

The Effects of Financial Repression on Economic Growth in Kenya

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Abstract

Financial repression refers to the notion that a set of government regulations, laws, and other non-market restrictions prevent the financial intermediaries of an economy from functioning at their full capacity. The study sought to investigate the effect of financial repression on economic growth in Kenya. The target population of this study is the entire economy of Kenya. The Data was analyzed through the use E-views. The dependent variable under investigation was Economic Growth as measured by GDP while independent variables were elements of financial repression and included Interest rate ceilings, High bank reserve requirements, Broad Money (M3), Government Borrowing. The period covered under this study was 1996 to 2043 and utilized quarterly Secondary time series data. A descriptive research design was adopted. The study used an OLS regression equation and tested the values at 5% significance level and found evidence that Interest rate ceilings was negative and significantly related to economic growth (t-value -3.76), Broad Money was found to be negative and significantly related to economic growth (t-value -3.71). The study also found that government borrowing was negative and significantly related to economic growth (t-value -4.61), on the other hand High bank reserve requirements were found to be positive and insignificant related to economic growth.

LIST OF ABBREVIATIONS

BM	Broad Money
IRC	Interest rate Ceiling
GB	Government borrowing domestically.
HBRR	High Bank Reserve Requirement
MOF	Ministry of Finance
PBC	People's Bank of China
PRC	People's Republic of China
INFL	Inflation Rate

1. INTRODUCTION

1.1 Background of the Study

Financial repression refers to the notion that a set of government regulations, laws, and other non-market restrictions that prevent the financial intermediaries of an economy from functioning at their full capacity. The policies that cause financial repression include interest rate ceilings, liquidity ratio requirements, high bank reserve requirements, broad money, capital controls, and restrictions on market entry into the financial sector, credit ceilings or restrictions on directions of credit allocation, and government ownership or domination of banks Hiro, (2005). According to Beim & Charles,(2001), the key reason for the government to implement financially repressive policies is to control fiscal resources. By having a direct control over the financial system, the government can funnel funds to itself without going through legislative procedures and more cheaply than it could when it resorts to market financing. More specifically, by restricting the behavior of existing and potential participants of the financial markets, the government can create monopoly or captive rents for the existing banks and also tax some of these rents so as to finance its overall budget. Existing banks may try to collude with each other and to interrupt possible liberalization policies as long as they are guaranteed their collective monopoly position in the domestic market. According to Kaminsky & Sergio, (2002) in some countries, governments require banks to meet high rates of the reserve ratios, and use the reserves as a method to generate revenues. Because reserves earn no interest, reserve requirements function as an implicit tax on banks and also restrict banks from allocating a certain portion of their portfolios to productive investments and loans Montiel,(2003).

According to Kamal, (2012) when high reserve ratios are required, the lending and borrowing rate spread must widen to incorporate the amount of no-interest reserves, which can reduce the amount of funds available in the financial market/ Money Supply. If high reserve requirements are combined with interest ceilings and protective government directives for certain borrowers, savers who are usually unaware of the requirement policy become the main taxpayers because they face reduced rates of interest on their savings. Inflation can aggravate the reserve tax because it reduces the real rates of interest. Thus, high reserves requirements make the best use of the government's monopolistic power to generate seignior age revenue as well as to regulate reserve requirements Guha & Mukherjee,(2003), A variant of this policy includes required liquidity ratios – banks are required to allocate a certain fraction of their deposits to holding government securities that usually yield a return lower than could be obtained in the market. Governments often impose a ceiling on the interest rate banks can offer to depositors. In the Kenyan context economic growth was measured by GDP growth and financial repression as a coefficients of interest rate ceilings, broad money, high liquidity reserve, and government credit uptake.

Economists have commonly argued that financial repression prevents the efficient allocation of capital and thereby impairs economic growth. McKinnon, (1973), and Shaw, (1973), were the first to illuminate the notion of financial repression. While theoretically an economy with an efficient financial system can achieve growth and development through efficient capital allocation, McKinnon and Shaw argue that historically, many countries, including developed ones but especially developing ones, have restricted competition in the financial sector with government interventions and regulations. According to their argument, a repressed financial sector discourages both saving and investment because the rates of return are lower than what could be obtained in a competitive market. In such a system, financial

intermediaries do not function at their full capacity and fail to channel saving into investment efficiently, thereby impeding the development of the overall economic system.

Schumpeter,(1991) articulated a view that the development of financial intermediation was positively related to economic growth. Subsequently researchers applied case study techniques, providing evidence that countries with better developed financial systems were associated with higher rates of per-capita GDP growth. King & Levine,(1993) present evidence which shows that there is a systematic relationship between a set of financial indicators aligned to financial repression and a set of growth indicators inclined to economic growth.

According to Roubini & Sala-i-Martin,(1991) governments repress financial development by not allowing the financial sector to operate at its full potential by introducing all kinds of restrictions, laws and non-market restrictions to the behaviour of banks and other financial intermediaries.

Financial repression also takes the form of government directives for banks to allocate credit at subsidized rates to specific firms and industries to implement industrial policy. Forcing banks to allocate credit to industries that are perceived to be strategically important for industrial policy ensures stable provision of capital rather than leaving it to decisions of disinterested banks or to efficient securities markets. It is also more cost effective than going through the public sector's budgetary process Kirkegaard & Carmen, (2012). Government directives and guidance sometimes include detailed orders and instructions on managerial issues of financial institutions to ensure that their behavior and business is in line with industrial policy or other government policies. The Japanese Ministry of Finance (MOF) is a typical example of government's micromanagement of financial industry. The extreme example of direct state control of banks is nationalization of banks as was observed in Mexico in the 1980s, when the government nationalized all the banks to secure public savings.

According to Magud, et al.,(2011), in support of financial repression noted that throughout history, debt/GDP ratios have been reduced by (i) economic growth;(ii) a substantive fiscal adjustment/austerity plans; (iii) explicit default or restructuring of private and/or public debt; (iv) a sudden surprise burst in inflation; and (v) a steady dosage of financial repression that is accompanied by an equally steady dosage of inflation. The author found that financial repression in combination with inflation played an important role in reducing debts.

The purpose of this paper is to refine the stylized facts regarding financial repression and economic growth in Kenya. The chief interest being relationship between financial repression and economic growth.

1.2 Statement of the Problem

Several studies have been done on financial repression and economic growth for instance McKinnon, (1973), Shaw, (1973), Roubini & Sala-i-Martin,(1991),Schumpeter,(1991), King and Levine,(1993),Magud,et al., Kierkegaard & Carmen,(2012), and Kamal,(2012) however none of these studies have been carried in Kenya.

Governments and particularly developing country governments have intervened extensively in order to divert large amount of funds to the priority sectors such, state owned enterprises, small and medium scale firms and to a lesser extent housing, exports and underdeveloped regions. One way that government's finance expenditures in excess of tax revenues is to force the private sector, insurance companies, pension funds, commercial banks and other public financial institutions to buy government

securities at below market yields as generally returns on government securities is much below the market rates of interest. Another way in which government can borrow at low rates of interest is by setting high liquid asset ratios and ensuring that government securities are the only eligible assets that satisfy this requirement. Also, by setting high reserve requirements, the government can borrow indirectly from the banking system at a zero. Finally, governments may set ceilings on interest rates to limit competition from the private sector for loanable funds (Fry, 1997 and Giovannini and de Melo, 1990). Thus, financial repression is not a precise concept since the controls imposed on financial markets are a combination of price and quantity restrictions. A typical set of restrictions includes the prohibition on domestic residents from holding financial assets abroad, coupled with compulsory quotas of government bonds in financial intermediaries

The rationale for financial repression has been the response to the simplistic interpretations of Keynesian theories: It was thought that, by controlling interest rates at reasonably low levels and by expanding the scope of government direct intervention, investment would greatly increase. According to Prebisch,(1974), government intervention aimed at controlling interest rates accelerates growth. The author contends that lower interest rates encourage savings and that the government should lower interest rates to a level where full employment is achieved. Financial control is expected to increase aggregate savings, accelerate capital accumulation, boost the efficiency of investment and stimulate overall growth, World Bank,(1993) and Edwards,(1995)

Any initial interest rate rise increases the demand for credit by those who are most unlikely to repay their loans and hence this demand pushes up interest rates still further. With increase in interest rates, there is a rise in interest cost which pulls down otherwise profitable firms. As a result firms undertake riskier investments. This, in turn, increases the probability of default and results in an adverse selection of projects and a general deterioration of banks' portfolios. In their study on financial repression, Stiglitz, (1984), tried to show that raising interest rates beyond a certain level may lower banks' overall return. Hence, even if the government selected projects at random, lowering the interest rate could increase the expected quality of borrowers and this effect would be even greater if the government had some positive selection capabilities Fry, (1997). Thus, financial repression can be used as the basis of an incentive scheme to encourage higher savings and more efficient allocation of capital. Financial repression, thus, creates a scarcity. Some investors will get the capital they want at the interest rate being offered, while others will not.

The government can set up a contest so that those who perform well (as measured by, say, exports) get more access to capital. Such contests can have strong positive effects while at the same time it can also lead to government playing favorites World Bank,(1993).

1.3 Objectives

1.3.1 General objective

The objective of this study was to determine the effects of financial repression on economic growth in Kenya,

The specific objectives were:-

- 1) To determine the effect of Interest rates ceilings on as a measure of financial repression on economic growth.
- 2) To investigate the effect of high reserve requirements as a measure of financial repression on economic growth.

- 3) To find out the effect of Broad Money as a measure of financial repression on economic Growth.
- 4) To investigate the effect of domestic credit uptake by government as a measure of financial repression on economic Growth.

On the basis of the specific objectives, the study drew appropriate policy recommendations which aimed at helping all the relevant stakeholders to take stock of the relationship between financial repression and Economic growth.

1.4 Research Questions.

- 1) What is the relationship between interest rate ceilings on economic growth?
- 2) To what extent does a high reserve requirement influence Economic Growth?
- 3) How does Broad Money as a measure of financial repression influence economic growth?
- 4) How does government uptake/ appetite of domestic credit as a measure of financial repression influence economic growth?

1.5 Justification of the Study.

The research findings of this study will help in addressing the existing knowledge gap in literature of financial repression and economic growth in Kenya. It will also be a valuable addition to the existing knowledge and provide a platform for further research which will be useful to academicians and scholars. The study will be of great benefit to oversight boards, senior management and investors, economists of financial institutions in Kenya. The economist and investors in the country and beyond targeted in the study will clearly understand more on financial repression and economic. They will have the advantage of applying the recommendations made on the study and engage the relevant stakeholder to determine when to invest due to the causal relationship that will have been established between financial repression and economic growth. The study will also have great benefit to the government and regulatory bodies. It will help the regulators to understand the scope of financial repression on economic growth and how to strengthen the financial industry in terms of policies.

2. LITERATURE REVIEW

This chapter presents theoretical and empirical survey of the literature on the effects of financial repression on economic growth in Kenya.

2.1 Theories of Financial Repression

2.1.1 Demand Following and Supply-Leading Hypothesis.

In examining the causal relationship between financial development and economic growth, Patrick, (1966) distinguished ‘demand-following’ and ‘supply-leading’ phenomena. In his conceptual framework, ‘demand-following’ referred to the phenomenon in which creation of modern financial institutions and related financial services is in response to the demand in the real economy. By contrast, ‘supply-leading’ referred to the phenomenon in which creation of financial institutions and related financial services in advance of demand for them. The main body of the literature in this area, especially those focusing on developing country experiences, grew during the past two decades Pagano, (1993) and Trew, (2006). This was because worldwide financial liberalization was a relatively recent phenomenon. The increase in frequency of financial crises, including the 1994 Latin America debt crisis and the 1997

East Asian financial crisis, also prompted strong research interest in this area. Up to now, however, economists remain divided on economic consequences of financial liberalization.

A study of existing literature reveals two main conflicting theories on the effect of financial repression. These are the supply-leading hypothesis and the demand-following hypothesis.

The supply-leading hypothesis states that the presence of efficient financial markets increases the supply of financial services in advance of the demand for them in the real sector of the economy. It is the contention of this hypothesis that well-functioning financial institutions can promote overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from traditional sectors, to growth inducing sectors, such as manufacturing and industrial, agricultural and the services sectors and also promote competent

Entrepreneurial response in these sectors of the economy (McKinnon, 1973; Shaw, 1973; Fry, 1978; Diaz-Alejandro, 1985; Moore, 1986). The argument therefore, is for policy makers in government to focus on government policies aimed at promoting financial development in countries which must be persistent and sustainable in order to foster economic development Darrat (1999).

The main alternative view to the supply-leading hypothesis is the demand-following hypothesis which posits that financial markets develop and progress following the increased demand for their services from the growing real economy. Evolution in financial markets is simply seen as a passive response to a growing economy. As the real sector expands and grows, the growing real sector will generate increased new demands for financial services which in turn will exert and intensify pressures to establish larger and more sophisticated financial institutions to satisfy the new demand for these services and in this way, financial repression is merely a by-product or an outcome of continued government interference in the in the real sector of the economy (Robinson, 1952; Patrick, 1966; Ireland, 1994; Demetriades and Hussein, 1996; Darrat, 1999).

The two paradigms appear to be in conflict with each other, revealing opposing patterns of the causal relationship between financial repression and economic growth, each having different implications for policy makers. Thus, while the supply-leading hypothesis holds that financial development promotes economic growth, the demand following hypothesis argues for a reverse relationship between economic growths and financial repression. Kenya is a developing country that has adopted several policies in order to strengthen and develop its financial sector, hence it is against this background that this paper seeks to examine the existence and impact of financial repression on economic growth in Kenya from 1996 to 2013, using Broad Money, Inflation, Interest rate ceilings, Domestic credit uptake by Government, High bank reserve requirements and liquidity ratio requirements, as proxies for financial repression.

short of the prevailing market rate of return Goddard, (2010). The required reserve ratio against banks' deposit liabilities was introduced in McKinnon- Shaw models, was extensively explored by Fry (1988), and has been incorporated into more recent models as well. The required reserves are seen to constitute a leakage in the intermediation process, as higher required reserve ratios against deposits work to reduce the volume of loans provided by the commercial banks or other groups of financial institutions that are subject to reserve requirements Fry, (1997). An increase in reserve requirements raises the operating costs of commercial banks and reserves impose a tax on financial intermediation. Lardy, (2008) in her study *Financial Repression in China*. Found that indeed, from 2002 until the end of June 2008 the PBC raised the required reserve ratio of Chinese commercial banks 21 times, driving the reserve requirement rate up from 6 to 17.5 percent. Hence a negative relationship is expected in relation to economic growth.

Roubini and Sala-i-Martin (1992) in their study *Financial Repression and Economic Growth*, developed a complex model of financial repression, introducing variables of inflationary finance and endogenous growth, but also arrived at the same conclusion that financial repression increases are correlated with lower levels of economic growth. Expanding the purview of the examination of financial repression, Roubini and Sala-i- Martin also found that financial repression was associated with higher inflation rates, lower interest rates, and higher base money per capita. Roubini and Sala-i-Martin concluded that they had found a systematic inverse correlation between economic growth and several measures of financial repression. "In particular inflation, countries that repress their financial sector tend to grow less than countries that don't. Other studies which found a similar negative relationship were: Stern, (1999) Kamal, (2012) and Montiel, (2003)

Broad money (M3) refers to the most inclusive definition of the money supply. M3 includes liquid instruments as well as some less liquid instruments and is therefore considered the broadest measurement of money. Maswana, (2008) in the study "China's Financial Development and Economic Growth: Exploring the Contradictions" found broad money as a measure of financial repression to have a negative relationship with economic growth. This was also confirmed by other studies by Chen and Fische,(1996), Pagano, (1993) and Stiglitz, (1994).

Government crowding out of the domestic credit from financial lending institutions is one of the afor-mentioned ways that it actually implements financial repression. Crowding out by the government of the private sector from domestic borrowing leads to high interest rates, low private investments and ultimately slowed economic growth. Raju,(1999) studied *The Cost of Financial Repression: Impact on Savings, Investment and Growth for India for the period 1971-1995* and found that government crowding out had negative relations with economic growth, increasing savings and reducing private investments. This was also confirmed by other studies, Edward, (1995), Hiro, (2005) and Montiel, (2003)

2.4 Research Gap

Almost all of the scholarly literature on the relationship between financial repression and economic growth has found a negative correlation. Put in other terms, there is a surplus of past empirical research that has associated diminishing financial liberalization, with decreasing long run GDP output. The preeminent intellectual basis for the analysis of financial sector performance and the introduction of the concept of financial repression lies in the works of Ronald McKinnon, (1973) and Shaw, (1973). In these works, McKinnon and Shaw examined the performance of developing economies that had exhibited trends of financial repression. Although undertaking separate research, both economists arrived at the same conclusion: financial repression reduces the real rate of growth of the financial system, which

diminishes the productivity of capital, and therefore hinders the process of economic development. Building on their previous research, Roubini and Sala-i-Martin (1995) elaborated on their examination of the relation between financial repression and economic growth and found a similarly negative association between these variables. Some other studies that have found a similarly negative association between these variables are: Gelb (1989), King and Levine (1993), De Gregorio (1992) and Fry (1997).

However, despite the majority of research that has found a negative relation between financial repression and economic growth, two articles have challenged this assumption. Dornbusch and Reynoso, (1989) argued that “the strong claims for the benefits of financial liberalization are not supported by evidence” (Dornbusch and Reynoso 1989). Dornbusch and Reynoso found that there is only episodic empirical support for the growth effects of a liberalized financial system. They argued that the promotion of economic growth is definitely hindered by deficit finance, but not necessarily by the broad practices associated with financial repression. Thus, they concluded that the evidence of the favourable attributes of removing financial repression remains open to challenge. Most of the articles written on financial repression have focused on a government motivation stemming from an easy source of revenues. According to Goddard, (2010) however who found a positive relationship in the case of the PRC, although this may be a viable spillover benefit of financial repression, stated that the main reason for financial repression in the PRC is because it allows for sterilization. The ability of the PBC to maintain practices of sterilization has allowed the Chinese economy to uphold a competitively devalued exchange rate peg, which has boosted exports, thus contributing to long-run economic growth. The study aims to fill the disparity between the different studies and add to the knowledge in reference to the Kenyan context on financial repression.

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers data sources, definition and description of the key variables. It encompasses the research design, target population, data collection techniques, data collection procedures and finally data analysis, the econometric framework, the model specification, the estimation results and, finally, the robustness checks on the selected model.

3.2 Research Design

The study used historical data hence a non-experimental research design. The research problem was studied through the use of a descriptive research design. A descriptive study is concerned with finding out the what, here, and how of a phenomenon, Cooper and Schindler, (2008). Descriptive research design is going to be employed as it enables the researcher to generalize the findings to a larger population. This study is therefore generalized to the entire Kenyan economy in terms of its GDP growth rate. The main focus of this study was quantitative. The choice of the methodology was informed by the data generating process.

3.3 Target Population

The study targeted the entire economy performance as measured by GDP growth rate. This study used time secondary series data from the entire economy of Kenya to avoid the sampling bias problem covering the period from 1996 to 2014.

3.4 Definition and Measurement of Variables.

This study used annual data from the Central Bank of Kenya, KNBS covering the period from the year 1996 to 2014. The study employed the use of secondary data in its analysis from the aforementioned source.

The Interest rate ceiling is one of the five independent variables for the study. The study tried to show the relationship between interest rate as a measure of financial repression. Quarterly data from 1996 to 2014 was used, and the data was sourced from the CBK website.

High Bank reserve requirements are an independent variable in the study for the period from 1996 to 2014. It is defined as the quantity of funds that commercial banks are legally required hold in the central bank. Quarterly data was used to apply consistence with the other data formats for other variables employed in the study.

Broad money (M3) refers to the most inclusive definition of the money supply. M3 includes liquid instruments as well as some less liquid instruments and is therefore considered the broadest measurement of money. Data for Broad Money in this study was sourced from the CBK for the period of 1996 to 2014.

Domestic uptake by Government is the amount of government directly borrows from the country financial institution. It does so when it wants to borrow money to finance the budget, for development purposes or when the external sources of borrowing are more expensive that the internal ones. This leads to crowding out of other investors and a rise in the interest rates. Data was sourced from the CBK for the period 1996 – 2014.

Table 3.1 Summary of Variables and Measurement.

Variable	Description	Predicted Effect	Research Support	Data Sources
Interest Rate Ceiling	The maximum interest rate that a financial institution can charge a borrower for an adjustable rate mortgage or loan according to the contractual terms of the mortgage or loan. This interest rate is expressed as an absolute percentage.	Negative	Lardy, (2008), Trew,(2006) and Shaw (1973).	CBK
High Bank Reserve Requirement.	Quantity of funds that commercial banks are legally required hold in the central bank	Negative	Fry, (1997), Lardy (2008)	CBK
Broad Money	refers to the most inclusive definition of the money supply	Negative	Chen and Fische,(1996), Pagano, (1993) and Stiglitz, (1994).	CBK
Government uptake of domestic credit	The ratio or amount of credit that the government has uptake vis-à-vis the total amount of domestic credit available.	Negative	Edward, (1995), Hiro, (2005) and Montiel, (2003)	CBK

3.5 Data Analysis and Presentation

Before the data is subjected to a regression analysis, a normality test through the descriptive statistics of the variables was carried out to find out whether the variables were normally distributed. The variables residuals were also tested for normality and a histogram of the results graphed out. Correlation among the variables was tested and compared by use of a correlation matrix to find out whether the variables could be regressed together or they were too highly correlated. i.e. > 0.8.

3.6 Econometric methodology

In order to explore the existence of financial repression and the effects on economic growth in Kenya, the study used the ordinary least squares model (OLS). Under this approach it needs to be considered that the OLS's main assumption is that the errors must be uncorrelated.

$$y_i = \alpha + x_i \beta + \varepsilon_i$$

Consistent with, Brooks, (2008), the econometric model is specified.

Model Specification.

$$GDP_t = \alpha + \beta_1 \Delta IRC_t + \beta_2 \Delta HBRR_t + \beta_3 \Delta BM_t + \beta_4 \Delta INFL_{4t} + \beta_5 \Delta GB + \varepsilon_t$$

Where,

GDP_t = GDP growth rate at time, t

IRC_t = Interest rate ceiling at time, t

$HBRR_t$ = High Bank Reserve Requirements at time, t

BM_t = Broad Money at time, t

GB_t = Government borrowing from the economy at time, t

t = time

ε_t = the error term is assumed to be normally and independently distributed with mean zero and constant variance, t

α_t = captures all other explanatory variables which affect financial repression but are not captured in the model.

$\beta_1, \beta_2, \beta_3, \beta_4$, are the coefficients of Financial repression, measured with respect to IRC, HBRR, BM, INFL, GB, Previous studies have shown that OLS is a suitable model to describe economic growth time series Espinoza & Prasad, (2010) In terms of data analysis, a time series would provide econometric data well-suited to test the research questions in the study. This methodological approach is particularly fitting because the focus was on data from a single economy over time, rather than a snapshot of various economies in a particular instant. Time series analysis comprises a collection of observations made sequentially in time and is an approach often used in economic research.

3.7.1: Theoretical and Empirical Framework on the Model

Previous studies have shown that OLS is a suitable model to describe financial repression using time series data: In their study Roubini and Sala-i-Martin (2005), it is one of the first papers to model using OLS and empirically found negative effects of financial repression on economic growth. Graciela and Schmukler, (2005) also used OLS in their paper on financial repression and the long term and short term on financial markets and found that repression can lead to more stable markets in the long run. Montiel in the book Macroeconomics in Emerging Markets supports the use of OLS as a model to study financial repression owing to the time series nature of the data and supports the use of the Error Correction Model on the OLS to study the inter-dynamics between financial repression and economic growth.

This and many other studies appreciate the use of OLS on financial repression having regards for its data which is time series in nature. In terms of data analysis, a time series would provide econometric data well-suited to test the research questions in the study. This methodological approach is particularly fitting because the focus will be on data from a single economy over time, rather than a snapshot of various economies in a particular instant. Time series analysis comprises a collection of observations made sequentially in time and is an approach often used in economic research.

4. RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter covers the empirical analysis of the factors that explain financial repression risk. The data was tested for normality of the variables, Correlation analysis, Co-integration, regression of the variables and Error correction. Post data test, autocorrelation and heteroskedasticity.

4.2. Descriptive Analysis.

When analyzing time series data, the initial step was to investigate whether the variables under study were normally distributed. To test for normality of the variables, descriptive statistics was undertaken putting keen interest on the Jarque-Bera probability. Our concern being also on the measures of central tendency that comprises of the mean, median, and the mode as well as the measures of variability or dispersion that comprises of standard deviation (or variance). When using the Jarque-Bera test a null hypothesis of normal distribution was tested against the alternative hypothesis of non-normal distribution. For normal distribution the JB statistics is expected to be statistically indifferent from zero thus;

Ho: $JB=0$ (Normally distributed)

H1: $JB \neq 0$ (Not normally distributed)

Rejection of the null for any of the variables would imply that the variables are not normally distributed. (Table 4.1 in the appendices), presents the results of descriptive statistics of all the variables for the period 1996-2014.

4.3 Correlation

Table 4.2 as shown in the (appendices) found that, Interest rate ceiling is negatively correlated with GDP (-0.24 or 24%). High Bank reserve Requirements is positively correlated with GDP (0.34 or 34%). Broad Money is negatively correlated with GDP (-0.22 or 22%). Government borrowing is negatively correlated to GDP (-0.59 or 59%). The correlation matrix shows that all the variables can be included in the same model since the threshold for correlation between variables is mostly considered to be -0.8 or 0.8 and all the variables in the study pass this test hence regression.

4.4 Stationarity Test.

When estimating a model of time series variables, it is necessary to ensure that all time series variables are stationary. The importance of the concept of stationarity arises from the fact that virtually all the entire body of statistical estimation theory is based on asymptotic convergence theorems i.e. the weak law of large numbers, which assumes that all data series are stationary. This is done by conducting a unit root test on each variable to find the order of integration. A stationary variable has a time invariant mean

and covariance. A I (0) series is a time series that is stationary at level. An I (1) series contains one unit root and is a time series that is stationary at first difference.

In this study, Augmented Dickey-Fuller (ADF) test was used to test for unit roots. The results are as shown in (Table 4.3 in the appendices section). The decision criterion involves comparing the computed ADF statistic values with the critical values at 5%. If the computed ADF statistic is greater in absolute terms compared to the critical values, the null hypothesis of non-Stationarity in time series variables is rejected and vice versa.

When variables are integrated at different levels as above, the first task is to test for co-integration of the variables that are integrating at 1 as shown in Table 4.4. It is well known that if two series are integrated at two different orders, linear combination of them will be integrated to the higher order of the two orders. But it is possible that certain combinations of the non-stationary series are stationary. Then it is said that the pair y_t, x_t are co-integrated. The results show that the variables are integrating this gives the green light to regress the variables

Table 4.4. Co-integration Test.

Date: 06/06/15 Time: 12:03

Sample (adjusted): 1996 2014

Included observations: 72 after adjustments

Trend assumption: Linear deterministic trend

Series: GDP(log) IRC HBRR BM GB

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.970442	215.0712	95.75366	0.0000
At most 1 *	0.900174	137.6004	69.81889	0.0000
At most 2 *	0.763339	86.90528	47.85613	0.0000
At most 3 *	0.720055	55.20053	29.79707	0.0000
At most 4 *	0.705370	27.19094	15.49471	0.0006
At most 5	0.013820	0.306151	3.841466	0.5800

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.970442	77.47074	40.07757	0.0000
At most 1 *	0.900174	50.69514	33.87687	0.0002
At most 2 *	0.763339	31.70475	27.58434	0.0139
At most 3 *	0.720055	28.00959	21.13162	0.0046
At most 4 *	0.705370	26.88479	14.26460	0.0003
At most 5	0.013820	0.306151	3.841466	0.5800

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The co-integration results as shown in table 4.4 using the Johansen co-integration test. Show that there are five co-integrating equations which show that there is a long run relationship and equilibrium on the variables. The existence of co-integrating vectors imposes the transformation of the OLS model into a VECM model to analyze the dynamic interrelationships a OLS was done followed by an Error correction Model on the equation. The validity of the specification depends on the serial non-correlation and homoskedacity of the residuals. As shown in Table 4.6 and Table 4.7 in the appendices respectively.

Empirical Results and Discussion

Having carried out the requisite pre-estimation tests, we proceeded with OLS regression. Table 4.5 reports results from our basic specification using GDP as the dependent variable.

Table 4.5: The Effects of Financial Repression on Economic Growth in Kenya.

Variable	Notation	Model	Model with ECM
Constant	C	63.49** (6.61)	-0.29 (-0.31)
Interest Rate Ceiling	IRC	-0.58** (-3.76)	-0.16 -0.7
High Bank Reserve Requirement	HBRR	0.24** (3.40)	0.11 (0.59)
Broad Money	BM	-0.58** (-3.71)	-0.18 (-0.59)
Government Borrowing	GB	- 1.24** (-4.61)	-0.24 (-0.65)
Error correction Term	U(-1)		-0.35 (-0.09)*
	R2	0.76	0.26
	Adjusted R2	0.69	(0.01)
	F stat	11.38	0.97
	Prob(F-statistic)	0.00	0.47
	DW	1.75	1.36

Note: The 10% significant level is denoted by *. The parentheses indicate the t-statistic.

From the ECM regression model the results show that error correction term is significant at 10% level of significance, the coefficient of the error term is negative and indicates that the speed of adjustment is -0.34 and which goes to show that the ECM is normalizing the errors at the rate of negative 34% annually in the short-run. It also goes to show that in the short-run only IRC is significant and important in explaining the financial repression in Kenya. From the equation since the coefficient of U (-1) is negative and less than one and the corresponding coefficient of determination in the ECM is less than the Durbin Watson statistics then our ECM results are not spurious and are therefore accepted.

Estimation of the model took the linear shape

$$\text{CRISK} = 63.49 - 0.58*IRC + 0.24*HBRR - 0.58*BM - 1.25*GB$$

From the equation, an examination of the econometrics results further shows that the overall fit is satisfactory with an adjusted R-squared (R^2) of 0.63 or 63%. It implies that GDP, Interest Rate Ceiling, High Bank Reserve Requirements, and Government Borrowing from previous periods explained about 69% change of the credit risk over the observed years in the Kenyan commercial banks. The Durbin Watson is 1.75 for the model.

4.5: Post Estimation Tests

4.5.1: Test for Autocorrelation:

In regression analysis using time series data, autocorrelation of the errors is a problem. Autocorrelation of the errors, which themselves are unobserved, can generally be detected because it produces autocorrelation in the observable residuals. Autocorrelation violates the ordinary least squares (OLS) assumption that the error terms are uncorrelated. While it does not bias the OLS coefficient estimates, the standard errors tend to be underestimated (and the t-scores overestimated) when the autocorrelations of the errors at low lags are positive. Using the Breusch-Godfrey serial correlation test the study found that the variables were not serially correlated as shown in table 4.6 in the appendices.

4.5.2: Test for Heteroskedasticity

The possible existence of Heteroskedasticity is a major concern in the application of regression analysis, including the analysis of variance, because the presence of Heteroskedasticity can invalidate statistical tests of significance that assume that the modeling errors are uncorrelated and normally distributed and that their variances do not vary with the effects being modeled. Heteroskedasticity does not cause ordinary least squares coefficient estimates to be biased, although it can cause ordinary least squares estimates of the variance (and, thus, standard errors) of the coefficients to be biased, possibly above or below the true or population variance As shown in Table 4.7 in the appendices.

4.6 Results Discussion.

Our estimates in the model suggest that Interest Rate Ceiling has a negative and significant relationship with credit risk at 5% significant level of which is in line with our hypothesis. The findings are also consistent with Lardy, (2008), Trew, (2006) and Shaw (1973). A probable interpretation of these results is that if the government restricts interest rates and replaces efficient market allocation mechanisms with public selection processes, the result is less capital, and what capital there is will be less efficiently allocated.

From our model the estimates suggest that High Bank Reserve Requirements have a positive and insignificant relationship with credit risk at 5% significant level which is in tandem with our hypothesis as supported by studies done by Fry, (1997), Lardy (2008). A plausible explanation of these results is that an increase in reserve requirements raises the operating costs of commercial banks and reserves impose a tax on financial intermediation.

From our model the estimates show that Broad Money is negative and significant in explaining financial repression at 5% significant level which is consistent with Chen and Fische,(1996), Pagano, (1993) and Stiglitz, (1994).

From our model the estimates suggest that government borrowing has a negative and significant relationship with credit risk at 5% significant level. Which is in line with our hypothesis and the findings are also consistent with: Edward, (1995), Hiro, (2005) and Montiel, (2003). A plausible interpretation of these results is that government crowding out has negative relations with economic growth, increasing savings and reducing private investments.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction.

This chapter presents a summary of the major findings that are presented in chapter four, summary conclusions and recommendations suggested by the researcher. All findings are summarized in line with the objectives and shows how the objectives have been achieved.

5.2 Summary

The study sought to establish the Effects of Interest Rate Ceilings, High Bank Reserve Requirements, Broad Money, and Government Borrowing on economic growth in Kenya using the OLS model. The study used quarterly time series data for the time period 1996-2014 and found that Interest rate ceiling, Broad Money and Government borrowing all to be important and significant in explaining financial repression. High bank reserve requirements were found not to be important and significant in explaining financial repression in Kenya.

5.3 Conclusions

The first objective of the study was to establish the effect of Interest rates ceilings on economic growth as a measure of financial repression on economic growth in Kenya. The findings indicate that IRC has a negative and significant effect on the credit risk. This implies that restricting interest rates, replaces efficient market allocation mechanisms with public selection processes, the result is less capital, and what capital there is will be less efficiently allocated.

The second objective of the study was to establish the effect of high reserve requirements as a measure of financial repression on economic growth. The findings indicate that high bank reserve requirements have a positive and insignificant effect on economic growth in Kenya. This implies that an increase in reserve requirements raises the operating costs of commercial banks and reserves impose a tax on financial intermediation.

The third objective of the study was to establish the effect of Broad Money as a measure of financial repression on economic Growth. The findings indicate that Broad Money has negative insignificant in explaining economic growth in Kenya.

The fourth objective of the study was to establish the effect of domestic credit uptake by government as a measure of financial repression on economic Growth. The findings indicate that government borrowing is negative and significant in explaining financial repression in Kenya. This is explained by the fact that is that government crowding out has negative relations with economic growth, increasing savings and reducing private investments

5.4 Recommendations.

The study sought to provide more information to the Central Bank, Managers of Commercial banks, Investment bankers and Investors on the effects of financial repression on economic growth in Kenya so as to make informed decisions. Following the conclusions drawn from the above findings of the study, it is recommended that in that the Central Bank of Kenya should play a more regulatory and active role by ensuring that

5.5 Suggestions for Further research

The effect of financial repression on economic growth in Kenyan is a research area where there is capacity for a lot of research, and where research gaps exist especially in regards to studies carried out in Kenya where varying results have been published on the same.

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APPENDICES: TABLES

Table 4.1: Descriptive Statistics.

	GDP	IRC	HBBR	BM	GB
Mean	5.06	17.84	19.54	65.98	30.16
Median	4.74	18.00	17.88	71.22	29.24
Maximum	29.53	34.00	36.24	88.81	39.45
Minimum	32.11	3.34	5.08	22.91	24.60
Std. Dev.	12.94	9.81	8.22	17.99	4.29
Skewness	0.60	-0.02	0.41	-1.08	-0.68
Kurtosis	4.23	1.87	2.37	3.34	2.32
Jarque-Bera	2.93	1.29	1.08	4.75	2.32
Probability	0.23	0.83	0.58	0.09	0.31
Sum	121.33	428	468.84	1583.49	723.85
Sum Sq. Dev.	3852.51	2213.28	1555.30	7447.33	424.10
Observations	76	76	76	76	76

Source Author's Computation

Table 4.2 Correlation Matrix

	GDP	IRC	HBBR	BM	GB
GDPPCGR	1.00				
IRC	-0.24	1.00			
HBBR	0.34	0.15	1.00		
BM	-0.22	0.11	-0.02	1.00	
GB	-0.59	-0.08	-0.15	-0.09	1.00

Source: Author's computation

Table 4.3: Stationarity Test.

Variable	Levels				1st Difference				Order of Integration
	Constant		Trend and Intercept		Constant		Trend and Intercept		
	t-stat	5%	t-sta	5%	t-cal	5%	t-stat	5%	
GDP(log)	2.86**	-1.96	-	-	-	-	-	-	I(0)
IRC	-0.73	-1.96	-1.5	-3.62	-3.64**	-1.96	-	-	I(1)
HBRR	1.26	-1.96	-3.45	-3.64	-3.96**	-0.96	-	-	I(1)
BM	-1.08	-1.96	-2.06	-3.69	-2.96**	-1.96	-	-	I(1)
GB	-1.48	-1.96	-1.83	-3.64	-5.73**	-1.96	-	-	I(1)

Note: The 5% significant level is denoted by **. The parentheses indicate t-statistics.

Table 4.6: Test for autocorrelation.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.705329	Prob. F(2,14)	0.2174
Obs*R-squared	4.505581	Prob. Chi-Square(2)	0.1051

Table 4.7 Test for Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.795263	Prob. F(6,16)	0.1635
Obs*R-squared	9.254079	Prob. Chi-Square(6)	0.1598
Scaled explained SS	7.276159	Prob. Chi-Square(6)	0.2961