

Financial Repression and
Financial Development in Iraq
الكبح المالي و التطور المالي في
العراق

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Abstract

This paper examines the consequences of financial repression policies on financial development in Iraq during the period 1970-2002. Iraq as most the developing countries adopted the policies of financial repression as instruments to spur the development of financial sector. By using the Autoregressive Distributed Lag (ARDL) model, the paper finds that the repressive policies of financial sector failed in raising the development of financial sector. This fact suggests that the Iraqi policy-makers have to give up of the repressive policies in order to set up a sophisticated financial system that could drive the economic development in the country. As well as more bank branches need to be established with more autonomy and adequately allocated over the country to stimulate financial deepening.

المخلص :

هذا البحث يختبر نتائج سياسات الكبح المالي على التطور المالي في العراق خلال المدة 1970-2002. العراق مثل معظم الدول النامية تبني سياسات الكبح المالي كأدوات لتعزيز تطور النظام المالي. من خلال استخدام نموذج الانحدار الذاتي للابطاء الموزع ARDL , البحث وجد بأن السياسات الكبحية للقطاع المالي فشلت في زيادة تطور القطاع المالي. هذه الحقيقة تقترح على صانعي القرار الاقتصادي و السياسي في البلد ان يتخلوا عن تلك السياسات الكبحية من اجل اقامة نظام مالي متطور قادر على تحفيز و قيادة عملية التنمية الاقتصادية في البلد. بالاضافة الى ذلك, المزيد من فروع المصارف بحاجة ان تفتح مع المزيد من الاستقلالية و على ان توزع بشكل ملائم في كافة مناطق العراق لغرض تشجيع العمق المالي.

Keywords: *financial repression, financial development, Iraqi financial sector, ARDL.*

ARDL المصطلحات الأساسية : الكبح المالي, التطور المالي, القطاع المالي العراقي,

JEL Classification: *E44; C33; O53.*

1. Introduction

There is a consensus among researchers now that a sophisticated financial sector plays key role in promoting the economic growth. Different

financial policies have been launched in order to create a well functional financial system. The repressive financial policies were largely used by governments of developing countries aftermath they got their independence during the first half of the last century. These policies were affected by the thoughts of John Maynard Keynes, where the economic theory from the 1903s to the 1970s was dominated by his thinking. The liberalized financial policies are the other approach which used by different countries to improve the efficiency of financial sector. This approach was affected by the thoughts of Shaw (1973) and McKinnon (1973).

The financial repression policies include (Beim and Calomiris, 2001, p 47) : (i) imposing ceilings of interest rates, (ii) imposing high reserve requirements on banks, (iii) directing bank credit, (iv) owning banks by governments, (v) restricting entry into financial industry especially by foreigners, and, (vi) restricting international capital inflows and outflows.

The objective of the paper is to measure and assess the financial repression policies which were adopted by the Iraqi monetary authority during the period 1970-2002. It also aims to gauge the effect of these policies on the financial development in Iraq.

The paper tests the hypothesis that (financial repression policies stimulated the financial development in Iraq).

After the introduction in section 1, section 2 discusses the theoretical viewpoints of the advocate and opposite of financial repression, section 3 presented the empirical literature related to financial repression for different case studies. Section 4 analyses the trend of financial repression and financial development in Iraq, section 5 introduces the econometric model and data sources. Section 6 interpreting the results, and, section 7 presents the conclusions and recommendations.

2. Theoretical Literature on Financial Repression

2.1. Advocates Viewpoint

Keynes (1937), Tobin (1965) and their followers believe that financial repression policies lead to higher savings, investment and economic growth through monetary expansion and controlling of interest rates.

Keynes (1937) believed that the financial systems need careful management; otherwise, they could disrupt economic activities quite seriously. Keynes introduced the concept of a 'liquidity trap' that sets a ceiling to the nominal interest rate. When a trap is binding, the real interest rate exceeds the equilibrium level consistent with full employment, and planned savings exceed planned investments. This

disequilibrium is resolved by a decrease in real income in turn reduce savings to equal investments.

Keynes argued that individuals save money for three major purposes: (i) to bridge the gap between planned receipts and expenditures; (ii) as a precaution against unexpected billings; and (iii) for speculative purposes, in case the market value of any alternative assets fall.

The latter purpose determines whether individuals save money or investing them with alternative assets such as government annuities. This involves paying a fixed dividend based on the market interest rate, which reflects both the desire to maximize wealth and the opportunity cost of holding money as the expected gains from the annuities and vice - versa.

$$P_c = D / i \dots\dots\dots I$$

P_c : market price of the consol i : expressed as a proportion rather than a percentage

D : fixed dividend or coupon

The speculative motive for holding money arises from the desire to maximize wealth. As long as expected capital losses are not sufficient to offset the coupon income from the consol, individuals continue to keep all their investment portfolios in consols. However, if capital losses are expected to be large enough to more than wipe out the coupon income, money is clearly more attractive than consols as a form in which to hold one's wealth. This means that the demand for speculative money balances is produced by an expectation or fear that the percentage fall in the market price of consols will exceed the current market rate of interest. When the interest rate is low, a relatively small percentage drop in the market price of consols will wipe out interest earnings. With higher interest rates, the percentage fall in the market price of consols has to be more substantial for interest earnings to be completely offset. Thus, the incentive for individuals to hold speculative money balances as opposed to consols is greater the lower is the interest rate (Fry, 1988, p8).

Higher annuities and lower interest rates would create an increase in the money supply above the liquidity trap interest rate. Such an increase would be the result of individuals' desires to hold more coupons to avoid capital losses. They therefore reflect higher liquidity preferences. The alternative to this is an interest rate ceiling to be imposed by authorities, maintaining fixed price levels so that an expansionary monetary policy could stimulate investments. Yet a major objection to this approach is the inflationary consequences of monetary expansions on macroeconomic

stability.

Further justification for financial repression was derived from the assumption of perfect substitutability of money and “productive” capital in Tobin’s monetary growth model. This model stipulates that the return on capital rises relative to the return on money, such circumstances encourage a shift from money to capital in household portfolios, higher capital-to-labor ratios, and increased labor productivity (Tobin, 1965). Tobin’s approach is expressed in a money and growth model that allocates wealth between money and productive capital for the overall economy (household and private sector). This can be expressed as follows:

$$\left. \begin{aligned} M_d &= (b_{10} + b_{11}r + b_{12}\pi)W \\ K_d &= (b_{20} + b_{21}r + b_{22}\pi)W \end{aligned} \right\} \dots\dots\dots 2$$

M_d = money demand

K_d = productive capital demand

r = real return on productive capital

π = inflation rate

In this case $(r + \pi)$ equals the nominal interest rate (i) and constitute the opportunity cost of holding money. The opportunity cost of holding money is the forgone return which could have been obtained from holding productive capital. The six coefficients are subject to two restrictions derived from the fact that the equation 2 represents a complete system of demand equations. The first is that $b_{10} + b_{20} = 1$, if both $(r + \pi) = 0$. The second is that $b_{11} + b_{21} = 0$ and $b_{12} + b_{22} = 0$.

Yet a consensus existed that the yield on money holdings reflected economic growth. It was also agreed that the credit supply should be considered through the distinction between “inside money” (credit to the private sector) and “outside money” (backed by loans to government) - as it is not matched by an increase in private sector liabilities and does not finance private investment (Gurley and Shaw, 1960). Higher inflation would therefore reduce incentives for money-holdings and therefore also reduce the funding available for private investments. A portfolio shift from money to inflation hedges reduces productive investment and hence economic growth.

(Fry, 1997) argue that the central implication of this reasoning is that reducing the rate of return through an optimal level of inflation (each of which serve as a tax on real money balances) can increase the rate of economic growth. Tobin emphasized that the rate of economic growth

accelerates as the capital / labor ratio increases, demonstrating the need to reduce the return on money holdings.

Tobin advocated monetary expansion and "inflation tax" as a mean to finance growth. This model discouraged households' monetary holdings, substituting them for productive capital. Tobin however used a narrow definition for money that altered his findings. Failing to take into consideration further ingredients such as inflation hedges and government backed loans.

Beside those two advocates, Joseph E. Stiglitz (1993, p 20), argued that since the financial markets are significantly different from other markets and are more prone to failure. Then they are required some level of government intervention (repressive financial policies) to protect them of the vulnerable or failure and to improve the efficiency of the financial institutions and markets. Financial repression can be used as the basis of an incentive scheme to encourage higher savings and more efficient allocation of capital. The government can set up a contest so that who perform well (as measured by, say, export) get more access to capital (p 41).

In his other paper he added that the recently increased frequency of financial crises was closely associated with financial market liberalization in developing countries Stiglitz (2000). This implies that an amount of financial repression is required in order to discipline the financial market.

2-2 Opposite View (Theory of Financial Liberalization)

McKinnon (1973) and Shaw (1973) were the first who criticized the policies of financial repression within their famous books. They ascribed the poor performance of investment and economic growth in developing countries to the policies of financial repression listed above. Those restrictions were associated with low savings, credit rationing and low investment. In order to overcome the deleterious effects of financial repression policies, they propounded instead the financial liberalization thesis, which can be succinctly summarized as amounting to freeing financial markets from any governmental intervention and letting the market forces determine the allocation of credit.

McKinnon's formal analysis of how the real deposit rate of interest affects savings, investment, and economic growth is based implicitly on an outside money model. Thus, potential investors must accumulate money balances prior to their investment. The lower the opportunity

cost¹ of accumulating real money balances or the higher the real deposit rate of interest lead to greater incentive to invest. McKinnon (1973) relied on the following function for money demand in his interpretations.

$$M/P = F(Y, I/Y, d - \lambda^e) \dots\dots\dots 3$$

Where: M is money stock (say M_2), P is the price level, Y is real GNP, I/Y is the ratio of gross investment to GNP, and $d - \lambda^e$ is the real deposit rate (d is the nominal deposit rate and λ^e is expected inflation rate).

This function expresses that the demand for money is a function to real interest rate of deposit at a given level of output. Hence, a lower real deposit rate of interest encourages household to hold other forms of wealth rather than deposits that would be used to finance productive investment. Consequently, the accumulation of productive capital will slow down, so reducing the rate of economic growth (Fry, 1988, 38).

On the other hand, Shaw (1973) based his analysis on the debt-intermediation hypothesis which is firmly constructed on inside money model. It produces a demand for money function that can be formed as follows (Shaw, 1973, 62) :

$$M/P = F(Y, v, d - \lambda^e) \dots\dots\dots 4$$

Where v is a vector of opportunity costs in real terms of holding money. Shaw expects real yields on all forms of wealth, including money, to have a positive effect on the savings ratio (Shaw, 1973, 73). Shaw focuses on the role of deposit accumulation in expanding the lending potential of financial intermediaries. According to (Molho, 1986) higher deposit rates encourage the inflow of deposits to banks, which in turn can increase lending, thereby stimulating externally financed investments. Shaw maintains that expanded financial intermediation between savers and investors resulting from financial liberalization and financial development increases the incentives to save and invest; it also raises real returns to savers and at the same time lower real costs to investors by accommodating liquidity preference.

Although the Shaw and McKinnon theses emphasize different aspects of the process of accumulation of financial assets and liabilities, however, these theses should be viewed as complementary rather than competing theories. The two approaches complement each other because most projects are financed in part with own funds and in other part with borrowings (Molho, 1986, 111).

In these models, nominal interest rate controls inhibit capital

¹ The opportunity cost is between money and physical capital according to the complementarily hypothesis of McKinnon.

accumulation because they reduce the real rate of return on bank deposits, thereby, discouraging financial savings (Demetriades and Luintel, 1997, 312). It is also argued that low or even negative real interest rates inhibit economic growth not only by reducing the volume of investment but also by lowering the productivity of capital (World Bank, 1989).

3- Empirical literature on Financial Repression

There are many studies have examined the effects of financial repression on financial development with different countries as case study. Demetriades and Luintel (1996, 1997) provided evidences that financial repression in India had negative influences on financial deepening during the period 1960-1991. A study for Mauritius, (Kankee, 2006) found that the government controls over financial variables have inhibited financial sector development. Yiping Huang and Xun Wang (2010) examined the impact of financial repression on economic growth in China and their empirical results emphasized that financial repressions impede economic growth probably through inhibition of financial development. According to Capiro *et al* (2001) economic growth in many countries has declined gradually under financial repression. In these countries, financial systems have contracted and the efficiency of their lending remained low, eventually leading to widespread bank insolvencies. Oosterbaan *et al*, (2001) cited that financial repression leads to a fall in available loans. Hence the restrained and controlled financial sector discourages both savings and investments because the interest rates are set at a level which contradicts with the level that could be determined in a competitive market. Reinert *et al*, (2009) mentioned that in a repressed system, financial mediators fail to channel savings to productive investments.

Hachicha (2005) studied the impact of banking sector controls on financial deepening in Tunisia and empirically found that the financial repression has significant and negative effect on financial development in Tunisia.

At the same vein, several empirical studies found positive nexus between financial liberalization and financial development. This implicitly meant that financial repression has impeding role on financial development because of the financial liberalization thesis is always introduced as a corrected approach of financial repression as suggested

by McKinnon-Shaw thesis. The investigations on financial liberalization and financial development relationship can be found in the studies that carried on by for instead, Fry (1997), Odhiambo (2005), Laurenceson and Chai (1998), and many others.

4- View of Financial Repression Trends in Iraq

Aftermath the nationalization decree of financial system in Iraq in July 1964, the monetary authority strived to improve the efficiency of financial institutions by adopting repressive financial policies. These policies mainly represented by that the state-owned banks only undertake banking activities, administrative interest rates, directed credit to state-owned enterprises, and high reserve requirement ratio. The Iraqi financial system was partially liberalized in 1991 via allowing the domestic private sector to set up and run banking activities.

However, the two largest state-owned commercial banks, viz. Rafidain Bank and Rasheed Bank, controlled the banking sector by holding a considerable amount of the total assets, total deposits, and total credit of the commercial banking system through their large network of branches, as shown in Table 1.

Table 1 : Selected Indictors of Commercial Banking System in Iraq : 1990 - 2002

Year	Total Assets		Total Deposits		Total Credit		Number of Branches	
	SOBs	POBs	SOBs	POBs	SOBs	POBs	SOBs	POBs
1990	24252	00	21551	00	3426	00	249	00
1995	452407	18479	386360	15387	142294	3299	311	23
2000	1191132	362098.6	1251872	90528.6	316514.9	78029.9	313	128
2002	2066151	1125042	2588771.4	229553.1	557574.7	103290.6	316	132

(ID million)

Note : SOBs = State-Owned Banks; POBs = Privately Owned Banks.

Sources : Authors' estimates based on the Annual Reports of Iraqi banks - several years

The Central Bank of Iraq (CBI hereafter) was empowered to

administratively determine the interest rates on deposits and credit. The spread² was highly enlarged during the period of study 1970-2002, which increased from 1.5 % in 1970 to 8 % in 2002 as shown in table (2). It seems that the Iraqi banks achieved high proportion of profit especially during the period from 1995 to 2002.

But the reality was just the opposite. This is because the state-owned commercial banks were forced to hold a considerable amount of their loanable funds in the form of treasury bills and government securities. The largest state-owned commercial banks namely Rafidain Bank and Rasheed Bank held respectively, 77 per cent and 55 per cent of their total loanable funds in the form of treasury bills in 2000 (Rafidain Bank, 2000) and (Rasheed Bank, 2000).

Table 2 : Spread of Iraqi Commercial Banks : 1970-2002 (%)

<i>Year</i>	<i>Interest Rate on Short - Term Credit</i>	<i>Interest Rate on Savings Deposits</i>	<i>Spread</i>
1970	6	4.5	1.5
1975	6	4.5	1.5
1980	6	4.5	1.5
1985	9	6	3
1990	11	7	4
1995	20	10	10
2000	20	10	10
2001	18	10	8
2002	18	10	8

Source : Authors' estimates based on the, Central Bank of Iraq, *Annual Bulletins*, Department of Statistics and Research, Baghdad, Various Issues.

On the other hand, Table 3 shows that the depositors had received negative interest rate due to the high rates of inflation which were aggravated during the economic sanctions imposed from 1990 to 2003. The negative rate of interest on deposits encouraged Iraqis to hold real assets and foreign currencies (especially US dollar) instead of financial assets (deposits) in order to maintain the real value of their wealth. Factors other than the unattractive interest rates, i.e. weak banking culture and low banking density, also seemed to have encouraged the Iraqis to keep their surplus funds away from the banks.

Table 3 : Real Interest Rate in Iraq: 1970-2002 (%)

<i>Year</i>	<i>NDR</i>	<i>INF</i>	<i>RDR</i>
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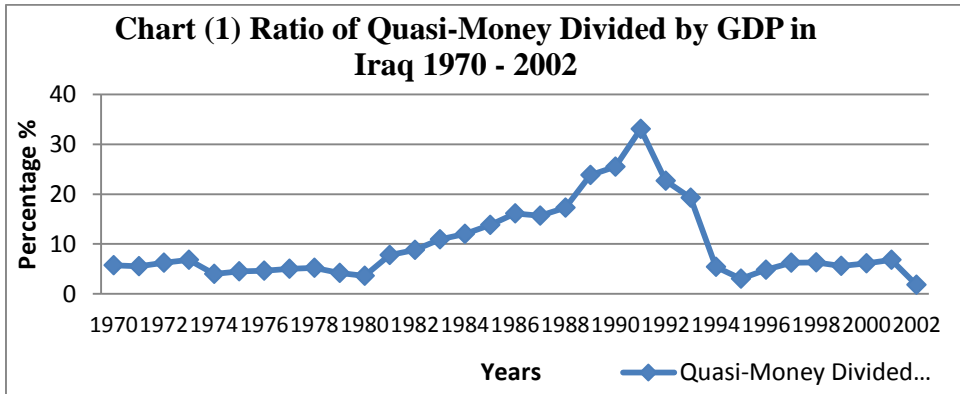
² Spread is the interest earned, less interest expended by banks.

1970	4.5	12	-57.6
1975	4.5	11	-54.1
1980	4.5	22	-76.1
1985	6	4	40
1990	7	52	-84.9
1995	10	351	-96.8
2000	10	5	83.3
2001	10	16.4	-36.7
2002	10	19.3	-45.8

Note : The Nominal Deposit Rate (NDR) of interest is measured by the official savings deposit rate.

The Inflation rate (INF) is measured by average growth of consumer price index (1988=100).

The Real Deposit Rate (RDR) is



Source : Author's estimation based on the data from :

- Central Bank of Iraq, Annual Bulletins, Department of Statistics and Research, Baghdad, Various Issues.

The CBI also made use of the credit planning policy to control credit allocation to the economy. Table 4 reveals that this policy of allocating credit to high return investments also did not achieve its goals. Most of the loanable funds of Iraqi banks were channeled either to the state-owned enterprises or to finance the government budget deficits through holding treasury bills. The same table 4 shows also that the private sector projects had received only a smaller share of total loanable funds.

Table 4 : Allocation of Loanable Funds by Iraqi Commercial Banks : 1970 – 2002

(ID million, Percentage)

Year	Loanable Funds Allocated to			Total Loanable Funds (4)	Ratio 1/4	Ratio 2/4	Ratio 3/4
	Private Sector (1)	Public Sector (2)	Treasury Bills (3)				
1970	87	47	30	164	53.1	28.6	18.3
1975	116	796	33	945	12.3	84.2	3.5
1980	409	1090	5	1504	27.3	72.4	0.3
1985	365	1365	6271	8001	4.6	17.1	78.3
1990	285	3140	13762	17187	1.6	18.3	80.1
1995	6101	139492	165445	311038	2	44.8	53.2
2000	170004	168184	815344	1153532	14.8	14.5	70.7
2001	243821	150723.8	753780.4	1148325.2	21.2	13.1	65.6
2002	312200	348665.3	1149704.0	1810569.3	17.2	19.2	63.5

Source: Authors' estimates based on Central Bank of Iraq, Annual Bulletins, Department of Statistics and Research, Baghdad, *Various Issues*.

The Iraqi commercial banks achieved a low level of profitability based on this pattern and policy of funds allocation. Loans to the state-owned enterprises were advanced between 6.5 to 8.5 per cent rate of interest (CBI, 2003, p15); whereas, the government paid only 6 to 7 per cent rate of interest for treasury bills held by the banks (Al-Shama`a, 2002, p 32). At the same time, banks paid higher rates of interest on the deposits which varied from up to 10 per cent for savings deposits and 15 to 18 per cent for two-year time deposits annually (CBI, 2003, p15). Hence, the financial intermediation of the Iraqi banking system was lopsided during the financial repression period as measured by the credit to private sector divided by GDP (Sanhita and Khalaf, 2008, p 16).

Financial intermediation in Iraq was further aggravated because the statutory reserve requirements were set at a high ratio of 42 per cent. As this ratio increases, banks' capacity for lending decreases at a certain level of deposits. This is due to the banks having to keep some amount of their deposits in the form of statutory reservations at the central bank without return. The loanable funds of banks will therefore be reduced. The profitability of banks was further reduced because the reserve requirements yielded zero-rate of interest.

5. Model, Data Source and Methodology

5.1. Model and Data Sources

Guided by the writings of Demetriades and Luintel (1996), Demetriades and Luintel (1997), Laurenceson and Chai (1998) and Jankee (2006), and

taking into account the constraints relating to data availability we estimate the following model.

$$\text{DEEPth} = f(\text{RGDP}, \text{BD}, \text{FRI}) \dots\dots\dots 5$$

Financial development is proxied with the variable DEEPth, which is defined as credit to private sector divided by the nominal GDP deflated by the average CPI^a ³. This measure is frequently used in the analysis as a proxy of financial development. It reflects the efficiency of banks to direct the loanable funds into productive investments of private sector.

The economic growth (RGDP) is measured as the real GDP per capita. This variable is widely used in the literature as a proxy for the level of real income and economic growth of an economy (*see* Demetriades and Hussein, 1996; Demetriades and Luintel, 1996, 1997; Laurenceson and Chai, 1998; and Jankee, 2006). It is assumed to have a significant positive effect on financial deepening. Robinson argued that financial development follows economic growth, and articulated this causality argument by suggesting that “where enterprise leads finance follows” (Robinson, 1952, p 86).

Banking density (BD) is calculated by dividing the population by the number of bank branches. This variable reflects the appropriate spread of banks’ branches throughout the country. According to the Structuralist School, the expansion in the structure of the financial system, such as an increase in the number of financial institutions and in the array of financial instruments, will have a beneficial effect on the savings-investment climate, and, hence, on economic growth (Goldsmith, 1969). This proxy has been used as a determinant of financial development in several studies (Demetriades and Luintel, 1996, 1997; Laurenceson and Chai, 1998; and Jankee, 2006).

Financial repression index (FRI) is used to gauge the effect of financial repression policies on financial development. For our index, we may organize the data concerning four aspects of financial repression, *viz.* (i) interest rate controls, (ii) ratio of public sector credit, (iii) ratio of public sector deposits, and (iv) real interest rate on deposits. Interest rate control is calculated by using a dummy variable that is assigned a value of 1, if the

³ Financial development is computed using the formula : $FD = [(Y_t / CPI_t^e + Y_{t-1} / CPI_{t-1}^e) * 0.5 / (GDP_t / CPI_t^a)] * 100$: where Y is the quasi money, CPI_t^e is the end of the year consumer price index, CPI_t^a is the average consumer price index, and, GDP is the gross domestic product. (ESCWA, 2005, P22).

control is present, if it is not, it is 0. Therefore, the period from 1970 to 2002 is assigned the value of 1. Second and third measures capture the share of public sector from the credit and deposits related to the private sector. Following Agarwala (1983) , Roubini and Sala-i-Martin (1992), and Huang (2010) we set real interest rate on deposits (RID) to 0 if real interest rate is positive and to 1/2 if real interest rate is negative but higher than minus 5% and to 1 if real interest rate is lower than minus 5%.

In order to construct a single index of financial repression policies, we use the statistical method of 'principal component'. Principal component analysis linearly transforms a set of positively correlated variables into a new, smaller set of variables which are termed as principal components. These principal components are not correlated with one another and are ordered in terms of the amount of variance in the original variables they explain. Therefore, the first principal component frequently explains the vast majority of variances in the initial set of variables. Data on financial repression index is given in the Appendix One.

The data about GDP, population, inflation, general price index, total deposits, banks' branches, interest rates, and credit allocation are obtained from various issues of the Central Bank of Iraq Annual Reports, Annual Reports of Iraqi commercial banks, and Annual Statistics Abstract of the Ministry of Planning. All the variables in the data set are expressed in natural logarithms, and the annual observations and time-span of the study ranges from 1970 to 2002. The choice of annual data is prompted by the fact that most of the available data are reported annually.

5.2 Econometric Methodology

The methodology of this study is designed to evaluate the impact of the financial repression on the financial development in Iraq. This study utilizes the Autoregressive Distributed Lag (ARDL) approach to cointegration as outlined by Pesaran and Pesaran (1997) and Pesaran and Shin (1998). This approach examines the hypothesis that financial repression leads financial development as proposed by Keynes (1937), Tobin (1965) , and Joseph E. Stiglitz (1993, 2000). The ARDL model has been chosen here because it has numerous advantages. Firstly, it can be applied irrespective of whether the individual repressors are integrated to the order of I(0) or I(1), regardless of stationarity. Secondly, the ARDL model takes a sufficient number of lags to capture the data generating

process from a general to specific modeling framework: Laurenceson and Chai (2003). Thirdly, the ARDL approach yields superior estimates of long-run coefficient, and the diagnostic tests of the estimated equation are more reliable (Gerrard and Godfrey, 1998, p 235 and Laurenceson and Chai 1998, p 405). Fourthly, from the ARDL model, one can derive a dynamic error correction model (ECM) through a simple linear transformation (Banarjee *et al*, 1994, pp 50-52).

The ECM also helps us to measure the short-run relationship among the model's variables. Finally, the ARDL model is a more appropriate measure in the case of a smaller sample. Since the sample size of our study is limited to 33 observations, it provides more motivation for the study to apply the ARDL approach for analysis. Based on Equation (5), we establish our ARDL model as follows:

$$\Delta LDEEPTH = \alpha_0 + \sum_{i=1}^p \beta_1 \Delta LDEEPTH_{t-i} + \sum_{i=1}^p \beta_2 \Delta LR GDP_{t-i} + \sum_{i=1}^p \beta_3 \Delta LBD_{t-i} + \sum_{i=1}^p \beta_4 \Delta LFRI_{t-i} + \lambda_1 LDEEPTH_{t-1} + \lambda_2 RGDP_{t-1} + \lambda_3 LBD_{t-1} + \lambda_4 LFRI_{t-1} + \mu_t$$

..... 6

Where Δ =1st difference of a variable,
 α_0 is a constant,

p is a maximum lag order,
 β_1, \dots, β_4 represent the short-run coefficients (error correction dynamic),
 $\lambda_1, \dots, \lambda_4$ correspond to the long-run relationship,
 i time trend, and,
 μ_t is the white noise error.

The implementation of the ARDL approach involves two stages. First, the existence of the long-run relation (cointegration or co-movement) between variables under investigation is tested by computing the F -statistics to analyze the significance of the lagged levels of the variables. Pesaran *et al* (1999) and Narayan (2004) have provided two sets of appropriate critical values for different numbers of regressors (variables). This model contains an intercept or trend or both. One set assumes that all the variables in the ARDL model are of $1(0)$, and another assumes that all the variables are $1(1)$. If the F statistic lies above the upper-bound critical value for a given significance level, the conclusion is that there is a non-spurious long-run level relationship with the dependent variable. If the F -statistic lies below the lower bound critical value, the

conclusion is that there is no long-run level relationship with the dependent variable. If it lies between the lower and the upper limits, the result is inconclusive. The general form of the null and alternative hypotheses for the *F*-statistic test is as follows:

$$H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$$

$$H_1: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq 0$$

Secondly, if the cointegration between variables is identified, then one can undertake further analysis of long-run and short-run (error correction) relationship between the variables.

6. Empirical Results

6.1. Unit Root Test

The Augmented Dickey-Fuller (ADF) test was carried out to investigate the stationarity (the presence of unit roots) in all the variables included in Equation (5). This test examined the null hypothesis that the considered variable has a unit root (non-stationary) *versus* the alternative hypothesis that the variable is stationary. The ADF test results presented in Table 5 clearly reveal that all the variables under investigation are integrated at order 1, I (1), i.e. they become stationary after first differencing.

Table 5 : Results of Unit Root Test

ADF			
Variables	Levels	1 st Differenced	Status of Integration
LDEEPH	-1.49	-3.53 **	I(1)
LRGDP	-1.26	-2.70 ***	I(1)
LBD	-3.02	-4.75 *	I(1)
LFRI	-2.20	-4.51 **	I(1)

Notes : 1. Critical values follow the MacKinnon (1996) one-sided p-values.

2. One, two and three asterisks indicate statistical significance at 1%, 5% and 10% levels respectively.

Source : Author's estimation by using EViews 7 program.

In the first stage of the ARDL analysis, we test for the presence of long-run relationship between the variables under investigation. This is done by computing the *F*-statistic for testing the significance of the lagged levels of the variable in the error correction form of the underlying ARDL model. Given the fact that we use annual time series data and the limited number of observations (33), we then allow the ARDL model to be lagged by a maximum of one time period. This level of lag is obtained by lag length applicable by the EViews Package by using Akaike information criterion AIC and Schwarz information criterion SC. Table 6 reveals the existence of long run relationship among the variables due to the estimated *F*-statistic and *W*-statistic is greater than the upper bound at 95% level.

Table 6 : F-statistic and W-statistic of ADRL Model to cointegration

Estimated F-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
5.8479	3.6087	4.9212	2.9564	4.0613
Estimated W-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
23.3915	14.4348	19.6848	11.8255	16.2450

Source: Author estimation by using Microfit 5 package.

We also apply the Johansen-Juselius approach for cointegration test in order to confirm our above analysis. Table 7 provides extra evidences of the existence of long-run relationship among the variables based on Trace test and Max test.

Table 7: Johansen-Juselius Test of Cointegration

Null Hypothesis	Estimated Statistic Tests		Critical Value 5%	
	Trace	Max	Trace	Max

r= 0	53.40594**	21.30506	47.85613	27.58434
r ≤ 1	32.10088**	14.52804	29.79707	21.13162
r ≤ 2	17.57284**	11.17472	15.49471	14.26460
r ≤ 3	6.398121**	6.398121**	3.841466	3.841466

Notes :

- 1- The results obtained by using the EViews 7 package.
- 2- r stands for the number of cointegration vectors.
- 3- *, **, and *** denoted significantly at 1% , 5%, and 10% level of significance respectively

6.2 Analysis of the Results

We turn now to estimate the long-run and the short-run coefficients. The results of table 8 estimate the long-run relationship between the financial development (DEEPTH) as dependent variable our ARDL model are presented in the following tables.

Table 8 : Long-Run Estimates of ARDL Model

<i>Regressor</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-value</i>	<i>p-value</i>
LRGDP	1.0833	0.16338	6.6305	[0.000]
LBD	0.61910	0.96954	0.63854	[0.529]
LFRI	-4.2888	0.94417	-4.5424	[0.000]
CONST	3.2495	8.5265	0.38110	[0.706]

Note : Dependent variable is LDEEPTH and ARDL model (1,1,0,0) is selected based on Schwarz Bayesian Criterion.

Table 8 shows the results of the long-run relationship between the dependent variable (DEEPTH) and the other regressors. All the independent variables have the expected signs. The real GDP per capita expressed high affect on the financial development with positive and statistically significant coefficient. This means an increase in 1% of real per capita GDP rise the financial development with 1.08% long run. This statement emphasizes the Robinson hypothesis of the demand – following hypothesis, which state that as the real side of the economy develops, its demands for various new financial services materialize, and these are met rather passively from the financial side.

The financial repression index exhibits the expected negative sign and statistically significant. This implies that the financial repression policies undermined the financial depth in Iraq. An increase in 1% of financial repression index reduces the financial development by 4.28%, and this case held up the financial system to be an engine to economic growth in the country.

However, the banking density variable reveal the expected sign but statistically insignificant. In other words, this variable did not exhibit any effect on financial deepening in the long-run in the case of Iraq. This means that the banks allocations over the country did not help in improve the financial services since most of the bank branches concentrated in the main cities of the country and this hindered the banks of providing more credit to private sector.

Table 9 : Error-Correction Estimates

<i>Regressor</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-value</i>	<i>p-value</i>
Δ LRGDP	-.65606	.15814	-4.1487	[.000]
Δ LBD	.29371	.45430	.64651	[.523]
Δ LFRI	-2.0346	.43929	-4.6316	[.000]
Δ ECM(-1)	-.47441	.081031	-5.8546	[.000]
R² = .73465		R-Bar-Squared = .68362		
S.E. of Regression = 30438		F-stat. F(4,27) 17.9958[.000]		

Note : ECM-ARDL (1,1,0,0) is selected based on Schwarz Bayesian Criterion.

Table 9 presents the results of error correction of the ARDL approach and the short-run relationship of the variable as well. The results reveal unsurprisingly that the real GDP per capita has appeared with a negative sign, and is statistically significant. This implies that the real GDP per capita is not an essential determinant of financial depth in Iraq in the short run. This also means that the increases in the real per capita GDP dot come from the financial development

since more of the loanable funds were granted to the public sector, and the national income largely materialized from the oil revenues in Iraq.

The financial repression index has the expected negative sign and is statistically significant. It shows that an increase of 1% of financial repression index reduces the financial development in 2.03 per cent. This is again confirming the depressing effect of financial repression policies on financial development. This fact consists with the literature led by Shaw (1973) and MacKinnon (1973) which stressed the negative effect of financial repression on financial development. The banking density variable is statistically insignificant, which also suggests that this variable is not conducive to promoting financial deepening in the country.

According to Banarjee *et al* (1998), a highly significant error correction term is a further proof of the presence of a stable long-run relationship between the variables. Hence, Table 9 shows that the coefficient of error correction term ECM-1 is statistically significant with the expected negative sign. This confirms, once again, the existence of cointegration between the variables of our model. The coefficient of ECM-1 is -.47441 per cent, which indicates that the specified relationship returns to equilibrium relatively fast. That is, -0.47 per cent of the disequilibrium in the previous year is corrected in the current year.

7. Conclusion and Policy Implications

An attempt has been made in this paper to assess the impact of the policies of financial repression (1970 to 2002) on the financial development of Iraq. The initial investigations of this study revealed that the financial development in Iraq was low during the entire period from 1970 to 2002. This simply implies that the strategy of financial repression did not contribute to spur the financial development in Iraq.

In order to verify this fact, we applied a more robust econometric technique, *viz.* the ARDL model. The findings of the ARDL analysis suggest that the financial repression index negatively affected the financial development in Iraq

through the policies of interest rate controls and directed credit allocation. The econometric analysis also shows that the banking density in Iraq has not contributed to financial deepening, due mainly to the inappropriate allocation of banks which are mostly concentrated in the main cities.

The findings of this study therefore reject the hypothesis, which states that financial repression stimulates financial development in Iraq.

Therefore, an effort is necessary required to remove the repressive policies of financial sector in order to enhance the financial depth in Iraq, and the gradual approach is more appropriate than the shock therapy approach for the unique situation in Iraq.

Appendix 1 : Proxies of financial repression index

<i>Years</i>	<i>IRC dummy</i>	<i>PCR</i>	<i>PDR</i>	<i>RID dummy</i>	<i>FRI</i>
1970	1	35	32.4	1	29.25
1971	1	46	33.2	0.5	35.01
1972	1	45	31.6	0.5	33.89
1973	1	49	38.8	0.5	38.73
1974	1	72	39.4	0.5	49.19
1975	1	87	41.5	1	56.54
1976	1	81	43.7	0.5	55.02
1977	1	75	45.5	1	52.91
1978	1	69	52.6	0.5	53.48
1979	1	71	58.3	1	56.59
1980	1	73	58.8	0.5	57.90
1981	1	70	58	0.5	56.23
1982	1	66	56.4	0.5	53.77
1983	1	67	57.4	0.5	54.64
1984	1	74	57.6	0.5	57.83

1985	1	79	55.3	0	59.28
1986	1	74	43.9	0	52.20
1987	1	88	46.5	0.5	59.32
1988	1	92	43.1	0.5	59.64
1989	1	96	40.5	0.5	60.31
1990	1	92	37.8	1	57.18
1991	1	96	49.0	0.5	63.93
1992	1	95	38.7	0.5	59.10
1993	1	93	30.1	0.5	54.55
1994	1	94	41.2	0.5	59.72
1995	1	96	52.0	0.5	65.21
1996	1	93	46.2	0.5	61.41
1997	1	90	44.2	0.5	59.22
1998	1	86	45.4	1	57.75
1999	1	63	48.5	0	49.28
2000	1	51	46.0	0	42.89
2001	1	38	50.3	1	38.54
2002	1	52	54.9	0.5	46.92

Note:

IRC= interest rate controls (dummy)

PCR =ratio of credit to public sector

PDR = *Ratio of public sector deposit*

RID = *real interest rate on deposit (dummy)*

FRI = the financial repression index. It is equal to $FRI_t = 0.671260*(IRC_t)+0.443772*(PCR_t)+0.425917*(PDR_t)+0.413607*(RID_t)$

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