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Financial Repression and Agricultural Growth: The Case of Islamic Republic of Iran (1962-2007)

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Abstract

There have been few studies working on effects of financial repression policies on Iran's economic growth. Considering the huge share of agricultural sector, we have been trying fill this gap by the help of time series data from 1962 to 2007 on agricultural GDP, unproductive government expenditures, human capital, industrial price index, political instability, and financial repression measurements. Results show that bank reserve requirement control policies as a proxy for financial repression measure, has negative effect which reminds reducing controls on this parameter will help government achieve higher rate of growth.
Keywords: Financial Repression, agricultural growth, Iran.

1- Introduction

After 1970 decades, many countries suffered from high and persistent rate of inflation and the stagnant economic growth and external imbalances under financial repression policies. To cope with these difficulties, some experts like McKinnon and Shaw (1973), offered different solutions such as liberalization policies which is mainly higher rate of interest rate to accelerate capital stock accumulation and though achieving higher rate of growth and lower rate of inflation. In fact, higher rate of interests will lead to the substitution of unproductive assets by bank deposits and this increase in investment; help us face higher rate of growth and lower inflation rate.

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There are different theories arguing effects of financial repression policies on capital productivity and growth rate. Government intervention on controlling interest rate, reserve requirements and other limitations on banking systems are known as financial repression policies which reduce capital stock formation and its productivity (which lead to lower rate of economic growth).

Effects of financial repression policies on growth rate were evaluated by the help of time series and panel data in different studies but few of them work specifically on agricultural sector. Although Iran is one of developing countries that repress their financial system, but despite other countries only few studies are taken in this regard. Considering the agricultural share in Iran's economy, we have been trying to shed light on this issue by the help of time series date and Dynamic Ordinary Least Square method (DOLS) introduced by Stock and Watson(1993).

2- Literature Review

Samadi (1999) evaluated McKinnon and Shaw (1973) models by the help of Iran's economy data during 1962 to 1995. Based on McKinnon and Shaw (1973) theory, financial repression policies will slow the speed of economic development by reducing real growth rate and the capacity of financial system. The results of this study support McKinnon & Shaw hypothesis. Based on this study, if government eliminate financial repression policies and increase the real interest rate, real investment and saving levels will be increased and will lead to higher revenue and economic growth. Samadi (2000) in another survey has worked on the long and short-run relationship between financial development and economic growth during 1959 to 1995. Results show a casual short term relation from financial development to economic growth.

Khataei and Seifipour (1999) show that financial repression affect economic growth through two channels of capital stock formation and technological innovation. They evaluated the casual relationship between financial development and economic growth using seasonal data from 1989 to 1996. And they came to a conclusion that long term development of stock market and private financial resources has positive effects on economic growth.

Nazifi (2004) says financial development brings economic growth when appropriate field of efficient allocation of resources is ready and lead to an increase in capital efficiency. The Results of study showed that, financial development has negative effect on economic growth. She claims that the main reason can be because of inappropriate implementation ways of financial liberalization, weakness in banking system management, not having a harmonious financial market. All these factors lead to a decrease in capital productivity through inappropriate allocation of resources.

Keshavarzian and Azimi (2005) have evaluated the effects of interest rate liberalization on investment and Iran's economic growth rate during 1966 to 2002. They show that real interest rate has positive relation with investment level and economic growth, because Iran's interest rate is low while the volume of currency is so high. By interest rate liberalization and its adjustment in banking system, real money demand will decrease while on the other hand long term bank deposit and other financial investment will increase which brings economic stability with itself.

Araghi and Taghavi (2005) introduce Iran's dependency to oil as the main reason -among different factors such as underdeveloped money and capital market, inefficient institutional system and etc- which persuade Iran's government, choose financial repression policies.

Haslag & Koo (1992) evaluated financial repression, financial development and economic growth relation by the help of 119 countries' time series data. In this study, inflation rate and reserve requirement were assumed as a proxy of financial repression measures. Inflation had no effect on growth rate but normally higher rate of reserve requirement was accompanied by lower rate of growth. They show there is a real strong relation between financial repression and financial development measures. And, financial repression will cause a delay in financial development, and in turn lower the economic growth rate.

Fung, Ming and Zho (2000) investigated the long-run effect of credit and interest rate controls on a 20 years performance of Chinese economy and show that, if government's stock interest rate increases, inflation rate will be decreases without slowing down the economic growth rate. On the other hand if available credit level for individual households decreases, inflation rate and economic growth will decrease as well. Nominal increase in

deposits interest rate will have recessionary effects on economy which means it may lower economic growth and increase inflation rate.

Demetriadis and Luintel (2001) show there is a positive relationship between financial development, bank system control levels and mild interest rate repression. According to their model, in the presence of loan interest rate control policies, increases of deposit interest rate have no effect on financial development.

Financial repression relationship and economic growth causal relation was evaluated by Ang and Mckibben (2007). Based on their conclusion, financial liberalization has positive effect on economic development through eliminating financial repression policies. And there is a positive interaction between mentioned indexes and economic growth.

To sum up all, financial repression effects on economic growth depends on each country's political, economical and institutional circumstances. In few studies, effects of these financial repression policies were evaluated on agricultural economic growth. Thus our main goal -considering the huge share of agriculture in Iran's economy- was to fill this gap.

3- Model

Financial repression was originally coined by the economists in developing countries in 1970. McKinnon and Shaw (1973) were the first introducers of this notion and defining it as a set of governmental legal restrictions which prevent financial intermediaries in the economy from functioning at their full capacity level (Gupta, 2005). Financial repression as government intervention in financial systems by determining a real negative interest rate (interest rate lower than inflation rate), the lower interest rate for special groups of loan demanders and at last directed credits policies.

Financial repression is the technique of keeping interest rate under its market equilibrium rate (Fry, 1980).

Roubini and Sala-I-Martin (1995) summarize government reasons for implementing financial repression polices as follow:

1- Interest rate control policies help government fight against usury.

2- A better chance for controlling money supply by controlling banking system policies.

3- The assumption that government are more capable of recognizing market failure and allocating their restrict capital resources to the most efficient projects.

4- Increasing monetary base by interest rate controls and earning some kind of inflationary revenue.

5- An appropriate way for intangible collection of taxes with lower cost comparing to other existing ways.

6- Instrument that help governments redistribute their revenue among different income share levels.

Science the break of the colonial empire, many developing countries were observed to suffer from stagnant economic growth, high and persistent inflation and external imbalances under the financial repressed regime. To cope with these difficulties they were persuaded use financial liberalization policies which are mainly constructed of higher rate of interests (Gupta, 2005). There are several arguments regarding effects of financial repression polices on capital productivity.

As we explained in literature review section, different researchers have worked on investigating effects of financial repression policies on agricultural growth and in this paper we have tried to do the same by the help of Barro's growth model (1990) as follow:

$$y_{1t} = a_0 + a_1 D_{tb} + \beta y_{2t} + e_t \qquad t = 1,2,...,T \qquad (1)$$

In this model

y_{1t} Represents agricultural GDP (AGDP), D_{tb} is dummy variable and y_{2t} are independent variables such as:

Unproductive Government expenditures (UNGOV)

Human capital (PRIM&SEC)

Political instability (SECURITY)

Industrial price index (IND)

Financial repression measure (FIN)

Unproductive Government expenditures (UNGOV) which following Sala-i-Martin (1992) is gained by deducting education, safety and defense expenditures from all other government expenditures.

Human capital (PRIM&SEC) is shown by the number of people educated in primary and secondary schools.

Political instability (SECURITY), a dummy variable is chosen which will take 1 for war and revolution time, and otherwise is zero.

Financial repression measure (FIN): There have been different ways known for measuring financial repression as there is no direct measure available. So empirical investigation shall rely on proxies such as real interest rate (Roubini & Sala-i-Martin, 1952) or the difference between domestic and international interest rate (Demetriades and devereux, 1992). In this paper we have measured financial repression directly by collecting information on interest rate control policies, reserve requirement and directed lending programs oriented from Demetriades et al. (1998) research. Three dummy variables are determined for each policy and one for considering simultaneously all three types[1].

Our first financial repression measure (FININT) is a dummy variable for denoting interest rate control policies. It takes zero when real interest rate is positive and will takes one when it is negative and it is between 0 to 10, at last it takes two, when real interest rate is negative and higher than 10. In our study we have used the 5 years deposit's interest rate as our nominal interest rates which are converted to the real rate by deducting the inflation rate from the nominal interest rate.

FINRES is our second financial repression measure which is a proxy for reserve requirement control policy. Following Roubini and Sala-i-Martin (1992) reserve requirement is earned from the ratio of the total bank deposits to the summation of money (M1) and quasi money (M2). FINRES takes 0 when it is less than 10, takes one when it is between 10 to 20, takes 2 when it is between 20 and 30. At last it will take 3 when the ratio is more than 30%.

Third financial repression policy (FINC) is made for directed credits to agricultural sector which is earned through the share of agricultural credits from total credits. If this ratio be less than 10 it will take 1, when it is between 10 and 20 it takes 2 and at last when it is between 20 and 30 it will take three.

These dummies can be used in growth equation to quantify the effect of each policy separately. Given that we have a whole range of policies implemented simultaneously, we have used the forth measure named FINM

1- For more detail you may check the thesis under the name of "Effects of financial repression policies on capital productivity and growth in agricultural sector, Sanaz Mansouri (2007).

which is a simple arithmetic average of all three mentioned measures. FINM takes all joint influences of previous three mentioned policy variables into account.

4- Empirical Results

As time series data are taken for this paper, unit root tests are needed to be done before any estimation of long term relations between variables. Zivot & Andrews (1992) test was used for this purpose.

Table one shows results of comparing estimated statistics with Zivot and Andrews critical values which imply that in our growth –financial repression model, agricultural GDP, primary school and industrial price index are I(1), while secondary school and agricultural growth rate were I(0). Structural break points are presented in mentioned table based on the chosen model.

Table 1: Zivot –Andrews (1992) Unit root test results

variable	Variable explanation	T	$\hat{T\lambda}$	K	The least statistics	Chosen model	Integration order
AGINCOME	Agricultural GDP	42	1379	0	-7.7	C/S	I(0) ***
$AGDP_{t-1}$	Agricultural GDP_{t-1}	42	1367	2	-4.09	C/S	I (1) **
UNGOV	Unproductive government cots	42	1373	1	-5.57	C/S	I(0) **
PRIM	Primary school	42	1366	0	-2.77	C/S	I(1) ***
SEC	Secondary school	42	1371	2	-8.57	C/S	I (1) ***
IND	Industrial price index	42	1378	5	-2.66	C	I (1) **

Note: * ** *** shows significance in 1, 5, 10 % certainty level.
T is no of observation; Tλ is the break point, K Is the lag order used in the model

Considering ZA test result and our goal for evaluating long term relation between growth and financial repression policies dynamic ordinary least square method (DOLS) helped us estimate long term relations between variables. Estimated results are summarized separately for each financial repression measure in table 2 to 5 which we can sum up as follow:

$AGDP_{t-1}$ coefficient was positive in all 4 cases and it is significant only when third financial repression measure is used. Primary school (PRIME) has significant negative effect on agricultural growth rate while secondary school (SEC) has positive significant regardless the type of financial repression measure used. Unproductive government expenditure (UNGOV)

is negative and significant except when third financial repression measure is used. War and revolution as proxies of political instability (SECU) have negative effect on growth rate and are significant only when third measure was used.

Industrial price index (IND) has negative effect and it is significant when first and third financial repression measure are used. Its negative effect shows any increase in industrial prices index hurts agricultural growth rate.

Financial repression has negative effect -except when third measure is used- on agricultural growth rate and it is significant only when reserve requirement is used as a measure of financial repression which imply that relaxation of these control policies will lead to higher agricultural growth rate.

Table 2: Estimation Result of Growth Model and the First Financial Repression Measure (FININT): DOLS Method

Variable name	Variable Explanation	coefficient	SE
AGDP $_{t-1}$	Agricultural GDP	0.0006	0.0002**
PRIM	Primary school	-2.32 × 10-6	-8.42 × 10^{-6} **
SEC	Secondary school	-5.36 × 10-8	-1.542 × 10^{-6} **
SECU	Political insecurity	-1.68	0.78 **
UNGOV	Unproductive government cots	1.73	3.82
IND	Industrial prix index	-0.02	0.008 **
FININT	Financial repression measure	-0.71	0.61
R^2=0.78	DW=2.1	F=7.40	

Table 3: Estimation Result of Growth Model and the Second Financial Repression Measure (FINRES): DOLS Method

Variable name	Variable Explanation	coefficient	SE
$AGDP_{t-1}$	Agricultural GDP	0.0001	0.0003
PRIM	Primary school	-1.1 × 10^{-7} *	1.12 × 10^{-7}
SEC	Secondary school	4.4 × 10^{-7}	1.5 × 10^{-7}**
SECU	Political insecurity	1.25	1.30
UNGOV	Unproductive government cost	-1.90	6.58***
IND	Industrial price index	-0.007	0.01
FINRES	Financial repression measure	-2	0.07**
R^2=0.78	DW=1.88	F=16.13	

1- One, two and three asterisk denotes statistical significance at 1, 5 and 10 levels respectively.

2- Lags and leads coefficients are not reported in the table.

Table 4: Estimation Result of Growth Model and the Third Financial Repression Measure (FINC): DOLS Method

Variable name	Variable Explanation	Coefficient	SE
PRIM	Primary school	-1.8×10^{-6}	6.42×10^{-7}***
SEC	Secondary school	2.97×10^{-7}	1.42×10^{-7}**
SECU	Political insecurity	-6×10^{-8}	0.92***
IND	Industrial price index	-0.02	0.07**
$AGDP_{t-1}$	Agricultural GDP	0.0004	0.0002**
FINC	Financial repression measure	0.68	0.55
UNGOV	Unproductive government cost	-1.78	4.14**
R^2=0.91	DW=2.1	F=15.13	

1- One, two and three asterisk denotes statistical significance at 1, 5 and 10 levels respectively.
2- Lags and leads coefficients are not reported in the table.

Table 5: Estimation Result of Growth Model and the Fourth Financial Repression Measure (FINM): DOLS Method

Variable name	Variable Explanation	Coefficient	SE
$AGDP_{t-1}$	Agricultural GDP	0.0005	0.0003
PRIM	Primary school	-2.27 X 10-6	1.18 X 19-6**
SEC	Secondary school	4.71 X 10-8	1.6 X 10-6**
UNGOV	Unproductive government cots	-10.19	4.92**
SECU	Political insecurity	-0.8	1.44
IND	Industrial price index	-0.02	·0.01
FINM	Financial repression	-0.71	0.83
R2=0.85	DW=2.01	F=6.17	

1- One, two and three asterisk denotes statistical significance at 1, 5 and 10 levels respectively.
2- Lags and leads coefficients are not reported in the table.

Table 6: Summery of Growth Model Estimation and Financial Repression Policies

Variable Name	Variable Explanation	FININT (As the first financial repression measure)	FINRES (as the second financial repression measure)	FINC (as the second financial repression measure)	FINM (as the second financial repression measure)
$AGDP_{t-1}$	Agricultural GDP	Positive and insignificant	Positive and insignificant	Positive and significant	Positive and insignificant
PRIM	Primary school	Negative and significant	Negative and insignificant	Negative and significant	Negative and significant
SEC	Secondary school	Positive and significant	Positive and significant	Positive and significant	Positive and significant
UNGOV	Unproductive government cost	Negative and significant	Negative and significant	Positive and insignificant	Negative and significant
SECU	Political insecurity	Negative and insignificant	Positive and insignificant	Negative and significant	Negative and insignificant
IND	Industrial price index	Negative and significant	Negative and insignificant	Negative and significant	Negative and insignificant
FIN	Financial repression measure	Negative and insignificant	Negative and significant	Positive and insignificant	Negative and insignificant

5- Concluding Remarks

A financial repression effect on growth rate depends on economical, political and institutional situation of countries and their implementation method. Researchers such as hung (2005), Nazify (1383), Bai, Lee and Qian (2000) believes in positive effect of financial repression on growth rate while on the other hand McKinnon and Shaw (1973), Roei (2003), Ang and Mckibben (2007), Samadi (1999), Khataei and Seifipour (1999) believe in negative effect of these policies.

Our research shows that:

1- Lagged value of agricultural GDP ($AGDP_{t-1}$) has positive significant effect which implies the higher level of AGDP in the previous year will lead to a higher growth rate in the next years.

2- Primary school has negative effect while secondary school has positive effect regardless the type of financial repression measure which may show the need of this sector for high educated and intellectual skills human capital.

3- Unproductive government expenditure has negative effect which show decreasing this type of expenditures will lead to higher growth rate.

4- War and revolution as proxies of political instability measure has negative effect.

5- Industrial price index has negative effect which shows that industrial sector price increase hurts agricultural economic growth.

6- Reserve requirement as financial repression measure has negative effect on agricultural growth which shows releasing controls on reserve requirements will help agricultural growth rate. Imperative determination of interest rate in banking system and government failure in recognizing appropriate investment field in agricultural sector are the two reason for the insignificancy of interest rate and directed credits.

Considering huge share of agricultural sector in Iran's economy government can develop this sectors growth by directing special credits for investment project for persuading attendance of more educated people with higher skill levels. We may remind that recognizing appropriate investment fields for simultaneous improvement of growth rate and capital productivity will be inevitable.

In our paper only long term interest rate was used which we suggest to test other interest rates such as short term interest rate, crab market, and agricultural sectors interest rate to enable us compares the results.

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