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Financial Repression - Economic Growth Nexus in Ethiopia: Evidence from Multivariate Analysis

Abebe Derbie Aragaw
Woldia University, Ethiopia, P.o.box: 400

Abstract
This paper examines empirically the short run and long run relationships and the causality between financial repression proxies and economic growth, utilizing time series data over the period 1980 to 2015 in Ethiopia. Bound test of co integration and estimation of short run and long run relationships, based on ARDL model frame work and Toda Yammato causality test based on VAR model were employed.The ARDL bound test suggests that there is a long run relationship between financial repression proxies and economic growth. The long run estimates also suggest that there is a positive significant effect of financial repression proxies on economic growth. While in a short run there is statistically negative significant effect of financial repression proxies on economic growth but the magnitude is lower. Unidirectional and bi-directional causalities also found from financial repression proxies to economic growth.
Keywords: Financial repression, economic growth, ARDL, Ethiopia

1. INTRODUCTION

Developing countries, including Ethiopia have engaged in financial reforms for the past two decades. With no courage to say liberalization in 1992, the Ethiopian government embarked on structural reforms of the financial sector. However, Ethiopia looses the financial support of the IMF because of the hallmark of the strategy is gradualism (Geda, 2006).

Financial intermediates play a crucial role in accelerating economic growth via collecting from savers and mobilize to borrowers (Mishkin, 2004). But LDCs financial sector is characterized by inefficient service and its malpractice are due to financial repression. Commonly in developing nations the financial sector is not led by the market rather the governments interfere and give direction, because of their tendency is pump priming, fear of stability and market failure of the financial sector in large (Chowdhury, 2010).

Even though there is something of consensus over the long run effect of financial liberalization and economic growth, LDC governments still repressed their financial sector, because, without intervention to the sector their financial system would not be cooperative partner in their development effort. So LDCs governments intervene to the financial sector extensively in order to divert large amount of funds to priority sectors such as industry, state owned enterprises and small medium scale enterprises (Raju, 1999).

There are different theories and empirical studies arguing on the effect of financial repression policies on economic growth. Theoretically financial repression is perceived to have a number of macroeconomic consequences (Mckinnon, 1973).

First, in the developing countries financial context money is held as a store of value rather than for transaction purpose. As a result low interest earning from saving due to financial repression depresses private saving. This reduction in saving also directly reduces physical investment and thereby decreases economic growth. Second, such repressed financial market may give the path for the introduction of informal financial sectors to meet the existent demand with their inefficient service and evil practice of usury as an alternative vehicle for saving.

There are theories that suggest a positive relationship between financial repression and economic growth via its aggregate demand component - government expenditure (Gitau & Kosimbei, 2015). The key reason for the government to execute financial repressive policies is to control fiscal resources. By having a direct control over the financial system the government can channel funds to itself without any legislative procedures. Additionally, through its regulations on entry and activity of the banking sector the government can create monopoly and captive rents so as to finance its budget deficit (Beim & Charles, 2001).

Empirical studies also suggest that financial repression may impact economic growth negatively. Mckinnon, (1973) and Shaw, (1973) argues that a repressed financial sector discourages both saving and investment because the rate of return is lower than the competitive market. Thereby it impairs economic growth. In line with the above Islam, (2008) founds 30% of financial distortion of Bangladesh is due to financial repression. Furthermore repressed finance coupled by persistent rate of inflation is danger of the economy (Sanaz, Ali, & javad, 2012) .

According to Yu-Fu Chen, (2015) financial reform policies can unleash growth by enhancing efficiency of capital when it is adopted gradually. But still relaxation of barriers of financial market is not visible in a short run (Månsson & Kristofer, 2015). Not only this, for Arnaud & Adalbert, (2003) it is better to regulate and repress the sector because financial reform lead to financial crises. Additionally, financial repression, hand in hand with

closed capital account is input for china economic growth (Oster & Brand, 2015).

In a same vein Alejandro, (1984) concludes that financial repression have positive effect, since financial liberalization leads to financial crisis and lower growth. But in large the financial repression - growth nexus remains a debatable issue.

The relationship between financial liberalization and economic growth is long mooted issue. But, by and large it is assumed to have healthier relationship. Consequently empirical literatures toward their relationship are huge for example Levine, (2003), Odhiambo, (2011) Kaminskiy & Schumukler, (2003) have documented the positive relationship. Contrarily if there is no better regulation liberalization has negative effect on economic growth (Gregorio & E., 1995).

Considerably though limited number of papers on the area for least developed nations as per the researcher knowledge, papers directly considering Ethiopian financial market are rare (see, for example Geda, (2006), Hagos, (2014), Meresa, (2009) and Zwedu, (2014). These are also focuses on the effect of liberalization. This is due to the structural adjustment program, which was propagated during 1990s, and then the effect of financial repression on economic growth is a research gap.

Vis a vise to the above researchers, the researcher in this paper will examine the relationship between financial repression and economic growth. Yet, more empirical studies (see, for example, Ang, (2007) Gregorio & E. (1995) and Thiel, (2001)) focuses on the effect of finance on economic growth from the supply side using production function and hypothesizing that repressed finance reduces volume of capital accumulation . This study will evaluate the effect of such repressive policies on economic growth from the demand side of the economy.

This research is expected to answer the follow questions.

- Is there a long run relationship between financial repression proxies and economic growth?
- What are the effect of financial repression proxies both in a long run and short run equilibrium?
- Is there a causality running from financial repression to economic growth?

2. LITERATURE REVIEW

2.1. Theoretical review

2.1.1. Basic concepts: Financial repression, financial liberalization and Economic growth

As Reinhart, (2012) financial repression is nothing, it is the intervention made by the government in order to generate revenue or to correct market failures with different techniques. Like directed lending, explicit or implicit caps on interest rates, regulation of capital mobility and generally tighter connection between government and banks either explicitly via public ownership of some of the banks or implicitly via its nock on effect using monetary authorities as weapon to handle its excess debt. And sometimes financial repression associated with relatively high reserve requirement and barriers of entry to the market.

With this tendency, someone may sense that today's low interest rate environment is not only driven by macroeconomic factors, but also by policy actions that help governments deal with the high sovereign debt burden. (Jérôme, Chuan, Tauno, Laurent, & Steven, 2015).

It is a widely accepted fact that the financial sector matters for growth (see, Jayratne & Strahan, (1996) and Levine, (2005) and it is also a widely documented fact that a lot of governments in less developed nations have introduced all kinds of distortion in that particular sector. Before and during the 1970s many development economists favored such policies of financial repression on several grounds.

First, it was argued that the government needed to impose anti usury laws. Second, it was argued that a strict control and regulation of the banking system would give the monetary authorities a better control over the money supply. Third, it was thought that governments knew better than markets what the optimal allocation of savings was or what kinds of investments were more desirable from a social perspective. Fourth, financial repression was identified with interest rates below market rates which reduces the costs of servicing government debts (Sala-i-Martin, 1992).

Financial liberalization is a deliberate attempt to move away from "financial repression" as a policy to fund government fiscal imbalances and subsidize priority sectors, a move strongly advocated by the influential work of McKinnon (1973) and Shaw (1973).

The financial sector matters for the process of economic development. In fact, this is the sector where a large part of an economy's savings are intermediated towards productive investment purposes. Since the rate of capital accumulation is a fundamental determinant of long-term growth, the efficiency of the financial sector is potentially important for the long-term performance of an economy (Geert & Harvey, 1997).

There are different concepts of economic growth and ways of measuring it, but the core definition is in terms of growth in the long run productive capacity of the economy, typically measured by real growth in Gross Domestic Product GDP (Sources of Economic Growth, 2011).

2.1.4 Financial market in Ethiopia

The major financial institutions operating in Ethiopian financial market are banks, insurance companies and

micro-finance institutions. The number of banks functioning in the country reached 19 of which 16 were private, and the remaining 3 are state-owned. During this era all those banks increases their branches and with that, branch to population ratio declines. (NBE, 2013/14)

The significant branch expansion was undertaken by Commercial Bank of Ethiopia but comparing with the previous years the share of public banks in total branch network slightly went down to 45.4 percent at the end of 2013/14 from 50.3 percent last year (NBE, 2013/14). Coming to microfinance institutions and insurance companies they are increasing in number following Proclamation No 40/1996 and they become solution for the market failure exist in the sector, because of low capacity of commercial banks. But still an estimated 80% of potential rural demand for loans is still unmet being one of key constraints on growth and development of enterprises. For this, lack of management information system and auditing, lack of Funding sources for expansion, poor linkage between financial institutions and supervision and regulation by NBE are listed as a cause (Gesesse, Amha, Mommartz, Steel, & William, 2008).

As Geda, (2006) Ethiopia financial market is shallow and repressed. The sector operates with only two capital market instruments and the rest are expected to prevail soon since the country is in a philosophy of gradualism. The two instruments are Treasury bill and occasionally issued bond. while inter bank credits are opened lopsidedly.

Like other socialist nations financial sector of Ethiopia during DERG regime and before is not obtain the chance to determine optimal financial market prices, rather it was based on directives that come from the central planning organ. NBE also takes the responsibility of the financial sector role to achieve balanced and accelerated development as a developmental organ.

With modification the current government also provides the chance to NBE (see, The Monetary and Banking Proclamation of 1994) to control all financial institutions by (a) fixing both deposit and lending interest rates, (b) directly controlling the foreign exchange and credit allocation which was done in a discriminatory manner, by favoring the public sector, and (c) by directly financing government deficit.

Additionally, as monetary policy NBE follows both the direct measures and the indirect ways which can influence money supply but following the opening of more private banks NBE shy away from direct to indirect measures. Adopting indirect monetary policy instruments requires a certain level of financial market development. Specially to use open market operation as a main monetary policy instrument, well-developed secondary market is necessary to transmit the desired effect into the economy (Erchafo, 2001).

Since 1991, economic policy of the country approaches to free market and then financial sector development and financial institutions are increasing in number. Consequently, NBE removed all interest rate ceilings in the financial sector in 1998, but never feeds market based interest rate determination. Most Ethiopian financial institution still maintain a low rate of interest for various reasons, including political pressure, cheap funding from public or other sources, and failure to allow for inflation (Gesesse, Amha, Mommartz, Steel, & William, 2008).

Ethiopian government officials also believe that entry by foreign banks will further skew credit allocation towards large-scale industrial, real estate and service enterprises and away from agriculture, small-scale and micro enterprises which is incompatible with current development plan of the nation. The other reason is the infant industry argument since foreign banks have more capital, more experience, and better reputations (Kozo, Barbara, & Robert, 2007).

2.2. Empirical review

Sala-i-Martin, (1992) presents a theoretical and empirical analysis of the relation between policies of financial repression and long term growth. The estimation result shows, after controlling for other determinants of growth, various measures of financial repression affect growth negatively; inflation rates and banks' reserve ratios and growth are negatively related.

Islam, (2008) investigates the relationship between financial repression policy variables and economic growth (measured by GDP). The empirical evidence suggests that financial repression measured by inflation tax and government size has negative effect in the economy of Bangladesh. The regression analysis has found that about 30 percent of economic distortion prevailing in the economy of Bangladesh is due to large size of government and financial repression.

Huang & Wang, (2010) investigates financial repression and growth relationship using both time series and provincial panel data in china. From their estimation result they conclude that repressed finance retards economic growth by about 3.0-3.6 percentage points in 1978 and by 1.7-2.1 percentage points in 2008. More specifically they found that state sector's share of bank loans and capital account controls have the greatest impacts on economic growth, while those of interest rate and reserve requirement regulations are important but relatively more modest in magnitudes.

Besides that, Mansouri, Samadi, & Torkamani, (2013) explores the effect of financial repression on decomposed element of economic growth in Iran using a data ranging from 1962 to 2007. They suggest that,

financial repression has negative effect on the decomposed element of economic growth (agricultural sector growth). For the guys required reserve ratio which is considered as proxy for repression measures has negative magnitude which shows their unhealthy relationship.

Kamal, (2012) suggests that a negative financial repression – economic growth nexus. On her arguments she uses panel approach and a unique proxy for financial repression that is the ratio of currency outside the banking system to real output (CB). This proxy is unique in that it is related to the degree of financial repression, and thus relates differently to economic growth depending on the level of financial development. At last she founds that CB relates negatively to growth in countries that are less financially liberalized and positively with growth in countries that are more financially liberalized.

In a same vein, Ang, (2007) investigates empirically the link between financial development and economic growth in Malaysia with the help of annual data for the period 1960 to 2003.with that he also checks potency of repression and liberalization policies on financial development and economic growth with nock on effect. The results indicate that financial development (measured in banks credit to private sector to GDP) leads to higher output growth via promoting both private saving and private investment. But he will not comfort, liberalization - financial development - economic growth path. There is evidence that financial repression policies, such as interest rate controls, high reserve requirements and directed credit programs, have contributed positively to financial development while liberalization harms it.

In support to Ang, (2007), Oster & Brand, (2015) suggesting that repression policies may have had a positive effect. Financial repression was arguably critical to China's growth model – limiting consumption and directing the country's high rate of savings into investment in heavy industry. Inversely removing the implicit tax on savings and broadening options available to savers (through greater access to global financial markets) will help support the transition to a more consumption based economy.

One of controversial and interesting paper helps to understand effect of financial policies depends on different factors is by Raju, (1999) which investigates the cost of financial repression in India for different periods (1955-70, 1955-98 and 1971-98). Estimation results proof that, two distinct impacts of financial repression on economic growth. When the period 1955-98 is considered we find that the cost of financial repression is 0.06% of growth foregone for every 1% the real interest rate is held below its market equilibrium level. When the period considered is 1955-70 he found a similar relationship between growth and the real interest rates whereas for the period 1971-98 he found that holding real interest rates below their market equilibrium levels has an a positive impact on growth by about 0.11% of growth for every 1% the real interest rate is held below its market equilibrium level.

Jérôme, Chuan, Tauno, Laurent, & Steven, (2015) outlined in their paper, financial repression comes with significant costs. Whether the costs outweigh the benefits largely depends on the ability of governments to take advantage of the low interest rate environment by implementing the right structural reforms.

3. METHODOLOGY OF THE STUDY

3.1. Type and source of data

The focus of this research is to examine empirically the effect of financial repression on economic growth and to determine the presence of causality running from financial repression proxies to economic growth, for this purpose the data is collected from secondary sources.

They are taken from annual reports of NBE, IMF and from world development indicators. Typically, yearly time series data ranging from1980 to 2015 is utilized. Linear interpolation and extrapolation for missing values and certain mathematical calculation is made to convert variables in to a required form.

3.2. Model specification

The econometrics model of financial repression – economic growth nexus draws up on the theoretical consideration and different empirical works. Following Stolbov, (2012), Sanaz, Ali, & javad, (2012) and Sala-i-Martin, (1992) I use econometrics model which is developed by Barro, (1991) with modification. Here, since it is a demand side analysis model by (Lin & Li, 2001) for aggregate expenditure also considered.

$LY = F(X's, FR)$ _____ (1)

The above mathematical model (equation (1)) can be rewrite as an econometric model which incorporates the stochastic term.

$LY = \beta_1 + \beta_2 X_t + \beta 3\ FR_t + \varepsilon_t$ _____ (2) $t = 1, 2, 3 \ldots\ldots T$

Then the above semi log model is the econometric model used to examine financial repression economic growth nexus. In Lin-Log model if we multiply the dependent variable by hundred we can obtain growth rate of the regressed (growth rate of real GDP in this case).

Where: LY is real GDP in logarithm, X_t is vector of controlled variables and FR_t is vector of financial repression proxies.

3.3. Brief justification of the model

Here, the multivariate time series model is employed because univariate time series analysis is unable to determine the effect of policy variables. Beside that unlike simultaneous equation models, in the VAR environment, there is better forecasting and flexibility and all variables are considered as endogenous as such identification not maters (Brooks, 2014).

3.3.1. Phillips Perron unit root test

Time series analysis is based up on stationarity assumption of variables. A time series is stationary if its mean and variance do not vary systematically with time. If its mean and variance vary systematically with time, the variable is non stationary. There by regressing non stationary (not co integrated) variables leads to non sense or spurious regression (Gujarati, 2003). Then to have better results and correct statistical inferences the leading property of time series variables stationarity is checked using Phillips Perron unit root test.

Instead of adding additional lags in the regression, Phillips & Perron, (1988) introduce an alternative approach to ADF unit root test which is based on non parametric test. Usually time series studies face a problem of autocorrelation. Thus, in this paper the PP test is employed based on its merit over ADF unit root test. The Phillips Perron unit root test has these two advantages over ADF test. One, the PP test allows autocorrelation in residuals. Second, the user does not have to specify a lag length for the test regression.

The test regression for Phillips Perron (PP) unit root test is:

$$\Delta Yt = \beta Dt + \pi Yt\text{-}1 + \varepsilon t \quad \text{---------- (3)}$$

Where $\varepsilon t \sim I(0)$ and Δ is the first difference operator. Based on the estimate the null hypothesis is there is unit root.

3.3.2. ARDL model and short run dynamics

Basically, in this paper the newly proposed ARDL model is utilized to check co-integration and to estimate short run and long run relationships. In this financial repression – growth nexus study the co-integration test is based up on bound test of the ARDL model. This bound test of co-integration has several advantages over the Engle Granger and Johansson co-integration test. One, we can have a co-integration even if variables are stationary at different order i.e. I (1) and I (0) but not I (2). Two, we can attach different lags for each variable under examination in the ARDL environment. Three, long run estimates based on ARDL model are supper consistent in small sample size (Pesaran & Shin, 1998).

The simple ARDL (1, 1) model looks like this:

$$Yt = \alpha + \beta 1\ Yt\text{-}1 + \mu Xt + \mu Xt\text{-}1 + \varepsilon_t \quad \text{---------- (4)}$$

Where Yt is the dependent variable, economic growth in this paper while Xt is vector of financial repression proxies and controlled variables. ε_t is white noise error term as usual.

For short run estimates, the ECM model is derived from the above ARDL model via incorporating unitary long run elasticity assumption based on steps below (Baddeley & Barrowclough, 2009).

Step one: subtract Yt-1 from the above equation in both sides.

$$\Delta Yt = \alpha + \mu 1Xt + \mu 2Xt\text{-}1 + (\beta 1\text{-}1)\ Yt\text{-}1 + \varepsilon_t \quad \text{---------- (5)}$$

Step two: adding and subtracting $\mu 1Xt\text{-}1$ to the right side and rearranging.

$$\Delta Yt = \alpha + \Delta \mu 1Xt + (\mu 2 + \mu 1)Xt\text{-}1 + (\beta 1\text{-}1)\ Yt\text{-}1 + \varepsilon_t \quad \text{---------- (6)}$$

Step three: imposing unitary elasticity to equation above. We can get a long run elasticity from the long run model in which $Yt = Yt\text{-}1 = Yt^*$ and $Xt = Xt\text{-}1 = Xt^*$, when we include in the ARDL (1,1) model.

$$Yt^* = \alpha + \beta 1\ Yt^* + \mu 1Xt^* + \mu 2Xt^* + \varepsilon_t \quad \text{---------- (7)}$$

Rearranging the above equation (10);

$$Y* = \frac{\alpha}{1-\beta 1} + \frac{(\mu 1 + \mu 2)}{1-\beta 1} Xt* + \varepsilon_t \quad \text{---------- (8)}$$

The parameter attached to Xt^* is long run elasticity which is equal to $\frac{(\mu 1 + \mu 2)}{1-\beta 1}$ and it is assumed to be unitary, then $\mu 1 + \mu 2 = 1 - \beta 1$. Then after substituting $1 - \beta 1$ to $\mu 1 + \mu 2$, equation (9) can be re write as;

$$\Delta Yt = \alpha + \Delta Xt + (1 - \beta 1)Xt\text{-}1 + (\beta 1\text{-}1)\ Yt\text{-}1 + \varepsilon_t \quad \text{---------- (9)}$$

Collecting Yt-1 and Xt-1 and remembering that their slop parameters are same but in opposite sign equation (12) can also re write as;

$$\Delta Yt = \alpha + \Delta \mu 1Xt + \beta 1\text{-}1(Yt\text{-}1 - Xt\text{-}1) + \varepsilon_t \quad \text{---------- (10)}$$

$\mu 1$ is the short run coefficient while $\beta 1\text{-}1$ is the coefficient of error correction term which is assumed to be negative.

Therefore, the error correction term ($\beta 1\text{-}1$) tells us that amount of discrepancy between short run and long run equilibrium that is corrected each time such as a year.

3.3.3. Vector autoregressive model (VAR)

By this paper to say financial repression is granger cause of economic growth, if the current and past value of financial repression proxies improves prediction of economic growth relative to using only past values of economic growth. Basically, the granger causality is checking long run causality based on two assumptions (Lin

J. L., 2008).

I. The future cannot cause the past.
II. A cause contains unique information about an effect not available elsewhere.

To do so, the following procedures introduced by Toda & Yamamato, (1995) are used, because, the usual Wald test statistic have no asymptotic chi-square distribution when there is none stationary variables.
The simple VAR (1) model with two equations looks like:

$Yt= \alpha +\beta 1\ Yt-1+ \mu 1Xt-1 + \varepsilon_t$ ---------- (11)

$Xt= \alpha +\beta 2\ Yt-1+ \mu 2Xt-1 + \varepsilon_t$ ---------- (12)

Testing, H0: $\mu 1=0$ against $Ha\neq 0$. The null hypothesis is X is not granger cause of Y.
For the second equation testing, H0: $\beta 2= 0$ against $Ha\neq 0$. Rejecting the null hypothesis means Y is granger cause of X. Steps;

- Determine order of integration and denoting M the maximum order in the system
- Estimating VAR model at level, determining optimal lag length (P) and checking whether the VAR is well behaved
- Estimate the preferred VAR model with M additional lags with no constant
- Test for granger causality

Additionally, robustness of the ARDL result is examined by estimating dynamic ordinary least square (DOLS) and fully modified ordinary least square (FMOLS). Because, dynamic ordinary least square (DOLS) with leads and lags allows for the presence of mix of I (0) and I (1) variables in the co-integrated system and the technique performs well in finite samples (H.Stock & W.Watson, 1993). Besides that for Montalvo, (1995) DOLS provides asymptotically efficient estimates and it outperforms systematically than canonical correlation regression estimator. The estimation involves regressing one of I (1) variables on the remaining I (1) and I (0) variables with leads and lags. By doing so, it corrects small sample bias and endogenity problem. While for the two guys Hayakawa & Kurozumi, (2006) DOLS estimator without leads and lags is better than with leads and lags. Phillips & Hansen, (1990) introduce asymptotically unbiased and efficient estimator (FMOLS) which corrects long run correlation semi parametrically.

3.4. Definition of variables

Following economic theories and empirical literatures in this thematic area and considering Ethiopian financial market the following variables are included in the model.

In this empirical study to examine effect of financial repression policies, real GDP in logarithm will be considered as dependent variable which is consistent with most growth papers such as Barro, (1991) and Sala-i-Martin, (1992). Investment share of GDP and government expenditure share of GDP like Sanaz, Ali, & javad, (2012) and Islam S. , (2008) are also included as continuous explanatory variables which takes any value with positive expected sign and considered as controlled variables. For the above three variables the data is taken from IMF world economic outlook (2015)

At last there are four financial repression proxies. REAL is a variable for denoting interest rate control i.e. real interest rate in percents annually, which is calculated as nominal lending rate minus inflation rate which is in line with (Huang & Wang, 2010). Interest rates are among the most closely watched variables in the economy. Their movements are reported almost daily by the news media because they directly affect our everyday lives and have important consequences for the health of the economy.

They affect personal decisions such as whether to consume or save, whether to buy a house, and whether to purchase bonds or put funds into a savings account. Interest rates also affect the economic decisions of businesses and households, such as whether to use their funds to invest in new equipment for factories or to save their money in a bank (Mishkin, 2004). With this regard in financially repressed economy real interest rate is considered to be lower or negative and the data is taken from WDI (2015) and NBE reports. As a result interpreted inversely.

M1 is indicator of monopoly power of governmental financial institutions over the financial sector, which can be computed as, the share of governmental financial institutions total deposit over the total deposits of the entire financial institutions and which is consistent with (Okpara, 2010). The data for this proxy is obtained from NBE reports. Certain calculation is made to transform the raw data in to the required variable of interest since the data on hand is not in the desired form. CP is a proxy for financial repression which is calculated as domestic credit to private sector share of GDP. The data is taken from WDI (2015). And it is consistent with papers by Orji & Mba, (2015) and Hailay Tsigab, (2015).

RCB is a proxy for degree of financial repression which is calculated as currency outside banks over nominal GDP. Because of a number of reasons such as lower deposit interest rate, higher inflation and higher demand for investments private funds may be outside the banking sector. And this may create shortage of funds and dismantle investment economic growth link. The data for both currency outside bank and nominal GDP is procured from IMF.

4. RESULTS AND CONCLUSION

4.1. Unit root test

As time series data are taken for this analysis, unit root tests are needed to be done as a first step, to assess the order of integration of the variables in the system. The Phillips Perron (PP) unit root test at levels and first difference with options like with intercept and with trend and intercept reported in table(4) below.

H0: There is a unit root. Ha: There is no a unit root.

Table 4: Phillips Perron test results

	A. Variables at level		B. Variables at first difference		Decision
Variables	t-stat with trend and intercept	t-stat with intercept only	t-Stat with trend and intercept	t-stat with intercept only	Order of integration
LY	-1.319248	-1.626899	-5.5097***	- 4.0848***	I(1)
Real	-4.950622***	-4.935904***			I(0)
	-0.77300	-1.462	-5.2513***	-5.10749***	I(1)
CP	-2.425339	-1.105648	-4.4421***	-4.38033***	I(1)
RCB	-1.585561	-1.144208	-4.6409***	-4.42861***	I(1)
I	-2.512921	-0.586003	-16.272***	-8.86546***	I(1)
G	-2.316302	-2.591678	-5.0345***	-5.04763***	I(1)
T	-0.454569	-1.093424	-4.5518***	-4.49408***	I(1)

Source: Authors calculation using Eviews 9. *, **, *** indicates, rejection of null hypothesis at 10, 5 and 1 percent respectively.

The result of PP unit root test reported in Table (4) above shows that all variables are non stationary at level for both options, except real interest rate is stationary at level i.e. I(0) for both options. Following the rule of thumb; t- statistic is greater than critical value at 10%, 5% and 1% respectively. While at a first difference all variables in the system are becoming stationary both in trend and intercept, i.e. I (1).

4.2. Co- integration test

As the econometrics analysis suggests, once issue of unit root is addressed in preliminary stage, the co-integration test can be carry out to verify the existence of linear, stable and long run relationship among variables. In this paper to see long run relationship between financial repression measures and economic growth ARDL bound test of co integration was employed.

Based on Phillips Perron (PP) unit root test, variables in the system are both I (0) and I (1), allowing legitimate use of bound test of co-integration; which is based on ARDL model. The test is basically conducted for a null hypothesis of no co-integration.

Table (6) clearly reveals that calculated F- statistics (15.9) is higher than the upper bound critical value (3.18) and (3.91) at 5 and 1 percent significance level respectively. Thus, the null hypothesis of no co-integration is rejected. This means that the variables tend to move together in its steady state path in the long run. Financial repression can move together with economic growth in a long run. The Durbin Watson statistics (2.52) is higher than the coefficient of determination (0.89), and then it is fair to expect that the model is free from autocorrelation. Mainly the model passes all the diagnostic tests.

Table (6) ARDL bound test of co integration

ARDL bound test of co integration: Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	15.90858	7
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.7	2.83
5%	1.97	3.18
2.5%	2.22	3.49
1%	2.54	3.91

Source: Authors calculation using Eviews 9.

4.3. Long run and Short run dynamics

Once the existence of long run relationships are justified based on ARDL bound test and all the diagnostics tests are passed, then the other concern is to estimate the long run and short run estimates as reported in table (7) and (8) respectively.

Table 7: ARDL results of long run relationships

Dependent variable: LY: Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
REAL	-0.083584	0.027883	-2.997689	0.0085***
M1	-0.002621	0.007001	-0.374325	0.7131
CP	0.003895	0.039682	0.098159	0.9230
RCB	0.135633	0.036625	3.703270	0.0019***
I	0.137682	0.025911	5.313734	0.0001***
G	0.140401	0.055633	2.523713	0.0226**
T	-0.014542	0.022247	-0.653672	0.5226

Source: Authors calculation using Eviews 9. *, **, *** indicates, statistically significant variables at 10, 5 and 1 percent respectively.

More of a time an increase in real interest rate which is a result of higher lending rate or lower inflation rate is expected to have a positive effect on economic growth. But, here a proxy for financial repression, real interest rate has a positive effect (interpreted inversely) on long run economic growth, measured by real GDP in logarithm form.

This implies that, financial repression measured real interest rate results in an increase in economic growth. The estimation result shown in table (7) reveals that, other things remain constant a one percent decrease in real interest rate increases economic growth by about 8.3% in a long run. This is consistent with results of Raju, (1999).

Currency outside bank share of GDP has a positive statistically significant effect on economic growth. This implies the more the degree of repression (the more currency outside the banks) results in an increase in economic growth rate. The result shows a one percent increase of currency outside bank share of GDP results in an increase in economic growth by about 13% in a long run. Controlled variables such as investment and expenditure share of GDP have also a positive statistically significant effect on economic growth as expected.

Table 8: ARDL results of short run relationships

Dependent variable: LY Cointegrating Form Selected Model: ARDL(1, 2, 2, 0, 2, 2, 2, 0)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REAL)	0.002037	0.000930	2.189277	0.0437
D(REAL(-1))	0.006013	0.001019	5.899717	0.0000
D(M1)	0.000837	0.000762	1.098666	0.2882
D(M1(-1))	0.001766	0.000798	2.213559	0.0417
D(CP)	0.000344	0.003524	0.097577	0.9235
D(RCB)	-0.025418	0.009841	-2.582942	0.0200
D(RCB(-1))	-0.013195	0.011614	-1.136178	0.2726
D(I)	0.005736	0.002310	2.483344	0.0245
D(I(-1))	-0.005360	0.002483	-2.159010	0.0464
D(G)	0.014093	0.004183	3.369524	0.0039
D(G(-1))	0.005878	0.003461	1.698652	0.1087
D(T)	-0.001284	0.001794	-0.715713	0.4845
CointEq(-1)	-0.088277	0.027649	-3.192773	0.0057

Source: Authors calculation using Eviews 9. *, **, *** indicates, statistically significant variables at 10, 5 and 1 percent respectively.

In the above short run estimation result (shown in table (8)) the error correction term has a desirable properties i.e. it is statistically significant at1% and it is correctly signed (-0.088277). This implies that there is a possibility of adjustment to equilibrium after a shock and beside that, it suggests that there is stable long run relationship between financial repression proxies and economic growth. Coefficient of CointEq(-1) indicates that every year, a 8.8% adjustment to equilibrium (long run) was required.

Past value of governmental banks deposit share of the total deposit of sector (monopoly power indicator) have a positive statistically significant effect on economic growth in a short run but the magnitude is very weak. While real interest rate (interpreted inversely) and currency outside bank share of GDP have a negative statistically significant effect on economic growth but the magnitude is very weak. Controlled variables such as investment and government expenditure have a positive statistically significant effect too.

To sum, financial repression measured by real interest rate and currency outside bank have a short run weak negative effect and a positive long run effect.

4.4. Causality test

ARDL bound test confirms that there is co- integration between financial repression proxies and economic

growth. Then, there must be causality between them either in a one way or in both directions. Granger causality tests are conducted to determine whether current or lagged values of financial repression proxies influence prediction of economic growth, measured by real GDP in logarithm.

Table (9): results of Toda Yamamato causality test.

Null Hypothesis:	Df	Chi-sq	Prob.
REAL does not Granger Cause LY	1	11.86758	0.0026***
LY does not Granger Cause REAL	1	2.724437	0.2561
M1 does not Granger Cause LY	1	11.54693	0.0031***
LY does not Granger Cause M1	1	7.405898	0.0247**
CP does not Granger Cause LY	1	5.434749	0.0660*
LY does not Granger Cause CP	1	0.641347	0.7257
RCB does not Granger Cause LY	1	2.818068	0.2444
LY does not Granger Cause RCB	1	2.212676	0.3308
I does not Granger Cause LY	1	13.95589	0.0009***
LY does not Granger Cause I	1	6.084265	0.0477**
G does not Granger Cause LY	1	2.436660	0.2957
LY does not Granger Cause G	1	0.219862	0.8959
T does not Granger Cause LY	1	5.409560	0.0669*
LY does not Granger Cause T	1	0.019214	0.9904

Source: Authors calculation using Eviews 9. *, **, *** indicates, statistically significant variables at 10, 5 and 1 percent respectively.

Table (9) clearly shows that there is uni directional causality running from real interest rate, credit to private sector share of GDP and trade share of GDP to economic growth. This means that current and past values of those variables helps significantly for prediction of economic growth at 1%, 10% and 10% respectively.

Additionally there is bi directional causality running from governmental banks deposit share of GDP and investment share of GDP to economic growth. Implies that current and past values of those variables help for prediction of economic growth and inversely current and past value of real GDP also helps for prediction of both series.

4.5. Robustness check

To validate ARDL model long run results DOLS and FMOLS results are reported in table (10).

Table (10) clearly presents the long run relationships between financial repression proxies, controlled variables and economic growth. The DOLS estimator found that statistically a positive long run effect of currency outside bank share of GDP, share of governmental bank deposit to the total deposit by the sector and investment spending share of GDP on economic growth. The lower credit available to private sector also has a negative influence.

Table (10): DOLS and FMOLS estimator results

	DOLS		FMOLS	
Variable	Coefficient	Prob.	Coefficient	Prob.
REAL	-0.008354	0.5450	0.003769	0.3043
M1	0.014953	0.0023***	0.013129	0.0000***
CP	0.106038	0.0159**	-0.010736	0.4024
RCB	0.137320	0.0001***	0.127336	0.0000***
I	0.107711	0.0001***	0.079810	0.0000***
G	-0.010256	0.6943	0.028430	0.0256**
T	-0.007971	0.5119	0.048606	0.0000***
R-squared	0.993717		0.413739	
Adjusted R-squared	0.959790		0.288112	

Source: Authors calculation using Eviews 9. *, **, *** indicates, statistically significant variables at 10, 5 and 1 percent respectively.

Additionally, FMOLS results support the findings of ARDL and DOLS. The FMOLS result suggests that there is a positive long run relationship between financial repression proxies and economic growth. In general, table (7) and table (10) provide a long run estimates by ARDL, DOLS and FMOLS. A result for all estimators are similar implies that results for different estimator are robust.

4.6. Diagnostics tests

This study complemented through checking stability of short run and long run results for the entire period under investigation. For this cumulative sum (CUSUM) and cumulative sum square (CUSUMSQ) tests were employed. If the plot of CUSUM and CUSUMSQ are within 5% critical bound, the null hypothesis of coefficients are stable, cannot be rejected.

Figure (2) and (3) respectively shows that plot of both tests are within 5% level of significance and suggests that coefficients are stable.

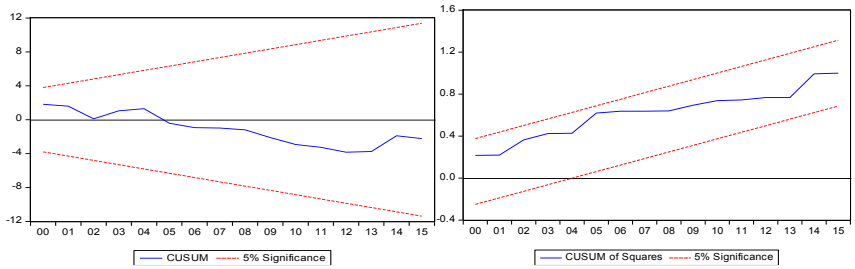


Figure (2) CUSUM test of stability

Furthermore, all the models pass the diagnostics tests such as autocorrelation hetrosckedasticty, normality of the error term and model specification tests. The result of diagnostics tests for all model are present in the appendices part.

4.7. Conclusion and policy implications

In fact, effect of financial policies on economic growth remains a controversial issue starting from 1970s. Different scholars argue on the effect of financial policies both theoretically and empirically and categorized themselves as a follower of McKinnon and Shaw school who believe that financial repression can harm economic growth or to those who accept regulated finance.

This paper presents one channel that can explain why financial repression leads to significantly higher economic growth in Ethiopia using yearly time series data ranging from 1980 to 2015. This is in line with papers like Oster & Brand, (2015), Arnaud & Adalbert, (2003) and Alejandro, (1984).

The estimation results show that financial repression proxies and economic growth can move together in a long run and there is unidirectional and bidirectional causality running from financial repression proxies to economic growth. In a long run real interest rate, ratio of currency outside bank to nominal GDP, investment spending and government expenditure share of GDP have a positive statistically significant effect on economic growth. In a short run financial repression proxies (real interest rate and currency outside bank share of GDP) have negative statistically significant effect but the magnitude is too weak. While the monopoly power indicator has a positive significant effect.

Based on, the estimation results and macroeconomic condition of the country the following policy measures should be adopted to Ethiopian financial market.

I. Real interest rate is one of a closed watch financial variable that can influence our daily activities. So, the government should have to regulate it carefully. Because allowing real interest rate to be determined by the market enhances both deposit and lending rates and there by people will depose his income rather than investing in productive ventures. If real interest rate is not determined by market the lower or negative real interest rate motivates individuals to borrow from financial sectors and engaged in productive investments.

II. Ethiopian Governments still have to monopolized the financial sector and enhance governmental banks deposit. Because the higher deposit helps governmental banks to meet easily the required demand and maximizes the profit which intern expend as public investment.

III. The government should have to enhance investment spending via giving different loans to the firms at lower lending rates.

Finally in the future papers it will also be useful to examine the extent of financial repression which can be optimal.

5. REFERENCES

Alejandro, C. F. (1984). Good - Bye Financial Repression, Hello Financial Crisis. Working Paper Number 24.

Ang, J. B. (2007). What Are The Mechanisms Linking Financial Development And Economic Growth In Malaysia? Discussion Paper 34.

Arnaud, M., & Adalbert, W. (2003). The Finance- Growth Nexus And Financial Sector Environment: New Evidence From South East Europe.

Baddeley, M., & Barrowclough, D. (2009). A Practical Guide To Quantitative Research In Economics, Finance

And Development Studies. Cambridge University.
Bardhan, P., & Udry, C. (1999). Development Microeconomics. Oxford University Press.
Barro, R. J. (1991). Economic Growth In A Cross Section Of Countries. The Quarterly Journal Of Economics , Vol. 106 (No. 2), 407-443.
Beim, D., & Charles, W. (2001). Emerging Financial Markets. The Journal Of Financial Research , 309-310.
Brooks, C. (2014). Introductory Econometrics For Finance. Cambridge University press.
Chowdhury, A. (2010). Financial Sector Regulation In Developing Countries: Reckoning After The Crisis.
Erchafo, G. (2001). Monetary Policy Instruments In Ethiopia.
Geda, A. (2006). The Structure And Performance Of Ethiopian Financial Sector In The Pre And Post Reform Period With Special Focus On Banking. World Institute For Development Economics Research .
Geert, B., & Harvey, C. R. (1997). Capital Markets: An Engine For Economic Growth. National Bureau Of Of Economics Research .
Gesesse, D., Amha, W.,s Mommartz, R., Steel, E. D., & William. (2008). Access To Finance In Ethiopia.
Gitau, G. K., & Kosimbei, G. (2015). The Effects Of Financial Repression On Economic Growth In Kenya. International Journal Of Business And Commerce , 15-37.
Gregorio, J. D., & E., G. P. (1995). Financial Development And Economic Growth.
Gujarati, D. N. (2003). Basic Econometrics. New York: Mcgraw-Hill.
H.Stock, J., & W.Watson, M. (1993). Asimple Estimator Of Cointegrating Vectors In Higher Order Integrated Systems. Econometrica , 783-820.
Hagos, M. K. (2014). Financial Regulation And Supervision In Ethiopia. Journal Of Economics And Sustainable Development .
Hailay Tsigab, K. (2015). Financial Development And Economic Growth Nexus: Evidence From Ethiopia. International Journal Of Science And Research .
Hayakawa, K., & Kurozumi, E. (2006). The Role Of "Leads" In The Dynamic Ols Estimation Of Cointegrating Regression Models.
Huang, Y., & Wang, X. (2010). Does Financial Repression Inhibit Economic Growth? Empirical Examination Of China's Reform Experience.
Islam, S. (2008). Financial Repression And Economic Distortions To The Stage Of Economic Growth And Agricultural Development In Bangladesh.
Jayratne, J., & Strahan, P. E. (1996). The Finance-Growth Nexus: Evidence From Bank Branch Deregulation. The Quarterly Journal Of Economics
Jérôme, H., Chuan, L., Tauno, L., Laurent, D., & Steven, B. (2015). Financial Repression:The Unintended Consequences. Zurich: Swiss Re.
Kamal, L. (2012). Financial Development, Financial Repression, And Growth In Developing Economies. International Business & Economics Research Journal.
Kaminskiy, G. L., & Schumukler, S. L. (2003). Short- Run Pain, Long Run Gain: The Effect Of Financial Liberaliation.
Kozo, K., Barbara, P., & Robert, M. S. (2007). The Case For Financial Sector Liberalization In Ethiopian.
Levine, R. (2005). Handbook Of Economic Growth. NBER.
Levine, R. (2003). More On Finance And Growth: More Finance,More Growth? The Federal Reserve Bank.
Lin, J. L. (2008). Notes On Testing Causality. Institute Of Economics, Academia Sinica.
Lin, J. Y., & Li, Y. (2001). Export And Economic Growth In China: A Demand-Oriented Analysis. China Center For Economic Research .
Mansouri, S., Samadi, A. H., & Torkamani, J. (2013). Financial Repression And Agricultural Growth: The Case Of Islamic Republic Of Iran (1962-2007). Quarterly Journal Of The Economic Research (Sustainable Growth And Development) ,10-22.
Månsson, H. K., & Kristofer. (2015). Revisiting The Nexus Of The Financial Development And Economic Growth – Wavelet Approach With A Focus On Asian Economies.
Mckinnon, R. (1973). Money And Capital In Economic Growth. Washington Dc: Brooking Institution.
Meresa, T. M. (2009). Financial Liberalization Finance Growth Nexus: Emperical Survey Of Ethiopian Economy.
Mishkin, F. S. (2004). The Economics Of Money, Banking And Financial Markets. The Addison-Wesley Series In Economics.
Montalvo, J. G. (1995). Comparing Cointegrating Regression Estimators:Some Additional Monte Carlo Results. Economics Letters , 229-234.
NBE. (2011/2012) , NBE. (2013/14).
Odhiambo, N. M. (2011). The Impact Of Financial Liberalisation In Developing Countries: Experiences From Four Sadc Countries.
Okpara, G. C. (2010). Relative Potency Of Financial Repression And Liberalization On Financial Development

And Economic Growth: An Empirical Survey. American Journal Of Scientific And Industrial Research , 643.650.

Orji, A., Onyinye Imelda, A.-O., & Mba, P. N. (2015). Financial Liberalization And Output Growth In Nigeria:Empirical Evidence From Credit Channel. International Journal Of Economics And Financial, 297-311.

Oster, A., & Brand, J. (2015). China Economic Update By Nab Group Economics. Nab.

Pesaran, M. H., & Shin, Y. (1998). An Autoregressive Distributed-Lag Modelling Approach To Cointegration. 371-413.

Phillips, P. C., & Hansen, B. E. (1990). Statistical Inference In Instrumental Variables Regression With I(1) Processes. Review Of Economics Studies , 99-125.

Phillips, P., & Perron, P. (1988). Testing For A Unit Root In Time Series Regression. *Biometrica* , 335-346.

Raju, S. (1999). The Cost Of Financial Repression: Impact On Savings, Investment And Growth For India, 1971-1995.

Reinhart, C. M. (2012). The Return Of Financial Repression. No. 16.

Sala-I-Martin, N. R. (1992). Financial Repression And Economic Growth. Journal Of Development Economics , 5-30.

Sanaz, M., Ali, H., & Javad, T. (2012). Financial Repression And Agricultural Growth: The Case Of Islamic Republic Of Iran. Journal Of The Economic Research , 10-22.

Shaw, E. (1973). Financial Deepening In Economic Development. Oxford: Oxford University.

(2011). Sources Of Economic Growth. Department Of Busniess Inovation And Skills.

Stolbov, M. (2012). The Finance-Growth Nexus Revisited: From Origins To A Modern Theoretical Landscape. The Open - Acces, Open- Assesment E-Journal.

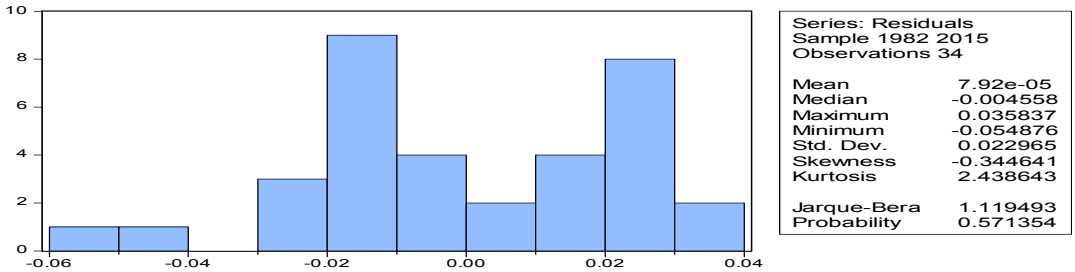
Thiel, M. (2001). Finance And Economic Growth- A Review Of Theory And The Available Evidence. Number 158.

Toda, H., & Yamamato, T. (1995). Statistical Inference In Vector Autoregresions With Possibily Integrated Proceses. Journal Of Econometrics.

Yu-Fu Chen, M. F. (2015). Financial Market Reform – A New Driver For China's Economic Growth? (L. Solanko, Ed.) Institute For Economies In Transition , Discussion Papers 5.

APENDICES

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.239914	Prob. F(1,15)	0.2830
Obs*R-squared	2.595509	Prob. Chi-Square(1)	0.1072
Heteroskedasticity Test: ARCH			
F-statistic	0.126641	Prob. F(1,31)	0.7244
Obs*R-squared	0.134263	Prob. Chi-Square(1)	0.7141
Omitted variable test	value	d.f	probability
t-statistic	0.971994	15	0.3465
F-statistic	0.944773	(1, 15)	0.3465
Likelihood ratio	2.076750	1	0.1496



VAR Lag Order Selection Criteria: Endogenous variables: LY REAL M1 CP RCB I G T

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-726.7986	NA	8.17e+08	43.22345	43.58259	43.34592
1	-483.2091	358.2198*	23380.18	32.65936	35.89165*	33.76166
2	-400.2606	82.94853	15223.92*	31.54474*	37.65018	33.62687*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error AIC: Akaike information criterion SC: Schwarz information criterion HQ: Hannan-Quinn information criterion.

VAR Residual Serial Correlation LM Tests:Null Hypothesis: no serial correlation at lag order			
Lags	LM-Stat		Prob
1	86.98703	0.0296	
2	78.81723	0.1006	

VAR normality test: Null Hypothesis: residuals are multivariate normal			
Component	Jarque-Bera	Df	Prob.
1	0.558039	2	0.7565
2	2.985102	2	0.2248
3	1.636494	2	0.4412
4	3.246280	2	0.1973
5	0.512521	2	0.7739
6	0.096480	2	0.9529
7	3.314669	2	0.1906
8	0.325887	2	0.8496
Joint	12.67547	16	0.6963