

# Any Relation between Nominal Interest Rate & Inflation Rate upon Fisher Effect

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## ABSTRACT

In this paper, we will consider any relation between inflation rate and nominal interest rate at under-development countries upon fisher effect. Fisher effect has been applied and approved in most experimental researches of developed & industrial countries.

Due to the basic role of nominal interest rate in economy, it is really important to consider this case as well. Any rejection and/or approving of fisher effect may cause important effect in monetary policies which should be considered by monetary authorities and central banks of countries.

This paper includes statistical information of different developing countries such as Iran, Algeria, Indonesia, Kuwait, Nigeria and Venezuela through 1980-2008. The interest rate of latest facilities has been used for nominal interest rate accordingly. Regarding the theory of the paper, any mutual positive relation between nominal interest rate and inflation rate has been studied by the use of co integration tests of Panel Pedroni & Fisher Johansen. The results have finally led into a lack of application of Fisher theory in developing countries. Therefore, we have tried to recognize effective factors in rejection of analytical Fisher effect as well.

**KEYWORDS:** Nominal interest rate, Inflation rate, Panel Co integration Tests.

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## 1-INTRODUCTION

Interest rate is the most important variable for economists by the help of which they may understand any economic relation in present time with future through the further effects of which on saving and investment.

Banking interest rate was one of the most important problems of investors and producers within recent year in compliance with profitability and high level of foreign trade in Iran. Since most countries of 3<sup>rd</sup> world as the aerial & world competitors manage to produce with single-digit interest rate, therefore Iranian producers may find a little competition power in domestic & international fields.

Regarding these problems, Islamic Parliament approved a bill in 7<sup>th</sup> period under the title of "Rationalization of banking facilities interest rate in compliance with output rate in different economic parts". That bill faced with different reactions by agreed and opposed persons.

The agreed people approve that it is possible to increase investment volume and reduce any cost price of produce by reducing banking interest rate as a part of investment costs which may in itself provide inflation reduction as well. In contrast, the opposed ones are worry about negative consequences of interest rate reduction without reducing of inflation rate. The major and basic condition for reducing of nominal interest rate is to reduce inflation rate and then applying expected inflation adjustment and finally making positive the estimated nominal interest rate. Therefore from their viewpoint any reduction of interest rate is possible only in a long-term horizon and gradual reduction of inflation rate. Additional theory of this reasoning is correctness of "Fisher Effect" for Iranian economy according which there is a reduction in inflation rate in long-term and also a reduction in nominal interest rate as well.

Since theoretical concepts of Fisher effect are in compliance with developed economies structure, therefore we will use the results of Panel tests for more study of this theory in Iran and finding better results. For this purpose, we will apply the relation between nominal interest rate and long-term interest rate obtained from developing countries with a similar structure like Iran. As a result, the present research may not only consider any relation between both variations, but will take into account any relations while we may specify nominal interest rate in a special form. Pursuant to this ideal, testing the effect of fisher in developing economies is the real purpose of this research according to the following theory:

Theory: Inflation rate & nominal interest rate in long term:

## 2-Fisher effect

"Fisher Effect" is one of the most important results out of neo-classic theory of interest rate presented by "Fisher, Irving" in 1930 in his famous book under the title of "The theory of interest". This theory is based upon real interest rate ( $r$ ) and nominal interest rate ( $i$ ). If ( $\pi^e$ ) is expected inflation rate, we have:

$$(2-1) \quad i = r + \pi^e$$

In his analysis about interest rate, Fisher benefited from price changes and nominal interest rate data of both Great Britain & U.S.A respectively through both periods 1820-1924 & 18990-1927. Then he did not find a clear relation between price changes and interest rate within short. By the way, when he benefits from a distributed stop of previous inflation in his relation (as a proxy for expected inflation), he would find a high correlation coefficient among long-term variations and then he introduced Fisher Effect accordingly.

The real interest rate will be determined in Fisher theory in financial amounts market. Therefore he may analyze financial amounts market with an assumption of inflation expectations for explaining the effect of expected inflation rate on real interest rate. Fisher's reasoning about any effects of expected inflation rate on nominal interest rate is similar to any effects of expected inflation on nominal salary increase.

As a result, Fisher effect will explain that only one unit increase in expected inflation rate may increase the nominal interest rate for one unit with fixed expected real interest rate as follows:

$$(2-2) \quad i = r + \beta\pi^e, \quad \beta = 1$$

For the purpose of expectations, Fisher considers complete estimation theory and in compliance with short-term expectation as an ideal one and explains that the more real assumption is to consider delayed estimation and long-term expectations. Fisher believed that it is necessary to have a long-term (30 years) for compliance of economy with new inflation rate. But he may ensure that upon further economic development in new world, it is possible to have more complete estimation than before and more compliance with quicker expectations. As a result expected inflation rate in long-term will be equal with real inflation as follows:

$$\pi^e = \pi$$

Therefore Fisher states that only one unit increase in inflation rate, it may cause one unit increase in nominal interest rate as well. As a result, the real interest rate is independent from inflation rate with determining factors like utilization and economy.

### 3-Research history

Following is a report about obtained results out of any studies at different countries about Fisher effect:

Upon a random process at inflation rate level and interest rates by the use of co integration test within a short-term period, Mishkin (1992) could find a superficial regression. But it may confirm Fisher's effect within a long-term period as well.

Even by the use of relevant information of 1970 and 1980, Fahmy, Kandill (2003) could not reject co integration relation between nominal interest rate and inflation rate in a long-term period.

Upon considering foreign currency changes in relevant post-war data at U.S.A, Tillman (2004) may confirm Fisher's effect in his own study.

Through a study by the use of monthly statistical information of fourteen OECD countries through a period from 1980 to 1999 and by the use of Durbin-Hausman test and Monte Carlo Simulation, Westerlund may approve Fisher's effect completely for the mentioned countries.

Leeking Fuei (2007) may test any potentials of the relation between nominal interest rate and inflation rate at Singapore with regard to Fisher's effect.

Through 1976-2006, he has rejected Fisher's claim that "*Real interest rate is fixed and nominal interest rate and inflation interest rate have a mutual relation with each other*". In this study the real meaning of Fisher's effect will be tested with ECM and error correction model.

Table (I)- Different studies respectively in developed & under-developed countries

Long-term Fisher Effect	Studying period	Expected inflation	Economic method	Date	Researcher	Country
Accepted	1962-1993	REH and EMH	E & G	1995	Mishkin & Simon	Australia
Accepted	1959-2002	CPI	Discrete wavelet transform	2003	Atkins & Sun	Canada
Accepted	1974-1996	Average	OLS	2003	Ghazali & Ramlee	UK
Accepted	1953-1990	CPI	E & G	1992	Mishkin	USA
Rejected	1996-2001	CPI	GARCH	2002	Aksoy & Kutan	Turkey
Rejected	1977-1999	CPI	Four variable VAR	2003	Jorgensen & Terra	Peru
Rejected	1977-1999	CPI	Four variable VAR	2003	Jorgensen & Terra	Mexico
Rejected	1977-1999	CPI	Four variable VAR	2003	Jorgensen & Terra	Brazil

### 4-Research findings

We may analyze Long-term economic relations with co integration methods. Major idea in co integration analysis is non-fixed condition of most economic time series with an increase of decrease (random) process. But perhaps there is a

stationary condition without a (random) process in linear combination of these variants. Therefore any co integration analysis may have the ability of finding a long –term equilibrium relation.

Therefore, it is necessary to consider roots of processes in variants before any co integration analysis. For this purpose, firstly panel unit will be specified with root test in which all concerned variants have a stationary root. Then all co integration models of Panel data have required validity for studying any relations among these variants. Finally by extraction of co integration vector and by the use of Johansen method and coefficient test, we may study the research theory as well.

**Stationary roots tests of Panel unit for nominal & inflation interest rates**

In order to explain the subject, we may consider the following AR (1) pattern:

$$(3-1) \quad y_{it} = \rho_i y_{it-1} + X'_{it} \delta_i + \varepsilon_{it}$$

Where:

$y_{it}$ = concerned variant

$i=1,2,...,N$  as the signal of sections

$t=1,2,...,T_i$  as the number of observations in each part

$X'_{it}$ = the agent of exterior variants including width from origin & process

$\rho_i$ = Correlation coefficient

$\varepsilon_{it}$ = Disorder sentence

It is assumed that all above-mentioned items are independent from each other in different sections.

If we have  $|\rho_i| < 1$ , then it is assumed to have stationary  $y_i$  and on the other hand, if we have  $|\rho_i| = 1$ ,  $y_i$  has a stationary root and would be assumed as non-stationary as well.

For the purpose of this test, there are two theories about  $\rho_i$ , first it is assumed that there are common factors among different sections and as a result  $\rho_i$  is equal for all parts. If we have ( $\rho_i = \rho$  for all  $i$ ), all LCC, Bertong & Hedri tests have been based upon this theory accordingly. On the other hand, the second theory is non-equal situation of  $\rho_i$  among all sections. IPS and Fisher tests are completely based upon this theory.

**Common stationary root process test among different sections for nominal interest rate**

✓Loin, Leen & Choo (LLC) test

This method may test a common stationary root process test among all other parts. Number of stops has been determined automatically with regard to Schwartz scale and width of origin and process as exterior variants.

Table (1) The results of LLC Panel Unit Root & deduction of nominal interest rate variant data

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	0.85307	0.1968	I(1)
di	-6.88277	0.0000	I(0)

✓Bertong test

Number of stops in this test would be determined in accordance with Schwartz criteria. The results show that current findings may reject zero theory. Then according to Bertong test, nominal interest rate had a stationary root and non-stationary variant. In addition, the results of test in deduction of 1<sup>st</sup> grade of nominal interest rate variant shows the rejection of current zero theory. It means that deduction of nominal interest rate is a stationary variant.

Table (2) The results of Bertong Panel Unit root & deduction of variant data of nominal interest rate

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	0.81374	0.2079	I(1)
di	-5.33476	0.0000	I(0)

✓Hedry test

Like LLC & Bertong tests, it is assumed in this method that there is a common & stationary root among different sections. But the difference of this test and other ones is zero theory of which with assumption of stationary condition of nominal interest rate variant. There are two test statistics in this method one based upon equality variant and the other based upon inter-section non-equality variance. Regarding the results of tests as mentioned in following table, it is possible

to reject any assumption of stationary root in level and deduction of nominal interest rate variant in both current statistics. This means that according to this test, nominal interest rate was a non-stationary variant with no more possible of stationary condition with one time deduction.

Table (3) The results of Hedri Panel Stationary root at level & deduction of variable data of nominal interest rate

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	4.44493	0.0000	I(1)
	3.18571	0.0007	I(1)
di	14.6806	0.0000	I(1)
	7.28049	0.0000	I(1)

### Stationary root process test exclusive for all parts and nominal interest rate

✓Im, Pesaran & Shin (IPS) test

The results of this test are obtainable according to the non-equal root coefficient in different parts. This is a sign of accepting zero theory based upon non-stationary of nominal interest rate. It means that nominal interest rate is an I(1) variable. Then by deducting of variant, we can reject any presence of stationary root which may change into a stationary variant. Number of steps in this test would be determined in accordance with Schwartz.

Table (2) The results of Bertong Panel Unit root & deduction of variant data of nominal interest rate

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	0.19277	0.5678	I(1)
di	-7.61132	0.0000	I(0)

✓ADF – Fisher test

In Fisher test like IPS process, it is assumed to have a stationary root at different sections. Fisher test has two statistic tests, one with standard normal distribution and the other with Q-Two distribution. According to the Q-Two distribution results and also standard normal test, it is impossible to assume that stationary root theory has been rejected for nominal interest rate. While in deduction of first rate of this variant, zero theory will be rejected as well. In other words, nominal interest rate is a non-stationary variant which may be changed into a stationary variant with deducting process.

Table (6-4) The results of ADF Fisher Panel unit & deduction of variant data of nominal interest rate

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	10.8715	0.5400	I(1)
	0.5788	0.19883	
di	0.0000	76.1417	I(0)
	0.0000	-6.77889	

✓PP – Fisher test

The results of this test show that both standard normal distribution statistics and Kai-Du distribution may accept non-stationary assumption of nominal interest rate. In other words, nominal interest rate is assumed based upon both non-stationary statistics.

Table (7) The results of Panel PP stationary root-Fisher & deduction of variable data of nominal interest rate

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
i	17.9928	0.1159	I(1)
	-0.99732	0.1593	
di	133.987	0.000	I(0)
	-9.96643	0.000	

According to the current panel tests, it is possible to conclude summarily that nominal interest rate in most current tests has a stationary or non-stationary root through 1980-2008 in considered countries. Then with a deduction it may change into a stationary variant. Therefore regarding the obtained results out of a stationary root in economic variants, nominal interest rate is equal to I(1) which may change into I(0) with one time deduction.

Regarding all made tests in this regard, it is possible to conclude that nominal interest rate will be respectively  $i \sim I(1)$  &  $\Delta i \sim I(0)$ .

### Panel stationary root tests for inflation rate

All explained stationary root tests for nominal interest rate have also been made for inflation rate accordingly. Therefore, there is a summary report about the relevant obtained results as well.

Regarding tables (8) & (9), the findings could not reject presence of zero theory of stationary root in inflation rate. It has been confirmed that inflation rate has a stationary root based upon all common stationary root tests among different sections (LLC, Bertong) and relevant tests based upon non-stationary root in different sectors (IPS, ADF-Fisher & PP-Fisher).

It is not possible to reject presence of zero theory for inflation rate in current tests for common stationary root at different sectors.

Table (8) The results of Panel stationary root test for inflation rate at data level

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
IIC	3.52758	0.9998	I(1)
Bertong	2.76043	0.9971	I(1)

Current tests in stationary root process may not reject any zero theory of stationary root in inflation root for concerned countries through 1980-2008.

Table (9) The results of Panel stationary root test for inflation rate at data level

Variant	Test Statistic	Acceptance of zero theory and stationary root	Co integration degree
IPS	4.3352	1.0000	I(1)
ADF-Fisher	4.40123	0.9571	I(1)
PP-Fisher	3.75654	0.9874	I(1)

Regarding the results of common stationary root process tests at different sections, inflation rate in 1<sup>st</sup> grade deduction is still a non-stationary variant. While in case the stationary root is exclusive for each part, the results of test may reject zero theory of stationary root at level 5. Finally with regard to contrary results in these tests and due to have different theories for these tests, it is possible to explain stationary condition of inflation rate at 1<sup>st</sup> grade deduction. It means  $dinf \sim I(0)$ .

Table (10) The results of Panel stationary root test with 1<sup>st</sup> grade deduction of inflation rate (dinf)

Process test of common stationary root among different sections	Test method	Statistic test	Acceptance probability of stationary root presence & zero theory	Accumulation rate
	IIC	-0.12327	0.4509	I(1)
	Bertong	1.68768	0.9534	I(1)
Exclusive stationary root process tests related to different sections	IPS	-1.79815	0.0361	I(0)
	ADF-Fisher	29.9767	0.0078	I(0)
	PP-Fisher	48.1894	0.0000	I(0)

Finally we may conclude that all variants are at non-stationary data level. But by repeating this test for data deduction we may change all variants into stationary condition and reject any stationary root theory only by one deduction case. Therefore all model variants are first grade or I(1) form.

**Panel Co integration test between nominal interest rate & inflation rate**

Since the stationary root test results are pointing out to 1<sup>st</sup> grade of co integration of variants, we may study any presence of long-term balance relations among different variants as well. This is because the present research is about long-term inflation rate and nominal interest rate in one only.

As a result, firstly due to non-harmonized situation in active conditions and panel error sentences, we may use Panel co integration test introduced by Pedroni for further study of non-harmonized situations in Panel models. This is because the mentioned test will provide any non-harmonized situation in width from the origin and gradient of co integration equation. Finally for recognition of co integration vectors direction, if any, we will benefit from Panel Fisher-Johnson co integration test for recognition of co integration vectors' direction.

Relevant co integration relations among variants I & inf are studied through following equation:

$$(2-3) \quad I_{it} = \alpha_{1i} + \delta_{1i}t + \beta_{2i}inf_{it} + \varepsilon_{it}$$

**Pedroni Co integration test**

Disorder sentence means  $\varepsilon_{it}$  is I(1) under the zero assumption of any lack of co integration of this test. General Pedroni test process obtained from (2-3) regression disorder sentence has been tested according to the following process:

$$(3-3) \quad \varepsilon_{i,t} = \rho_i \varepsilon_{i,t-1} + u_{it}$$

$$(3-4) \quad \varepsilon_{i,t} = \rho_i \varepsilon_{i,t-1} + \sum_{j=1}^{p_i} \Psi_{ij} \Delta \varepsilon_{i,t-j} + v_{i,t}$$

Pedroni presents zero theory test statistics with different methods of co integration of  $(\rho_i = \mathbf{1})$ . There are two groups of tests: One harmonized theory in which  $(\rho_i = \rho) < 1$  for all  $i_s$  (which may be named as Within-dimension by

Pedroni). This group of tests may provide convergence possibility among countries. The other non-harmonized theory means  $\rho_i < 1$  is for each i (Between-dimension) test or group statistics) for non-convergence situation among countries.

Table (11) – The results of 1<sup>st</sup> Group Pedroni Panel Co integration test

1 <sup>st</sup> group Within-dimension test	Test method	Test Statistics	Zero assumption acceptance Lack of co integration
	Panel statistic $\Upsilon$	-1.307213	0.9044
	Panel statistic $\rho$ Philips-Prone	-3.940448	0.0000
	Panel statistic $t$ Philips-Prone	-3.986495	0.0000
	Panel statistic $t$ altered dickey-fouler	-4.149303	0.0000

Table (12) – The results of 2<sup>nd</sup> Group Pedroni Panel Co integration test

2 <sup>nd</sup> group Between-dimension test	Test method	Test Statistics	Zero assumption acceptance Lack of co integration
	Group Panel statistic $\rho$ Philips-Prone	-0.782514	0.2170
	Group Panel statistic $t$ Philips-Prone	-1.834075	0.0333
	Group ADF statistics	-1.803509	0.037

Regarding the results of table (11), it is possible to reject any lack of co integration zero assumption in within – dimension Panel  $\rho$  and  $t$  statistics and Philips –Prone and ADF tests. It means that there is a co integration relation between both variants. Also the lack of co integration relation in between-dimension group  $t$  Philips –prone & ADF tests would be rejected at %5 level. While group Philips-Prone  $t$  statistics in between-dimension and in within-dimension  $\Upsilon$  could not reject zero assumption.

Most of test statistics may confirm the presence of co integration vector for both variants i & inf. Then according to the presented results, it is possible to confirm long-term relation between both variants as well.

**Fisher –Johnson co integration test**

It is necessary to know convergence vectors direction of both nominal interest rate and inflation rate for research theory test. Therefore we may benefit from Fisher-Johnson test as well.

The obtained results out of estimation the relation of (1-4) have been inserted in tables (3-4) & (14-4) with an assumption of a fixed limited process.

Table (13)- The results of maximum test of special qty with presence a fixed process

Variants	Zero theory	Opposed theory	Maximum Test Statistics	Theory acceptance Probability
i	$r=0$	$r=1$	34.92	0.0005
inf	$r \leq 1$	$r=2$	14.75	0.2555

Table (14)- The results of test by the presence of an assumption of fixed process

Variants	Zero theory	Opposed theory	Maximum Test Statistics	Theory acceptance Probability
i	$r=0$	$r \geq 1$	38.25	0.0001
inf	$r \leq 1$	$r=2$	14.75	0.2555

According to the obtained results of these two tests, there is a co integration vector between both variants of nominal interest rate & inflation rate as well. This method makes it possible to study any effects of test and maximum special quantity for different panel parts. In this case, we may accept a co integration relation for Kuwait & Indonesia. This is necessary to mention that such a result is in compliance with an analysis as enclosed to this research about statistic information of different countries. This is because there is a negative gradient between inflation rate & nominal interest rate in these two mentioned countries.

Tables (15) & (16) show the obtained results of relation (2-3) by the use of Fisher-Johnson test and lack of a fixed process assumption:

Table (15)- The results of test of maximum special quantity with lack of fixed process theory

Variants	Zero theory	Opposed theory	Maximum Test Statistics	Theory acceptance Probability
i	$r=0$	$r=1$	48.45	0.0000
inf	$r \leq 1$	$r=2$	13.73	0.3186

Table (16)- The results of test of lack of fixed process theory

Variants	Zero theory	Opposed theory	Maximum Test Statistics	Theory acceptance Probability
i	r=0	$r \geq 1$	49.56	0.0000
inf	$r \leq 1$	r=2	13.73	0.3186

Fisher test may provide reliable results for current information with lack of fixed process in which we may find a reliable co integration relation between both nominal interest rate and inflation rate as well. Regarding the test, it is possible to prove that there is a co integration relation at different parts of both variants only in Iran, Indonesia and Nigeria in contrast with last step.

In spite of this contrast, when there is not any limitation for a linear process, Panel results are in compliance with statistical analysis of last part in those countries with lack of process such as Iran, Indonesia & Nigeria. There is a co integration relation between both variants of nominal interest rate and inflation rate through 1980-2008.

It is necessary to have co integration & normalized vector in which we have a long-term harmonized relation between both variants and calculate them by Johnson method. Table (17) shows the relevant results accordingly.

Table (17)- The results of Johnson Co integration test

Variant	Co integration vector	Normalized vector
i	-0.100740	-1
inf	-0.024735	-0.245532
c	1.69718	16.78301

As a result, following is the long-term convergence relationship between nominal interest rate and inflation rate for developing countries through 1980-2008:

$$(3-5) \quad i = 16.783 - 0.245inf$$

Research theory shows that there is a similar changing process for both inflation rate & nominal interest rate through a long-term period. T statistic with meaningful level of %5 has been used for testing of research theory. Any rejection of zero assumption means confirming the theory otherwise it will be rejected accordingly.

$$(3-6) \quad i = \alpha + \beta inf$$

$$H_0: \beta \leq 0 \quad , H_1: \beta > 0$$

According to the current information in **Eviews** software output, **t** statistic obtained from this co integration relation is equal to -3.8061 which may lead to acceptance of zero theory at %5 level. In other words, the research theory will be rejected and the research shows that inflation rate & nominal interest rate are in opposite directions in long –term and in developing concerned countries (Iran, Algeria, Indonesia, Kuwait, Nigeria and Venezuela).

Research theory may reject a mutual positive relation with a nominal interest rate and inflation rate in long-term period in compliance with Fisher effect. There are different reasons for rejection of the positive relation between nominal & inflation interest rates in developing countries. Statistic data collection in developing countries is somehow difficult for those information equal with reality and/or impossible for interest rate. Therefore statistical & economic analysis will face with a fundamental problem related to economic theories and correct confirmation of a model for further studies. On the other hand, it is possible to point out that most under-developing countries have a complete controlled economy which may reject any theories behind economic ones based upon hidden market in these countries. It means that most economic theories and also interest rate theory are based upon free market while due to serious controls of governments in developing countries we will face a lack of harmony in economics. Therefore, there are a lot of problems and limitations against finding a suitable result in our economic studies.

### 5-Conclusion

Monetary effects on real economic variants will face with different problems due to structural bottlenecks in developing countries and high level of investment risks and also serious controls on monetary markets in these countries. Therefore it may lead to creation of very complex effective mechanisms. There are different reasons for rejecting of Fisher effect and also ineffective situation of monetary policies with regard to the obtained results as well most of which are related to constructional bottlenecks in these countries. Followings are different reasons accordingly:

- There is not a monetary inter-banking market in most developing economies (like Iran). Therefore central bank may specify any interest rates of deposits and facilities for which all banks are obliged to follow up the case. Since there is not a monetary inter-banking market from one side and also there are specified interest rates lower than equilibrium rate of market on the other, there is a high level of pressure for banking facilities in these societies.

- Economic environment in which all monetary & financial policies which may applied in developed countries are different from the same in developing countries. In developed countries we have maximum benefit of resources. The only duty of monetary & financial policies is to reduce short-term fluctuations of production. Bu in spite of removing any crisis resulted from commercial short-term courses in under-developing countries , all monetary & financial authorities are facing with fundamental problems of economic long-term development and growth. Due to the lack of financial governmental limitation in developing countries, monetary policies are related to financial policies which may weaken monetary policies. Of course monetary policy has a non-suitable function as well.
- Interest rate in developed countries will be specified by inflation rate (as a major economic index) and economic growth. Any determining of interest rate in advanced & free systems is based upon inter-banking market as well. Then any supply & demand in banking markets will determine banking interest rate.
- According to the inter-banking interest rate, all banks may absorb deposits and/or grant different facilities (Any currency difference is depending upon the term and customer risk as well). Central banks manage to increase and/or decrease inter-banking interest rate through market involvements for specifying interest rate in economic systems. It means that central bank is able to provide any rates of monetary demands by banks for specifying the specified interest rate (with regard to all terms & conditions). In other words, interest rate of central bank is in fact a market balance interest rate.

Therefore central banks in developing countries are obliged to consider inflation targeting as a monetary policy format without any violation from major goal and primary fixed prices. Also we may conclude that by releasing the price and/or money chances and determining interest rate on floating basis and exiting from grammatical form, monetary policies could be successful with a suitable attitude in these countries.

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