	0.000	0.000	0.000	0.003	0.000
		***	***	***	***	***	***

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant
Source: The output of EVIEWS program version 7

3.2.2. The Johansen Co-Integration Test

As revealed in Table 3.3. the Johansen co-integration test applied in determining the co-integration between the study variables namely inflation, exchange rates, money supply and gross domestic product (GDP) by Trace and Maximum Eigenvalue. As reported the trace and maximum Eigenvalue statistics and its values both at (5%), the result of the Johansen co-integration test reveals that there is one co-integration equation at 5% level of significance as indicated by the trace test. While the maximum eigenvalue test indicated one co-integration equation at (5%) significant level, these results propose that the suitable model to use is the VECM specification with more than one co-integration vector in the model.

Table 3. 3. Trace Effect Coefficient by Johansen Test

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.730608	104.2688	95.75366	0.0114
At most 1	0.496730	60.98643	69.81889	0.2063
At most 2	0.451519	38.32767	47.85613	0.2879
At most 3	0.332669	18.50780	29.79707	0.5287
At most 4	0.106494	5.160330	15.49471	0.7916
At most 5	0.042827	1.444450	3.841466	0.2294
Trace test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.730608	43.28237	40.07757	0.0211
At most 1	0.496730	22.65876	33.87687	0.5567
At most 2	0.451519	19.81987	27.58434	0.3537
At most 3	0.332669	13.34747	21.13162	0.4208
At most 4	0.106494	3.715880	14.26460	0.8881
At most 5	0.042827	1.444450	3.841466	0.2294
Max-eigenvalue test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				

Source: The output of EVIEWS program version 7

3.2.3. The Results of Selecting the Optimum lag

As shown in Table 3.4. selecting lag test used to determine the optimum lag between the variables. The best optimal lag is two periods of the study variables according to the criteria for choosing optimum lag, however, the second optimal lag according to the criteria for choosing optimum lag more appropriate for VECM.

Table 3. 4 The Results of Selecting the Optimal Delay Period

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1420.337	NA	1.11e+29	83.90220	84.17156	83.99406
1	-1264.003	248.2956	9.66e+25	76.82371	78.70922*	77.46672*
2	-1219.553	54.90902*	7.24e+25*	76.32664*	79.82829	77.52081
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Source: The output of EVIEWS program version 7

3.2.4.   The Results of a Vector Error Correction Model (VECM)

As the results showed in Table 3.5. there is a long-run equilibrium between inflation as a study dependent variable and foreign exchange rates, money supply and gross domestic product (GDP) as the independent variables in the Northern Region of Iraq during the period (2008-2016), since the error correction parameter is negative and it is statistically significant according to the t-test which reached -0.29.

Table 3. 5. The Results of a Vector Error Correction Model (VECM)

Vector Error Correction Estimates						
Sample (adjusted): 2008Q4 2016Q4						
Included observations: 33 after adjustments						
Standard errors in ( ) & t-statistics in [ ]						
Co-integrating Eq:	CointEq1					
INFLATION(-1)	1.000000					
DOLLAR(-1)	0.324918					
	(0.09248)					
	[3.51338]					
EURO(-1)	-0.154196					
	(0.05907)					
	[-2.61040]					
GDP(-1)	-0.000782					
	(0.00101)					
	[-0.77224]					
LIRA(-1)	-0.107368					
	(0.08478)					
	[-1.26644]					
MS(-1)	-0.000413					
	(0.00042)					
	[-0.99186]					
Error Correction:	D(INFLATION)	D(DOLLAR)	D(EURO)	D(GDP)	D(LIRA)	D(MS)

CointEq1	-0.291285	0.139330	0.045792	-27.688	0.005437	-18.76515
	(0.05305)	(0.16913)	(0.63262)	(33.3076)	(0.48350)	(53.9886)
	[-5.49109]	[0.82382]	[0.07239]	[-0.83128]	[0.01124]	[-0.34758]
D(INFLATION(-1))	-0.098589	-0.584956	-1.987978	-84.47835	-0.469918	-120.6801
	(0.12277)	(0.39141)	(1.46409)	(77.0849)	(1.11899)	(124.948)
	[-0.80305]	[-1.49447]	[-1.35783]	[-1.09591]	[-0.41995]	[-0.96584]
D(INFLATION(-2))	0.019689	-0.517112	0.349184	-14.89224	0.506268	23.81498
	(0.12092)	(0.38552)	(1.44205)	(75.9244)	(1.10214)	(123.067)
	[0.16283]	[-1.34133]	[0.24214]	[-0.19615]	[0.45935]	[0.19351]
D(DOLLAR(-1))	0.085781	-0.133439	-0.949877	-4.445921	-0.220239	63.20761
	(0.05176)	(0.16503)	(0.61731)	(32.5016)	(0.47180)	(52.6822)
	[1.65719]	[-0.80856]	[-1.53874]	[-0.13679]	[-0.46680]	[1.19979]
D(DOLLAR(-2))	0.261830	-0.318935	0.264372	32.47818	0.003444	4.855973
	(0.04849)	(0.15461)	(0.57830)	(30.4480)	(0.44199)	(49.3534)
	[5.39940]	[-2.06289]	[0.45715]	[1.06668]	[0.00779]	[0.09839]
D(EURO(-1))	-0.017206	-0.029358	0.461344	19.95474	0.278054	8.325127
	(0.01746)	(0.05565)	(0.20817)	(10.9603)	(0.15910)	(17.7656)
	[-0.98570]	[-0.52752]	[2.21618]	[1.82064]	[1.74764]	[0.46861]
D(EURO(-2))	-0.043595	0.016576	-0.360872	13.10933	-0.109506	11.73869
	(0.01975)	(0.06298)	(0.23559)	(12.4039)	(0.18006)	(20.1056)
	[-2.20681]	[0.26318]	[-1.53178]	[1.05688]	[-0.60817]	[0.58385]
D(GDP(-1))	-0.000798	-0.001236	0.002452	-0.479415	0.000887	0.057609
	(0.00034)	(0.00109)	(0.00408)	(0.21466)	(0.00312)	(0.34794)
	[-2.33449]	[-1.13426]	[0.60137]	[-2.23340]	[0.28473]	[0.16557]
D(GDP(-2))	-0.000332	0.003573	0.000861	-0.255666	0.000549	-0.396045
	(0.00041)	(0.00132)	(0.00493)	(0.25956)	(0.00377)	(0.42072)
	[-0.80296]	[2.71105]	[0.17459]	[-0.98501]	[0.14572]	[-0.94135]
D(LIRA(-1))	0.014236	0.090430	-0.089915	5.044532	0.117501	7.413608
	(0.02723)	(0.08681)	(0.32473)	(17.0972)	(0.24819)	(27.7130)
	[0.52281]	[1.04165]	[-0.27689]	[0.29505]	[0.47344]	[0.26751]
D(LIRA(-2))	-0.004869	-0.08897	0.144430	19.21350	-0.029012	3.840913
	(0.02607)	(0.08311)	(0.31089)	(16.3685)	(0.23761)	(26.5318)
	[-0.18677]	[-1.07046]	[0.46457]	[1.17381]	[-0.12210]	[0.14477]
D(MS(-1))	0.000278	-0.001013	-0.004295	0.037022	0.000219	0.538014
	(0.00025)	(0.00079)	(0.00295)	(0.15538)	(0.00226)	(0.25186)
	[1.12156]	[-1.28439]	[-1.45520]	[0.23827]	[0.09711]	[2.13620]
D(MS(-2))	-7.67E-05	0.001222	0.003733	0.340816	-0.002025	0.322648
	(0.00026)	(0.00082)	(0.00305)	(0.16070)	(0.00233)	(0.26048)
	[-0.29975]	[1.49724]	[1.22301]	[2.12085]	[-0.86802]	[1.23868]
R-squared	0.778131	0.687205	0.417270	0.444539	0.179577	0.352108
Adj. R-squared	0.645009	0.499527	0.067632	0.111262	-0.312676	-0.036627
Sum sq. resids	641.8448	6524.283	91283.80	2.53E+08	53322.39	6.65E+08
S.E. equation	5.665001	18.06140	67.55879	3556.999	51.63448	5765.577
F-statistic	5.845267	3.661631	1.193436	1.333843	0.364807	0.905779
Log likelihood	-95.79431	-134.0568	-177.5911	-308.3924	-168.7204	-324.331
Akaike AIC	6.593595	8.912535	11.55098	19.47833	11.01336	20.44430
Schwarz SC	7.183128	9.502068	12.14051	20.06786	11.60289	21.03383
Mean dependent	-1.056667	3.185152	-11.97303	312.7652	-17.32303	3760.937
S.D. dependent	9.508051	25.53061	69.96620	3773.088	45.06724	5662.804

Source: The output of EVIEWS program version 7

There is a positive long-run relationship between the exchange rate of the US dollar against the Iraqi dinar and the inflation in the Northern Region of Iraq during the period (2008-2016), and this relationship is statistically significant according to the t-test. Alternatively, the devaluation of the dinar leads to higher inflation rates because the high exchange rates for the US dollar would make imported expensive and carries a

higher inflation rate in the region. There is an adverse long-run relationship between the exchange rate of the Euro against the Iraqi dinar and the inflation in the northern region of Iraq during the period (2008-2016), and this relationship is statistically significant by t-test. Any reduction in the value of euro, will lead to prices drop for European goods. Thus, the increase of imports leads to the increasing rates of imported inflation in the region.

There is an adverse long-run relationship between the exchange rate of the Turkish lira against the Iraqi dinar and the inflation in the region during the period (2008-2016). This relationship is statistically insignificant according to the t-test and it does not differ from zero. However, the Turkish lira was not playing a dynamic role in Iraqi and in the northern region stock exchange; it means that there is no lira's significant impact in economic activities in the region.

There is an adverse long-run relationship between GDP and inflation during the period (2008-2016). This relationship is not statistically significant according to the t-test, and it does not differ from zero. The relationship between GDP and inflation is insignificant because the production of goods and services in region is almost non-existent, but it depends on imports of goods and services from neighboring countries especially Turkey and Iran.

There is an adverse long-run relationship between money supply and inflation during the period (2008-2016). This relationship is statistically insignificant according to the t-test, and it does not differ from zero. However, the relationship between the money supply and the inflation rate is not significant because the northern region government during the period 2014 till now in money supply depend on revenues of oil exported independently which means it does not depend on the money supply in the Iraqi economy.

Furthermore, the model is significant. So, changes in the major currencies (US dollar, euro, Turkish lira), money supply and gross domestic product (GDP) in the region accounted for about 77% of changes in inflation and the remaining 23% were due to other factors. Also, the results of the estimate demonstrate that the study variables account for about 77% variation in the inflation rate in KRI over the period 2008-2016 besides 23% can be due to other factors not taken in the model. However,

taking into thought the degree of freedom, the adjusted R-squared indicates that 64% of the dependent variable clarified through the explanatory variables.

This study is mainly interested in the first equation of the VEC model, and its estimated results showed in Table 3.6. the thirteen estimated parameters C1, C2…C13 belong to this equation. The coefficient of C1 associated with co-integrating relation included in the model. The value of C1 is -0.291285 which is negative and also statistically significant at the 1% level. Hence, the associated co-integrating equation is valid and there is a long-run or equilibrium relationship between Inflation, the Exchange rate of the major currencies namely (US dollar, Euro, Turkish lira), GDP and Money Supply.

Table 3. 6 VEC model Equation

Dependent Variable: D(INFLATION)				
Method: Least Squares				
Sample (adjusted): 2008Q4 2016Q4				
Included observations: 33 after adjustments				
D(INFLATION) = C(1)*(INFLATION(-1) + 0.324918243049*DOLLAR(-1) - 0.154196481942*EURO(-1) - 0.00078180969252*GDP(-1) -0.107368008673*LIRA(-1) - 0.000413292078116*MS(-1)) + C(2)*D(INFLATION(-1)) + C(3)*D(INFLATION(-2)) + C(4)*D(DOLLAR(-1)) +C(5)*D(DOLLAR(-2)) + C(6)*D(EURO(-1)) +C(7) *D(EURO(-2)) + C(8) *D(GDP(-1)) + C(9)*D(GDP(-2)) + C(10)*D(LIRA(-1)) + C(11)*D(LIRA(-2)) + C(12)*D(MS(-1)) + C(13)*D(MS(-2))				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.291285	0.053047	-5.491095	0.0000
C(2)	-0.098589	0.122768	-0.80305	0.4314
C(3)	0.019689	0.12092	0.162828	0.8723
C(4)	0.085781	0.051763	1.657185	0.1131
C(5)	0.26183	0.048493	5.399398	0.0000
C(6)	-0.017206	0.017456	-0.985695	0.3361
C(7)	-0.043595	0.019755	-2.20681	0.0392
C(8)	-0.000798	0.000342	-2.334489	0.0301
C(9)	-0.000332	0.000413	-0.802961	0.4314
C(10)	0.014236	0.02723	0.52281	0.6069
C(11)	-0.004869	0.026069	-0.186771	0.8537
C(12)	0.000278	0.000247	1.121559	0.2753
C(13)	-7.67E-05	0.000256	-0.299749	0.7675
R-squared	0.778131	Mean dependent var		-1.056667
Adjusted R-squared	0.645009	S.D. dependent var		9.508051
S.E. of regression	5.665001	Akaike info criterion		6.593595
Sum squared resid	641.8448	Schwarz criterion		7.183128
Log likelihood	-95.79431	Hannan-Quinn criter.		6.791955
Durbin-Watson stat	2.486014			

Source: The output of EVIEWS program version 7

As a result, revealed in the Tables 3.7 and 3.8 the residuals of the model approved both the normality test and no-autocorrelation test. VEC Residual Normality Tests under the null hypothesis that residuals are multivariate normally distributed is not rejected due to all the model's probability or p-values more significant than (0.05). Likewise, the VEC residual serial correlation LM test under the null hypothesis shows that there is no serial correlation. Thus, the null hypothesis is not rejected up to lag 11 at 1 percent level. However, the tests only rejected serial correlation up to lag 4.

Table 3. 7 VEC Residual Normality Tests

VEC Residual Normality Tests											
Orthogonalization: Cholesky (Lutkepohl)											
Null Hypothesis: residuals are multivariate normal											
Sample: 2008Q1 2016Q4											
Included observations: 33											
Component	Skewness	Chi-sq	df	Prob.	Kurtosis	Chi-sq	df	Prob.	Jarque-Bera	df	Prob.
1	0.173735	0.166012	1	0.6837	3.175911	0.042549	1	0.8366	0.208561	2	0.9010
2	0.505919	1.407745	1	0.2354	3.206791	0.058799	1	0.8084	1.466543	2	0.4803
3	0.037432	0.007706	1	0.9300	2.452873	0.411603	1	0.5212	0.419310	2	0.8109
4	-0.85264	3.998514	1	0.0455	3.435242	0.260474	1	0.6098	4.258988	2	0.1189
5	-0.29727	0.486050	1	0.4857	2.534003	0.298586	1	0.5848	0.784636	2	0.6755
6	0.281475	0.435756	1	0.5092	2.551977	0.275996	1	0.5993	0.711752	2	0.7006
Joint		6.501782	6	0.3694		1.348007	6	0.9689	7.849789	12	0.7968

Source: The output of EVIEWS program version 7

Table 3. 8 VEC Residual Serial Correlation LM Tests

VEC Residual Serial Correlation LM Tests		
Null Hypothesis: no serial correlation at lag order h		
Sample: 2008Q1 2016Q4		
Included observations: 33		
Lags	LM-Stat	Prob.
1	38.22537	0.3687
2	32.14575	0.6525
3	29.09319	0.7860
4	61.69078	0.0049
5	33.32404	0.5965
6	38.77110	0.3458
7	24.33820	0.9303
8	39.58875	0.3129
9	24.19364	0.9332
10	36.80780	0.4313
11	28.41038	0.8123
12	45.94537	0.1239
Probs from chi-square with 36 df.		

Source: The output of EVIEWS program version 7

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study purposed to examine and identify the relationship between the inflation and foreign exchange rates of the major currencies as US dollar, Euro, and Turkish lira, in the northern region of Iraq (NRI) for the period 2008 - 2016.

The study indicated that the highest inflation rate for goods and services during the period of study in the northern region of Iraq is in 2015 by almost fifty percent, as indicated by Omar (2017) the increased in the money supply by the NRG, while the lowest inflation rate was in 2016 by (-3.27) percent. States that since the imposition of a compulsory savings system by the NRG on public employees' salaries that led to a decrease in the money supply and hence reduced demand for goods and services in NRI.

We conclude from the study that the highest inflation rate in the region during nine years is 46.26 percent in the section of foodstuffs. Moreover, this is because foodstuffs are essential goods cannot dispense, while the lowest inflation rate during the same period was just 16.62 percent in the services sector, and this is because the local authorities support most of the services.

However, the study specified that the lowest annual rate of change in exchange rates was in 2009 at the rate of over minus two percent as revealed by (KRG, 2017). So, this decline is due to the continuation of the Iraqi central bank to raise quantities of the dollar per day on the one hand and the devaluation of the dollar globally due to the financial crisis in the United States of America. While the highest annual rate of change in 2012 was over two percent, this result also similar to Badawahi (2015) states the deterioration of the value of the Iraqi dinar against the US dollar despite the substantial Iraqi oil revenues in 2012 the price of one dollar was 1260 dinars. Moreover, the reason for this decline is not only related to the monetary policy of the Iraqi government but also related to the political turmoil in the broader Middle East.

The study also concludes in section 2.2.1 of the data analysis that the annual growth rate of the exchange rate of the US dollar against the Iraqi dinar during the same period was at the rate of one percent only. So, the reasons for that the intervention of the

Iraqi council of representatives in the independence of the policy of the Iraqi central bank through determining the volume of sales from 210 million dollars to 75 million dollars per day and according to the budget law for the year 2015, as indicated by central bank of Iraq (2018). Besides, the decision of the central bank to impose tax and customs insurance on the purchase of the dollar led to the imposition of speculators margin of interest on the dollar sold in banks and banking organizations and then the rise in the dollar. Further, the corruption spreads among banks dealing with the central bank to offer the US dollar to individuals.

Consequently, in section 2.2.2, of data analysis, the study found that the lowest annual rate of change in the exchange rate of the euro against the Iraqi dinar was in 2015 by minus fourteen percent. So, this decline is due to the crisis in the Eurozone that led to the decline of the European demand for raw materials exported by developing countries like Iraq. Moreover, non-oil countries suffered considerable financial losses, and the budget became in deficit, as well as the strength of the rise of the US dollar against other currencies.

While the results revealed that the highest annual rate of change occurred in 2011 by over five percent due to stabilities of political and economic conditions that prevailed. Besides, increased the confidence of the population to use foreign currencies after 2010 which helped to increase the purchasing power of the dinar against the foreign currency as well as the decline of the US dollar in the markets due to the decline in growth rates in the US economy (NRG, 2017).

However, the study concludes from the same chapter, section 2.2.3 result that the lowest annual rate of change in the exchange rate of the Turkish lira against the Iraqi dinar was in 2014 where it reached minus -24.41 percent. This decline is due to the gradual decrease of the Turkish lira against the Iraqi dinar because the owners of capital began to switch their savings to significant currencies that increased demand on the dollar or euro in the Turkish markets. Although the highest annual rate of change of the Turkish lira was in 2010 by 4.44% so, this result is similar to Mashhadani (2013) that states the rise back to the end of 2008. The global economic crisis began to affect Turkey. However, the Turkish economy grew by 0.7% in 2010, 2009 by 4.8%, but soon regained growth and rose to 9.2% in 2010, and this fluctuation of the Turkish economy

directly related to the price of the Turkish lira against the price of the Iraqi dinar in the Iraqi exchange markets.

As indicated in chapter three section 3.2.4, VECM the estimate displays a positive long-run relationship between the exchange rate of the US dollar against the Iraqi dinar and inflation in the Northern Region of Iraq period (2008-2016) and this relationship is statistically significant according to the t-test. Alternatively, the devaluation of the dinar leads to higher inflation rates. Because the high exchange rates for the US dollar would make imported expensive, carries a higher inflation rate in the Northern Region of Iraq.

However, there is an adverse long-run relationship between the exchange rate of the Euro against the dinar to the inflation in the Northern Region of Iraq during the period (2008-2016), and this relationship is statistically significant by t-test. Any reduction the value of the euro, will lead to lower prices for European goods, thus increasing imports, and increasing rates of imported inflation in the Region.

There is an adverse long-run relationship between the exchange rate of the Turkish lira against the dinar and inflation in the Region during the period (2008-2016). This relationship is statistically insignificant according to the t-test, and it does not differ from zero. However, the Turkish lira was not played a dynamic role in Iraqi and its Northern Region stock exchange; it means that there is no lira's significant impact in economic activities in the region.

There is an adverse long-run relationship between GDP and inflation during the period (2008-2016). This relationship is not statistically significant according to the t-test, and it does not differ from zero. The relationship between GDP and inflation is insignificant because the production of goods and services in Region is almost non-existent, but it depends on imports of goods and services from neighboring countries, especially Turkey and Iran.

There is an adverse long-run relationship between money supply and inflation during the period (2008-2016). This relationship is statistically insignificant according to the t-test, and it does not differ from zero. However, the relationship between the money supply and the inflation rate is not significant because the Northern Region Government during the period 2014 till now in money supply depend on revenues of oil

exported independently which means it does not depend on the money supply in the Iraqi economy.

Furthermore, the model significant, so, changes in the major currencies (US dollar, euro, Turkish lira), money supply and gross domestic product (GDP) in the region accounted for about 77% of changes in inflation and the remaining 23% were due to other factors. Also, the results of the estimate demonstrate that the study variables account for about 77% variation in the inflation rate in KRI over the period 2008-2016 besides 23% can be due to other factors not taken in the model. However, taking into thought the degree of freedom, the adjusted R-squared indicates that 64% of the dependent variable clarified through the explanatory variables.

Recommendations

In the light of the results and conclusions the current study reached, the researcher endorses the subsequent recommendations:

The researcher endorses it is the responsibility of the Iraqi central bank to remove three zeroes from the Iraqi currency categories (1,5,10,25,50) by 2020. To achieve economic stability and low inflation rates in Iraq and the region.

It is necessary for NRG authorities to direct towards industrial, agricultural ventures, tourism and with the participation of the private sector because that will contribute to easing inflationary pressures and thus will lead to reduce imports and increase domestic production. Intensify the efforts of the establishment of a formal stock exchange trading in Erbil, capital of NRI.

It is the responsibility of the Iraqi central bank to work on the convergence of parallel exchange rates and official exchange rates. To reduce speculation in foreign exchange markets in the Iraqi provinces, especially in the region. Trade policymakers also to protect domestic production from rival foreign goods, especially goods from neighboring countries.

Nevertheless, it is the responsibility of the Iraqi central bank to continue the process of the auction to sell currencies until the stability of economic conditions in Iraq. Although, the trend towards increasing commodity exports to a degree exceeding

the commodity imports in the region to reduce the continuing deficit in the balance of trade. Especially with neighboring countries. Moreover, the result of lower inflation rates as well as the rise in the value of the Iraqi dinar against other foreign currencies.

However, the researcher recommends that for both the federal government in Baghdad and the NRI in Erbil is necessary to do actions to reduce the smuggling of the US dollar currency to neighboring countries, especially to Iran.

The researcher recommends that the resarchers in future have to (Analyze the relationship between foreign exchange rates for major currencies and gold prices in Iraqi region for the Period 2003-2018), to deliver the scientific research in the field of foreign exchange rates and the rate of inflation.

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APPENDIXES

Appendixes (1) The price of the Dollar against the Iraqi Dinars in (Erbil, Duhok, and Sulaymani) provinces in the form of monthly

Years	provinces	January	February	March	April	May	June	July	August	September	October	November	December
2008	Erbil	1231	1223	1236	1221	1215	1260	1205	1198	1190	1198	1198	1183
	Duhok	1231	1224	1225	1221	1214	1210	1206	1217	1187	1189	1187	1184
	Sulaimaniyah	1232	1225	1226	1221	1213	1209	1206	1196	1189	1191	1188	1184
2009	Erbil	1182	1180	1181	1183	1190	1180	1186	1183	1184	1183	1183	1184
	Duhok	1182	1180	1181	1180	1191	1182	1186	1186	1184	1183	1184	1187
	Sulaimaniyah	1182	1180	1180	1180	1189	1181	1185	1185	1184	1183	1183	1186
2010	Erbil	1185	1183	1183	1183	1183	1186	1185	1187	1187	1184	1190	1194
	Duhok	1186	1185	1185	1183	1185	1186	1188	1187	1151	1186	1190	1194
	Sulaimaniyah	1186	1185	1185	1183	1184	1186	1187	1187	1186	1185	1191	1194
2011	Erbil	1194	1193	1191	1200	1194	1198	1198	1201	1205	1199	1204	1220
	Duhok	1194	1193	1192	1192	1201	1195	1200	1203	1205	1200	1204	1220
	Sulaimaniyah	1194	1193	1192	1191	1199	1195	1200	1202	1204	1200	1205	1219
2012	Erbil	1215	1227	1242	1258	1260	1242	1252	1250	1233	1205	1210	1223
	Duhok	1209	1238	1240	1268	1254	1241	1257	1251	1232	1204	1211	1225
	Sulaimaniyah	1209	1234	1240	1264	1251	1239	1228	1250	1232	1202	1210	1224
2013	Erbil	1230	1239	1260	1277	1275	1237	1221	1212	1216	1225	1230	1225
	Duhok	1231	1235	1260	1277	1277	1239	1221	1215	1216	1226	1231	1230
	Sulaimaniyah	1230	1235	1259	1275	1274	1238	1220	1212	1215	1225	1225	1227
2014	Erbil	1234	1230	1230	1220	1223	1214	1223	1218	1214	1211	1203	1212
	Duhok	1235	1231	1230	1220	1217	1215	1232	1218	1213	1210	1205	1220
	Sulaimaniyah	1230	1231	1233	1222	1225	1215	1220	1215	1210	1211	1205	1219
2015	Erbil	1223	1238	1270	1296	1329	1310	1235	1214	1227	1224	1225	1219
	Duhok	1222	1241	1275	1297	1317	1323	1239	1221	1230	1223	1259	1223
	Sulaimaniyah	1220	1239	1270	1295	1330	1303	1234	1210	1225	1220	1223	1220
2016	Erbil	1243	1247	1269	1289	1294	1276	1276	1285	1295	1301	1306	1302
	Duhok	1241	1250	1284	1292	1277	1280	1286	1296	1306	1302	1302	1310
	Sulaimaniyah	1244	1250	1271	1290	1295	1274	1270	1295	1299	1307	1310	1300

Source: Erbil, Duhok, and Sulaimaniyah Chamber of Commerce and Industry / Iraq

Appendixes (2) The price of the Turkish Lira against the Iraqi Dinars in (Erbil, Duhok, and Sulaymani) provinces in the form of monthly

Years	provinces	January	February	March	April	May	June	July	August	September	October	November	December
2008	Erbil	1082	1015	1015	1015	1015	995	975	975	975	975	975	750
	Duhok	1030	1020	975	930	950	980	975	975	980	975	970	975
	Sulaimaniyah	1050	1050	1050	1050	1050	1000	1000	1000	1050	1050	1050	990
2009	Erbil	750	750	740	700	700	700	700	700	700	700	800	800
	Duhok	760	725	690	740	765	750	770	780	780	800	780	790
	Sulaimaniyah	890	820	750	750	750	750	795	820	825	850	850	850
2010	Erbil	800	800	800	800	800	800	800	800	800	800	815	815
	Duhok	785	780	765	770	790	760	765	780	785	815	820	790
	Sulaimaniyah	850	825	800	800	800	800	750	795	800	840	850	850
2011	Erbil	815	815	780	750	770	740	740	750	740	740	740	740
	Duhok	765	750	740	780	760	740	720	685	770	640	645	645
	Sulaimaniyah	800	800	800	800	800	800	800	790	710	711	700	700
2012	Erbil	740	740	700	700	715	700	700	700	690	670	675	675
	Duhok	640	690	690	690	710	665	695	690	685	660	670	685
	Sulaimaniyah	700	700	700	700	700	700	800	710	725	700	700	700
2013	Erbil	692	690	703	709	709	675	640	620	610	620	618	613
	Duhok	685	695	685	695	715	670	625	605	590	610	615	610
	Sulaimaniyah	715	702	695	695	715	715	697	652	612	610	615	610
2014	Erbil	520	530	500	495	504	509	465	440	415	415	425	421
	Duhok	552	553	555	556	566	575	572	569	550	535	535	528
	Sulaimaniyah	522	529	510	490	509	510	460	442	410	414	422	437
2015	Erbil	525	530	500	495	504	509	465	440	415	415	425	421
	Duhok	522	505	491	490	500	485	455	437	546	416	423	417
	Sulaimaniyah	520	530	500	297	502	507	466	438	411	415	425	420
2016	Erbil	413	420	399	450	449	442	430	435	443	440	450	390
	Duhok	416	420	429	445	448	435	466	439	435	427	399	372
	Sulaimaniyah	410	415	400	455	450	440	435	430	440	442	445	395

Source: Erbil, Duhok, and Sulaimaniyah Chamber of Commerce and Industry / Iraq

Appendixes (3) Consumer Price Index in Kurdistan Region

Years	Region & provinces	January	February	March	April	May	June	July	August	September	October	November	December	General Index Number
2008	Erbil					121.31	127.59	134.59	126.46	124.62	128.18	131.47	131.83	128.26
	Duhok					126.19	121.23	120.06	122.27	124.89	133.16	134.1	132.24	126.77
	Sulaimaniyah					134.57	134.38	133.92	133.4	142.25	135.52	143.07	140.49	137.20
	Region					127.95	129.16	131.31	128.54	132.16	132.33	136.94	135.59	131.75
2009	Erbil	127.71	129.41	122.85	123.39	127.55	125.27	119.88	117.75	118.69	125.11	119.96	121.98	123.30
	Duhok	132.32	129.17	133.84	130.7	128.21	130.24	128.53	128.22	128.74	129.94	128.86	129.21	129.83
	Sulaimaniyah	127	135.61	136.8	121.55	132.04	126.4	124.75	127.32	125.33	133.53	125.75	118.15	127.85
	Region	128.36	131.99	130.73	142.12	129.59	126.78	123.73	123.97	123.58	129.68	124.26	121.85	128.05
2010	Erbil	121.46	121.98	122.63	123.42	122.04	124.48	121.38	124.56	127.17	127.43	129.47	132.42	124.87
	Duhok	129.2	129.79	128.74	128.18	128.86	126.65	124.84	127.81	133.72	132.79	136.25	136.46	130.27
	Sulaimaniyah	118.62	127.89	129.58	135.75	129.73	131.9	122.07	124.38	125.44	129.38	136.89	130.25	128.49
	Region	121.85	126.1	121.84	129.64	126.71	127.01	122.39	125.15	127.79	129.36	134.02	132.34	127.02
2011	Erbil	131.11	131.44	130.49	129	134.72	132.97	131.72	137.4	138.3	137.49	138.14	138.48	134.27
	Duhok	136.71	137.4	136.49	136.84	134.1	129.85	128.6	129.67	129.91	132	131.53	132.39	132.96
	Sulaimaniyah	122.19	122.14	123.49	124.72	125.14	125.14	124.84	124.71	124.99	124.39	125.52	128.35	124.64
	Region	128.48	128.72	128.76	128.8	130.53	129.01	128.16	130.42	130.92	130.8	131.42	132.92	129.91
2012	Erbil	146.05	149.2	149.86	151.66	149.61	146.99	148.04	156.45	156.26	150.1	153.4	153.03	150.89
	Duhok	133.8	134.51	135.69	138.13	137.6	132.3	130.64	135.98	138.9	140.48	138.52	138.52	136.26
	Sulaimaniyah	128.85	129.53	130.94	131.64	131.81	128.92	130.46	131.27	132.74	130.65	129.3	130.37	130.54
	Region	136.22	137.82	138.9	140.37	139.57	136.28	136.98	141.53	142.69	139.86	141.1	140.42	139.31
2013	Erbil	153.8	154.1	154.4	154.8	153.4	152.6	154.3	154.9	157.7	159.5	158.8	160.4	155.73
	Duhok	137.3	138.1	138.3	139.8	139.6	137.1	135.4	134.6	134.3	139.4	139.7	141.5	137.93
	Sulaimaniyah	131.8	133.6	135.2	137	135.6	135.1	135.3	134.7	135.2	135.6	135.5	135.8	135.03
	Region	141.1	142.2	142.9	144.2	143	141.9	142.3	142.2	143.3	145.2	145	146	143.28
2014	Erbil	164.4	164.5	164.6	162.9	158.4	161	164.1	165.4	165.9	167.2	169.4	168.5	164.69
	Duhok	150.1	147.4	140.8	141.6	142	140.8	138.9	141.4	142	143.8	148.2	149.8	143.90
	Sulaimaniyah	138.3	137.2	137.6	137.1	136.2	136.6	136.2	137.1	136.9	138	139.6	139	137.48
	Region	150.4	149.4	148.4	147.6	145.6	146.5	147	148.4	148.7	150	152.4	152.1	148.88
2015	Erbil	165.2	166	164.5	164.6	164	163.4	163.1	163.7	161.9	161.9	160.3	161.7	163.36
	Duhok	149	147.1	146.9	146.2	147.3	145.8	144.2	141.3	144.3	143.7	142	144.8	145.22
	Sulaimaniyah	138	136.1	138.4	141	141.6	142.8	142	143.5	141.5	141.5	141.6	142	140.83
	Region	150.4	149.4	149.8	150.7	151.1	151	150.2	150.5	149.6	149.5	148.6	149.9	150.06
2016	Erbil	97.2	95.4	93.9	93.4	94.3	95.2	94.9	94	93.6	92.3	92.8	93.9	94.24

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Duhok	102	101.5	101.4	100.1	101	97.6	99.1	99.4	98.5	97.9	99.5	98.7	99.73
Sulaimaniyah	100.7	101.4	95	95.7	95.1	96.6	96.8	97.5	98.1	98.8	96.8	96.4	97.41
Region	99.7	99.2	95.9	95.8	96	96.6	96.6	97	96.5	95.5	95.9	96	96.73

Source: Ministry of planning, Regional statistics authority, consumer price index unit, official records.

* Due to the lack of information on consumer price index from January to the fourth month of 2008, the researcher obtained information from the other months of the same years scientifically.

Appendixes (4) Inflation Rate, Foreign Exchange Rates, GDP and Money Supply in the Iraqi Kurdistan Region

Years	Seasons	Dollar	Euro	Lira	Money Supply	GDP	The Inflation of goods and services
2008	First	1228.11	1820.67	1031.89	63754.30	31346.61	31.5
	Second	1220.44	1902.22	998.33	66486.16	31639.57	28.56
	Third	1199.33	1809.67	989.44	77744.35	32551.00	30.67
	Fourth	1189.11	1599.22	967.78	83923.56	34666.82	34.95
2009	First	1180.89	1553.22	763.89	93734.67	25849.50	30.36
	Second	1184	1608.33	733.89	94163.44	27747.73	32.83
	Third	1184.78	1683.67	763.33	102533.69	27915.23	23.76
	Fourth	1184	1739.78	802.22	111632.52	30148.44	25.26
2010	First	1184.78	1646	800.56	120817.37	31304.77	23.26
	Second	1184.33	1503	791.11	135204.00	34629.18	27.79
	Third	1182.78	1542.33	786.11	142440.14	36083.60	25.11
	Fourth	1189.78	1613.22	821.67	147831.34	36499.15	31.91
2011	First	1202.44	1610.44	785	148865.25	43883.37	28.65
	Second	1196.11	1722.11	771.11	151481.96	45973.05	29.45
	Third	1202	1688.89	745	161959.02	46437.43	29.83
	Fourth	1207.89	1644.89	695.67	172449.13	49455.86	31.71
2012	First	1228.22	1615.33	700	172930.01	53635.92	37.65
	Second	1253	1617.67	697.78	172435.68	54071.99	38.74
	Third	1242.78	1578.44	710.56	173908.23	54508.05	40.4
	Fourth	1212.67	1579.11	681.67	182778.57	55816.24	40.46
2013	First	1242.11	1653.56	695.78	186341.10	54729.24	42.07
	Second	1263.22	1661.33	699.78	196936.23	58659.43	43.03
	Third	1216.44	1622.78	627.89	206385.72	60243.23	42.6
	Fourth	1227.11	1679.33	613.44	210325.67	61005.80	45.4
2014	First	1231.56	1680.78	530.11	212719.72	57328.37	49.4
	Second	1219	1680.22	523.78	214111.47	55546.14	46.57
	Third	1218.11	1636.11	480.33	214380.26	57122.73	48.03
	Fourth	1210.67	1519.56	459.11	221139.19	58493.67	51.5
2015	First	1244.22	1427.11	513.67	210548.83	44910.05	49.87
	Second	1311.11	1447.22	476.56	205727.78	47963.94	50.93
	Third	1226.11	1357.33	452.56	210995.41	43472.93	50.1
	Fourth	1226.22	1342.44	419.67	204109.29	43293.29	49.33
2016	First	1255.44	1383.44	413.56	200516.21	41414.59	-1.73
	Second	1285.22	1446.56	446	202863.50	42756.49	-3.87
	Third	1289.78	1438	439.22	204699.82	44445.66	-3.3
	Fourth	1304.44	1414.56	417.78	201855.26	42872.25	-4.2

Source: Erbil, Duhok, and Sulaimaniyah Chamber of Commerce and Industry / Iraq & Central bank of Iraq

Appendixes (5) Curriculum Vitae

PERSONAL INFORMATION		
Name and Surname	Farhang Abdulkareem Elias AQRAWI	
Date of birth	20 July 1981	
Address	Shorsh - Arbil - Iraq	
Phone (Iraq) **Phone (Turkey)**	+9647504495274, +9647805959488 +905539215274	
E-mail	farhangabdulkareem.1988@gmail.com	

EDUCATION AND TRAINING		
Degree	**Institution**	**Time Interval**
Bachelor of Science	Salahaddin University, College of Economic and Administration, Department of Economic	2009 - 2013
Master of Science	Siirt University, Faculty of Economic and Administration, Siirt (TURKEY)	2016 - 2018

WORK EXPERIENCE		
Ministry	**Position and Responsibilities**	**Time Interval**
Ministry of Health	The employee, Child Hospital	2005 - 2013
Ministry of Higher Education	Research Assistant in the College of Economic and Administration	2013 - 2016

PERSONEL SKILS	
Languages	Kurdish mother language
	Arabic
	English
Computer skills	MS Word, MS Excel, MS PowerPoint, MS Access Database and EViews Program.