# Financial Liberalization Index for Sri Lanka

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## Abstract

Financial liberalization is a process of liberalizing the financial system of an economy by reducing controls in interest rates, financial intermediaries, and markets. Since the mid-1980s, the World Bank and the International Monetary Fund (IMF) started financial liberalization as a basic frame work for developing member countries to accelerate economic growth. Sri Lanka has been involved this process since 1977.This study attempts to establish an index to evaluate the complex process of financial liberalization in Sri Lanka by focusing on important changes in the financial sector. The study has used major policy components of financial liberalization to construct financial liberalization index at a particular time. In order to derive the index, an arbitrary value is assigned to each of the policy variables. Each policy variable can take a value between 0 and1.The value is depending on the implementation phases of the policy. Time series annual data from1977 to 2011 are used to construct the index. The principle Component Method is used as an analysis method.

This index is helpful to evaluate the impact of financial liberalization policies on various aspect of the economy. The constructed index shows that financial liberalization has gradually increased from 1997to 2011, though the policies are implemented since 1977 in Sri Lanka.


***Key words:*** *Financial liberalization, Liberalization index, Principle component method, Economic growth*

## Introduction

At the time of independence Sri Lanka had an underdeveloped financial market. The participants in the market were a few commercial banks with a small number of market instruments. Since the mid 1980s the World Bank and International monetary Fund started financial liberalization as a basic frame work for developing member countries to accelerate economic growth. A major turning point in the financial sector in Sri Lanka came after liberalization policies were introduced in 1977.

The concept of financial liberalization can be traced as far back as Bagehot (1873), who argues that the financial system plays a critical role in the adoption of better technologies that effectively mobilize resources, thus encouraging economic growth. However, the concept really gained prominence following the seminal works of McKinnon (1973) and Shaw (1973), in which they argue that financial repression is a major impediment to or a drag on economic growth in developing countries. They define financial repression as the set of government legal restrictions imposed on the activities of financial intermediaries, preventing them from functioning at their full capacity level. McKinnon and Shaw maintain that financial liberalization, involving the establishment of higher interest rate that equate the demand for and supply of saving ,in addition to the removal of credit controls, will lead to a increased saving ,faster a more efficient allocation of investment and contribute positively to economic growth.

Sri Lanka has implemented financial liberalization reform in order to widen and deepen the financial system under open economic framework. The whole liberalization reforms can be divided into two phases. The period from 1977-1989is known as the pre and after 1989 it was known as post 1989 period. The first phase focused on interest rate, exchange rate and banking reform and the second phase focused on stabilization and further relaxation of remaining restriction on trade and payments (Cooray, 2003).

The study is an attempt of a construction an index that shows a summary of the key policy reforms implemented of financial liberalization in Sri Lanka as a single index.

**Objectives**

The study of impact of financial liberalization on various aspects of the economy is quite interested and debatable area among economists. Many researchers and scholars have constructed indices to evaluate the impact of financial liberalization policy on various aspects of the economy. But, very little researches have been undertaken to evaluate the impact of financial liberalization in Sri Lanka using an index. Therefore, objective of this study is to construct a index that reflect the level and consequences of financial liberalization policies in Sri Lanka.Further,this study aims to bridge the gap that lack of analysis financial liberalization package as a policy in open economy framework in the context of Sri Lanka.

**Methodology**

This study is mainly based on secondary data published in annual report of Central Bank of Sri Lanka.The time series data of 35 years (1977-2011) is collected to construct the index. In order to construct the financial liberalization index, the Principal Component Method is employed.

**Literature Review**

Measuring financial liberalization is not as easy task primarily given its multifaceted nature. Data are also not readily available on every dimension and even where they are available. They may be extremely fragmented. The following literature gives detail of the various efforts of measuring financial liberalization.

Quinn (1997) constructed international financial liberalization index. It measures the extent of a country's restrictions on the flow of international finance using the detailed text of the IMF's Annual Report of Exchange Arrangement and Exchange Restrictions (AREAER).Capital Account openness is scored on graduating 0-4 scale, Current account openness on a 0-8 scale and international agreements on a 0-2 scale, where the larger number represents more liberalized. The resulting 0-14 range indicator is an overall measure of the intensity of international financial liberalization. Quinn constructed the index for 1950-1997 for 21 OECD countries and for the years 1959, 1973, 1982, 1988, 1997 for 43 developing countries.

Montiel and Reinhart (1999) combine the IMF's AREAER indicator with country specific information to construct capital account liberalization intensity index. Taking on values 0, 1 or 2 with higher number represents stronger capital account restrictions.

Grilli and Milsi-Ferretti (1995) use share indicator to measure the proportion of years the country's capital account is reported as free of restrictions. The resulting variable is a 0, 1 indicator of the presence or absence of capital controls.

Bandiera (2000) developed financial liberalization index using 8 dummy variables representing the various dimensions of liberalization, interest rates, pro-competition measures, reserve requirements, directed credit, banks' ownership, prudential regulation, capital account and exchange rate liberalization. Laeven (2003) constructed financial liberalization index similar to Bandiera. He includes the six variables to measure financial liberalization. But excludes the measures related to stock market and external sector in his index.

Kaminsky and Schmukler (2001) examined the short-run and long-run effect of financial liberalization on capital market by constructing a comprenhensive chronology of financial liberalization in 28 developed and emerging economies since 1973.They used three measures of financial liberalization:capital account liberalization,domestic financial system liberalization and stock markets liberalization.

Kaminsky and Schmukler (2003) build financial liberalization index using average of domestic financial liberalization focus on interest rate regulations and complement with information on the regulations reserve requirements, credit allocation and foreign currency deposits, Capital account liberalization focus on offshore borrowing by non –financial corporations, multiple exchange rate markets and control on capital outflows.

Demirguc-kunt and Detreagiache (1998) constructed domestic financial liberalization for 53 developing countries. They use the first date in which some interest rate were liberalized and create dummy variable with zeros for periods in which interest rates are subject to controls and ones for the liberalized periods.Financial liberalization index is used as measure of financial liberalization by Abiad and Mody (2005). They used six dimensions; credit/reserve requirement, interest rate controls, entry barriers and or lack of procompetition policies, restrictive operational regulations, the degree of privatization in the financial sector, and control on international financial transactions. For each dimension is given a score on a graded scale as; with zero corresponding to being fully repressed, one to partially repressed, two to largely liberalize and three to fully liberalized.Kraay (1998) constructed capital account openness to measure financial liberalization.He used data on actual capital inflows and outflows as a percentage of GDP.The sum of the inward and outward foreign direct investment, portfolio investment and other investment in the financial account of the balance of payment are considered as capital inflows and outflows. But Lane and Milesi-Ferretti (2001) have use portfolio and direct investment assets and liabilities as a percentage of GDP as an indicator of financial openness.Shrestha (2005) constructs a financial liberalization index for Nepal employing the principal component method. He uses eight variables of financial policies to construct the index. The index shows the degree of financial liberalization at a particular time. Bandiera et.al. (2000) construct an index of financial liberalization for eight developing countries using principal component method. They examine total effect of financial reform on aggregate private savings in Chile, Ghana, Indonesia, Korea, Malayasia, Mexico, Turkey and Zimbabwe.

Financial liberalization index for Sri Lanka is constructed by Paudel in 2007 employing principal component method. The study uses thirteen major policy components of financial liberalization. They are; Interest rate regulation, liberal exchange rate policy, banking policy reforms, easing of credit supply, introduction of prudential norms, money market reforms, share market reforms, bond market reforms, current account liberalization, capital account liberalization, bank ownership, reserve requirements and institutional reforms. The study covers data from 1963 to 2005 in Sri Lanka.The index contributes to show quality and extension of financial liberalization in Sri Lanka.

**Results and Discussion**

A financial liberalization reform includes several elements; as it reflects a variety of restrictions that were imposed. This includes capital account liberalization, banking sector liberalization and stock market liberalization. The financial liberalization index for Sri Lanka is constructed to include all the reforms during the different period after 1977.The index is constructed following methods by Bandiera et al. (2000) Laeven (2003) Shrestha (2005) and Paudel (2007).They have used major policy components of financial liberalization to construct financial liberalization index.

This study used directly related 10 major policy components of financial liberalization package in Sri Lanka to construct the index. The policy components and their indicators used to assign values to derive index are summarized as;

1. Interest Rate (IR)-Interest rate on Deposit and Lending
2. Exchange Rate (ER)-Decontrol of exchange rates.
3. Reserve Requirements (RR)-Changes of Reserve requirements
4. Credit Supply (CS)-Removal of Credit ceilings
5. Capital Account Liberalization (CAL)-Foreign direct investment and capital inflow.
6. Current Account Liberalization (CAAL)-Balance of payment statistics
7. Share Market Reform (SR)-Share transactions and permission to share investment in foreign investment.
8. Bond Market Reform (BMR)-Treasury bond transactions and permission to issue certificate of deposits for commercial banks
9. Money Market Reform (MMR) - Treasury bill market transactions and set up reverse repurchases market
10. Banking Policy Reforms (BPR)-Removal of entry barriers to foreign bank and foreign commercial banks

## Econometric model

In order to construct the financial liberalization index, some arbitrary value is assigned to each of the selected policy components. Each policy component takes value between 0 and 1depending on the implementation status of the policy. When a particular policy component is fully liberalized, that variable takes a value of 1 and when the variable remains regulated it takes a value of 0.If liberalization occurs in a gradual process in some contexts 0.25,0.5 and 0.75values are assigned as some selected variables have been liberalized in different phases. The assigned values presented in their implementation status are used to construct the index .The weight of each of the component is calculated by employing the Principle Component method. The index can be expressed as following formula.

$FLI_t = w_1IR+w_2ER+w_3RR+w_4CS+w_5CAL+w_6CAAL+w_7SR+w_8BMR+w_9MMR+w_{10}BPR$....................*(1)*

Where:

$FLI_t$ = Financial Liberalization index at respective year

$W_i$ = weight of the component given by the respective eigenvector of the selected principle component. The Eigen values and Eigenvectors of the correlation matrix of financial liberalization policy variables are shown in table 1.

Table. 1 Eigen values and Eigen vectors of policy components

| Variables | Eigenvector |
|---|---|
| | $\lambda_1$ |
| IR | -0.328164 |
| ER | -0.341778 |
| RR | -0.174694 |
| CS | -0.234072 |
| CAL | -0.331626 |
| CAAL | -0.336129 |

| | |
|---|---|
| SR | -0.341567 |
| BMR | -0.338313 |
| MMR | -0.356663 |
| BPR | -0.329996 |
| Eigen value | 7.489961 |

Source: Author ccomputed

For the analysis, the first principal ($\lambda_1$) component is selected, because it covers 74% of total variance.

Table.2 Weight of selected policy variables

| **Variables** | **Eigenvectors** $\lambda_1$ | **Weight of variables** $W_i = \lambda_1 / \sum\lambda_1$ |
|---|---|---|
| IR | -0.328164 | 0.105417 |
| ER | -0.341778 | 0.109790 |
| RR | -0.174694 | 0.056118 |
| CS | -0.234072 | 0.075192 |
| CAL | -0.331626 | 0.106529 |
| CAAL | -0.336129 | 0.107976 |
| SR | -0.341567 | 0.109723 |
| BMR | -0.338313 | 0.108677 |
| MMR | -0.356663 | 0.114572 |
| BPR | -0.329996 | 0.106006 |
| **Total** ($\sum\lambda_1$) | -3.113 | |

The index equation (1) with the fixed values weight based on equation (2) arrives at as:

$$FLI_t = 0.105417IR + 0.10979ER + 0.056118RR + 0.075192CS + 0.106529CAL + 0.107976CAAL + 0.109723SR + 0.108677BMR + 0.114572MMR + 0.106006BPR \quad \ldots\ldots\ldots(2)$$

Then equation (2) with weight of variables multiply the correspondent value for all ten variables,the index for the individual policy components was calculated. Finally the financial liberalization index for each year is obtained by summing up the calculated values of all 10 policy variables for the respective year. The figure of the financial liberalization index given is presented in figure 1.

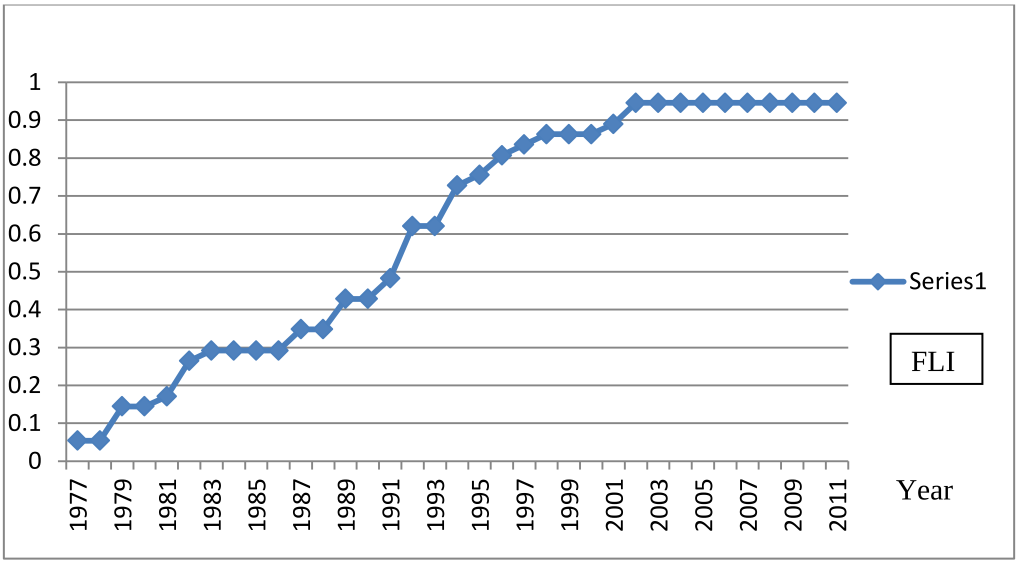


Figure No.1. Financial Liberalization progress in Sri Lanka 1977-2011

The index shows that the major policy steps of financial liberalization process in Sri Lanka have followed from 1987 to 2002 period.

## Conclusion

The financial liberalization index for Sri Lanka has been constructed by including ten policy components implemented during the period 1977 to 2011.The liberalization index is based on principal component method and also takes in to account the different phases of liberalization process. Most of the past studies considered only full liberalization level or non liberalization level for their calculation. But it will misguide when evaluating the impact of liberalization on various aspects. Therefore, this study has presented the real picture of financial liberalization process in Sri Lanka.This index would make it easy to further studies on financial liberalization Sri Lanka.

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