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Investigating the effects of financial repression on economic growth of MENA countries

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ABSTRACT

In today's societies, economic growth and sustainable development is an important objective that countries' leaders are looking for it. Some countries have achieved that goal, but other countries failed to achieve this goal despite access to abundant resources due to lack of management have. Middle East and North Africa (MENA) countries are among these countries. Examining 10 countries of the MENA region including Iran, Iraq, Egypt, Djibouti, Libya, Yemen, Syria, Lebanon, Jordan, and Tunisia in period (2000-2012), this study provides effective strategy to achieve sustainable growth and development using Panel data model. One of the mismanagement factors causing these countries to experience economic crises is the phenomenon of financial repression. During studies conducted by scientists and researchers on financial repression, it was found that the most important cause of it is command control of interest rate and its important effect is creation of inflation. The main objective of this research was to prove the negative effect of financial repression on economic growth in MENA countries. It was concluded that governments' intervention in the financial markets has reduced economic growth by using financial repression index in these countries.

Keywords: Financial repression, Economic growth, MENA region

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INTRODUCTION

One of the theories explaining the weakness of the financial system in developing countries well is the phenomenon of financial repression. Most of economic theories explaining financial repression emphasize on negative impact of financial repression on economic growth (Shumpiterz, 1911, McKinnon, 1973). This phenomenon is created when the government tries to control various economic rates including interest rates, exchange rates, etc. and by their command determination, orients their economic mechanisms in line with its goals. In these countries, private sector savings instead of being driven to financial markets are invested more in non-financial assets such as gold and land. The root of this fact is command control and government decisions about the orientation of incentives of various economic components in line with determined objectives. This kind of attitude to the economy is not only inconsistent with the real nature of economy, but also it is in conflict with scientific analysis. The study examines the effect of financial repression on economic growth in MENA countries (Iran, Iraq, Egypt, Djibouti, Libya, Yemen, Syria, Lebanon, Jordan, and Tunisia). Nowadays, economic growth and development is one of the important objectives of these countries. However, some countries despite abundant natural and financial resources failed in achieving this goal .There are various theories to explain the economic failure of these countries. One of the theories explaining the weakness of the financial system in developing countries is the phenomenon of financial repression. Most of economic theories explaining financial repression emphasize of negative impact of financial repression on economic growth. This phenomenon is created when the government tries to control various economic rates including interest rates, exchange rates, etc. and by their command determination, orients their economic mechanisms in line with its goals. In these countries, private sector savings instead of being driven to financial markets are invested more in non-financial assets such as gold and land. The root of this fact is command control and government decisions on orientation of incentives of various economic components in line with determined objectives. This kind of attitude to the economy is not only inconsistent with the real nature of economy, but also it is in conflict with scientific analysis. MENA countries that have abundant natural and financial resources are examples failed in achieving these objectives. This study examines the phenomenon of financial repression and its effects in a number of member countries of the MENA region and the effect of this phenomenon on the economic failure of these countries to provide solutions to achieve high economic growth.

Methodology

Types of data used generally for experimental analysis included time series data, cross-sectional data, and panel data. In time-series data, values of one or more variables can be observed over a period of time. In the cross-sectional data, the values of one or more variables for multi-unit or a sample are collected at the same time. In the panel data, same cross-sectional over time is examined and evaluated. These data have space and time dimensions. There are other names for panel data such as the combined data (a combination of time-series and cross sectional observations), the micro-panel data, longitudinal data (time study of one variable or a group of subjects), analyzing the event history (for example, the study of dandruff movements over time in consecutive states and conditions. There are other interesting names, which all these names refer primarily to movement of cross-sectional units over time (Gujarati, 2003, p. 1141).

Panel data

In panel data, cross-sectional data are examined during a certain period, so panel data have time and are cross-sectional dimensions. These data are a combination of time-series and cross-sectional data. Panel data construct experimental analyses in a specific shape (T) that it is not possible in the case of using time series and cross-sectional data.

Regression models of panel data

Base econometric usually explains changes of a variable in terms of y in terms of the number of variables (xs) which make changes in, which this performed often in the form of a function:

(1) $y_i = f(X_{ki}) \qquad i = 1,2,\dots,N \qquad k = 1,2,\dots,k$

K index indicates the number of explaining variables. Often for the start, the form of this function is considered linear function.

(2) $(y_i = B_0 + B_1X_{1i} + B_2X_{2i} + \cdots + B_kX_{ki} + \varepsilon_i$

Here, index i represents the number of observations that we have of each variable, and the number of observations can be based on time. In this case, yi and xki are time series.

In the other state, in a certain time, a variable can be measured in a population. Here, the independent variable such as productivity changes in each country. Over time, by applying classical regression assumptions, coefficients (B) are estimated. Statistical tests on the coefficients, regression goodness of fit, F tests, Coefficient of Determination Regression and so on depend on cases such as the number of certain observations, T for time-series data, and N in the cross-sectional data, and the number of parameters (B) estimated (Gujarati 2003).

Estimate of regression models with panel data

The estimating regression model depends on assumptions of this study on intercept, slope coefficient, and disorder sentence (Gujarati, 2003, p. 1147).

Model estimation is always done in two ways:

1. Fixed effects method
2. Random effects method

Diagnostic tests

To determine the type of data used in the combined models, different tests are used. The most common of them is Chow test to use fixed effect model against estimate model of pooled data, Hausman test for using fixed effect model against random effect model and LM test to use random effect model against pooled model (Zarranejad, 20006). Chow test is performed for the use of the pooled model against panel model. Hypotheses of this test are as follows:

$$\begin{cases} H_0 = \text{pooled model} \\ H_1 = \text{fixed effect model} \end{cases}$$

The first hypothesis is based on bound values and the reverse hypothesis is based on non-bound values. Chow test statistic based on the square error of the bound and non-bound models is as follows:

$$(3)\text{Chow} = \frac{\frac{\text{RRSS}-\text{URSS}}{\text{N}-1}}{\frac{\text{URSS}}{\text{NT}-\text{N}-\text{k}}}$$

This statistic has an F distribution with N-1 and NT-N-K degrees of freedom.

The most common test to determine the type of model and the combined data is the Hausman test. Hausman test is based on the presence or absence relationship between regression error estimated and the independent variables of model. If there is such relationship, fixed effect model will be used, while random effect model will be used in the case of absence of such relationship. H0 hypothesis shows lack of relationship between independent variables and error of estimate and H1 hypothesis represent such relationship. If the cross-sectional effects variance in random effect model is small, we can use combination of all data method and ordinary least squares estimation can be used to estimate relationships between variables.

Accordingly, to determine a random effect model and to determine the random effects model (panel) against the pooled model, Parish hierarchy test can be used. Hypotheses of this test are as follows:

(4) $$\begin{cases} H_0: \sigma_\alpha^2 = 0 \longrightarrow \text{pooled} \\ H_{10}: \sigma_\alpha^2 > 0 \longrightarrow \text{Random Effect} \end{cases}$$

In these hypotheses, σ_α^2represents the variance of the estimated effect model through random effect. To calculate test statistic, pooled estimation error can be used as follows:

(5) $$\text{LM} = \frac{\text{NT}}{2(\text{T}-1)}\left[\frac{\text{T}^2 \sum \text{e}_{\bar{\text{i}}0}^2}{\sum\sum \text{e}_{\text{it}}^2} - 1\right] 2 \approx \chi_1^2$$

In the equation above, eit is pooled estimate error and e ̅i0 is average error in the first time. It should be noted that the first hypothesis of this statistic has a chi-square distribution with one degree of freedom.

Panel data

Combined data

Combined data deals with properties of a variable that change over time and according to the sections. It means that they are a combination of time series data and cross sectional data

Time series structural model:

(6) $$y_t = \alpha + BX_t + u_t$$

Cross-sectional structural model

(7) $$y_i = \alpha + BX_i + u_i$$

Variable related to firm, company, industry, and … :i

Variables change over time: t

Model with considering space and time dimension:

(8) $$y_{it} = \alpha + BX_{it} + u_{it}$$

Hausman test statistic

(3-22)
$$H = \left(\widehat{B}_{FEM} - \widehat{B}_{REM}\right)' \left(\widehat{Var}\left(\widehat{B}_{FEM}\right) - \widehat{Var}\left(\widehat{B}_{REM}\right)\right)^{-1} \left(B_{FEM} - B_{REM}\right) \sim \chi^2$$

First, we need to know if is it better to use pooled method or fixed effects model that it is done by Chow test. If the pooled model was preferred, it is done. However, if fixed effects model was preferred, we should test it against the random effects model that it is done by Hausman test.

Hausman test is one of the main tests in panel studies. It can be said that it is the second test after Chow test. The underlying assumption in the fixed effects model is that the error component could be correlated with explanatory variables, while with fixed error component in time that is time without change such as gender of the person during the time, it does not change or skin color of the person. However, in the fixed effects models, it is assumed that there is no correlation between error component and explanatory variables.

Hausman test uses criterion of chi-square. If the probability of the test statistic is more than 0.05, at a significance level of 95 percent, we can prefer random effects to fixed effects, otherwise, fixed effects is selected .Another method is to test the pooled model against random effects model (Lagrange test of Breusch - Pagan). If this hypothesis H0 is not rejected, pooled model is preferred, but if a random model is preferred, we measure it Hausman test compared to fixed effects model.
Lagrange coefficient test statistics
H0= lack of random effects: pooled model
H= random effects: random effects model

(3-23)
$$LM = \frac{NT}{2(T-1)}\left[\frac{\sum_{i=1}^{N}\left(\sum_{t=1}^{T} u_{it}\right)^2}{\sum_{i=1}^{N}\sum_{t=1}^{T} u_{it}^2} - 1\right]^2 = \frac{NT}{2(T-1)}\left[\frac{T^2\bar{u}'\bar{u}}{u'u} - 1\right]^2 \sim \chi^2$$

Stationary test on the combined data

Unit Root Tests of combined data were developed by Kovach (1992 and 1994) and Debertion (1994). These studies were completed by Lin and Levine (1992 and 2003), Vaime and Shane. These tests will start with Lane and Levine test.

Lane and Levine (LL) test

Unit root test related to time series, as previously discussed, examines the stationary or non-stationary of variables using one equation.

Lin and Levine (LL) showed that in the combined data, using unit root test related to these data, there is greater test power than the unit root test for each section individually. McDonald (1996) and Frank and Rossy (1996) with examples in their research showed that by applying the unit root tests in the combined data such as advanced Dickey Fuller test and Philips – Brown test have lower statistical power than unit root tests of combined data.
Lane and Levine (1992) showed the unit root test as follows:

(9)
$t = 1,2,\ldots,T \quad i = 1,2,\ldots,N \qquad \Delta X_{i,t} = P_i X_{i,t-1} + \delta_i t + \alpha_i + \varepsilon_{it}$

In the above equation, N is the number of sections and T is time period, Pi is auto-correlated parameters for each section, δi is time effect, αi is fixed coefficients for each section, and ε_{it} is model error that has normal distribution with zero mean and variance of δ^2. This test is based on test Dickey - Fuller is intended as follows:

(10) $\Delta X_{i,t} = P_i X_{i,t-1} + \delta_i t + \alpha_i + \sum_{j=1}^{Li} \theta_{ij}\,\Delta X_{i,t-j} + \varepsilon_{it}$

In the equation above, Pi is auto-correlation parameter for each section, Li is length of interruption, δ_i *is time effect*, α_i fixed coefficient for each section, and ε_{it} is model error that has normal distribution with zero mean and variance of δ^2. LL test is Dickey-Fuller combined test with time process that has higher power in heterogeneity of sections and heterogeneity of variance of error sentences.

Hypotheses of this test are as follows:

(11)
$$\begin{cases} H_0: P_i = 0 \\ H_1: P_i = P < 0 \end{cases}$$

In these hypotheses, as N and T are greater, test statistic will tend to normal distribution with mean zero and variance 1. LL has several tests. First, instead of usual equation, the following equation is used:

(12) $$\Delta X_{i,t} = P_i X_{i,t-1} + \delta_i t + \alpha_i + \varepsilon_{it} \rightarrow \hat{\varepsilon}_{it}$$

(13) $$X_{i,t-1} = \sum_{j=1}^{Li} \theta_{ij}\, \Delta X_{i,t-j} + \delta_i t + \alpha_i + V_{i,t} \rightarrow \overline{V}_{i,t-1}$$

Now, regression of errors is estimated as follows:

(14) $$\hat{\varepsilon}_{it} = P_i \hat{V}_{i,t-1} + \varepsilon_{it}$$

Then, it is tested according to value of this statistic. Using these statistics and long terms and long terms coefficients of variables, test statistic is calculated as follows:

(15) $$t_\delta^* = \frac{t_\delta - N\tilde{T}\hat{S}_N \hat{\delta}_\varepsilon^{-2} SE(\hat{\delta})\mu_{mT}^*}{\delta_{mT}^*} \rightarrow N(0,1)$$

In this equation, SE (δ) is standard deviation and $\hat{\delta}$ and $\hat{\delta}_\varepsilon$ are mean and standard deviation were calculated, respectively. In the long term, μ*mT and δ_{mT}^* were calculated mean and standard deviation, respectively. Lin and Levine by using the length of interruption and the number of variables and $\tilde{T}$ the average number of interruptions per section, t_δ^* was calculated. Then, using statistics of table, significance levels of Lin and Levine are compared, if this statistic is less that statistic of table, unit root hypothesis for that variable is not rejected.

IPS test

IPS test is one of the stationary tests of combined data. The difference of this test with LL test emerges in considered hypotheses. In hypothesis H1, P_is have different values. In other words, the hypotheses of this test are as follows:

For all

(16) $$H_0: P_i = 0 \qquad i = 1,2,3,\dots,N$$
$$H_1: \begin{cases} P_i < 0 & i = 1,2,3,\dots,N_L \\ P_i = 0 & i = N_{L+1},\dots,N \end{cases}$$
$$0 < N_l < N$$

Based on these assumptions, some sections can have unit root. Therefore, instead of combined data, unit root test is used separately for each section and then mean value of these statistics is calculated in the form of $\bar{t}_{NT}$.

If $t_{iT}(R_i, B_i)$ represents the t statistic for ith unit root test of section, with interruption Ri and test coefficients of Bi, $\bar{t}_{NT}$ $standard\ statistic\ is$ defined as follows:

(17) $$\bar{t}_{NT} = \frac{1}{N}\sum_{i=1}^{N} t_{iT}(R_i, B_i)$$

Its amount with an increase in N and T tends to the infinite toward standard normal distribution. To create a standard t statistic, IPS defines the following values:

$$\mathrm{Var}\ t_{iT}(R_i, B_i), E(\ t_{iT}(R_i, B_i))$$

It also calculated these values. When t tends toward infinity, these values close to Dickey-Fuller test statistics.

Because of autocorrelation, it is proposed to solve it, the two methods of asymptotic mean and variance and using standard statistics by using the mean and variance $t_{iT}(\pi_t, 0)$ under the premise Pi = 0 for equation (3-33) to be used.

(18) $$w_i = \frac{\sqrt{N}\left[\frac{\bar{t}_{NT} - N^{-1}\sum E\left(t_{iT}(\pi_t,0)\right)}{P_i=0}\right]}{(N-1)\sum \mathrm{Var}\left[\frac{t_{iT}(\pi_t,0)}{P_i=0}\right]} \rightarrow N(0,1)$$

Fisher test

Another method to test unit root of combined data is using significance level of Dickey-Fuller unit root test. The base of this approach was taken from Fisher method (1932), extended later by Madala and Wu (1999) in detail. Accordingly, this test is known MW (Madala and Wu) test.

The test based on Dickey-Fuller test is performed as follows:

(19) $$\Delta y_{i,t} = \alpha_i + P_i y_{i,t-1} + \sum_{t=1} B_{i,2} \Delta y_{i,t-2} + \varepsilon_{i,t}$$

Where y i, t is variable examined, αi fixed coefficient in advanced Dickey-Fuller test, Pi is test interruption, and $\varepsilon_{i,t}$ is error test. MW test assumptions, as assumptions of IPS test are stated as follows:

H0= unit root for variables at all sections
H1= variable is stationary at least in one of the sections

Fisher test in simple words examines presence or absence of unit root in the combined data. After Dickey-Fuller test, P-value unique to it is used to perform test. Statistics used to perform Fisher test was presented by Madala and Wu (1999) as follows:

(20) $$P_{mv} = -2 \sum_{i=1}^{N} \mathrm{Log}\,(P - \mathrm{Value})$$

Accordingly, total value of the significance level for the usual unit root test in each section is calculated. This statistic has a chi-square distribution with 2N degrees of freedom.
2-4- creating combined index of financial repression using Beam and Colominos method (FRI).
To create a combined index for financial repression, a method was used that Beam and Colominos in 2001 in a book titled "The Rise of Global Capital" used this method. To measure financial repression for the countries, they used an equation as follows:

$$FRI = a + 50 * FR$$

In the equation above, FRI is a combined index of financial repression, $\mathrm{FR} = \mathrm{INT} - \mathrm{GOV}$, $\mathrm{a} = 50 - \mathrm{b}(\mathrm{mean}(\mathrm{FR})$, *and* $\mathrm{b} = \frac{20}{\mathrm{s.d.(FR)}}$, *in which*

- INT is real interest rate
- GOV is ratio of government debts to commercial banks to debts of private sector to commercial banks.
SD indicates standard of deviation and mean is the arithmetic mean.

FRI index obtained for financial repression in this study has a normal distribution with mean 50 and SD 20. In addition, numerical FRI value is between zero to 100, where 100 represents the highest degree of financial repression and zero is the lowest level of financial repression.
The effect of financial repression on economic growth

To investigate the effect of financial repression on the economic growth, the following model was considered:

$$\dot{GDP} = \alpha_1 + \alpha_2 GDP(-1) + \alpha_3 INF + \alpha_4 TRADE + \alpha_5 CAPITAL + \alpha_6 GOV.EXP + \alpha_7 SCHOOL + \alpha_8 T + \alpha_9 FRI + \alpha_{10} DR$$

In which:
GDP: The growth rate of real income per capita
GDP (-1): the amount of per capita real income in the previous year
INF: rate of inflation
TRADE: degree of trade openness
CAPITAL: Gross capital formation
GOV.EXP: government final consumption expenditures
SCHOOL: registration rate in higher educations
T: trend variable
FRI: financial repression index
DR: The index of capital goods price deviation from the mean period
- Introduction of indices

The growth rate of real income per capita ((GDP)˙) (dependent variable): This variable shows the growth rate of gross domestic production per capita at constant prices extracted from World Bank database.

The amount of per capita real income in the previous year (GDP (-1)): This variable shows level of GDP in the previous year. To calculate this index, data related to GDP per capita at constant prices are used. Information on this variable was extracted from the World Bank Site.

Inflation rate (INF): This variable indicates the growth of the consumer price index and it is on an annual basis. The data related to this variable were extracted from the World Bank. Trade openness degree (TRADE): This variable indicates the total exports and imports of goods and services expressed as a ratio of GDP. The data related to this variable were obtained from the World Bank. Gross capital formation (CAPITAL): gross capital formation or gross domestic investment represents the amount of money spent to increase durable goods plus net change in inventories. This variable as a ratio of GDP has been entered into the model and the data related to it were obtained from the World Bank .Government final consumption expenditure (GOV.EXP): This index is calculated by dividing the amount of government final consumption expenditure by the amount of GDP at constant prices. In World Bank database definition, government final consumption expenditure is the total current costs of the government to purchase goods and services, which includes compensation for labor services. In this figure, security and national defense expenditures have been considered (but it is clear that military expenditures of government which are part of government capital formation have not been considered in it). Registration rates in higher education (SCHOOL): This index is defined by the World Bank as ratio of total registrants in higher education (ISCED 5 and 6) to all those who have completed high school in 5 years. Trend variable (T): the variable has been included to solve possible problems caused by stationary of other variables. This variable for all countries in the first year of study takes number 1, number 2 in the second year, and number 3 in the third year . Financial repression combined Index (FRI): This indicator as stated was obtained by combination of several variables. The data required for this index were extracted from the database of the World Bank. The index of capital goods price deviation from the mean period (DR): the index of deviation of the price of capital goods was made using the definition of real cost of credit (DR) as follows. This definition is taken from the study conducted by Kamijani (1374), which is based on Agarula study.

(21)
$$\mathrm{DR} = \frac{1+\mathrm{i}}{1+\mathrm{p}} - 1 = \frac{\mathrm{i}-\mathrm{p}}{1+\mathrm{p}}$$

In this equation, I and p are respectively nominal interest rate and inflation rate. To obtain the deviation of prices of capital goods, the mean DR for each country is calculated and then DR distance from mean is defined as deviation index. Data needed to make this index were extracted from the database of the World Bank.

Model estimate

In this section, after examining diagnostic tests, we estimate the model. But, at first, to better understanding of the model, we look at the statistical features of the variables used in the model.
We examined the model variables as follows:

Table 1. Statistical properties of model variables

Standard Deviation	Minimum	Maximum	Middle	Average	Variable
2272.802	728.326	9099.075	2366.436	2983.602	GDP(−1)
8.291	-9.797	43.422	5.397	8.452	INF
33.796	11.838	147.143	79.866	75.669	TRADE
27.978	7.869	154.234	23.278	32.177	CAPITAL
5.032	9.300	29.705	14.410	16.230	GOV. EXP
15.540	0.267	60.877	30.923	28.737	SCHOOL
11.317	9.603	83.939	52.266	51.642	FRI
3.800	4.050	19.425	0.327	1.427	DR

As can be seen, the mean rate of inflation in the countries of the Middle East and North Africa in the years studied is single number and countries in the region have significant volumes of foreign trade so that total volume of all exports and imports of goods and services in these countries is75% of real production of countries. Other statistical feature include physical capital ratio to human capital that is lower compared to developed countries. Another important point is number related to financial repression index in these countries. The mean index value of index 51 indicates a high degree of financial repression and government intervention in these countries. After observing the statistical characteristics and obtaining an overview of the data, diagnostic tests are examined. Therefore, in order to select the optimal model estimation method, F Limer test is used to measure the difference in the intercepts among the countries. If intercepts among the countries has no significant difference, pool method can be used to estimate. However, if the difference of intercepts is significant, fixed effect or random effects in panel data are used. F Limer test results are given below:

Redundant Fixed Effects Tests Equation: OK Test cross-section fixed effects			
Effects Test	Statistic	d.f	Prob
Cross-section F	10.167708	(7,32)	0.000
Cross-section Chi-square	57.363348	7	0.000

As the results of this test show, null hypothesis on equality of intercepts in the model is rejected. As a result, Pooling Data is not appropriate for the estimation of the equation and fixed or random effects must be used. Hausman test is used to select one model between fixed effects model and random effects model. The underlying assumption in the fixed effects model is that the error component could be correlated with explanatory variables, but it does not change over time with fixed error component in time that is time without change such as gender of person or skin color of the person. However, in random effects model, it is assumed that there is no correlation between the error component and other explanatory variables .Hausman test uses criterion of chi-square. If the probability of the test statistic is more than 0.05, at a significance level of 95 percent, we can prefer random effects to fixed effects, otherwise, fixed effects is selected . The results of the calculation of Hausman test statistic are given below:

Correlated Random Effects – Hausman Test Equation: OK Test cross-section random effects			
Test summary	Chi-sq Statistic	Chi-sq. d.f	Prob
Cross-section random	52.902443	7	0.000

Rejecting the null hypothesis suggests that the fixed effects model is preferred to random effects model. Therefore, fixed effects model should be used here. Finally, to investigate the stationary of variables using the following three statistics, we select the optimal model.

Table 2. status of variables

ADF-Fisher Chi-Square	Im, Pesaran and Shin W-stat	Levin, Lin & Chu	Variable
56.767 (0.00)	-4.579 (0.00)	-5.123 (0.00)	$\dot{GDP}$
7.87638 (0.98)	1.61381 (0.94)	-0.968 (0.16)	$GDP(-1)$
37.737 (0.00)	-3.025 (0.00)	-5.026 (0.00)	INF
21.124 (0.38)	0.542 (0.70)	-2.033 (0.02)	$TRADE$
11.238 (0.93)	1.100 (0.86)	0.361 (0.64)	$CAPITAL$
12.780 (0.80)	0.338 (0.63)	-1.256 (0.10)	$GOV.EXP$
23.925 (0.15)	-0.010 (0.49)	-1.525 (0.06)	$SCHOOL$
31.297 (0.02)	-1.173 (0.12)	-1.877 (0.03)	FRI
40.851 (0.00)	-3.127 (0.00)	-6.271 (0.00)	DR

As inferred from the results of some of the variables, some of variables are not stationary. For this reason, by entering the variable of trend, we tried to maintain stationary of these variables .According to diagnostic tests results, optimal model is estimated and results related to it are interpreted.

Results of model estimate and interpretation of results

Using the related tests, the optimal method was selected to estimate linear equation coefficients. Results of estimate using fixed effects are reported in table below. As shown in results reported in the above table, the estimated linear equation has a positive and significant intercept rate (16.25) that presents other cases that affect economic growth, but have not been entered into our model. Additionally, in order to assess the assumption of convergence of growth of countries, production interruption of real per capita is included in the model that its negative sign confirms the convergence assumption. However, another variable that its impact on economic growth is taken into consideration is the rate of inflation. It is expected that increased inflation rate, increasing uncertainty in the economy, increased production costs, reduced international competitiveness of the economy, and an increase in the nominal interest rate to have an inhibitory effect on economic growth. However, the results of the model indicate that the effects of inflation on economic growth in the region countries are not significant .The results also showed a significant positive relationship between trade openness of an economy and economic growth, so that a unit increase in the share of total value of exports and imports of GDP will increase economic growth by 0.11%.

In fact, countries that engage in dynamic interaction with the outside world, the rate of exchange and technologies in them is higher, and also due to competition at the international level, the performance of production factors is higher, and according to the principle of comparative advantage in the production of goods and services, it has more appropriate allocation of resources between different economic sectors .The next variable is physical capital. As previously mentioned, in the form of growth models, physical capital is a key factor affecting the economic growth process of countries. As seen in the table above, one unit increase in the share of investment in GDP will increase economic growth by 024% that this coefficient is very significant and important. In fact, the accumulation of physical capital plays a major role in the explaining the growth of countries .According to the model estimate, one unit increase in the ratio of government expenditure to GDP will reduce economic growth by 0.10%. Negative effect of size of government in the economy is largely attributed to lower productivity and efficiency of the public sector compared with the private sector and reduced private sector investment through substitution effects. The statistic (t) value shows that this coefficient is not significant .Another very important factor that in the theoretical literature its impact on economic growth has been stressed is human capital. Spread of knowledge and expertise and provision of conditions for development of individual talents will affect the economy by increasing productivity. As seen in the table, one percentage increase in the ratio of people registered for academic studies will increase the countries' economic growth by 023% in the model. Therefore, it can be acknowledged that the emphasis of most of new growth models on introducing new human capital as a factor affecting growth is an important development in the history of growth literature .In addition, coefficient of trend is positive and significant in the model. In addition, the index of deviation of prices of capital goods in studied countries is positively correlated with economic growth, but this result is not consistent with theoretical expectations.

Table 3. The results of the fixed effects model

Probability	t	Standard Deviation	Coefficient Corner	Variable
0.0146	2.583576	6.292331	16.25672 **	C
0.0001	-4.341699	0.002344	-0.010176 ***	GDP(−1)
0.1345	-1.535611	0.076642	-0.117692	INF
0.0022	3.323103	0.034252	0.113823 ***	TRADE
0.01	2.469222	0.097455	0.240637 **	CAPITAL
0.6112	-0.513373	0.201809	-0.103603	GOV. EXP
0.0275	2.310386	0.102071	0.235824 **	SCHOOL
0.0034	-3.158758	0.052285	-0.165157 ***	FRI
0.0338	2.218018	0.084612	0.187672 **	DR
0.0212	2.423734	0.175519	0.425411 **	T

CONCLUSION

Based on the results, estimated linear equation has a positive and significant intercept (16.25), which represents that there are other cases that can have an effect on economic growth, but they were not entered into our model. In addition, to assess the convergence hypothesis of growth of countries, real production per capita interruption was included in the model that its negative sign confirms the convergence hypothesis.Another variable whose impact on economic growth is taken into consideration is the rate of inflation. It was expected that increased inflation by increasing uncertainty in the economy, increased production costs, reduced international competitiveness of the economy, and an increase in the nominal interest rate to have inhibitory effect on economic growth. However, the results of the model indicate show that that the effects of inflation on economic growth in these countries were not significant .Based on the results of the estimate, one percent of increase in the registrants' proportion for higher education will increase countries economic growth by 0.23% in the mentioned model. Therefore, it can be acknowledged that the emphasis of most of new growth models on introducing new human capital as a factor affecting growth is an important development in the history of growth literature .In addition, coefficient of trend is positive and significant in the model. In addition, the index of deviation of prices of capital goods in studied countries is positively correlated with economic growth, but this result is not consistent with theoretical expectations .The main index in this study that is combined index of economic repression has a negative on economic growth of countries. As can be seen, one unit increase in the combined index of financial repression decreases the economic growth of countries by 0.16%. Therefore, as expected, governments' intervention in the financial markets through determining interest rate threshold, high rates of legal reserve and involvement in the distribution of bank credits as an obstacle affected the process of economic negatively and made the economic development and growth in trouble. Therefore, the hypothesis of a negative impact of financial repression in the countries studied on their growth cannot be rejected.

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