Abstract

This study investigates the influence of inflation on economic growth for five Turkish Republics (Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkmenistan) that are in the transition period through dynamic panel data analysis based on threshold. Study results indicate that there is a nonlinear relationship between inflation and growth rate; the threshold for the influence of inflation on economic growth is 7.97%, and an inflation rate above this threshold has a negative influence on economic growth while an inflation rate below this threshold has a positive influence on economic growth. These results show that a high inflation rate will have a considerable influence on economic growth. In this regard, it is important to achieve sustainable growth which plays a crucial role in increasing the efficiency of implemented monetary policies and assuring stability. Therefore, political and economic decision-makers in transition economies do not ignore the concept of threshold within the scope of monetary policy while determining the target inflation rate in their efforts to deal with inflation.

Keywords: Threshold, Inflation, Economic Growth, Dynamic Panel

1. Introduction

Relationship between growth and inflation is one of the most debated and addressed issues within the historical development process of economy. Growth and inflation, which are highly influential on determining macroeconomic targets and assuring stability in an economy, are two of the main issues handled and prioritized almost in all schools of economics. In today’s world, an economy that achieves no or inadequate growth is always associated with important problems such as poverty, unemployment and low welfare. Inflation, on the other hand, leads to a lot of negative influences discussed by economists. Regardless of the level of development, growth and price stability are considered...
the basic performance criteria in all countries. Price stability and employment problems in an economy must be solved so that stability is assured. From this perspective, growth is one of the main phenomena contributing to employment.

The sound functioning of economic life and the sustainability of balances in an economy depend, above all, on a regular and stable structure of macroeconomic variables that make up the general economic structure. Any imbalance in the macroeconomic variables that constitute the general structure of economy negatively influences the general structure of economic life. Thus, a stable macroeconomic structure is the prerequisite for economic growth to be continuous and stable (i.e. for countries to enter in the process of sustainable growth and make it permanent) (Ercan, 2002; Yıldırım, 2003). A sound economic structure, and thus, a sustainable economic growth performance largely depend on price stability (Tari and Kumcu, 2005).

As a general definition, price stability refers to a low and sustainable inflation rate that does not influence individuals’ investment, consumption, and saving decisions and preferences. The important point here is preventing the general level of prices from increasing or decreasing more than specific limit values. Price stability is the basic condition for ensuring economic and social stability in the medium and long term and assuring sustainable development. Economic, political and social structures of a country may seriously suffer if it fails to establish price stability in its economy.

Inflationary environments make it difficult to build up prospective saving, investment, production and consumption decisions, and environment of increasing uncertainty prevents economic growth. Savings, which are planned to be used for financing the development of countries in environments where inflation is volatile and thus uncertainty regarding inflation is high, are used in speculative areas for obtaining more return rather than for real investments or production. That has a negative influence on economic growth by causing real investments in economy to shrink.

In addition, while inflation brings about a fall in real investments by reducing the profit of producers on one hand, it wears off their purchasing power on the other hand. Thus, price stability in an economy confronts us as an important factor increasing growth potential to turn economy into a developed, more efficient and functional one. On the other hand, increases in the general level of prices not only negatively affect consumption, investment and growth by increasing unambiguity, but also widen the gap between income groups more by disrupting social distribution of income (i.e. causing a deterioration in the distribution of income against fixed income groups) (Şiriner and Doğru, 2005). In general, economies with high inflation rates have lower average growth rates in comparison to those with price stability. Therefore, price stability, which has important influences on investment and consumption, must be ensured for a steady and sustainable growth. All in all, ensuring price stability will bring about economic stabilization, lead to a high and sustainable increase in growth, and consequently improve people’s quality of life.

The influence of inflation on growth has been frequently discussed in economy literature for a long time. The content of such discussions has varied by the period (conjunction) undergone by the world economy. State started to play an active role and implement interventionist policies after the great depression in 1929 in both developed and developing countries. As policies increasing aggregate demand were implemented, both production and inflation increased. Inflation was not considered a problem in that period. It was even thought that inflation had a positive influence on growth.

When the monetary system called Bretton Woods, which was indirectly gold-indexed ended in the 1970s, it was started to be discussed how the value of money whose supply was completely left to the control of central banks would be preserved. In that period, a rapid monetary expansion was experienced in many countries including developed countries. As a result of monetary expansion, inflation rates reached double-digit numbers. High inflation and low growth environment resulting from debt crises and supply shocks undergone in the 1970s and 1980s began to strengthen the idea that there is an inverse relationship between these variables. In addition, the fall in growth rate along with continuing increase in inflation rate in many countries made the argument that inflation positively influences growth was controversial.

Price stability as an economy policy became number one target in many developed and developing countries in the course of time. In that period, it was accepted by all segments that a strong and sustainable economic growth in the long term is possible only if price stability is achieved. As a matter of fact, today, the central banks of a lot of countries directly or indirectly target inflation in order to ensure price stability and determine their policies accordingly. This is because, as the 2008 global crisis emerged in countries which had achieved price stability and when it was understood that price stability was not enough to ensure an automatically steady economic growth, the relationship between inflation and growth started to be investigated again.

Today, the generally accepted view is that inflation has a negative influence on growth in the medium and long term. Nobody argues that making prices steady is something wrong or is not of priority. However, what is optimal
inflation rate, whether or not there is a threshold peculiar to each country group, and how long it takes for stability to be achieved after the general level of prices is reduced to the desired level always occupy the agenda.

In recent years, price stability has been one of the main prerequisites for a sound and sustainable growth both in countries that are in the transition period and in countries that have a long market economy history. This actual state makes it a must to search the relationship between inflation and growth. It is more important for transition economies where state has big direct or indirect influences on price formation in the markets with the decisions they make or do not make. This is because; state fulfils active duties in the process of market economy formation. Little can be said about the influence of the inflation experienced in a country that is in the transition period on its growth rate. For that reason, determining whether or not inflation rate has a potential influence on economic growth performance in countries of this sort is theoretically and empirically important.

The relationship between inflation and economic growth is one of the most frequently addressed subjects in economy literature. However, this relationship has not been investigated enough for countries with transition economies that have abandoned public-oriented central economic systems, tried to shift to free market system, and had a state that still plays an active role in price formation. The term transition economy started to enter in economy literature as of the late 1980s. Transition economy refers to those economies that switched to free market economy from public-oriented central economic structure after the Berlin Wall was knocked down in 1989 and the Soviet Union was dissolved in 1991. These countries are called transition economies as they try to switch to market economy from central planning, and this transformation involves a process.

The present study aims to empirically show the influence of inflation rate on economic growth in the case of 5 Turkic Republics that switched from state-controlled planned economic system to free market economy as socialist regimes demolished in the 1980s. Literature contains a limited number of studies on the relationship between inflation and economic growth in transition economies. Thus, this study investigates the influence of inflation threshold on economic growth in 5 Turkic Republics that have quite weak financial systems relative to developed market economies and are in the transition period. In this way, a substantial contribution will be made to literature about the examination of economic development foundations of transition economies. Another main aim of this study is to bring proper foundations to the discussions on inflation and growth in transition economies that are mostly made on incorrect theoretical and empirical bases.

2. Literature Review

Though literature contains a lot of empirical and theoretical studies dealing with the relationship between inflation and growth, these studies do not report a specific trend regarding the nature of this relationship. In applied research, the relationship between inflation and economic growth varies by the period and the country group examined, the inflation rate taken into consideration and the econometric method employed. Although many recent studies report that inflation is a constraint to growth and negatively influences economic growth, relatively older studies report that inflation promotes growth. Study results on this subject in the literature fall under four categories: inflation does not have any influence on economic growth (Wai, 1959; Dorrance, 1966; Sidrauski, 1967), inflation has a positive influence on economic growth (Mallik and Chowdhury, 2001; Rapach, 2003; Benhabib and Spiegel, 2009), inflation has a negative influence on economic growth (Fischer, 1983; Barro, 1995; Valdovinos, 2002) and inflation influences economic growth within the framework of a specific threshold.

Recent studies demonstrate that new methods are employed based on the assumption that the relationship between inflation and growth is nonlinear in order to indicate the relationship between them more clearly. In general, this new method states that after a specific threshold is exceeded, inflation may have a negative influence on economic growth. Though different results have been obtained in studies on this subject, all of these studies demonstrate that the use of inflation rates in models based on a threshold yields more clear results in the search of the influence of inflation on growth. Some of the studies on this subject are summarized below.

Khan and Senhadji (2001) investigated the existence of threshold effect in the relationship between inflation and growth in the study on 140 industrialized and developing countries covering the period between 1960 and 1998. They predicted the threshold to be 1 to 3% for industrialized countries and to be 7 to 11% for developing countries. They found out that inflation rates over these values had a negative influence on economic growth while inflation rates below these values had no influence on it. Gylfason and Herbertsson (2001) conducted a similar study on 170 countries for the period between 1960 and 1992, and determined that an inflation rate exceeding 10 to 20% on a yearly basis negatively affected economic growth.
Mubarik (2005) dealt with the relationship between inflation and economic growth for Pakistan economy based on the annual dataset from the 1973 to 2000 period through threshold analysis. The obtained analysis results demonstrated that an inflation rate over 9%, which was found to be threshold, had a negative influence on economic growth.

Munir et al. (2009) carried out a study on the Malaysian economy for the period between 1970 and 2005 and investigated the relationship between inflation and economic growth via endogenous threshold autoregressive (TAR) model. They found the threshold for the influence of inflation on economic growth to be 3.89%. It was seen that while an inflation rate over this threshold had a negative influence on economic growth, an inflation rate below it had a positive influence on it.

Hasanov (2011) conducted a study on Azerbaijan as a transition economy for the period between 2000 and 2009 and determined the inflation threshold as 13%. It was observed that while an inflation rate below this value had a positive influence on economic growth, an inflation rate over the threshold had a negative influence on it.

Akgül and Özdemir (2012) carried out a study on Turkey for the period between 2003:01 and 2009:12 and investigated the nonlinear relationship between inflation rate and economic growth via two-regime TAR model. They found the inflation threshold to be 1.26 for the entire analysis period. It was seen that while an inflation rate over the threshold had a negative influence on economic growth, an inflation rate below the threshold had a positive influence.

Kremer et al. (2013) investigated the influence of inflation threshold on long-term economic growth based on the data from the period between 1950 and 2004 for 124 industrialized and non-industrialized countries. They predicted the inflation threshold to be 2% for industrialized countries and 17% for non-industrialized countries. They concluded that while an inflation rate over the threshold had a negative influence on economic growth, an inflation rate below the threshold had an insignificant influence on it. These results support the view that inflation contributes to growth in developing countries.

Vinayagathasan (2013) investigated the relationship between inflation and economic growth for 32 Asian countries for the period between 1980 and 2009 via dynamic panel threshold model. The threshold value for the influence of inflation on economic growth was indicated to be 5.43%. It was determined that while an inflation rate over this threshold had a negative influence on economic growth, an inflation rate below this threshold did not have any influence at all.

Tung and Thanh (2015) investigated the existence of threshold effect in the relationship between inflation and growth in their research on Vietnam as a transition economy covering the period between 1986 and 2013. It was observed that an inflation rate over 7%, the threshold, negatively influenced the economic growth.

3. Methodology

In the present study, we investigated whether or not there is a relationship between inflation and economic growth via unbalanced panel data analysis in the case of 5 Turkic Republics that are in the transition period (Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkmenistan). In addition, the existence and role of inflation threshold in this relationship was investigated. Though GDP growth rate is used for measuring growth rate in literature, annual real GDP per capita growth rate, which is a frequently used indicator, was used in the present study. The independent variable of the model is inflation rate ($\pi$). The inflation rate was calculated as the annual percentage change occurring in the consumer price index (CPI). In order to see the influences of other macroeconomic variables associated with inflation on economic growth, the share of investments in GDP (igdp), population growth rate (dpop), GDP per capita of the former period in representation of initial level of income (initial), the logarithmic value of the share of export and import in GDP in representation of openness (open), and the division of export by import in representation of foreign trade volume (dtot) were used, based on Khan and Senhadji (2001), Drukker et al. (2005), and Kremer et al. (2013), as control variables in the present study. Annual real GDP per capita growth rate data were obtained from the World Data Bank. CPI data were acquired from the International Financial Statistics (IFS). Control variables were obtained from the World Data Bank and the Penn World Table 8.0. Basic details about the variables are indicated in Table 1.
Table 1 Variables, Definitions and Sources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Abbreviation</th>
<th>Unit</th>
<th>Period*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Growth Rates of Real GDP per capita in constant 2005 prices</td>
<td>dgdp</td>
<td>%</td>
<td>1992-2013</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>π</td>
<td>%</td>
<td>1992-2013</td>
</tr>
<tr>
<td>The Percentage of GDP Dedicated to Investment</td>
<td>igdp</td>
<td>% GSYIH</td>
<td>1992-2013</td>
</tr>
<tr>
<td>The Population Growth Rate</td>
<td>dpop</td>
<td>%</td>
<td>1992-2013</td>
</tr>
<tr>
<td>The Initial Income Level</td>
<td>initial</td>
<td>USD</td>
<td>1992-2013</td>
</tr>
<tr>
<td>Openness</td>
<td>open</td>
<td>% GSYIH</td>
<td>1992-2013</td>
</tr>
<tr>
<td>The Percentage Change in Terms of Trade</td>
<td>dtot</td>
<td>%</td>
<td>1992-2013</td>
</tr>
</tbody>
</table>


Table 2 Descriptive Statistics

<table>
<thead>
<tr>
<th>Country</th>
<th>t</th>
<th>π mean</th>
<th>dgdp mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>22</td>
<td>0.99</td>
<td>4.21</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>20</td>
<td>2.57</td>
<td>4.43</td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td>18</td>
<td>2.20</td>
<td>3.48</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>21</td>
<td>3.26</td>
<td>4.02</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>21</td>
<td>3.04</td>
<td>3.29</td>
</tr>
</tbody>
</table>

Average annual inflation growth rate was approximately 2.41% in the countries included in the present study for the period between 1992 and 2013 (see Table 2 for a list of countries and summary statistics). The dataset about inflation rates shows that there are some extreme inflation rate values. With this in mind, a graphical analysis was performed to determine the range of inflation and optimum threshold level. Figure 1 and 2 presents the descriptive statistics concerning inflation rate and the logarithmic value of the inflation rate.
Ghosh and Phillips (1998) recommend using the logarithmic value of inflation rate in models in order to avoid the negative influences of extreme inflation rate values on regression results. Since the dataset regarding inflation rates involved negative values, semi-logarithmic transformation was administered to the inflation rate variable based on Khan and Senhadji (2001), Drukker et al. (2005), and Kremer et al. (2013). Such transformation took place as follows:

\[
\tilde{\pi}_{it} = \begin{cases} 
\pi_{it} - 1 & \text{if } \pi_{it} \leq \%1 \\
\ln(\pi_{it}) & \text{if } \pi_{it} > \%1
\end{cases}
\]

In our model, one lagged value of annual real GDP per capita growth rate was used as explanatory variable. That makes the model dynamic. One of the basic assumptions of the neoclassical growth theory is that countries converge in the transition period. The growth rates of countries vary by the initial state of economy in all models that involve the transition dynamics. The hypothesis that countries converge in the transition period assumes that underdeveloped countries grow faster than developed countries. The foundation of the hypothesis is the existence of returns decreasing by scale in production (Ramirez and Rondan, 2013). Therefore, in our model, the former annual real GDP per capita growth rate values indicating the initial states of countries were used.

The use of the lagged values of the dependent variable as an explanatory variable in fixed and random effect models used in static panel data analysis causes a relationship between the lagged values of the dependent variable and error terms. This relationship leads to an inconsistency among the predictions made via fixed and random effect models and among the obtained predictors (Green, 2000). This being the case, the administration of dynamic panel data method eliminates the relationship between the lagged values of the dependent variable and error terms and thus improves the reliability of the predictions made and strengthens the consistency of the obtained predictors.

Dynamic panel threshold model, which is the extended version (Kremer et al., 2013) of the static model administered for the endogenous predictors by Hansen (1999), was used in the present study. Initial income level was chosen as endogenous predictor \((\text{initial}=\text{dgdpt}_{-1})\). Panel threshold model was established by developing the cross-section threshold model of Caner and Hansen (2004) in which GMM type predictors allowing the use of endogenous variables are used. It is showed in equation 1.

\[
y_{it} = \mu_i + \beta_1' z_{1it}(q_{it} \leq \gamma) + \beta_2' z_{2it}(q_{it} > \gamma) + \epsilon_{it}
\]

In equation 1, subscripts \(i=1, \ldots, N\) represents country and \(t = 1, \ldots, T\) indexes time. In the model, \(y_{it}\) refers to the dependent variable; \(\mu_i\) refers to the country specific fixed effect and \(\epsilon_{it} \sim (0, \sigma^2)\) refers to the independent and identically distributed error term. While \(I(.)\) is included in the model as an indicator function showing the regime, \(q_{it}\) is used as the threshold variable and \(\gamma\) as the threshold. Moreover, \(z_1\) is used as an \(m\)-dimension explanatory variable vector that involves the lagged values of the dependent variable and other exogenous variables. The explanatory variable vector is included in the model in two subsets: \(z_{1it}\) for the explanatory variables associated with \(\epsilon_{it}\) and \(z_{2it}\) for the variables independent from \(\epsilon_{it}\) (Kremer et al., 2013).

To predict the model in equation 1, country specific fixed effect \((\mu_i)\) must be eliminated through fixed effect transformation in the first place. To this end, forward orthogonal deviation suggested by Arellano and Bover (1995) was used as a transformation method. This method is showed in equation 2.

\[
\tilde{\epsilon}_{it}^* = \frac{\sqrt{T-t}}{\sqrt{T-t+1}} [\tilde{\epsilon}_{it} - \frac{1}{T-t} (\tilde{\epsilon}_{i(t+1)} + \cdots + \tilde{\epsilon}_{iT})]
\]

The distinctive feature of this method is that it allows avoiding the serial correlation of transformed error terms. According to Kremer et al. (2013), this feature allows using the prediction method used by Caner and Hansen (2004) for cross-sectional models in dynamic panel data models.

The following step in the prediction of the model included in the equation 1 is the use of two-stage least squares method (2SLS) to determine inflation threshold. To this end, firstly reduced form regression is predicted for exogenous variables \((z_{2it})\) which are a function of the instrumental variables \((X_{it})\) following Caner and Hansen (2004). Then the predicted values \((\hat{z}_{2it})\) of the exogenous variables obtained from the model are used rather than the exogenous variables \((z_{2it})\) in the structural equation. The model included in equation 1 is predicted via least squares method for a fixed threshold \(\gamma\). This operation is repeated for the subsets of the threshold variable \(q\). Among the obtained thresholds, the
appropriate threshold having the lowest error terms sum of squares \( S(\gamma) \) is chosen as \( \hat{\gamma} \). This constraint is expressed as in equation 3 (Hansen, 2000).

\[
\hat{\gamma} = \arg \min S_n(\gamma)
\]  

(3)

Based on Hansen (1999), Caner and Hansen (2004), and Kremer et al. (2013), critical values concerning the confidence interval at 95% confidence level are calculated for the inflation threshold. In calculating the critical values, the constraint in equation 4 is used.

\[
\Gamma = \{\gamma : LR(\gamma) \leq C(\alpha)\}
\]  

(4)

In equation 4, \( LR(\gamma) \) shows asymptotic distribution concerning likelihood ratio statistic while \( C(\alpha) \) shows 95% of this distribution. According to Hansen (1999), likelihood ratio takes into account the time used in each cross-sectional data. After the appropriate threshold \( \gamma \) is determined, slope coefficients in the dynamic panel threshold model are predicted via the generalized method of moments for the predetermined instrumental variables and predicted threshold. Equation 5 shows the dynamic panel threshold model established via the generalized method of moments in order to investigate the influence of inflation on long-term economic growth.

\[
dgd_{pit} = \mu_1 + \beta_1 \pi_{it} I(\pi_{it} \leq \gamma) + \delta_1 I(\pi_{it} \leq \gamma) + \beta_2 \pi_{it} I(\pi_{it} > \gamma) + \varnothing z_{it} + \epsilon_{it}
\]  

(5)

In the equation 5, \( \pi_{it} \) variable represents inflation rate for two regime types while \( z_{it} \) represents the control variables vector. \( \beta_1 \) and \( \beta_2 \) coefficients indicate regime slope coefficients while \( \delta_1 \) indicates the regime fixed coefficient. Based on Bick (2010) and Kremer et al. (2013), initial income level \( (z_{2it}) \) was used as endogenous variable in the model.

According to Roodman (2009), the use of all lagged values of the dependent variable in dynamic panel data analysis as an instrumental variable enables coefficient predictions to be free of deviation and consistent. Thus, based on Arellano and Bover (1995), all lagged values of the dependent variable were used in the model as instrumental variables.

4. Findings

Table 3 shows the results of the dynamic panel threshold model established to investigate the influence of inflation on long-term economic growth in 5 Turkic Republics that are in transition period. The upper section of the table gives the predicted inflation threshold and confidence interval at 95% confidence level concerning this value. The mid-section of the table demonstrates the influence of inflation on economic growth for both regime types. \( \beta_1 \) indicates the marginal effect of inflation on economic growth in low inflation regime while \( \beta_2 \) indicates the marginal effect of inflation on economic growth in high inflation regime. There is low inflation regime when the inflation rate is below the predicted threshold, and there is high inflation regime when the inflation rate is above the predicted threshold.

As seen in the Table 3, the threshold predicted for the inflation was found to be 7.97% via two-stage least squares method \( (e^{2.076}=7.97) \). Error terms sum of squares belonging to the obtained thresholds is indicated in the Figure 3. Among the least error terms sums of squares, the threshold with the lowest error terms sum of squares was chosen as the appropriate threshold. While the lower limit for the threshold at 95% confidence level is 2.13%, the upper limit for it is 37.03%. An inflation rate of 40% is indicated as a natural breaking point in the distinction made between low and high inflation (Bruno and Esterlay, 1998). When this distinction is considered, it is seen that the upper limit concerning the threshold is below the inflation rate of 40%. Highness of the threshold in the economies subject to this research may be attributed to a couple of reasons. First, transition economies widely use price and interest rate indexation systems as they have long-term inflation experience. These indexation systems may have partly reduced the negative influence of inflation (Kremer et al., 2013). The second reason may be convergence process and Balassa-Samuelson effect (Khan and Senhadji, 2001). This effect suggests that a differentiation between the relative rates of productivity and growth of the tradable and non-tradable goods producing sectors in emerging economies may affect changes in the real exchange rate and are influential on inflation threshold (Altunöz, 2014).
Table 3 Results of Inflation Threshold and its Impact on Growth

<table>
<thead>
<tr>
<th>Threshold Estimates</th>
<th>( \hat{\gamma} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.97 %***</td>
</tr>
<tr>
<td>95% confidence interval</td>
<td>[2.13, 37.03]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact of Inflation</th>
<th>( \hat{\beta}_1 )</th>
<th>( \hat{\beta}_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.142**</td>
<td>-1.752**</td>
</tr>
<tr>
<td>(0.527)</td>
<td>(0.689)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact of Covariates</th>
<th>( \text{initial}_{it} )</th>
<th>( \text{investment}_{it} )</th>
<th>( \text{population}_{it} )</th>
<th>( \text{tot}_{it} )</th>
<th>( \text{openness}_{it} )</th>
<th>( \delta_1 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.838**</td>
<td>0.339***</td>
<td>-2.860**</td>
<td>0.130***</td>
<td>-2.177**</td>
<td>-8.331***</td>
</tr>
<tr>
<td>(2.426)</td>
<td>(0.065)</td>
<td>(1.342)</td>
<td>(0.034)</td>
<td>(0.977)</td>
<td>(2.567)</td>
<td></td>
</tr>
</tbody>
</table>

Observations 102
N 5

This Table reports results for the dynamic panel threshold estimation using all available lags of the instrument variable. Standard errors are given in parentheses *, **, *** represents significance level respectively %10, %5 ve % 1.

Fig 3. Confidence Interval Construction for Threshold Level
Table 3 shows that $\hat{\beta}_1$ regime coefficient takes the value 1.142 while $\hat{\beta}_2$ regime coefficient takes the value -1.752 and that there is statistical significance. That demonstrates that inflation has a positive marginal effect on economic growth in the low inflation regime while it has a negative marginal effect on economic growth in the high inflation regime. In other words, while an inflation rate below the threshold has a positive influence on economic growth, an inflation rate over the threshold has a negative influence on it. Considering regime coefficients in terms of magnitude, it is clear that inflation has a stronger influence on economic growth in the high inflation regime.

5. Conclusion

The present study investigated the role of the inflation threshold in the non-linear relationship between inflation and economic growth in the case of 5 Turkic Republics that are in the transition period (Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkmenistan) for the period between 1992 and 2013. To this end, dynamic panel threshold model, which is the extended version (Kremer et al., 2013) of the static model administered for the endogenous predictors by Hansen (1999), was used in the present study.

The study tried to determine the optimal inflation rate or whether or not there is a threshold in the transition economies where state fulfills active duties in the process of formation of the market economy and has a great influence on price formation in the markets with the decisions they make or do not make. Moreover, the study examined how the inflation experienced in this country group affects growth rate.

The obtained findings present new evidences concerning the existence of a non-linear relationship between inflation and economic growth in transition economies in the long term. In addition, these findings show that when inflation rate is above a specific critical value in these countries, inflation will negatively influence the economic growth. The predicted critical value was found to be 7.97% for the examined transition economies. This result supports the view that a moderate inflation rate below the threshold has a positive influence on economic growth. This finding does not indicate any causality relationship between inflation and economic growth. It just shows the existence of a relationship. On the other hand, this study indicates the importance of inflation threshold in the relationship between inflation and economic growth. This study may constitute a lead for the future works on this subject.

References


