

The Effects of Financial Liberalisation on Market Structure, Financial Intermediation & Savings Mobilization The Case of Sri Lanka

In early 1970s government heavily intervened in economic and monetary management. In Sri Lanka until 1977, like in several developing countries, the financial system was highly restrictive, characterized by severe credit and interest rate controls. However, by the mid 1970s most developing countries had realised that government interventionist policies in the financial system and in development had not produced results. These policies had disrupted the economies of many less developed countries. This situation was called "Financial Repression" by Mckinnon and Shaw (1973) who provided an alternative financial liberalisation paradigm. They argued that financial repression in developing countries had retarded economic growth.

To maintain a significant growth rate in an economy the banking sector can provide an efficient and valuable contribution to the needs of production sectors. After 1977, the Sri Lanka government introduced financial liberalisation, or financial sector reforms as an integral part of an economic policy package and the restrictions on credit and interest rates were eliminated and it created exceptional conditions for the finance and banking system to function effectively. The structure of the financial system and its role in savings mobilisation and intermediation has been analysed in many studies in Sri Lanka and overseas.

The main objective of the study is to examine the impact of financial sector reforms on savings mobilisation, financial intermediation and market structure in the formal banking sector in Sri Lanka within the framework of the Mckinnon-Shaw hypothesis.

Financial sector reforms helped to eliminate government intervention in the financial system and has led to financial deepening resulting in increased savings mobilisation. In particular, it has improved the efficiency of the financial system, resulting in lower intermediation margins, increased the flow of funds between various segments of the financial system, provided greater access to finance for hitherto marginalised borrowers and an increasing role for the financial sector (Aryeety, 1997).

Liberalisation resulted in a change in several policy variables, such as the interest rate structure, the structure of assets and liabilities of commercial banks, investment decisions by banks and the cost structure. We are testing the following financial liberalisation hypothesis: relating to an increase in savings mobilisation, a decline in intermediation margins, an increase in lending to previously neglected sectors of the economy and a decrease in the monopoly powers of banks.

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This study is organised as follows: It begins with an overview of the structural characteristics and financial sector reforms of the formal banking system in Sri Lanka. Section 3 mainly reviews the financial repression and financial liberalisation hypothesis following Mckinnon (1973) and Shaw (1973). Section 4, presents the methods of analysis and the data sources and the impact of financial liberalisation. Finally, section 5, deals with the concluding remarks and policy implications.

Structure of the Banking System and Financial Sector Reforms

2.1 Structure of the Banking System

The banking system in Sri Lanka can be divided into two sectors, i.e. formal and informal. In Sri Lanka the formal banking sector before 1977 consisted of the two state owned banks and eight foreign banks (which declined from 10 to 8 in 1970) and their limited number of branches, most of which were in the urban sector. As a result, over 75 per cent of the population had access to a restricted banking service and only limited transactions were possible. However, commercial banks had played a vital role providing finance to potential investors for a long time.

After 1977, in a broad sense, banking services have expanded rapidly with a wide range of new arrangements and products. Improvements to the banking services have been available to the rural sector, as well as to entrepreneurs in the metropolis. The new development policies emphasised the allocation of financial resources for short and long-term loan projects. Due to the new economic

policies the structure and the organisation of the banking sector broadened significantly. The new institutions included foreign commercial banks, development banks, finance companies and savings institutions. These banks are classified into two categories, and they are, commercial banks and non-bank financial institutions - NBFIs.

Prior to the liberalisation the financial system consisted of a limited number of government owned financial institutions and foreign commercial banks. After liberalisation many new commercial banks commenced operations under private ownership. Banking business was largely associated with new deposit mobilisation strategies. The State owned commercial banks have dominated deposit mobilisation and they still have a large share of total deposits. The approximate share of deposits of these commercial banks is 50-55 percent. Several new domestic and foreign commercial banks and their branches have expanded rapidly after 1977 throughout the island, except in the North and the East. Deposits in non-bank financial institutions have progressively increased since 1977 and at the end of 1999 their share was 47.2 percent of total deposits. They have provided loans and advances to key sectors of the economy and cleared the way for potential investors.

2.2 Legal Framework and Monetary Policies

A legal framework acts as a very strong and sufficient safeguard for the finance and banking system, it can contribute to efficient and better banking. The first major legislation was the Monetary Law Act of 1950, which established the Central Bank of Sri Lanka. Since then several new legislative enactments relating to the financial sector and covering a large area of the banking sector and as well as non-bank financial institutions have been passed. As a result in the period 1950-1988 the organisation and management procedures in the banks and financial institutions have improved considerably.

Before 1977, the intensive supervision of banks was not urgently needed. With new

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developments and the increasing complexity and sophistication of the financial system, it has become necessary to supervise and regulate the banks more closely. Moreover, non-bank financial institutions were also regulated and supervised by the Control of Finance Companies Act No. 27 of 1979 and the Finance Companies Act No. 78 of 1988. In addition, the Monetary Board of the Central Bank has issued a wide range of directives and rules for all non-bank financial institutions. With the ongoing process of financial sector reforms important legislative enactments and amendments were introduced and these included The Local Treasury Bills Ordinance, the Stock and Securities Ordinance, Insurance Act, The National Savings Bank Act and the Auditing and Accounting Standards Act.

2.3 Financial Sector Reforms in Sri Lanka

The two main components of the economy the public and private sectors have contributed to increase the growth rate rapidly by initiating new policy measures. Despite these new measures and the healthy performance of these two sectors severe frustrations and failures could be seen in our economy. This emphasises the need for well-balanced policies. Accordingly, the authorities had to use monetary policies which resulted in a more active and viable contribution to economic management. The monetary authority has deployed the instruments of monetary policy in a systematic manner taking into account the emerging financial problems.

In Sri Lanka the initial experience with monetary policy has revealed that there was limited scope for monetary management before 1977 in a restrictive economy. After liberalisation, monetary policy was freely used with the activation of a market economy. During the period 1977-1982 the authorities had to resort to a tight monetary policy as there were large inflows of foreign capital and considerable domestic borrowings by government and the private sector from the commercial banks. Furthermore, excess liquidity and the high liquidity in the market also eventually contributed to a sharp increase of the prices. The Central Bank used interest rates as a major monetary policy tool till 1988. While Bank rate, penal rates and statutory reserve requirements also significantly contributed to reduce the monetary expansion and the increase in prices.

However, some of these are conventional instruments were unable to mop up excess liquidity continuously. Therefore, the Central Bank recently began to use open market operations. Treasury Bills became the major monetary policy tool within the open market

operations framework. However, in the 1980s the Central Bank had reduced its holdings of Treasury Bills. After 1993 the Central Bank began to use repurchases of bills to influence market liquidity and interest rates. Meanwhile the Central Bank used its own securities in the mid of 1980s, 1993-94 and 1997 for open market operations.

There have been major changes in monetary policy since 1997. In any case, in some years monetary policy tools have been relaxed slightly due to the reduced inflationary pressures and has encouraged economic recovery substantially. But external and internal conditions have at times created numerous difficulties in the economy. It has at times, reduced statutory reserve requirements which increased bank liquidity and enhanced the supply of credit and reduced the cost of funds. With the use of monetary policy the Central Bank was able to do away with direct controls and move towards market oriented policy along with credit planning.

It is also important to note that government has been implementing these financial reforms within a very unstable macro economic environment since 1977. They are high rates of inflation, structural rigidities of the economy, devaluation of currency, large budget deficits, high government borrowing from the banking sector and balance of payments instability etc. Inflation has been high (except in a few years) even after liberalisation. In the 1970s inflation averaged from 5.9 percent in 1970 to 1.2 percent in 1977. However, price instability increased during the adjustment period with inflation ranging from 12.1 percent in 1978 to 9.4 percent in 1998. The budget deficit (before grants) as a share of the gross domestic product averaged 9.3 percent between 1970 and 1977. After liberalisation the budget deficit was 23.1 percent in 1980. Besides, during the period 1981-1989 the budget deficits were higher than 10 percent. Thereafter it declined gradually from 9.9 percent in 1990 to 9.2 percent in 1998. The share of public sector credit from banking system has followed a declining trend since 1995. The experience of Sri Lanka, as in the case of most developing countries, has revealed that continued adoption of an appropriate fiscal and monetary policy mix in the context of overall macro economic policies is essential to secure any positive results from economic liberalisation (Colombage, 1993).

3. A Review of Financial Repression and Financial Liberalisation Hypothesis

The financial sector can play a significant role in rapid and sustainable economic growth and development. However, the growing theoretical literature has not been able to provide a satisfactory framework for enhancing economic growth in most developing countries. The past experience in a number of less developing countries (LDCs) has revealed that government intervention approaches

in the financial systems and the development of new markets have been vigorously misdirected at the end of the 1960s. In the late 1970s, following liberalisation, McKinnon and Shaw (1973) provided a paramount paradigm instead of financial repression.

Low interest rates, through administered measures, did not make a successful contribution to increase deposits, while savings were confined to a narrow range of financial instruments. Government influence on interest rates on loans and deposits raised the demand and curtailed the supply of funds. According to Aryeety (1997) the unsatisfied demand for funds have forced financial intermediaries to ration credit by means other than interest rates, while the informal market develops uncontrolled rates.

Financial repression also leads to large differences between deposit and lending rates of interest (Shaw, 1993). Monetary authorities have also imposed high reserve requirements in most developing countries. Seek and Eilvil (1993) assert that the wide spread between lending and deposits rates can be viewed as an implicit tax through high reserve requirements on the banking sector by the monetary authority. Such high liquidity reserve requirements encourage crowding out of private sector investments. However, experience of most LDCs have revealed that prevalent financial repression causes widespread distortions and confusions and these were similar characteristics in the most LDCs financial systems.

Chirwa (1999) notes that the role of an efficient banking system in economic growth and development lies in savings mobilisation and intermediation. Banks as financial intermediaries channel funds from surplus economic units to deficit units to facilitate trade and capital formation. Thus Ncube and Senbet (1994) argue that an efficient financial system is not only required for domestic capital formation, but it also serves as a vehicle for gaining competitive advantages in the global market for capital.

In an efficient financial system interest rates function as the healthy instrument for depositors as well as borrowers. If the latter are charged reasonable interest rates for loans it means that the monetary authorities have recognised that the collection of deposits and the distribution of resources have been done in a satisfactory manner. The financial characteristics of LDCs imply that policy makers always intend to generate positive gains from the measures that they take. Many empirical studies show that the real deposit rate of interest positively influences the rate of accumulation of cash balances and a high deposit rate will generate

resources and encourage investment. Eventually investment and savings are thus encouraged and contributes to increase economic growth.

However, past financial reforms have revealed that difficulties have often to be confronted with. To avoid the misconceptions in regard to vital components in financial liberalisation packages McKinnon (1986), Abeyon (1997), World Bank (1989) have recommended key pre-requisites to the success of liberalisation, which include macro economic stability and adequate prudential supervision of banks. Liberalisation policies have created problems in many LDCs, such as sharp increases of interest rates, widespread bankruptcies of financial institutions, worsening inflation, widening external deficits and unstable exchange rates etc. In several instances governments have had to intervene to rescue collapsing domestic banks and re-impose controls on financial institutions.

Many studies have noted that liberalisation can lead to instability and inefficiencies of credit allocation in the financial system. Experience with liberalisation in many developing countries suggests that it promotes macro economy instability. The concept of financial repression employed in the literature appears to be too broad, encompassing both positive and negative aspects of government intervention in the financial markets, that may mask the need for institutional development (Chiwa, 1997).

Under these circumstances we expect several benefits from financial liberalisation for economic growth and development as on going measures in Sri Lanka.

First, financial sector reforms lead to financial deepening. This simple indicator is the money/GDP ratio, which measures monetization in the economy. Money is the principal instrument in payment and saving services.

Second an improvement of financial intermediation following financial liberalisation leads to reduced intermediation margins of the banking sector. Competitive financial markets play a crucial role and it provides for sound banking and financial market development. It helps to decrease the spread between deposits and lending rates.

Third, liberalisation gives the lead for a viable allocation of resources to various sectors. In a broad sense it is the financial markets that provide mechanisms for the flow of savings.

Fourth, financial liberalisation has a direct impact on local capital markets and creates new opportunities for enhancing savings and specialisation in investment in the economy. Aryeety (1997) notes that in this context financial liberalisation is expected to lead to a diminishing role of the informal financial sector.

Though countries have experienced difficulties in South America and Africa where liberalisation has ended in, disarray. A number of studies have suggested that financial liberalisation policies have been more successful in Asia than in the above countries. In particular macro economic instability has created many difficulties among these countries.

4. Empirical Evidence on the Financial Liberalisation Hypothesis

The data used in this analysis is for the period between 1970 and 1999, although financial sector reforms were initiated at the end of 1977. In our analysis to test the financial liberalisation hypothesis. We divide the data into two sub samples, the period before liberalisation (1970-1977) and the period after liberalization (1978-1999). We use the test of the difference between two means to establish the statistical significance of the changes in the performance impact of policy variables. Occasionally we have computed the simple correlation to determine the statistical association between variables.

4.1 Savings Mobilisation and Intermediation

The formal banking sector has been a successful mobiliser of funds. Among them the commercial banks have played a significant role in several areas along with other deposit-taking institutions and long term lending institutions. Total deposits of the formal banking sector have gradually increased throughout the whole period. The contribution of deposit taking institutions have grown rapidly mainly after 1977 following privatisation policies, when several private domestic commercial banks opened branches and expanded business islandwide, and this helped to raise the contribution of the formal banking system. The share of

business of the NBIs has grown considerably since 1986. The financial interrelation ratio (FIR) is defined as the ratio of deposits of non-bank financial institutions to deposits of commercial banks. FIR suggests the importance of the NBIs. The FIR averaged 36.2 per cent in the 1970s but in the 1980s had decreased to 30.9 percent and increased again to 32.7 percent in the 1990s. Table 1 presents the effect of liberalization on financial deepening, savings mobilisation and intermediation. Changes in the ratio of money supply (M1 and M2) to GDP reflects the degree of financial deepening.

The ratio of M1 to GDP fell from 14.71 to 13.08 per cent in the period before 1970. But the ratio of broad money supply (M2) to GDP increased significantly at 01-per cent levels from 23.05 per cent before liberalisation to 34.14 per cent after liberalisation. The financial inter-relation ratio which is the ratio of deposits of non-bank financial institutions to commercial bank deposits declined from 0.98 per cent before liberalisation to 0.83 per cent after liberalisation. This decline was significant at the 5 per cent level. The elimination of barriers to formal banking entry sharply increased competition among these financial institutions. The composition of demand deposits to total deposits also demonstrates a rising trend from 1528.6 in the period before liberalisation to 19261.3 in the period after liberalization. This was significant at 01 per cent level. The policy reforms persuaded depositors to increase their long-term liabilities in the banking system and it is clearly evidenced in the savings and time deposits behaviour, which increased from 3386.6 before liberalisation to 141277 after liberalisation. These changes indicate a depositor's preference for conversion of their savings from short term to long term. Financial deepening and savings mobilisation figures explain a policy of successful intermediation after liberalisation and the reduction of financial repression in the financial system.

4.2 Interest Rates and Intermediation Margins

Changes in interest rates and intermediation margins are presented in Table 2. In the 1970s and 1980s the average savings rate rose from 80.06 per cent in 1970 to 16.2 per cent in 1990, but later declined to 14.6 per cent in 1990. However, in the period after liberalization interest rates on savings rose sharply averaging 15.1 per cent as shown in Table 2, from 6.45 per cent in the period before liberalization to 15.11 per cent after liberalisation. Similarly lending rates also increased sharply from 8.63 per cent to 18.06 per cent in these two periods. Both deposits and lending rates are significant at 01 per cent. (Table 1)

Table 1
Changes in Financial Deepening and Savings Mobilisation 1970-99

Variable	Before	After	t-value	Change
Financial Deepening (per)				
M1/GDP	14.71	13.08	2.45b	Negative
M2/GDP	23.05	34.14	-8.23a	Positive
Structure of Deposits				
Demand Deposits	1528.6	19261.3	-5.73a	Positive
Savings and Time Deposits	3386.6	141277.3	-4.54a	Positive
NBIs/CBs Deposit Ratio (FIR)	0.98	0.83	2.62b	Positive

a = significant at 1 per cent, b = significant at 5 per cent, c = significant at 10 per cent

Liberalisation policies leading to greater competition should reduce intermediation margins as financial institutions compete for funds and increase efficiency. Smaller spreads mean greater competition and financial deepening. But the test of the two means show that the intermediation margins increased in the period before liberalisation from 1.58 per cent to 2.68 per cent in the period after liberalization, although in Sri Lanka intermediation margins are uncertain and no significant trend can be seen throughout the period and this is clearly proved by the significant level of t-values. (Table 2)

Table 2
Changes in Interest Rates and Intermediation Margin 1970-99 (percentage)

Variable	Before	After	t-value	Change
Nominal Rates				
Deposit Rates	6.45	15.11	- 6.23a	Positive
Lending Rates	8.03	18.06	-12.99a	Positive
Intermediation Margin	1.58	2.68	- 1.18	Positive
Real Rates				
Deposit Rates	0.66	3.05	- 0.95	Positive
Lending Rates	3.13	6.32	- 1.54c	Positive
Intermediation Margin	1.72	0.83	0.59	Negative
Inflation Rate	6.75	11.98	- 2.82a	Positive

a=significant at 1 percent, b=significant at 5 percent, c=significant at 10 per cent

Although a simple correlation analysis revealed a positive relationship between profitability measures, return on assets (ROA) and return on capital (ROC), this relationship is significant at 5 per cent and for the whole period of analysis the correlation was 5 per cent. Actually the underdeveloped nature of the money and capital markets have severely affected this low relationship. Though the correlation coefficient between the intermediation margin and profit measures in the post liberalisation period were 40 per cent and 39 per cent for ROA and ROC respectively, changes in the interest in the period after liberalisation induced financial institutions to adjust their intermediation costs.

However, in real terms the deposit rates and lending rates were positive. It means that in the period before, to that after liberalisation costs have increased tremendously. But the lending rate is only significant at 5 per cent, although the real intermediation margin is negative. The growing inflation rate has affected both deposits and lending rates. This means that commercial bank deposits and lending rates have had an impact on inflation.

Table 3
Intermediation Changes in Assets Structure and Credit Allocation for Main Sectors 1970-99

Variable	Before	After	t-value	Change
Asset Structure				
(Banking Industry)				
Loans and Advances	3144.2	97719.8	-5.03a	Positive
Treasury Bills	164.25	6997.0	-4.92a	Positive
Cash and Reserve Bank Balances	605.7	15459.8	-4.78a	Positive
Fixed Assets	606.8	2863.3	-3.86a	Positive
Sector Allocation of Credit				
Private Sector	2212.1	87462.0	-4.83a	Positive
Public Sector	159.5	9268.4	-3.38a	Positive
Sector of Credit Allocation				
(Commercial Banks only)				
Agricultural Sector	451.3	6889.9	-7.61a	Positive
Industrial Sector	662.6	12664.2	-7.3a	Positive
Commercial Sector	1318.5	40756.8	-5.83a	Positive

a = significant at 1 percent, b = significant at 5 percent, c = significant at 10 percent

4.3 Shift in Sector-wise Allocation of Domestic Credit

The banking system and in particular the commercial banks can promote economic development by providing credit to various sectors and this was done after liberalisation. The financial system was given a great opportunity to establish new institutions and to extend new bank branches islandwide. Thereafter all domestic as well as foreign banks started to provide substantial credit facilities to well established enterprises and to the small and large-scale ventures in the private sector. Agriculture, industries and trading sectors received loans and advances and these credits have grown substantially.

In the 1970s the share of domestic credit to the private sector averaged 69.5 per cent. Throughout the period the private sector received approximately, 60.0 – 65.0 per cent of the loans and advances from the commercial banks. Before liberalisation the loans and advances to the public sector declined, in contrast to after liberalisation (In 1994 the new government stated that the quantum of loans and advances increased appreciably and the loans and borrowings by the public sector from the banking sector were too high). The public sector was forced to increase borrowings from the banks mainly due to a decline in the inflow of external resources.

Table 3 gives the direction of the domestic credit allocation sector-wise. This is an important measurement of the performance of the banking system. In Sri Lanka commercial banks have given loans and advances to agricultural, industrial, commercial and the other sectors. In the period before liberalisation

loans and advances to these sectors were 18.5, 27.2 and 54.3 percent respectively. Loans for agriculture declined after liberalisation from 18.5 percent to 15.3 percent, but commercial sector loans increased from 54.3 to 56.6 percent at the end of the period.

Test of the difference between two period means show that credit allocations for industry and commerce increased significantly. Under the new policy reforms government implemented market oriented policies which contributed to diversify the loans and advances for industrial (like manufactures), commercial and agriculture (commercial crops) sectors. Moreover, commercial banks preferred to enhance credit facilities to the main sectors rapidly and dynamically.

The impact of intermediation on the financial sector is presented in Table 3. With respect to the structure of assets, loans and advances as a share of total assets suggests an unprecedented increase from 3144.2 in the period before liberalisation to 97719.8 in the period after liberalisation. This rising trend is significant at 01 percent. Other variables have contributed as well. Savings mobilisation has increased since liberalisation and this has been accompanied by an increase in the proportions of assets that financial institution lend to the private sector.

According to the past experience of the banking industry, the management of excess liquidity is an extremely important matter in Sri Lanka. This is important because in the period after liberalisation the required reserve ratio fluctuated between 10-15 percent for demand and time and savings deposits. For instance commercial bank's deposits with the Central Bank and cash and reserve bank balances with other banks were only 605.7 percent of total assets before liberalisation, but increased to 15459.8 percent in the period after liberalisation. Nevertheless this situation is significant at the 1 percent level. The wide range of loans provided is indicated by the asset structure of the banking industry.

With the implementation of privatisation policy reforms, private sector (domestic and foreign) activity gradually increased in the economy. In the allocation of credit the private sector has been dominant and the share of credit has been higher than to the other sectors. Before the liberalisation commercial banks delivered 71 percent of the credit to the private sector and after the liberalisation it reached to 83 percent. Similarly, the share of the government sector also increased slightly from 3 percent to 9

percent during the period. An increase in the distribution of loans to the two major sectors is implied by the test of means and is significant at 1 percent. Moreover, the increase in the share of commercial banks credit facilities to all sectors is implied in the means test (Table 3). These figures illustrate the strategy of focusing on key sectors of the economy and prudent credit risk management policies. The direction of bank credit has implications for banks' profitability performance. (Table 4)

Table 4
Changes in Market Structure and Profitability.

Variable	Before	After	t-value	Change
Indices of Market Concentration				
CR1	1724.7	45334.7	-5.74a	Positive
CR2	2083.2	37902.4	-5.39a	Positive
CR3	344.5	12485.4	-3.47a	Positive
Profitability				
ROA	0.72	0.85	-1.25a	Positive
RQC	2.15	6.68	-5.11a	Positive

a = significant at 1 percent, b = significant at 5 percent, c = significant at 10 percent

Particularly, the return on assets is positively associated with agriculture, industry and commercial sector at 45 percent, 43 percent and 07 percent respectively (at 5 percent level of significance). Further these results show that statistically all are significant. However, simple correlation analysis between the direction of credit to public and private sectors (for main sectors) and the measures of profitability (ROA and RQC) suggests insignificant relationships and unimportant conditions in these relationships.

4.4 Deposits and Market Structure and Profitability

Earlier only a few banks dominated the commercial banking system, but new policy reforms eliminated the barrier for bankers. At that time it was an exceptional performance under generally gloomy circumstances but banks had maintained a high level of performance.

The one-firm concentration ratio (CR1) implies that one bank dominates the share of deposits in the banking system. The contribution of each bank to the total deposits clearly shows the degree of monopoly power in the banking system, i.e. the share of the largest banks has been falling gradually since 1988. Especially the well-established two banks (Bank of Ceylon and People's Bank), some monopoly power has also prevailed among other banks after they were allowed to expand business.

In the period 1970 to 1978 three banks dominated the market for deposits, which is reflected in their monopolistic power position, but after liberalisation the results suggest a reduction in monopoly power. Major changes in banking monopoly power is clearly seen in figure 1, CR1, CR2 and CR3 the three largest firm concentration ratios are based on the increases in deposits over the period. It clearly depicts that the three banks behaviour by test of means is significant at 1 percent.

Besides, we also observe a significant increase in the level of profitability as measured by the return on assets during the whole period. This seems to be a perverse performance hypothesis. Generally the increase in profitability in the post liberalisation period is the outcome of many factors, they are a reduction in costs, increase in productivity and efficiency, the quality of the portfolio, market expansion and effectiveness of competition and relaxation of the bank regulation etc. Chirwa (1998) suggests that in a regression analysis of the determinants of commercial banks' profitability (return on assets, return on equity and return on capital) and market concentration are significant determinants of profitability.

Liberalised policies permitted new bankers to open and expand their operations for on going economic growth. As a result monopoly power gradually declined and increased competition sharply among banks. This was furthered by the implementation of privatisation proposals since 1987. Every bank and non-bank institution changed their credit operations in accordance with the trends in the economy. This has increased the level of competition in the banking system. It induced financial institutions to offer very high interest for deposits. Similarly in the context of the experiences of Sri Lanka banking industry, Gibson and Tsakalotos (1994) note a number of consequences that have followed from increased competition.

First, there is a deterioration in the risk-return relationship and loosening of credit limits as banks compete with one another to maintain, if not increase, their market share.

Secondly, increasing competition may lead to falling profits as some banks may be willing to accept short run losses in the hope of future monopoly profits as competition stifles.

5. Concluding Remarks

This study primarily provides empirical evidence on the financial liberalisation hypothesis with respect to financial intermediation and savings mobilisation and market structure. The

characteristics of financial repression in the banking system, changed significantly after liberalisation (since 1978). Empirical evidence is provided by changes in numerous important variables. This study has proved that there were significant increases in financial deepening and an increase in the share of demand deposits, an increase in the share of commercial bank credit to the manufacturing sector and a decrease in the monopoly power of banks. These results have helped the financial liberalisation hypothesis.

Liberalisation policies have clearly had a favourable impact on the banking system. Meanwhile financial repression has been eliminated and the administration has embarked on policies, which have brought back profound changes in the banking system. There has been an increase in the share of loans to the private sector rather than to the public sector. This shows that the private sector has been the major source of investment even though the public sector could still play a major role in the economy.

The study also finds through a simple correlation analysis that there is a low correlation between bank profitability and the direction of the credit, an unimportant condition throughout the period. Financial reforms in the Sri Lanka's formal banking industry are almost complete. However, if further fruitful advantages are to be secured by these reforms government needs to develop and improve the money and capital markets. Meanwhile, government should make an effort to achieve macro-economic stability and sound and prudential banking by better bank supervision and new bank regulations.

Besides Sivaganathan (1994) makes an extraordinary suggestion for the future development of banking services he says "information technology plays an important role in the infrastructure development of commercial banks and by their becoming financial conglomerates with investment companies, merchant banks and other subsidiaries, banks have diversified investments. The lower interest margin and unsatisfactory performance of their assets is moving the banks towards the concept of fee-based financial services, and the concentration in the future by commercial banks would be towards business outside the core business of conventional banking. The changing face of technology has made in roads into financial services."

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Contd. from Page 40

The actual cost of installing an irrigation system varies greatly from time to time and place to place, and no specific figures can be quoted which have general application. In the case of sprinkler or drip irrigation planning, the cost includes the well or other water supply, pump and motor, permanent pipes and fittings, portable pipes, sprinkler or drip outlets (emitters, nozzles, risers etc.) and filtering and controlling devices. In highly developed installations there may also be the cost of machinery to move the pipes around the fields.

For sprinkler and drip irrigation systems the maintenance costs include wear and tear on the pump, motor, pipes and sprinkler and drip outlet devices, replacement of corroded or calcified pipelines, and maintenance of other structures. Operating costs include energy for pumping water and the labour for setting up and moving the portable lateral lines. The depreciation for the various parts of each system needs to be calculated on the basis of the initial cost and the useful life span of the system. The cost for labour in micro-scale irrigation can be greatly reduced by the use of less portable and more permanent pipes, but such installation can be more costly than the labour use.

Micro-scale irrigation systems are more suitable for high value crops. The value varies not only with the crop and variety but also with quality, seasonality, total supply and demand and marketability. These complex factors are variable and often difficult to predict. With respect to the choice of an irrigation method, however, it can only be stated that where any of these price factors are favourably influenced by a certain method of irrigation, a relatively greater expense for that method can be justified. For example, if the tomatoes, which can be raised under a system of permanently installed sprinkler pipes are of better quality and can be matured in a season of relatively scarce supply, the profit would justify the high cost of installing the said irrigation system. If, on the other hand, high value crops can be raised almost as well by a lower cost surface irrigation system, use of sprinklers would be unjustified.

Advantages and limitations

Drip/Trickle Irrigation Systems

Drip or trickle irrigation is a method to apply water to soil through emitters (or applicators) located at selected points along the water delivery lines. Emitters have orifices through which a limited volume of water is discharged. Emitted water moves within the soil as an unsaturated flow. Wetted soil area of an emitter is normally elliptical in shape, and real shape is determined by textural composition of the soil.

Drip irrigation is not suitable for broadcasted crops. It is recommended for fruit trees, grapes, flower plants, vegetables and other high value crops cultivated in rows. When irrigation water is of poor quality drip irrigation can be used to avoid the yield reduction in salt sensitive crops.

Drip systems can control the rate of water application to achieve application efficiency as high as 90-95%. It could reduce evaporation from soil as well as evapo-transpiration from the crop. As the entire soil surface does not get wet, weed growth is not promoted by drip systems. The system is excellent for soils with low infiltration rates. Unlike surface and sprinkler irrigation, the drip systems can keep the water content always near the field capacity without creating any soil moisture deficit to the crop. Drip or trickle irrigation systems are designed to apply only the required amount of water, therefore, it would minimize water losses as runoff, percolation and seepage. Land levelling or grading is not an essential component in this system, and it requires very low labour for operation and maintenance. Most important advantage of this system is that fertilizer can be injected to the irrigation water (fertigation). Further, it avoids high concentration of salt due to frequent application of water.

However, there are limitations too in drip irrigation systems. Most serious problem is clogging (blocking) of emitters due to insufficient filtration of water. During irrigation, excess salt accumulates near the soil surface and moves towards the edges of the wetted soil. Rain can bring these into the root zones. Investment cost is high and technology is sophisticated. Conveying pipes or tubes can be easily damaged.

Micro-sprinkler irrigation systems

Sprinkler irrigation is the transport of water through a system of pipelines under pressure and the release of water in the form of spray. Water dynamically moves from the water source through the pump to the pipe network and is released through sprinkler nozzles into the air at a high velocity, where it breaks up into droplets and falls to the soil or crop surface. Micro-sprinklers are also similar to sprinklers but riser height is low with comparable application radius.

Sprinklers are suitable for a wide range of crops - field crops, vegetables, orchards etc. but some crops are affected as the entire crop gets wet usually. This is an advantage in one way because it reduced the insect damage.

Micro-scale irrigation systems can be selected when one or more of the following conditions prevail:

- ❖ Land bears undulating topography and soil is shallow,
- ❖ Land slope is too steep and levelling or grading is not economical,
- ❖ Soil is coarse textured and surface irrigation would cause high losses,
- ❖ Water is scarce and expensive therefore should be efficiently utilized,
- ❖ When labour cost is high many parts of the micro-scale irrigation systems can be permanently installed,
- ❖ When water supply needs high assurance especially for high value crops micro-scale irrigation is the best.

Finally, it is worthwhile to note that the adoption of micro-scale irrigation systems should not be a fashion or a sign of modernization. If the investment costs are not economically justified; for example in case of low income generating crops, it is useless to think of expensive micro-scale irrigation systems. However, there are low head, simple drip systems are available in the market and these small units are recommended for backyard cultivation. If the condition for surface irrigation is favourable (water and labour are not limiting) micro-scale irrigation systems are not economical. Energy for lifting and pressurising to apply water is very high in micro-scale irrigation. Most important point is that the user of the micro-scale irrigation systems should have an adequate knowledge on how to operate, maintain and service and repair the system.