

**CONTROL OF INFLATION ON THE ROAD OF THE ACCESSION TO EUROPEAN
MONETARY UNION**

THE CASE OF ALBANIA

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Abstract

The aim of this thesis is to analyze the monetary policy and inflation targeting applied by the Bank of Albania on the road to Euro adaption. There will be a comparison with the monetary policy used by the European Central Bank for the countries aiming to join the European Union and it will be shown if the Bank of Albania's monetary policy rules adapt those of the ECBs. The data of inflation and exchange rates in the Albanian economy in 2005-2013 has been used. Since the variables are non-stationary and present unit roots, Johansen's co-integration technique has been applied. This methodology has allowed for obtaining of a co-integrating relationship among the variables in the long-run. The co-integration results provide evidence of a no co-integration. This indicates that inflation and exchange rate does not move together in Albania in the long-run. According to the test results, it can be said that in the long-run foreign currency does not main cause of inflation in Albania.

Key words: Inflation, Exchange Rate, Johansen Co-integration Test, Albania.

Abstrakt

Qëllimi i kësaj teze konsiston në analizimin e politikave monetare dhe inflacionit të parashikuar aplikuar nga Banka e Shqipërisë në rrugën drejt adaptimit të Euros. Një krahasim midis politikave monetare të aplikuara nga Banka Qëndrore Europiane për vendet të cilat synojnë një vend në Bashkimin Europian do të zhvillohet dhe do të tregohet nëse rregullat e politikave monetare të Bankës së Shqipërisë janë të adoptueshme me ato të Bankës Qëndrore Europiane. Të dhënat e inflacionit dhe kursit të këmbimit valutor të ekonomisë së Shqipërisë për periudhën 2005 – 2013 janë përdorur. Teknika e Johansene bashkë integrimit është aplikuar duke parë se ndryshoret janë jo stacionare dhe paraqesin një rrënjë njësi. Kjo teknikë lejon të ketë një marrëdhënie të bashkë integruar ndërmjet ndryshoreve në afatgjatë. Rezultatet e bashkë integruara tregojnë se nuk rezultojnë bashkë integrim. Kjo do të thotë se inflacioni dhe kursi i këmbimit valutor nuk levizin së bashku në afatgjatë për Shqipërinë. Duke u bazuar në rezultatet e testit, mund të thuhet se në afatgjatë monedha e huaj nuk ka ndikim për inflacionin në Shqipëri.

Fjalë kyçe: Inflacion, Kursi i Këmbimit Valutor, Teknika e Johansen Co – Integration, Shqipëri

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Declaration

1. The material included in this thesis has not been submitted wholly or in part for any academic award or qualification other than that for which it is now submitted.
2. The program of advanced study of which this thesis is part has consisted of:
 - i) Research Methods course during the master study
 - ii) Examination of several thesis guides of particular universities both in Albania and abroad as well as a professional book on this subject.

Grisida Bakalli

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List of Abbreviations

ADF: Augmented Dickey–Fuller

EU: European Union

ECB: European Central Bank

BoA: Bank of Albania

EMU: European Monetary Union

OSCE: Organization for Security and Co-operation in Europe

NATO: North Atlantic Treaty Organization

GDP: Gross Domestic Product

VAR: Vector Auto Regression

HICP: Harmonized Index of Consumer Prices

USD: United States Dollar

ALL: Albanian Lek

ERM: Exchange Rate Mechanism

CPI: Consumer Price Index

IT: Inflation Target

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INTRODUCTION

Albania since June 2014 is an official candidate for the accession to the European Union (EU). The process to the European integration is very important and Albania's work toward it has been increasing from year to year, aiming to achieve the "candidate country's status".

The aim of this master thesis is to investigate the control of inflation and inflation targeting, the monetary policy of Albania and European Central Bank (ECB) and the adaption of the Bank of Albania's (BoA) monetary policy to ECB. Some conditions are to be fulfilled to become a member of the EU and for Albania the most important one is to control inflation on the road to the membership of the EU, so it must maintain price stability and inflation must decrease at the required levels of EU.

The history of the Albanian inflation has been through different values, it reached the highest one in 1997 because of the collapse of the famous pyramid schemes but those values have been decreasing since then. The most important financial institution, BoA always aims to maintain price stability as its primary objective and by achieving this; consequently the inflation rate must be kept at the required levels. Keeping the inflation target at this level will lead to positive effects in the road to the EU accession. Furthermore, evidences from the BoA have been showing that, from year to year the inflation rate levels have been positive toward the integration process.

Inflation targeting is a crucial reliable monetary policy strategy because it constrains to conduct some specified kind of information. The BoA values that a major positive contribution in the economy will be effected from the monetary policy by targeting an inflation rate at 3.0%. Maintaining a low inflation rate will lead to positive real interest rates and will keep the banking system's stability safe.

Another major task of the BoA to achieve the EU accession is the monetary stability of the Albanian economic development, which is measured by inflation rates and also by the volatility of exchange rates which have had successful outputs. The obviously aim of the BoA to turn to formal inflation targeting (Haderi & Kolasi 2003), publishes a target band for inflation rates between 2-4%.

The EU commission has established some main conditions under the Maastricht criteria, also known as the convergence criteria, which are the criteria for EU member states to enter the third stage of European Economic and Monetary Union and adopt the euro as

their currency in which they place control over inflation, public debt and the public deficit, exchange rate stability and the convergence of interest rates. The Treaty provides three stages for European Monetary Union which includes the free movement of capital between member states, economic policies coordination, and stronger central bank cooperation, introduction of the euro as the single European currency for the member states and implementation of the common monetary policy implemented by the ECB.

Thus, Albania has to achieve the necessary degree of compliance with the membership, so it needs to fulfill these key priorities. The most important one is to establish a functioning market economy. The main objective of the ECB is to maintain price stability and it also should support the general economic policies in the EU to contribute to the achievement of the objectives. In this master thesis the co-integration model is going to be applied by using yearly inflation and exchange rate data for the case of Albania, in order to measure the relationship between these two variables.

In the following chapters it is going to be discussed the monetary policy of the BoA and the indicators that lead to a successful decision making on the road to the EMU. The trends of the inflation rates achieved by BoA are going to be observed, inflation targeting launched by BoA from different years and objectives of BoA to reach stable inflation rates.

In the third part it is going to be discussed the monetary policy of the ECB to contribute in the achievement of the Union's objectives, the criteria that a country must conduct to adopt the EU's single currency, the inflation targeting conducted by ECB, the adaption of the BoA's monetary policy to the ECB and the achievements that BoA has reached toward EMU.

The analyses used in this paper concerns in the examination of the long run relationship between inflation and exchange rates by using Johansen co integration test.

CHAPTER 1. LITERATURE REVIEW

To further develop the analysis of this master thesis, an important task is to analyze some same models which were carried out by some studies. A research study developed by Boka (2014) on the integration process of Albania to the EU attempted to present the current level of the Copenhagen criteria compliance prior to EU accession and the Maastricht convergence criteria for EMU entailed the price stability, exchange rate stability fiscal criteria and long-term interest rate criteria, which concluded that toward the integration to Europe, there should be made sustained efforts to permanently meet those criteria and assure the competitiveness of the Albanian economy in European markets.

An important research made on the central bank independence and inflation targeting for the case of Romania by Dumiter (2014) whose main purpose was to construct a new index for central bank independence and inflation targeting, which wants in the first place to eliminate the differences of de jure and de facto independence for measuring independence both for developed countries and emerging countries based on some legal aspect and of some actual practice and behavior of the central banks. In the second place, inflation targeting was considered and the central bank independence are mutually reinforcing. By increasing central bank independence this fact will automated lead to an increase transparency and accountability of the central bank, conducting to a higher credibility of the central bank and automated to an efficient inflation targeting regime. Moreover, an efficient inflation targeting regime can increase central bank independence through an explicit target and a higher transparency of this monetary policy regime.

The study made on the democratization in Albania, the OSCE, NATO and the EU by Mema (2010) gives a specific focus on the integration of Albania to the EU, in which was stated that the EU's aid and assistance to Albania have been adapted to respond to the needs of the political and economic situation in the country. The EU contributions have moved from emergency assistance to rebuilding infrastructure, from economic recovery to developing government institutions, legislation and social development and from reinforcing democracy and the rule of law to promoting regional and cooperation. Accessing the EU market would help ensure the realization of economic growth rates that may over time close the existing GDP per capita gap between Albania and other EU members .

A research study developed by Weyerstras (2008) on the Bosnia and Herzegovina's EU integration process and economic policy making in the EU, by addressing the current

state of the country's accession process, the criteria defined at the European Council meeting in Copenhagen and Madrid, which candidate countries have to fulfill before acceding the EU. This analysis explored some possible macroeconomic effects of the country's accession as well as effects on public finances. The paper concluded that the stability and growth pact was intended to ensure the sound management of public finances in the euro area and to avoid a situation whereby a lax budgetary policy on the part of one member state is paid for by the others in terms of a negative impact on exchange rates or on confidence in the macroeconomic stability of the euro area.

A study developed by Muco, Sanfey and Taci (2003) examines the conduct of monetary policy in Albania during the transition period, identifies various channels through which monetary policy can affect prices and output. The vector auto regression model (VAR) of key macroeconomic variables estimated the weak link between money supply and inflation up to mid 2000. It concluded by arguing that, a move to formal inflation targeting could help promote the transparency and credibility of the monetary policy, but such a move should be introduced only when the country is ready for it.

The IMF working paper on the inflation in Albania developed by Rother (2000) used a model of inflation to provide insight into the nature and extent of relative price adjustments during the transition period, and argued that some of their inflationary effects should not be resisted. It presented an econometric analysis of the impact on aggregate inflation of macroeconomic variables on one side and the skewness of the price distribution on the other. And the results showed that the continued need for relative price adjustments had put upward pressure on inflation. The inflationary impact is of an economically meaningful magnitude and, judging by the recent upward trend in the skewness of the distribution of individual price changes, likely to persist in the future. For the case of Albania, some higher inflation rate than that usually targeted in developed economies is likely optimal. In the latter, inflation targets around 2% can be justified by the effect of quality miss measurement and the desire to leave some scope for low or negative real interest rates.

CHAPTER 2. THEORETICAL APPROACH AND POLICY

This chapter focuses mainly in the way BoA conducts the monetary policy which its primary aim is to maintain price stability to sustain the macroeconomic balances of the country's economy and the inflation targeting policy framework it conducts to manage inflation at low and positive rates.

2.1. Monetary Policy of the BoA

The main objective of the BoA's monetary policy according to the Law "On the Bank of Albania" is to achieve and maintain price stability, which is the greatest task that the central bank can perform to sustain the long- term economic growth of the country. The BoA details quantitative and qualitative indicators that will lead to a successful decision making in the monetary policy, it introduces the framework of instruments employed to implement the monetary policy and also presents the main instruments used in communicating the monetary policy to the public.

By maintaining price stability, directly the macroeconomic balances of the country will be sustained. Specifically, achieving and maintaining price stability, means keeping low but positive inflation rates and maintaining them for long periods of time. The estimations from BoA show that the monetary policy will continue to provide a positive contribution to the Albanian economy as it targets an inflation rate approximately at 3.0% (BoA, 2015) and this estimate shows that it affects positively the level and stability of the economic growth rates. Having a low inflation rate helps maintain positive real interest rates and facilitates the convergence process with the developed economies and also gives road the achievement of the aim of joining the EU.

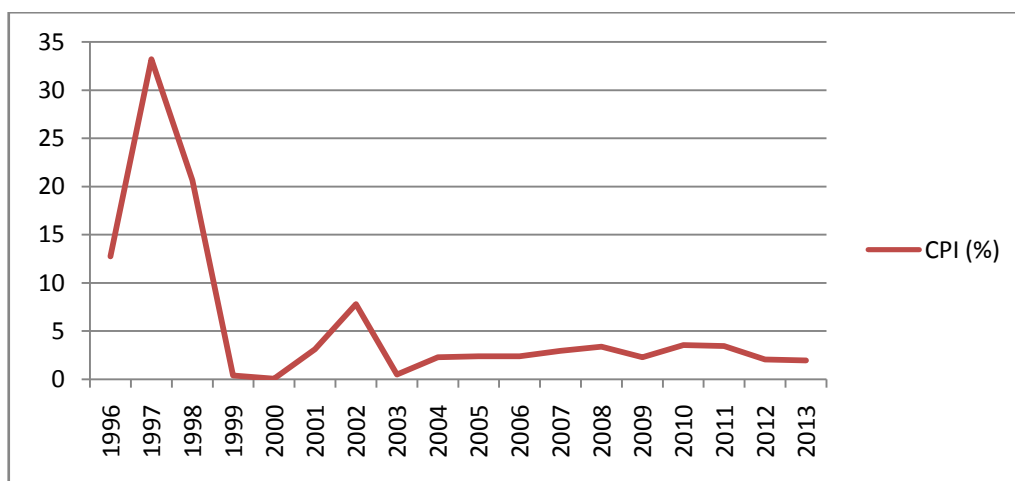
According to the BoA (2014) in the achievement of the inflation rates the Albanian records has been mainly good for the period from 2012 to 2014. So, the consumer price inflation went to lower levels from more than 40% compared to approximately 3% in the aftermath of the 1997 of the pyramid scheme. The BoA has made a determined work by reducing inflations levels, in the monetary policy as the ALL has been appreciating against the Euro and even more against USD. The BoA should continue to approach the inflation targets as it is still considered as being new in age and a period of 2 to 3 years with low inflation should precede the adopting of inflation targeting regime, considering as low an inflation rate that fluctuates from 1 to 3 %.

2.2. Inflation and inflation targeting policy of the BoA

Inflation Targeting (IT) is the policy framework which is used to manage inflation is being adapted from a major number of countries since the 1990's. Albania has been one of those countries which has had major inflation fluctuations, where inflation was reduced from 85% in 1993 to 22.6% in 1994 and after this transition years reached the lowest value of 7.8% in 1995 but this rates would not be stable for a long time, as at the end of 1997 the annual inflation rate reached 42% as a result of the pyramid schemes collapse. (Bolle & Meyer, 2013)

In 1999-2000 Albania has a negative annual inflation rate that lead to a deflationary period, but in the mid of the 2001 inflation jumped to 5.6% and in 2002 reached a higher value of 7.7 %. Such high values where reached as a result of a series of factors like, electricity energy crisis, political problems, slower international economic growth and introduction of the euro at the beginning of 2002. Starting from 2003 inflation progress in Albania had been under the pressure of domestic and international macroeconomic developments in which it observed that the annual inflation rate has reached stabilized values due to the BoA tolerance band. (Boka, M.&Torluccio,G.,2013) Analyzing the period from 2007 to 2011 it can be observed that the average inflation rate dropped to 3.1% close to the BoA's inflation rate target. (BoA, 2013)

Graph 1. CPI trends in 1996-2013



Source: INSTAT (2015).

The IMF has set a formal program framework which is accompanied by some quantitative objectives of the net international reserve, of net internal means of the BoA and

of the total funding of the budget deficit and these are the main objectives of the BoA aiming to achieve the control of the money supply. The monetary policy of the BoA manages the money supply and interest rates by achieving price stability in the short to medium term. The reason why the Central Bank adopts IT is to show more transparency and credibility and according to the BoA it is considered the most appropriate monetary policy for Albania in these aspects. (Kodheli, 2006)

The BoA has launched a new point target of 3% from 2-4% that was previously, which is expected to generate a main point for inflation expectations and anchor them to our inflation objective by using some econometric inflation forecasting models. The reasons for this model are to reach the improvement of the existing forecasting tools and the quarterly forecasting models have shown better approaches at predicting inflation which gives them further reliability (BoA, 2006). Another model is the structural econometric model which is a process that is composed of the improvement of the statistical database in the elaboration of the equations and in the collaboration between research work and monetary policy. So, IT regime is a forecasting procedure that analyses the dependency between economic indicators step by step up to macro links level and it is a transparent mechanism easy to be understood by the public which leads to the increase of central bank's responsibility.

The BoA targets a positive inflation rate to take into account the fast technological evolution of products and their qualitative improvement. Also by targeting a low value of inflation rate leads to maintaining positive real interest rates, consequently helping generate savings and financial flows in supporting investments in the economy. The BoA has launched a target inflation rate of 3.0 % because of the need for higher relative price volatility and it also helps the convergence process with the developed economies to achieve the European Union. (BoA, 2014)

The BoA revises yearly the inflation objectives and publishes them in the BoA annual Reports and the most important objective is still to maintain a target of 2 to 4% for mid-term period. One reason why the volatility of prices increases in Albania is because of the large weight food consumption and to get rid of the seasonal volatility is to target average inflation. The target of 2-4% is reasonable appropriate account price volatility in spite of the fluctuation weather during the period. (BoA, 2013)

By comparing Albania to other transitions economies, inflation has been showing generally low rates and not far from inflation seen across EU countries. When the economy is

not under major shocks, inflation seems to stabilize and this is a dynamic and fragile equilibrium. A wide range of information is used in establishing the implementation of the monetary policy under inflation targeting, thus to the BoA is given an opportunity to include the higher complexity of the Albanian economy in the decision making structure by allowing the central bank the necessary flexibility toward possible future macroeconomic shocks.

IT leads to a better balance regarding the monetary policies and considering that it is accompanied with fluctuating exchange rates it gives way for efficient administration of external shock factors. The benefits of inflation targeting in the long term are shown in the way of monetary policy is entertained by adopting Euro which is a long process if considered that it will take considerable period to the conclusion of this process.

CHAPTER 3. ALBANIAN ACCESSION TO THE EMU

In this chapter there will be discussed some crucial points regarding the objectives of the European Central Bank in the way it conducts its monetary policy to control euro inflation and how the inflation targeting policy of the EU is conducted. The steps the ECB takes to maintain stable values. It will be focused on the criteria Albania must fulfill to enter the ECB monetary policy and the introduction of Euro to the Albanian economy.

3.1. Monetary Policy of the ECB

The main objective of the ECB is to maintain price stability and of its own monetary policy according to the Treaty on the Functioning of the European Union, Article 127. It should monitor the economic policies in the Union in order to contribute to the achievement of the Union objectives. The Treaty emphasizes a crucial importance to price stability because as it is the most important contribution of the monetary policy scoping a favorable economic environment and higher employment and also all EU member states coordinate their economic policies for the benefit of the whole EU.

For a country which aims to adopt the European Union's single currency, the Euro, there are some criteria that are set in the Treaty of Maastricht which include:

1. Inflation rate not higher than 1.5% above the average rate of the three EU member states with the lowest inflation over the previous year.
2. National budget deficit at or lower than 3% of GDP.
3. National public debt must not be higher than 60% of GDP. (a country with a higher level of debt can still adopt the euro if it shows that its debt level is falling).
4. Long term interest rates should be no more than 2% above the rate in the three EU countries with the lowest inflation over the past year.
5. The national currency is required to enter the ERM 2 two years prior to entry.

ERM was a system introduced by the European Community in 1979 as part of the European Monetary System designed to reduce exchange rate fluctuations in preparation for Economic and Monetary Union and the introduction of the EU's single currency, the Euro.

When the Member State's economy adopts the single currency its exchange rate is fixed and the monetary policy is transferred under the control of the ECB which conducts it independently for the entire euro area. The aim of the economic entry criteria is to ensure economic convergence, also known as the "convergence criteria" the euro candidate country has to make radical changes to national laws and rules, especially regarding its national

central bank and other financial institutions to be consistent with the Treaty. An important obligation is the independence of the national central bank, such as the monetary policy decided by the ECB is also independent.

One of the objectives of the ECB's monetary policy is to maintain stable inflation below but close to 2% over the medium term and in order to fulfill this task bases its decisions on a two pillar monetary policy strategy and establishes them by using its operational framework. To increase economic welfare and potential growth of an economy can be achieved by maintaining stable prices on a sustained basis.

Some crucial benefits of the price stability are to improve transparency of the price mechanism which allows people to consume and invest more efficiently, reducing inflation which reduces real interest rates and increases probabilities to invest, avoiding unproductive activities to hedge against the negative impact of inflation and the contribute to financial stability. The provisions of the Treaty imply that the ECB should avoid generating excessive fluctuations in output and employment if this is in accordance with the pursuit of its primary objectives, thus avoiding extended inflation and deflation. Given the definition of the ECB's Governing Council it is stated that price stability is "a year on year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2% that should be maintained over the medium term."(ECB, 2015)

The ECB is the only issuer of banknotes and bank reserves defining it as the monopoly supplier of the monetary base which sets the conditions at which banks borrow from the central bank. The change in money market interest rates stimulated by the central bank influences developments in economic variables that is relatively high complex. The growth potential of the economy in the long run contributed by the central bank is raised by achieving stable prices, thus affecting the general level of prices. ECB is the only institution which is able to manage liquidity situation in the money market and influence money market interest rates. (ECB, 2015)

Another crucial purpose of the ECB is to control euro inflation thus to maintain constant and strong value of the euro and it provides liquidity into the system when needed. In cases when an EU country joins the euro area, its central bank gives up most of its power to the ECB. The ECB's Governing Council determines a main minimum interest rate in the refinancing options that is called the minimum bid rate which takes place at the National Central Bank. (ECB, 2015)

A range of new monetary policy are crucially established by European standards and executed by the ECB they might be effective in encouraging real economic activity if the negative impact of the Russian – Ukraine crisis on Europe is revised and also relatively muted global growth. Euro Currency had it peak on May 6th 2014 and since then it has been weakening by 6.9% against the USD (ECB), thus euro remains at risk of weakening further. (ECB, 2015)

3.2. Inflation and inflation targeting policy in the EU

Since the beginning of 1990s many central banks adopted an inflation target of 2% and at that time this wasn't established according to some particular process but 2% seemed to make sense regarding the economic aspects. On one hand, inflation seemed high to help concerns about hitting the zero lower bound; on the other aspect it was low enough for those who were worried about the problematic effects of inflation. (IMF, 2003)

Considering the first years of the EMU, inflation was in its low and stable values and despite a short period when price changes have been above the required value of 2%, however being consistent with the definition of price stability. (ECB, 2003) stated that the situation at that time for the increase in the rate of inflation were as they seemed, for as far as to look forward, to remain below the ceiling of 2%. Thus, inflation was not being in danger as the ECB was supporting the general economic policies of the EC.

The ECB takes different steps to avoid problematic aspects of Euro by decreasing spreads on government bonds on 3% and by achieving good values of interest rates on corporate and bank bonds. Thus, the situation of inflation in the euro zone has been increasing by reaching 0.4% in 2014 (Draghi, November 2014). This low value of inflation has been occurring as a consequence of low price inflation in energy and food whose effects are substantial. Core inflation that is the inflation rate that strips out these volatile and temporary components have been showing low values over 2013 which shows that weak demand it has its impacts by showing low pricing power between firms. Thus, in some euro area countries, high unemployment in which workers have less power to have higher wages reduces inflation pressures. Since, inflation core has had low values; it has been increasing as the economy in the euro area was reacting. Inflation reaches low inflation values by complicating relative price adjustments among euro area countries and a long period of low inflation sticks into inflation expectations as it ensures movements in wages and prices to become permanent.

If inflation expectations decrease, real interest rates which is crucial for investment decisions increase, they can't be settled downwards as the nominal short term rates in the euro are have already reached the effective lower bound which would lead to an effective monetary tightening. Through the latest times, inflation expectations have been volatile and the long term indicators are consistent with price stability, whereas in short term inflation

indicators have been decreasing to low values. The ECB is working to bring back inflation to the targeted levels of 2% to meet the inflation expectations.

3.3. Adaption of the BoA monetary policy to the ECB

In order for a country to be part of the EMU, in this case Albania, has to fulfill some political and economic criteria according to the “Copenhagen Criteria” which are the set of rules that define if a country is able to join the EU and require that a state has the institutions to preserve democratic governance and human rights, has functioning market economy, accepts the obligations and intent of the EU and has the ability to take on the obligations of membership, including adherence to the aims of political, economic and monetary union.

One of the most important successes of the Albanian economy development is monetary stability that is measured by inflation rates and also by the volatility of exchange rates and has reached some satisfied levels. After the collapse of the pyramid schemes the consumer price inflation dropped to 3% and the exchange rate reached stable levels as the ALL appreciated against Euro and USD. This approach is due to the evaluation and control of the progress of the monetary indicators used by the BoA which published the target band for inflation rates between 2-4%. Albania is at a stage where monetary and exchange rate policies are in national responsibility, possible to choose an exchange rate system from a number of alternatives and to choose any monetary policy strategy. (BoA, 2013)

The BoA’s monetary policy framework has been oriented through macroeconomic stability by achieving some crucial market patterns, as the GDP growth increased leading to increasing employment and moderate wage. Regarding country’s currency, ALL appreciated without affecting negatively on exports.

Price stability is achieved by maintaining inflation within the target range of 2-4% under a free floating exchange rate, so the BoA cut the key interest rate by decreasing it to 2.5%. Thus, monetary policy of the BoA remains forced by the relatively high degree of euroisation of the financial system.

If Albania accesses to the EU, it will not become immediately a member of the euro area as it has to conduct exchange rate policy as a matter of common interest (Article 124 of the Treaty) which would exclude competitive devaluations. Entering the exchange rate mechanism systems like a pegging to other currencies, floating or a crawling fluctuation band versus the euro would be expected. Adapting euro as the Albania’s national currency would follow the application of the same criteria as for the already membership countries. A strict criterion of the Eurosystem is the independence of the national central bank which is a very important task. (EU, 2013)

The candidate status given to Albania at the General Affairs Council meeting in Luxembourg is a big step but still needs to meet some crucial priorities. But the candidate status does not mean that EU will start accession negotiations with Albania as there is required additional progress. Albania will be a member of the EU only if it demonstrates that it will be able to take its part fully and the BoA's role will be limited so it will be a member with no abrogation. Some consequences will be that Albania will have to conduct exchange rate policy as a common interest based on the "Article 124 of the Treaty" which will lead to competitive devaluations meaning fixed exchange rates to the euro with a fluctuation band. (EU, 2013)

Introducing the Euro as the national currency will lead to the application of the same criteria as the member states which issue a maximum inflation rate and interest rates in the year before the examination, a sustainable budgetary position and two years of membership of the ERM and also the independence of the national central bank is required. All these criteria must be applied strictly in order to introduce euro. But, entering the euro system in Albania has its own advantages and disadvantages, where foreign exchange inflows from emigrants will be in euro as long as they work in the euro area countries, most of foreign exchange inflows will be expressed in euro and consequently the domestic economy will be exposed to the risk of the euro exchange rate to other foreign currencies also against the domestic currency ALL. (EU, 2013)

Considering the price and exchange rate stability which for Albania are not methodologically in the same lines with those of EU member states, it can be made exception only for CPI that fulfills the price stability criteria and an important task is that the monetary policy of Albania is strictly committed to attaining and maintaining price stability in the road to the EMU accession and the BoA has made successful progress in achieving this objective and it has been attaining low positive inflation rates considering the structural changes undertaken by the Albanian economy. But, despite this, the price stability criteria should not lead the country to adopt short – term measures to reduce inflation rather than structural reforms with long term benefits. Regarding the exchange rate stability it is suggested that ERM II membership will have less risky results to Albania if the exchange rate band is strengthened by stability oriented domestic economic policies. (BoA, 2014)

Albania has made progress in the road to the accession of the EU but further implementations are needed to strengthen monetary policy by including budgetary planning and public finance management. The BoA has to make further efforts in fulfilling the

Copenhagen and Maastricht criteria in order to integrate to Europe and also has to guarantee the competitiveness of the Albanian economy in the European markets.

CHAPTER 4. AN EXAMINATION OF THE LONG RUN RELATIONSHIP BETWEEN INFLATION AND EXCHANGE RATES: JOHANSEN CO-INTEGRATION TEST

This chapter is organized as follows: the regression model and data specification performed in the study; descriptive statistics of the variables; Johansen co-integration tests the co-integration of inflation and exchange rate (EURO/ALL) by carrying out a univariate analysis, and lastly Granger causality test.

4.1 Model and data specification

Consider the following regression equation model performed in this study:

$$INF = \alpha + \beta_1 EX_RATE + \varepsilon$$

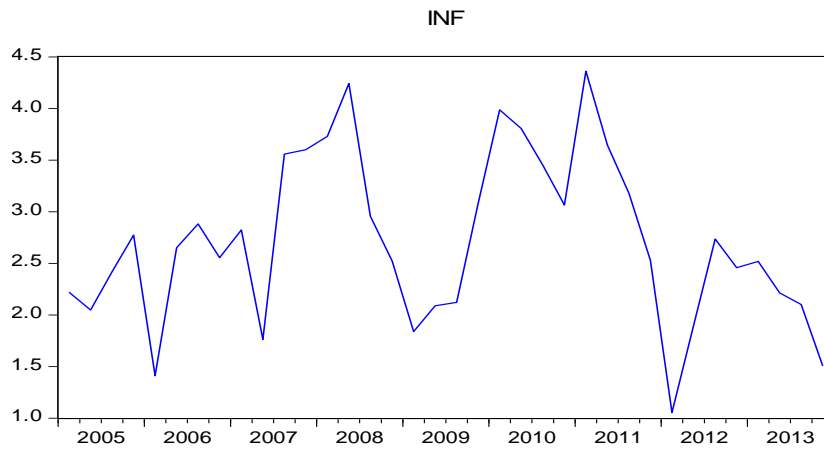
Where α represents the intercept, β_1 represents the estimated regression coefficient, ε is the error term. The dependent variable in equation (1) is inflation (INF) and (EX_RATE) represents foreign currency.

The data consist of quarterly inflation and exchange rate and obtained from INSTAT and the BoA database (<http://www.insat.gov.al/>; <http://www.bankofalbania.org>, accessed: 18 Nov 2014) for Albania for time interval 2005Q1-2013Q4. All tests are performed by using E Views7 statistical program.

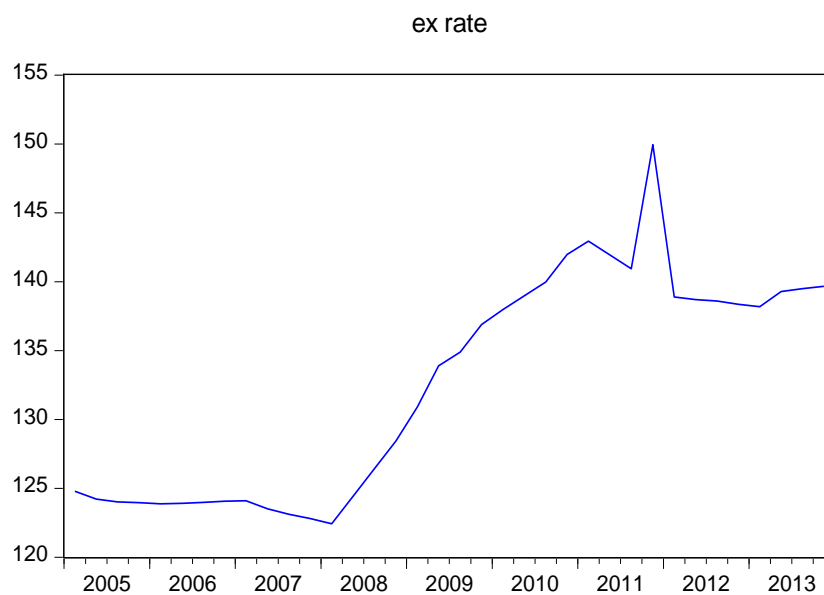
4.2. Descriptive statistics

Following graphs give graphical representations of the data. Tables and figure show descriptive statistics of the data and regression output. According to the regression output, $DINF = -0.0393859616091 + 0.0447421363466 * DEX_RATE$ is the estimated regression model.

Graph 2. Inflation in Albania



Graph 3. Exchange rate (EURO/ALL) in Albania



Graph 4. Scatter diagram

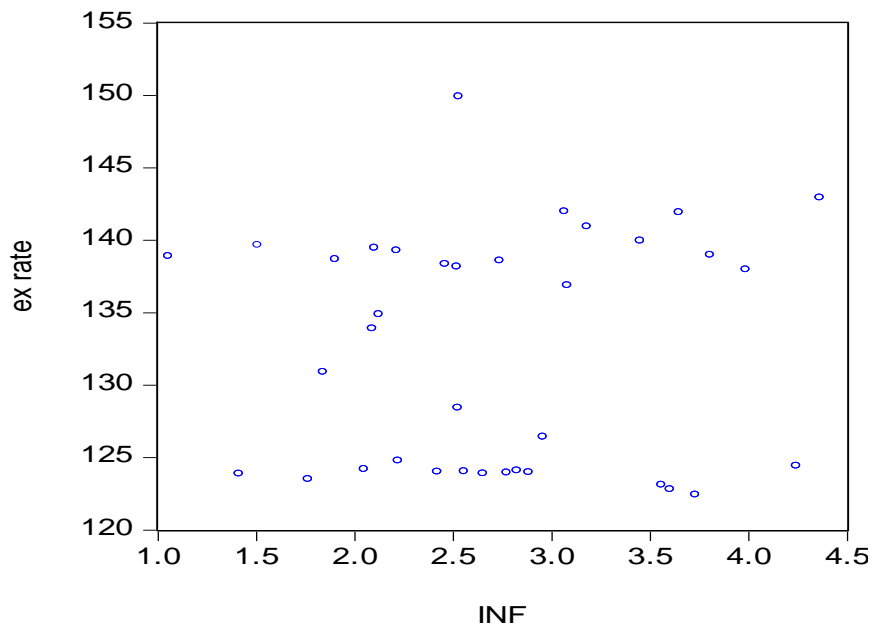


Figure 1. Histogram and statistics of INF series

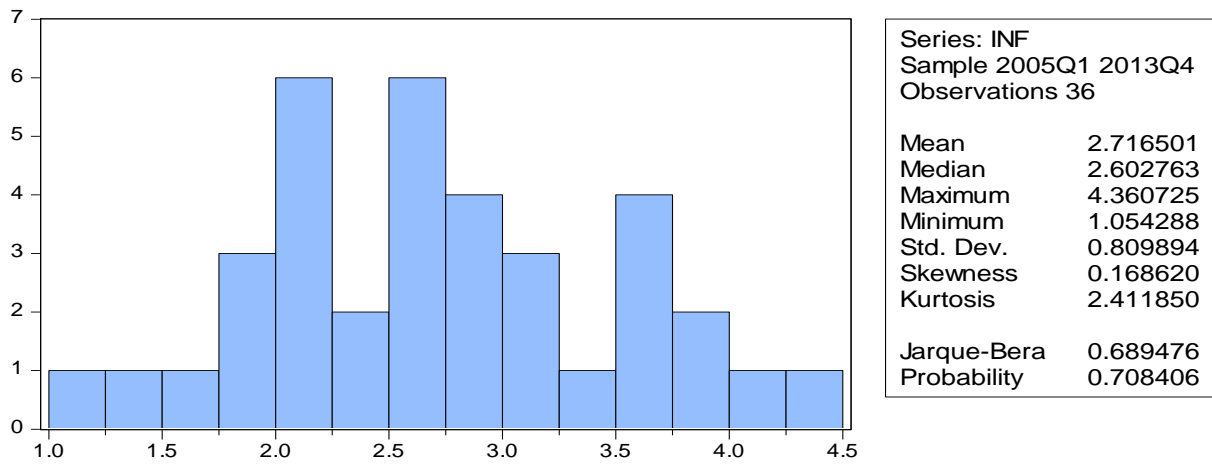


Figure 2. Histogram and statistics of EX_RATE series

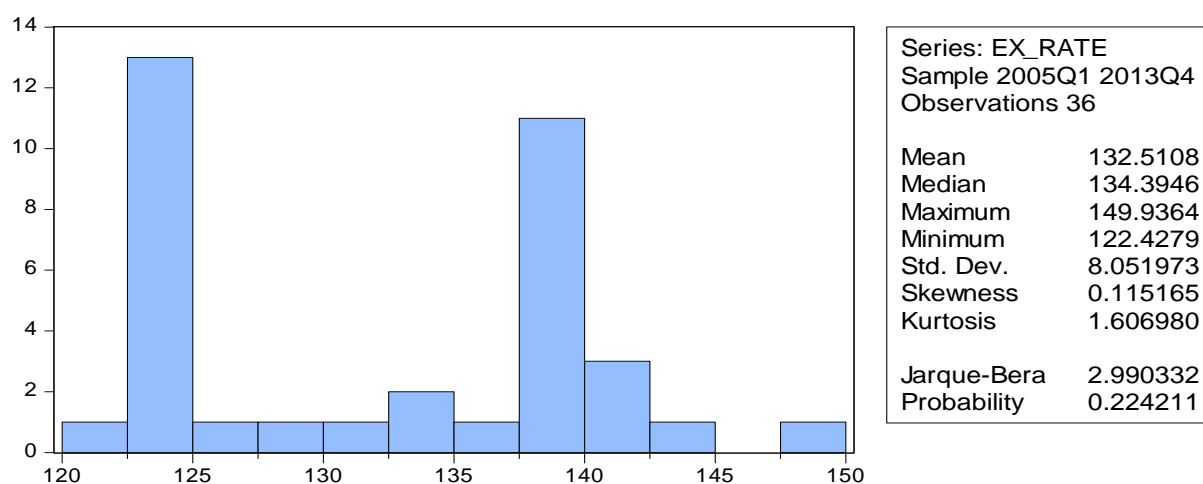


Table 1. Descriptive statistics of series

	INF	EX_RATE
Mean	2.716501	132.5108
Median	2.602763	134.3946
Maximum	4.360725	149.9364
Minimum	1.054288	122.4279
Std. Dev.	0.809894	8.051973
Skewness	0.168620	0.115165
Kurtosis	2.411850	1.606980
Jarque-Bera	0.689476	2.990332
Probability	0.708406	0.224211
Sum	97.79404	4770.389
Sum Sq. Dev.	22.95747	2269.199
Observations	36	36

Table 2. Estimation equation output of regression (levels) and its representations

Dependent Variable: **INF**
 Method: Least Squares
 Sample: 2005Q1 2013Q4
 Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.326650	2.288915	1.016486	0.3166
EX_RATE	0.002942	0.017243	0.170627	0.8655

R-squared	0.000856	Mean dependent var	2.716501
Adjusted R-squared	-0.028531	S.D. dependent var	0.809894
S.E. of regression	0.821366	Akaike info criterion	2.498257
Sum squared resid	22.93783	Schwarz criterion	2.586230
Log likelihood	-42.96862	Hannan-Quinn criter.	2.528962
F-statistic	0.029114	Durbin-Watson stat	0.865444
Prob(F-statistic)	0.865528		

Estimation Command:

=====

LS INF C EX_RATE

Estimation Equation:

=====

INF = C(1) + C(2)*EX_RATE

Substituted Coefficients:

=====

*INF = 2.32664964396 + 0.00294203551032*EX_RATE*

Figure 3. Normality test

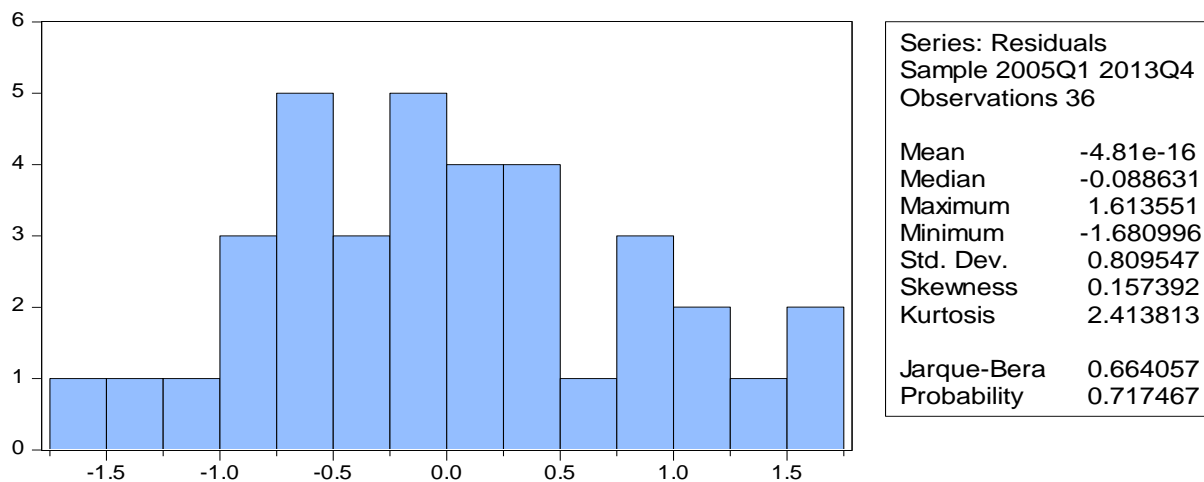


Figure 4. Stability test (levels)

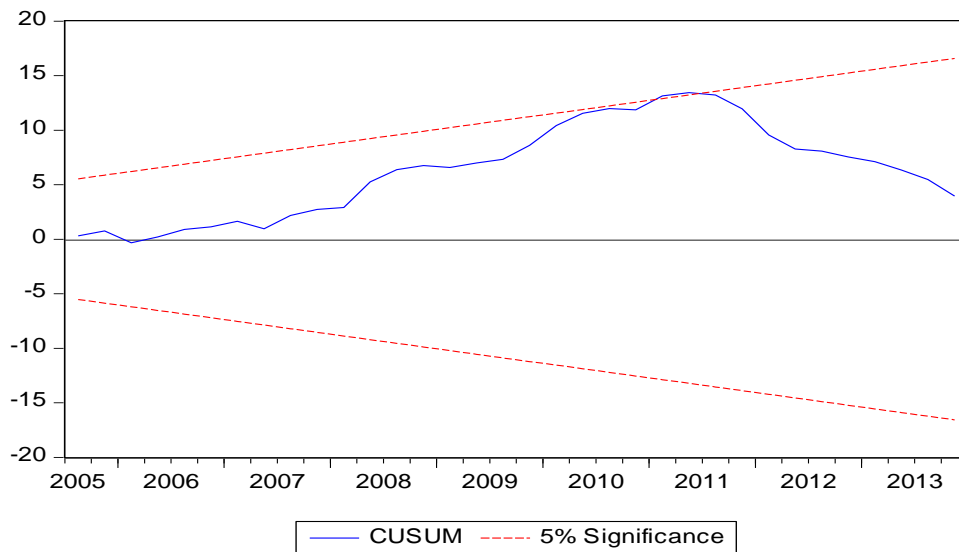


Table 3. Estimation equation output of regression (first differences) and its representations

Dependent Variable: **DINF**
 Method: Least Squares
 Sample (adjusted): 2005Q2 2013Q4
 Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.039386	0.131337	-0.299886	0.7661
DEX_RATE	0.044742	0.049374	0.906190	0.3714
R-squared	0.024280	Mean dependent var	-0.020353	
Adjusted R-squared	-0.005287	S.D. dependent var	0.764978	
S.E. of regression	0.766998	Akaike info criterion	2.362779	
Sum squared resid	19.41342	Schwarz criterion	2.451656	
Log likelihood	-39.34864	Hannan-Quinn criter.	2.393460	
F-statistic	0.821181	Durbin-Watson stat	2.253559	
Prob(F-statistic)	0.371405			

Estimation Command:

```
=====
LS DINF C DEX_RATE
```

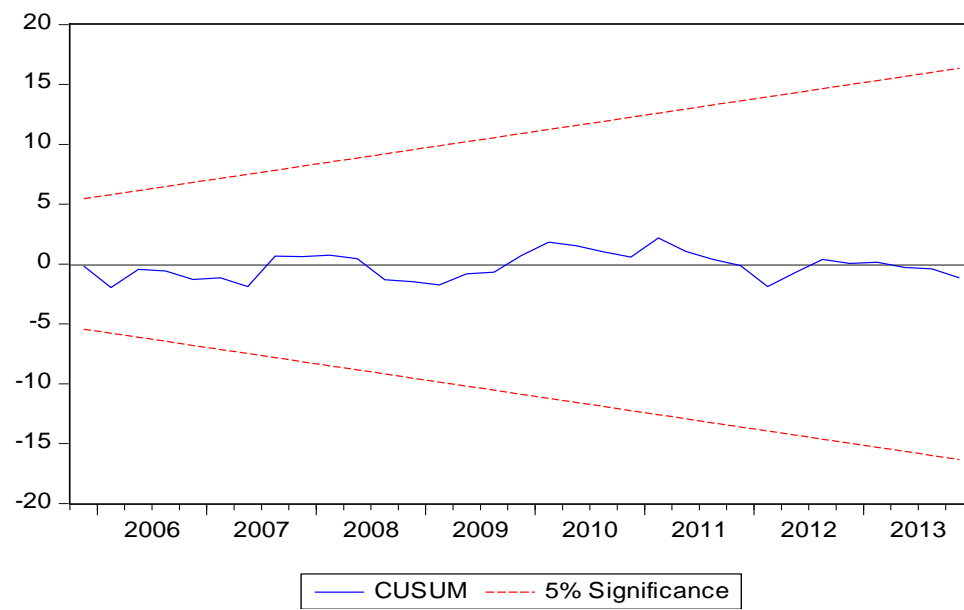
Estimation Equation:

```
=====
DINF = C(1) + C(2)*DEX_RATE
```

Substituted Coefficients:

```
=====
DINF = -0.0393859616091 + 0.0447421363466*DEX_RATE
```

Figure 5. Stability test (first differences)



4.3 Johansen co-integration test

Time series data display a variety of behavior. The main reason why it is important to know whether a time series is stationary or non-stationary before one embarks on a regression analysis is that there is a danger of obtaining apparently significant regression results from unrelated data when non-stationary series are used in regression analysis. Such regressions are said to be spurious (Hill et al., 2008). Before analyzing the co-integrating relationship between variables, it is important to carry out a univariate analysis. The economic series tend to possess unit roots. The presence of unit roots in the underlying series points towards the non-stationary of the underlying series. If both the independent and the dependent variables show the presence of unit roots, the regression results do not hold much meaning. This is referred to as spurious regression, whereby the results obtained suggest that there are statistically significant relationships between the variables in the regression model, when in fact all that is obtained is the evidence of contemporaneous correlation rather than a meaningful causal relation. The problem of spurious regression is compounded by the fact that the conventional t- and F-statistics do not have standard distributions generated by stationary series; with non-stationary, there is a tendency to reject the null in both cases and this tendency increases with sample size (Gül & Acikalin, 2008). The stationary of each series was investigated by employing the unit root tests developed by Dickey and Fuller. The test consists of regressing each series on its lagged value and lagged difference terms. The number of lag length based on the SIC information criterion.

Table 4. ADF unit root (level) and first differences test results of INF

Null Hypothesis: **INF has a unit root**

Exogenous: **Constant**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.904851	0.0549
Test critical values: 1% level	-3.632900	
5% level	-2.948404	
10% level	-2.612874	

Null Hypothesis: INF has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.860678	0.1868

Test critical values:	1% level	-4.243644
	5% level	-3.544284
	10% level	-3.204699

Null Hypothesis: D(INF) has a unit root

Exogenous: **Constant**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.751106	0.0000
Test critical values:	1% level	-3.639407
	5% level	-2.951125
	10% level	-2.614300

Null Hypothesis: D(INF) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.765350	0.0000
Test critical values:	1% level	-4.252879
	5% level	-3.548490
	10% level	-3.207094

*MacKinnon (1996) one-sided p-values.

Table 5. ADF unit root (level) and first differences test results of EX_RATE

Null Hypothesis: **EX_RATE has a unit root**

Exogenous: **Constant**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.996875	0.7436
Test critical values:	1% level	-3.632900
	5% level	-2.948404
	10% level	-2.612874

Null Hypothesis: **EX_RATE has a unit root**

Exogenous: **Constant, Linear Trend**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.970425	0.5966
Test critical values:	1% level	-4.243644
	5% level	-3.544284

10% level -3.204699

Null Hypothesis: **D(EX_RATE) has a unit root**

Exogenous: **Constant**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.977125	0.0000
Test critical values: 1% level	-3.639407	
5% level	-2.951125	
10% level	-2.614300	

Null Hypothesis: **D(EX_RATE) has a unit root**

Exogenous: **Constant, Linear Trend**

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.857620	0.0000
Test critical values: 1% level	-4.252879	
5% level	-3.548490	
10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Table 4 and 5 shows the Augmented Dickey–Fuller (ADF) test under the null hypothesis of a unit root (level) and first differences of variables of INF and EX_RATE. This table also presents the number of lag length included in the regression. The hypothesis of unit root against the stationary alternative is not rejected at all levels of INF variable with constant and linear trend. ADF test of INF variable gives unit root at all levels. Therefore, first differences of that variable are taken and it is shown that INF data are stationary now. Hence, it has been concluded that these variable are integrated of order 1. Also, ADF test result of EX_RATE variable gives unit root at all levels with constant and linear trend, and therefore taking first differences that variable is stationary and integrated of order 1.

On the basis of the above-mentioned unit root tests, performed the Johansen’s co-integration test to see whether any combinations of the variables are co-integrated. Johansen (1988), Johansen and Juselius (1990) have identified co-integration analysis. This approach uses a maximum likelihood procedure that tests for the number of co-integration relationships and estimates the parameters of those co-integrating relationship.

Table 6. Johansen Co-integration Test Results

Sample (adjusted): 2005Q3 2013Q4
 Included observations: 34 after adjustments
 Trend assumption: Linear deterministic trend
 Series: INF EX_RATE
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.*
None	0.213472	9.290944	15.49471	0.3392
At most 1	0.032593	1.126629	3.841466	0.2885

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.*
None	0.213472	8.164315	14.26460	0.3622
At most 1	0.032593	1.126629	3.841466	0.2885

*MacKinnon-Haug-Michelis (1999) p-values

LR test statistics and critical values are shown in Table 6. The results of both trace and max-eigen value tests suggest that there is no long-run co-integrating relationship between variables at the 5% significance level. In other words, a long-run stable relationship between variables does not exist.

4.4. Granger causality test

Table 7, presents the results of Granger causality test. The results of the co-integration test have been confirmed by Granger causality test results. Because of P values is greater 0.05, both “EX_RATE does not Granger Cause INF” and “INF does not Granger Cause EX_RATE” are accepted. Therefore, pair wise Granger causality test confirms the result of Johansen co-integration test results of no co-integration between variables in Albania in the long run.

Table 7. Pair wise Granger Causality Tests

Sample: 2005Q1 2013Q4

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EX_RATE does not Granger Cause INF	34	1.23972	0.3044
INF does not Granger Cause EX_RATE		0.89313	0.4203

CONCLUSION

This master thesis consisted of analyzing the monetary policy of the BoA which primary aim is to achieve and maintain price stability and maintain low but positive inflation rates for long period of times. It also introduces the framework of the instruments employed to implement the monetary policy. It was observed that the BoA targets an inflation rate of 3% as it affects positively the level and stability of the economic growth rates. The reasons why BoA adopts inflation targeting are to show more transparency and credibility to the public. Lately, inflation in Albania has been showing low rates and not far from inflation seen across EU countries and its benefits is reflected in the way BoA's monetary policy is entertained in adopting EU's single currency, the Euro.

This thesis empirically analyses the co-integrating long-run relationship between inflation and exchange rate in Albanian economy. Since the variables are non-stationary and present unit roots, Johansen's co-integration technique has been applied. This methodology has allowed for obtaining of a co-integrating relationship among the variables in the long-run. The co-integration results provide evidence of a no co-integration. This indicates that inflation and exchange rate does not move together in Albania in the long-run. According to the test results, it can be said that in the long-run foreign currency does not main cause of inflation in Albania. The reasons of current inflation are the monetary policy applications of the BoA and its consequences in the long-run. Therefore, exchange rate (EURO/ALL) policy does not effect on the long-run Albanian inflation, and control of inflation on the road of the accession to EMU mainly depends on monetary policies and monetary aggregates of the BoA.

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BIODATA

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APPENDIX:

Years- quarters	Inflation rate (CPI)	exchange rate (EUR/ALL)
2005Q1	2.22	124.78005
2005Q2	2.05	124.21005
2005Q3	2.42	124.01005
2005Q4	2.77	123.96025
2006Q1	1.41	123.87025
2006Q2	2.65	123.90025
2006Q3	2.88	123.98025
2006Q4	2.56	124.05338
2007Q1	2.82	124.10338
2007Q2	1.76	123.50338
2007Q3	3.56	123.10338
2007Q4	3.60	122.80338
2008Q1	3.73	122.42789
2008Q2	4.24	124.42789
2008Q3	2.96	126.42789
2008Q4	2.52	128.42789
2009Q1	1.84	130.8946
2009Q2	2.09	133.8946
2009Q3	2.12	134.8946
2009Q4	3.08	136.8946
2010Q1	3.99	137.97812
2010Q2	3.81	138.97812
2010Q3	3.45	139.97812
2010Q4	3.06	141.97812
2011Q1	4.36	142.93644
2011Q2	3.65	141.93644
2011Q3	3.18	140.93644
2011Q4	2.53	149.93644
2012Q1	1.05	138.89495
2012Q2	1.90	138.69495
2012Q3	2.74	138.59495
2012Q4	2.46	138.35495
2013Q1	2.52	138.18464
2013Q2	2.21	139.28464
2013Q3	2.10	139.48464
2013Q4	1.51	139.66867

Source: INSTAT (November, 2014)