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BANK SYSTEM EFFICIENCY AND CONVERGENCE IN THE IRAN PROVINCES

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ABSTRACT

According previews researches Bank system efficiency in every country, is a fundamental step toward economic growth. The most important topics in the of growth, is convergence. This paper examines the Impact of bank efficiency on the convergence process across in the range of 30 provinces for the period 2001-2015, giving special attention to the role of bank performance as a conditioning factor, using panel data. First, the Bank system efficiency calculated with SFA method and after, the Impact of bank efficiency in the convergence process estimated. As a result of the convergence of a function a of factors such as the accumulation of physical capital accumulation and bank efficiency. Then Bank system efficiency in every country, is a fundamental step toward economic growth and convergence.

KEYWORDS: Economic Growth, Efficiency, Bank System, Convergence, Panel Data

JEL CLASSIFICATION: R32, O11, O15, C23

INTRODUCTION

Theories of economic growth of exogenous growth began to come to endogenous growth. At the end, the issue is convergence in economic growth. However, much research hasn't been done on the factors affecting convergence and only the human capital factor is considered. Less than 50 percent of the main factors of production (labor, capital, land) and others qualitative factors are considered. Various input factors have been tested in the growth literature attempting to explain the Regions' long-run income level, among them, savings–investment ratio, labor or population growth, human capital, R&D expenditure, trade, financial conditions, institutions, political stability, government spending, income distribution, etc. There is not a clear consensus on the exact number of growth determinants that must be considered when growth equations are estimated, and most importantly, growth determinants are found to influence differently developing and developed regions.

This study uses panel data of 30 provinces for the years 2001 to 2015 to examine the effect of bank efficiency on convergence in Iran. So in this paper seeks to measure the effects different levels of Bank system efficiency on the growth of income per capita among.

Description of the Convergence Model

In 1956, the first Solow absolute convergence model with the proposed technical progress. A simplified conventional presentation of the convergence approach, by using panel data is the following:

$$\Delta lny_{i,t} = \gamma + blny_{i,t} + u_{i,t} \quad (1)$$

In this model, the convergence shown by the percentage growth rate of per capita income (i is region and t time) and the per capita income is lower, the greater convergence.

Absolute convergence is to return to scale dimming are described. Convergence coefficient, a parameterb $= (1 - e^{-\lambda T})$, the convergence rate is λ:

$$\lambda = -[\ln(1 - b)]/T \; . \quad (2)$$

Finally, T is the period over which the growth of income per capita is measured.

Now you can add other factors affecting the economic growth model 1 and model of conditional convergence is achieved, the of conditional convergence is as follows:

$$\Delta lny_{i,t} = \gamma + blny_{i,t-1} + c_i lnX_{i.t}^{j} + u_{i,t} \quad (3)$$

The difference between absolute convergence and conditional convergence of factors leading to increasing returns to scale and the impact areas difference on economic growth are.

Efficiency

First, Farrell (1957) raised efficiency. Efficiency is calculated in two ways:

- The SFA (introduced in 1997).
- Linear programming DEA (introduced in 1978).

There are two definitions for performance:

- The ratio of current output to potential output
- The ratio of production to production factors.

To calculate the efficiency, we should compare the potential output of firm with the amount of the actual output. Production Function indicates the maximum output of recognized inputs.

Efficiency Method

The most common methods for extracting frontier production function to calculate the efficiency is parametric method (SFA) and nonparametric method (DEA). The common features of these methods is that in both methods the standard output (potential) yield of the units in the different times and then achieved the highest output for certain inputs . In these methods alone cannot achieve the efficiency of a unit in a given time. But they must be examined in different periods and the performance of a single function as an efficient product and was dealing with time-series data or compare the Efficiency of units and the best Efficiency was one of the most efficient production units and dealt with cross-sectional data and in more secure conditions compare the studied units during different periods and dealt with consolidated data.

The calculated efficiency of these methods is a relative efficiency because it is a comparative conclusion method and the efficiency will be varied by changing the number of observations. The more scope of observations, the more reliable the efficiency indicators.

The concept is microeconomic efficiency is Stochastic Frontier Analysis method basic. In this way, the production function is estimated according to the assumptions considered and then the efficiency of its unit is measured according to the production function.

In ordinary least squares method to estimate the sample line passes through the points. While the SFA, line going from the highest point. This method is achieved by continuous frontier production function. Conventional econometric methods to estimate the production function method is maximum likelihood (ML). Because Production functions are mainly linear and nonlinear functions are retained in the maximum likelihood method compatibility

Inputs and outputs of the bank

The nature of the inputs and outputs of each economic unit including bank depends on how define expectations and economic unit. By changing our definition of the bank, the bank will also change the nature of the inputs and outputs. In view of manufacturing and services to banks, banks are like service firms. Bank services are such as holding deposits and providing the output of the bank and bank capital facility, bank input.

We consider the bank as an intermediary firm. Bank input is amount of deposits, labor and capital (number of branches), and granted facilities are bank outputs.

Bank Efficiency Measurement Model

For the analysis of stochastic frontier model has been stated that the second model that we use is more advanced. The second model for the formulation of frontier production is the technical effect model introduced by Betties and collie in 1995 as following:

$$Y_{it} = X_{it}\beta + (V_{it} - U_{it})$$
$$i = 1,...,N$$
$$t = 1,...,T$$

Where v is the random confusion component, u is inefficiency values vector, Y is the entity product vector, X is production inputs vector, and B is parameter vector. The function form used in the study is a general form of Cobb Douglas Model

$$\mathrm{Y}_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + v_{it} - u_{it} \quad (5)$$

where y is the logarithm for the total bank facilities ,X_1, is the logarithm for number of branches , $X_2$is the logarithm for the number of employees working in each bank ,X_3,is the logarithm for the total deposits of each bank , V_{it} is the model confusion component , U_{it} is the inefficiency component of the ith bank during the time ,t (t=1,2,3,4 and I =1,2,…,17) as its negative coefficient indicates that any incur as in inefficiency will decrease bank facilities.

With confidence interval 95% confidence level, the sampling results can be generalized population. The results were as follows:

Table1. The Result the Estimation of the Bank's Facilities Function Parameters via Stochastic Frontier Method

Variable	Parameter	Coefficient	Standard Deviation	Statistic t
Fixed	β_0	**4.19**	**2.01**	**2.08**
The number of branches(X_1)	β_1	**0.33**	**0.18**	**2.36**
Labor number(X_2)	β_2	**0.23**	**0.12**	**2.88**
The amount of deposits(X_3)	β_3	**0.52**	**0.33**	**4.01**

Source: research findings

As illustrated table 2, the model is significant and the estimate parameters are reliable.

Table 2: Variable Parameters

Variable	Estimate Coefficient	Standard Deviation
$Sigma-squared(\sigma^2)$	**8.12**	**4.80**
$gama(\gamma)$	**0.89**	**0.12**
$LR\,test$	**80.43**	**------**

Source: Research findings

Estimating and Analyzing the Results.

In order to prevent false regression variables reliability is checked. The combination unit root tests by Kovah (1994) was based on the studies by Levin and Lin (1992) Levin, Lin and Chu (2002), was developed. Unit root tests have been combined.

Levin and Lin (1992) and Dickey Fuller unit root test are as follows. The reliability of research results vary based on Levin and Lin is the following table:

Table 3: Results of the Variables Reliability Test

Variable	Levels of Reliability	Test Statistics	Probability	Result
Logarithm of economic growth	I(0)	8.85-	0.000	Level is stable
Logarithm of population	I(0)	9.24-	0.000	Level is stable
Logarithm of efficiency rate	I(0)	7.34-	0.000	Level is stable
Logarithm of the ratio of investment	I(0)	9.86-	0.000	Level is stable

*Source: Calculations researcher

As can be seen in all variables (without difference-making) are stable. So without fear of forgery can be estimated using a regression Logarithm of variables, which continue to be addressed. The panel model with fixed effects estimate and then does the test redundant fixed effects. The results showed that in all cases the null hypothesis that the individual effects of waste being rejected. And panel data models are estimated.

Table 4: Hausman Test

Effect Test	Chi-sq.statistic	Chi-sq.d.f	Prob
Cross-section Random	0.0002	4	0.96

Source: research findings

After the F test to the conclusion that the model shared effects And Hausman test showed that the equation for the equation must consider the effects of random sections, i.e. the fixed effects estimated 30 provinces.

$$\Delta lny_{i,t} = \gamma_i + 0/085\ln(efficiency) + 0/207\ln(s_k) + 0/01\ln(\text{population}) - 0/062 lny_{i,t0}$$

Since the index of all variables other than the rate of population growth in the five per cent level of significance is meaningful, significant variables is interpreted as follows: (Note that 87% of the variability is explained by the regression line.)

If the ratio of investment to GDP averaged one per cent rise, the average five-year growth, per capita income will rise 0.207 percent.

If Bank system efficiency of one per cent rise, the average five-year growth, per capita income will rise 0.085 percent.

If population of one per cent raise, the average five-year growth, per capita income will rise 0.01 percent.

•If the growth rate of per capita income in the last 5 years an average of one per cent rise, average per capita income of 0.062 percent five-year growth reduced.

Convergence factor ($lny_{i,t}$) is significant because it is defined by the coefficient for the model ($1-e^{-\lambda}$) pace of convergence (λ) is calculated in this model is .0.0128As a result, this model is converging.

CONCLUSIONS AND RECOMMENDATIONS

In this study, the per capita income convergence process in a series of 30 provinces for the period 2001-2015, with particular attention to the role of Bank system efficiency Calculate. The main results of the process of convergence achieved by the following aspects as clear.

It seems that convergence is a function of factors such as population, physical capital accumulation. According to the theory predicts investment growth has a direct relationship, and is statistically significant. These findings are common in most empirical studies in the literature growth.

- In estimate, it has been confirmed that by increasing the share capital increase in GDP growth. This reflects the increasing momentum.

The different levels of population for different variables and control the economy of the province is making the difference between stable states.

The following suggestions are offered for future studies:

- Rise facilities & Bank system efficiency
- Invest in each province of the country in industries where comparative advantage is based on research.
- High-tech and high-tech-support in less developed provinces2. The increase in

With regard to the impact on the growth of bank efficiency can impact the overall efficiency of the financial sector to economic growth and convergence investigated

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