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SESSION REPORT

Sectoral Output Growth and Financial Development in Emerging Economies: Evidence from Nepal

Prof. Frank Westermann, Ph.D.[*]

Abstract

A remarkable feature of the recent period of solid growth in Nepal – an annual rate of about 6%- , is that growth has been uneven across sectors. While the services sector has been expanding, the agricultural and manufacturing sectors have growing much more slowly. In this paper we attempt to explain this fact by investigating the linkages between financial development and sectoral output growth in a vector-autoregression (VAR) analysis. We find that the services sector reacts strongly to increases in domestic credit, while agriculture and manufacturing are largely unaffected. We interpret this finding in the context of a two sector-growth model, by Schneider and Tornell (2004), where credit constraints and the real exchange rate play a central role. We also discuss the importance of our findings for the goal of poverty alleviation. In this regard, we express concerns about the non-inclusion of the agricultural sector in the on-going process of financial development – a sector that accounts for more than 70% of employment, and has below average wage rates.

JEL codes: O11, O16, O53, F41

Keywords: Financial Development; growth; agriculture; poverty

I. INTRODUCTION

A remarkable feature of the recent period of solid growth in Nepal – an annual rate of about 6%- , is that growth has been uneven across sectors[1]. While in particular the services sector was able to expand, the manufacturing and agricultural sectors were growing more slowly in the 2000s. At the same time, the financial system has been gradually deregulated and domestic credit has been expanding.

In this paper we analyse the empirical link between domestic credit growth and output growth at a sectoral level and discuss the implications of our finding in the context of a two-sector growth model and of the debate on poverty alleviation. Our main finding is that while services reacts positively, both agriculture and manufacturing are largely unaffected by increases in domestic credit. In particular the agricultural sector – that accounts for more than 70% of total employment

[*] University of Osnabrueck, Germany, Institute for Empirical Economic Research, Rolandstr. 8, 49069 Osnabrueck, Germany, Frank.Westermann@uos.de
[1] A pattern that is also common for other countries in South Asia (see Eichengreen and Gupta (2009)).

does not seem to participate in the increase investment opportunities that arise from financial development.

In our study we use a long sample of annual sectoral output growth rates, starting in 1973, leading up to 2010, as well as several shorter samples. After preliminary unit-root and cointegration testing, we estimate bi-variate vector-autoregression, from which we identify impulse response functions that display the output-reaction following an unexpected shock in domestic credit growth. The response functions are identified by the use of generalized impulse response functions – a procedure that mitigates the endogeneity problem and is independent of the ordering of variables in the VAR.

In main empirical finding is that the reaction varies across sectors. The services sector shows a positive response that increases in magnitude, when considering shorter (more recent) time intervals, starting from 1980, 1985, and 1990[2]. The Manufacturing sectors, as well as agriculture show mainly insignificant reactions.

Regarding services and manufacturing, the findings for Nepal, are quite reminiscent of other countries, as well as theoretical predictions on the sectoral output response. A two sector-growth model, originally developed by Schneider and Tornell (2004), where credit constraints and the real exchange rate play a role help to interpret the results of the empirical analysis[3]. In this model, the tradable goods producing sectors finance themselves mainly in international capital markets and are independent of domestic credit conditions. The non-tradable goods producing sectors however, often including services, obtain finance from the domestic banking system and are more closely linked to domestic credit changes. Tornell and Westermann (2002) document that this pattern exists in a wide cross section of emerging economies.

The relative price of tradables and non-tradables good - the real exchange rate – plays an important role in this model. In order to overcome their credit constraints, firms resort to riskier forms of finance and often denominate their debt in foreign currency. Firms in the non-tradables sectors, however still have their revenues in domestic currency, which leads to the following balance sheet effects: A real appreciation reduces the debt burden of the firms, depreciation increases it, leading to an unconventional procyclical effect of real exchange rate changes.

In our data set we are able to test for this second aspect of the model, by computing the sector specific real exchange rates. Using again an impulse response analysis, we find in the shorter samples that the tradable sectors – the manufacturing sector in particular – shows a positive reaction to the real exchange rate, i.e. an increase in output following a depreciation. In the services sector, however, this effect is much less pronounced. This seems plausible, as the services sector in Nepal contains a mix between tradable and non-tradable elements. While the tourism industry is clearly a tradable component, most other services are non-tradable.

It is remarkable that the agricultural sector displays a negative reaction to the real exchange rate, i.e. a decrease in output after a real depreciation. This could mean that the resources (in particular labour) that are needed in manufacturing are withdrawn from the agricultural sectors in times of real depreciations. But it could also mean that the agricultural sector – due to trade barriers- , displays the pattern observed mostly in non-tradables sectors in other countries. This could include the attempt to overcome credit constraints by borrowing in foreign currency.

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[2] This result is reminiscent of the findings by Gautam (2008) between tourism financing and economic growth. The tourism industry is a major part of total services.
[3] See also Tornell, Westermann and Martinez (2003) for a simpler representation.

In either case, the pattern of development in the agricultural sectors is clearly a reason for concern in the development of Nepal's economy. Our findings complement and strengthen related arguments on inequality and growth by Bajracharya (2006) and Sharma (2010)[4]. They are also related to, and consistent with a formal analysis by Shrestha and Chowdhury (2007), who analyse the link between financial liberalization and growth in a autoregressive dirstributite lag (ARDL) model. Focusing on the difference between rural and urban income, they report a general positive impact on employment, but a negative impact on credit to rural areas and income distribution.[5] The differential impact of rural and urban areas had also been pointed out by Acharya (2003).[6]

The pattern in the agricultural sector is quite uncommon, when compared to other emerging economies, and in particular when compared to Europe in the process of industrialization, more than a hundred years ago. Diekmann and Westermann (2011) have shown that the agricultural sectors, has reacted most strongly to domestic credit, among all sectors, in 19th century Germany. In fact, the banking system took its origins in small credit co-operatives, which financed the "agricultural revolution", than preceeded the rapid process or industrialization during the second half of the 19th century. A comparable sequential process is not observable in Nepal's economy today.

The remainder of the paper is organized as follows. Sections 2 start with a graphical analysis of the data and reports the standard descriptive statistics. Section 3 contains the preliminary analysis, testing for stationarity and cointegration. Section 4 reports the main findings of the impulse-response analysis. Section 5 discusses the findings in the context of the debate on poverty alleviation and section 6 concludes.

II. Descriptive statistics

In this section, we start the analysis with a graphical representation as well as descriptive statistics of the time series under investigation. First, we consider a sectoral breakdown of aggregate lending. Figure 1 decomposes the total stock of domestic credit into various sectors, including the main sub-sectors, agriculture, manufacturing and services that will be included in the empirical analysis in the following sections (we show a more disaggregated breakdown here that is feasible in a cross section. In the later part of the analysis, we will focus in broader aggregates of sectors, for which we have time series data both, in nominal and in real terms).

Figure 1 show that the largest share of domestic credit is provided to firms in the services sectors. In sum, the sectors Transport, communication and public services, wholesale and retail trade, financial sector and other services, account for 37% of total domestic lending (10% if this figure is accounted for by the financial sector itself). The second largest sector is the manufacturing industry, with a share of 22%, followed by the construction sector with a share of 11%. Other sectors have much smaller shares. The agricultural sector, the second largest sectors in the economy with respect to output, and the largest with respect to employment, holds only 3% of total domestic credit. [7]

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[4] Sharma (2010) also points to the uneven growth pattern across sectors and discusses the lack of access to access to credit in rural areas. He points out for instance that lending rates in agriculture are above the average. In the paper he highlights the importance of agriculture for the poverty alleviation.

[5] Note that their results refer to financial liberalization, rather than financial development, for instance as measured by real credit growth in our paper. However, as shown by Bhetuwal (2007), both concepts are closely related.

[6] For aggregate GDP, a positive link between financial development and growth has also been established in Demetriades and Luintel (1996) and Dangal (2009).

[7] An econometric analysis of the determinants of lending to various types of households and regions is given in Adhikari (2009). The role of institutions for providing micro-finance and analyzed in Shrestha (2009)

Interesting is also the share of consumer loans in total loan, which is only 4%. In the literature on financial development and growth, this is an indicator of particular importance. If the share of consumer loans in total loans is high, the hypothesis that domestic credit is followed by real output growth is often challenged. However when the largest part of the lending is given to firm, who invest, this investment expands production possibilities and ultimately leads to long run growth. With a share of consumer loan of only about 4%, it seems that the preconditions that financial development can have a positive impact on growth are met.

FIGURE 1a: Decomposition of bank lending by sector
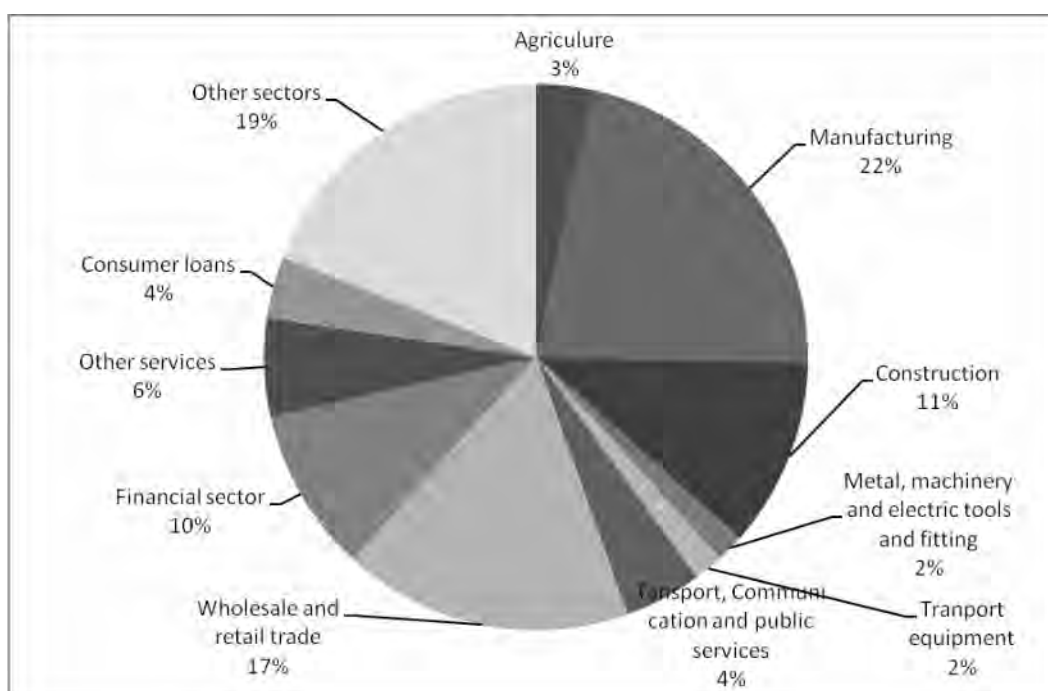
Source: Nepal Rastra Bank, Economic Report 2008/9, Table 7.5.

Figure 2a and 2b show the development of long run growth in the main sectors of the economy. The values are expressed in constant prices. Figure 2a shows the levels of output, while figure 2b shows the share of each the three main sectors in total output in the economy. We see that in the beginning of the sample period, the agricultural sector was clearly the most important sector, with a share of more than 50% of total value added in the economy. Although it has grown steadily over the past 38 years, its long run real rate of growth of 2.65%, as reported in Table 1, is clearly below that of the other two sectors. The manufacturing sector has a larger growth rate, with 5.3% of real growth on average; however, its share in total output is rather small, increasing to about 7% of GDP towards the end of the sample. The services sector, on the other hand is both, large in term of share in GDP, and in terms of annual real growth rates. Over the past 38 years, the service sector has grown 4.63% on average and has become the largest sector in total GDP since the early 1990ies. In 2010, it accounted for 43% of total output in the economy.

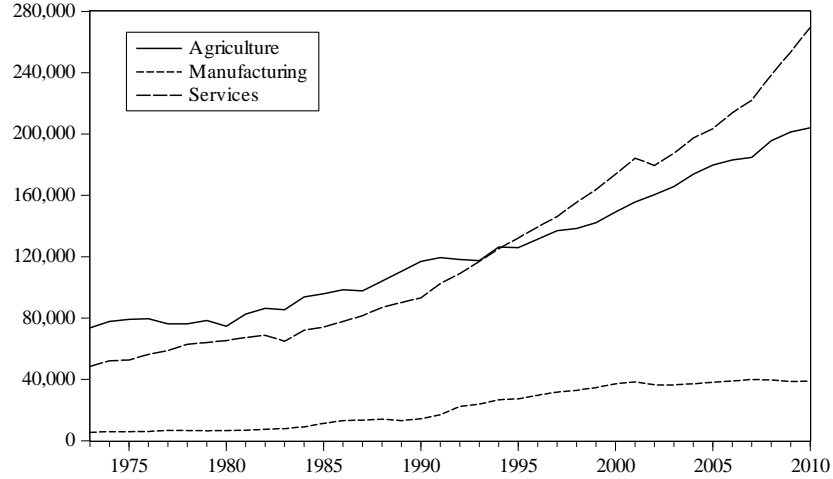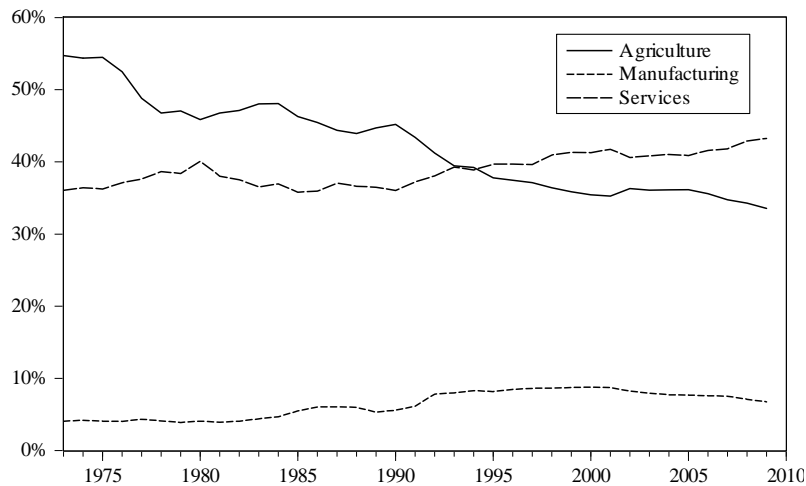**FIGURE 2a: Sectoral output – levels in constant prices**

FIGURE 2b: Share in value added:

Source: World Development Indicators (WDI)

Figure 3 displays the annual percentage growth rates as that enter the subsequent empirical analysis in the vector-autoregressions (VARs). The figure shows that on top of the differences in long run average growth rates, the growth rates also differ with respect to the variance and the occurrence of occasional outliers. While the agricultural sector and services sector have relatively stable growth rates since 1980ies, with a standard deviation of 2.9% and 3.2%, respectively, the manufacturing sector is considerably more volatile. In particular during the mid-80ies and early 1990ies, there were rapid expansions in manufacturing. In the later 70ies and earlier 2000s, there were multiple-year recessions. The occasional downturn as well as the boom-periods was also larger in absolute terms, as shown in Table 1, below.

TABLE 1: Descriptive statistics

	Agriculture	Services	Manufacturing	Domestic credit
Mean	0.0265	0.0463	0.0530	0.0726
Maximum	0.0997	0.1048	0.2776	0.3331
Minimum	-0.0490	-0.0578	-0.0732	-0.2517
Std. Dev.	0.0323	0.0295	0.0715	0.1296

FIGURE 3: Growth rates of value added in manufacturing, services and agriculture
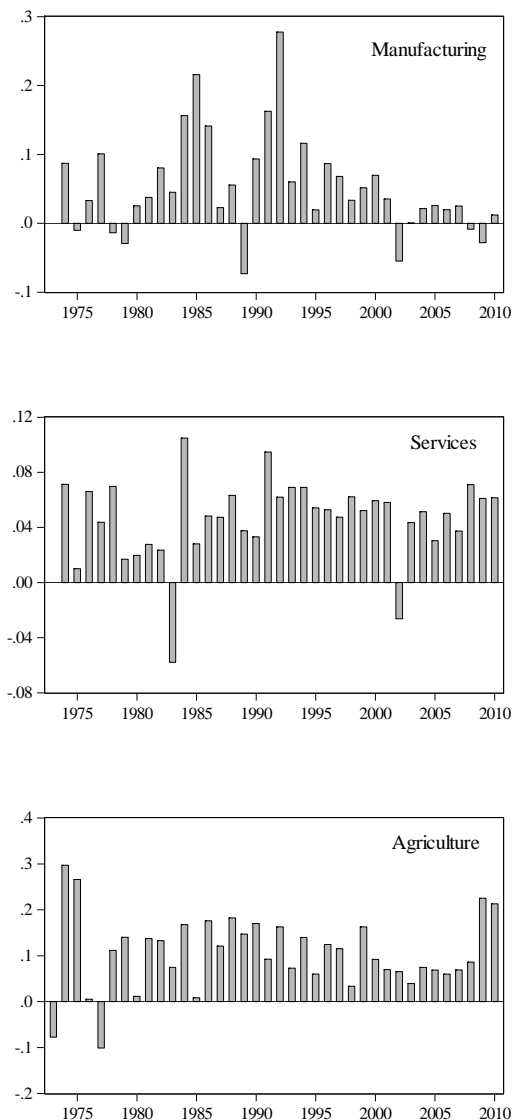
Source: World Development Indicators (WDI)

The last time series in our subsequent analysis is the domestic credit to the private sector, provided by the banking system. This series is plotted in Figures 4a and 4b, as a ratio of gross domestic product, as well as in logged first differences. From Figure 4a, it is clear that Nepal experiences a substantial increase of financial development over the time period under investigation. Until the early 1990ies, there was a smooth and steady increase. During the 1990ies the credit-to-GDP increased substantially, doubling in magnitude, from 15% in 1993 to 30% in the year 2000. After a short decline in the early 2000s, another rapid expansion occurred in the second half of the first decade of the 2000s. In 2009 the credit-to-GDP ratio reached a peak value of 59%.

FIGURE 4a: ratio of domestic credit to GDP
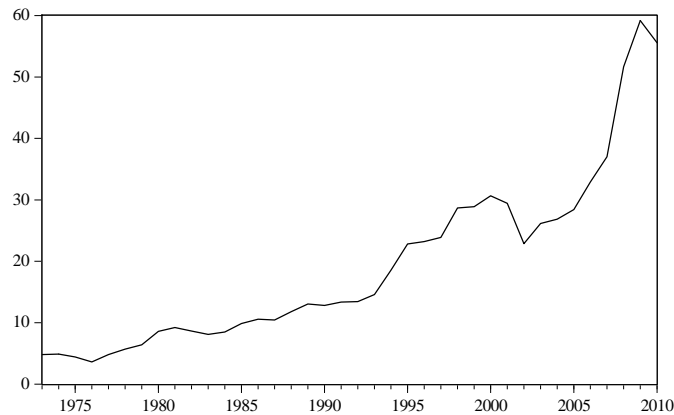
FIGURE 4b: Growth rates of real credit to the private sector
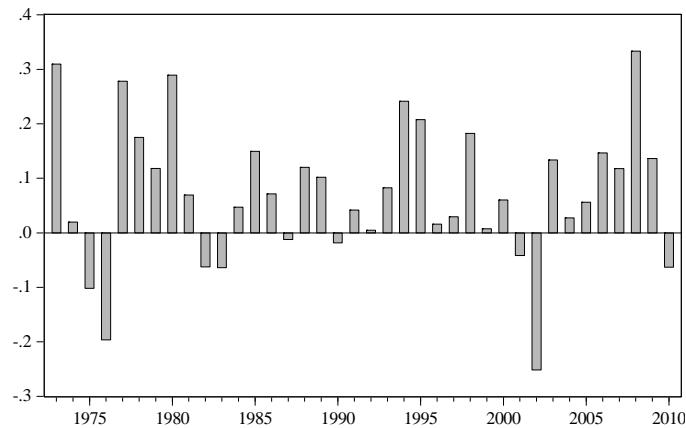
Source: World Development Indicators (WDI)

Although the above 50% credit-to-GDP ratio is nearly 10 times its value of the beginning of the sample, this number is not unusually high when compared to other countries experiences after financial liberalization. In particular the increase in domestic credit-to-GDP that occurred after the liberalization in the early 1990ies – documented by Shrestha and Chowdhury (2007) – is quite reminiscent to the increase documented in a broad cross section of emerging economies in Tornell and Westermann (2005).[8]

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[8] As shown in figure A4 of the appendix, the agricultural sector also had a below average share in the latest credit expansion that started in 2007. In fact it is the only sector that fell in levels, in nominal terms.

When looking at the growth rates of real credit growth (deflated by the consumer price index), we see that domestic credit is quite volatile throughout the sample period. Major contractions occurred in 1975/6 and 2002. Measurable downturns where also experienced in the early 1980ies, 1990 and, more recently, in 2010. Overall, the standard deviation of almost 13% is substantially higher than the fluctuation in real output in any of the main sectors. Also the absolute value of the negative growth rates is much larger, with negative values of up to 25%. The process of financial development in Nepal, although quite large when compared to the beginning of the sample, has been a risky one, with repeated severe setbacks. In this sense, again, the experience in Nepal is reminiscent of many emerging economies, in which the process of financial liberalization is associated both, with an increase in the average GDP growth rate, but also an increase in the incidence of financial crisis (see Tornell and Westermann (2008))

III. PRELIMINARY ANALYSIS

As a preliminary analysis of the data, we conduct test for stationarity and cointegration. Table 2 reports the results of the augmented Dickey-Fuller test. In all regressions the lag length was chosen by the AIC criterion. We find that in all sectoral time series as well as the domestic credit series, we cannot reject the null hypothesis of a unit root in the logged levels, while we can reject it at the 1% level in all logged first differences that approximately correspond to the percentage growth rates. In the following analysis, we therefore treat the data as stationary in 1st differences.

TABLE 2: Unit root tests

	Agriculture		Manufacturing		Services		Domestic credit	
	ADF test-statistic	P-value	ADF test-statistic	P-value	ADF test-statistic	P-value	ADF test-statistic	P-value
Levels	0.672	0.990	-1.319	0.611	0.652	0.989	-0.604	0.858
1st differences	-7.004	0.000	-3.773	0.007	-6.779	0.000	-5.564	0.000

Note: Lag length was chosen by the AIC criterion. MacKinnon-critical values are applied.

In a second step, we also test for the cointegration properties of the data. Table 3 reports the results of the Johansen Cointegration test. It shows that all variables in the analysis following individual stochastic trends: we cannot reject the null hypothesis of no cointegration. This result is strengthened, when applying the stricter finite sample critical values that were reported by Cheung and Lai (1995).

TABLE 3 Test for Cointegration

Number of Cointegration Vectors	Eigenvalue	Trace statistic	5% Critical value	Maximum eigenvalue statistic	5% Critical value
None	0.421533	41.48248	47.85613	19.70544	27.58434
At most 1	0.335006	21.77704	29.79707	14.68719	21.13162
At most 2	0.176654	7.089847	15.49471	6.997633	14.2646
At most 3	0.002558	0.092214	3.841466	0.092214	3.841466

Note: Lag length was chosen by the AIC criterion.

IV. VECTOR AUTOREGRESSIONS

In this section, we investigate the responses of growth rates in agriculture, services and manufacturing to an unexpected change in domestic credit. As the above unit root tests revealed a unit root in the levels of the sectoral output and credit series, we start by estimating the vector-autoregression (VAR) in first differences. From the VAR coefficients, we compute the generalized impulse response functions that are reported in figure 5 and 6 below.

The use of generalized impulse response functions, mitigate the endogeneity problem associated with the contemporaneous correlation between credit and output. It is independent of the ordering of variables in the VAR, as for instance in the Choleski decomposition. However, it should be noted that shocks are *not* fully identified in this approach. The shock is a system shock that include the contemporaneous reaction of other variables.

4.1. Reactions of sectoral output to domestic credit

We estimate bi-variate VAR's and compute the corresponding impulse response functions for the three sectors under consideration. Figure 5 shows the reaction of output growth in agriculture, manufacturing and services to an unexpected shock in the growth rates of domestic credit. We start by analyzing the full sample from 1973 to 2010. We find, overall, that that the responses are only weakly significant, at the 10% level, or statistically insignificant. In the agricultural sector there is an initial negative reaction, followed by equal sized positive reaction in the second year. Thereafter, as well as in the aggregate, the reaction is insignificant. In the manufacturing, the reaction is highly insignificant throughout the 10 year time-window under investigation. The only sector that displays a clear positive reaction in the services sector. Here the reaction is positive for the first two years and statistically significant at the 10% level in the 1st year after the shock in domestic credit[9].

As the sample period includes years before the liberalization and deregulation of Nepal's financial system, we next shorten the time interval in several steps. This, by itself, would have the statistical effect hat standard errors would widen, as the sample becomes shorter. However, as relatively more years are part of the period with more open and developed capital markets, the findings could also become sharper. In the sample period from 1980-2010, we see that the initial positive reaction of the services sector becomes statistically significant at the 5% level, while the other two sectors remain nearly unchanged. When shortening the sample even further, the agricultural sector turns insignificant over the entire 10-year response-window, while the services sector becomes even more clearly significant. This pattern remains also for the window from 1990-2010.[10]

While the insignificance of the agricultural sector in the later periods is an inconclusive finding, due to the reduced power of the test in smaller samples, it can be argued that the positive reaction of services to domestic credit growth is a rather recent phenomenon in the Nepalese economy.

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[9] This result is consistent with earlier finding by Gautam (2008), that analyses the impact of the tourism industry on GDP and the role of tourism financing.

[10] The process of Nepals financial sector reforms roughly corresponds to these time windows. Shrestha (2004) documents the various steps of financial sectors development in Nepal. In his analysis, the first period of financial sector reform started in 1984 and the second phase started in 1991. Phase 3 that started in 1999, is difficult to capture in a VAR model, as the sample period is too short.

FIGURE 5: Reactions of sectoral output to an unexpected change in domestic credit

Full sample

1980-2010

1985-2010

1990-2010
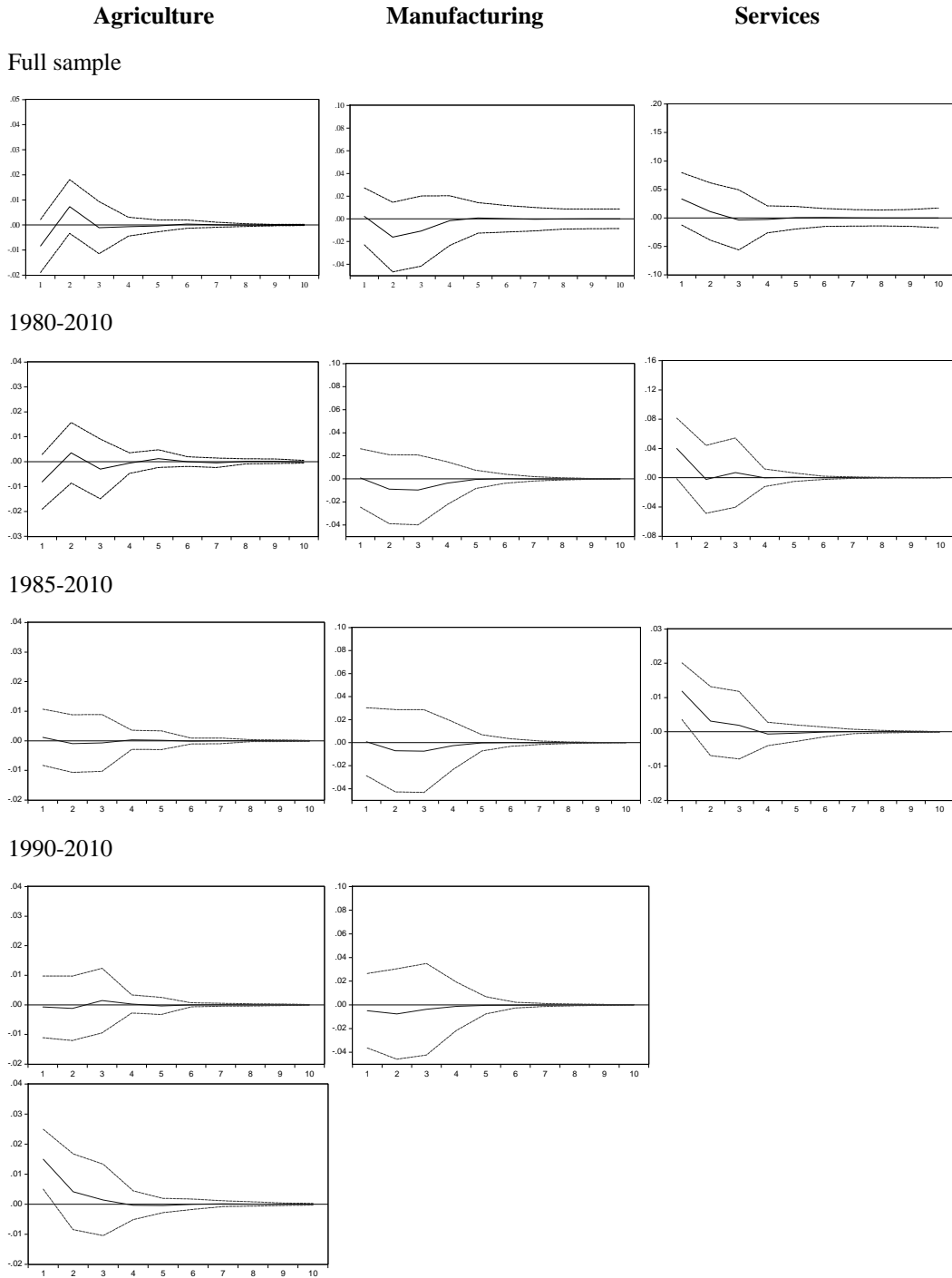
For the agricultural sector and the services sector, the results of the VAR analysis are quite plausible. The services sector, that was documented above to have the largest share in domestic credit was found to have the strongest response to changes in domestic credit, and the agricultural sector, the sector with the smallest share in domestic credit also displays the weakest reaction in the VAR.

The manufacturing sector, however does not react significantly, although with 22%, it receives a substantial share of total domestic lending. The explanation for the insensitivity of output in the manufacturing sector, to changes in bank lending may be found in the alternative sources of finance that is available to this sector. Manufacturing firms are typically larger than other firms, and can more easily participate in international trade, and thereby have access to international sources of finance.

Two graphs in the appendix of this paper suggest, that this is indeed the case. Figure A1 shows that the manufacturing sector receives by far the largest share of total foreign direct investment, among all sectors (39%). It is also like to benefit from the development of direct financing on the domestic capital market. Figure A2 shows that the market capitalization of the stock market has increased from less than 10% in 2003 to values of 30-40% in recent years.
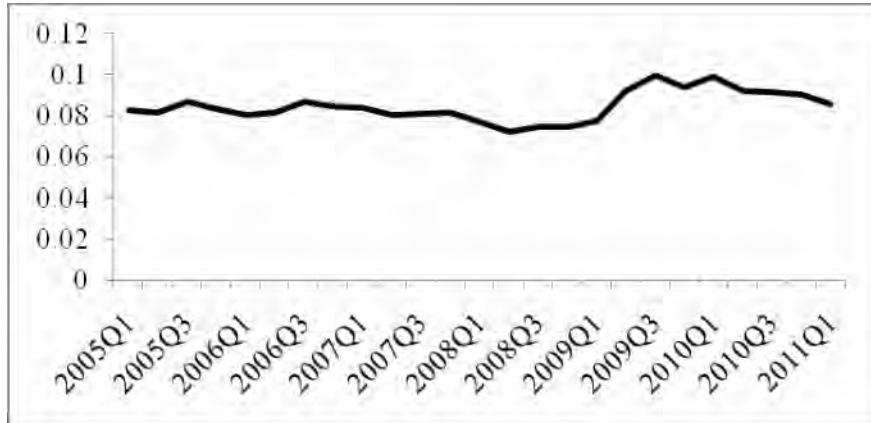
4.2. The Role of the real exchange rate

Sectoral asymmetries in developing countries, with respect to the reaction to domestic credit, are well known in the literature (see Tornell and Westermann 2005 for an overview). The reason for the asymmetry in most countries is the access to international credit and goods markets that varies across sectors. While tradables goods producing sectors have both assets and liabilities denominated in foreign currency, they are not adversely affected by changes in the real exchange rate. On the contrary, they benefit from improved exporting opportunities in case of a depreciation. The non-tradables sectors on the other hand, are characterized by credit constraints. They often aim to overcome this problem, by risky foreign currency financing, which leads to both, an empirical link between credit and output growth, as well as a pro-cyclical correlation of output growth and the real exchange rate[11].

In this section we attempt to investigate, whether Nepal follows this typical pattern. We again start by investigating some preliminary data. Figure 6 shows that the share of bank deposits denominated in foreign currency fluctuates between 8 and 10 percent of total deposits for Nepal's major banks. This number is not very large, when compared to other countries that experienced twin banking and currency crisis, as well as pronounced cyclical asymmetries across sectors. In Mexico, before the Tequila crisis, the comparable number was about 20%. In some other Latin American and South-East Asian crisis during the 1990ies, the figure was even higher. Also, as Nepal maintains a fixed exchange rate regime with India, not all foreign currency deposits will generate balance sheet effect of the type that lead to asymmetric output responses. Finally, the source of the foreign currency deposits is likely to be remittances from Nepalese citizens working abroad, rather than international investors from and portfolio flows from abroad, as in other countries.[12]

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[11] With respect to aggregate GDP, the empirical link between the real exchange rate and real output has been analyzed for Nepal in Thapa (2002). Thapa finds that overall, GDP displays a standard reaction to the real exchange rate, i.e. a negative reaction to an appreciation. In this section, we analyze the relation as the disaggregated level, using sectoral prices to compute sector specific real exchange rates.

[12] Although Nepal maintains a fixed exchange rate regime, it is shown for instance in Bhatta (2003) that a substantial share of Nepal's external debt is denominated in other foreign currencies, in particular the US Dollar and the Japanese Yen. As these currencies fluctuate with respect to the Nepalese Rupee, the can generate balance sheet effects to the type discussed above. Bhatta (2003) provides some empirical evidence, that the external debt is positively related to GDP growth.

FIGURE 6: Share of deposits denominated in foreign currency

Source: Nepal Rastra bank

Figure 7 shows that for most of the period under investigation, the real exchange rate in Nepal has been depreciating[13]. The real exchange rate in this figure is computed by sector, adjusting the nominal exchange rate by price deflators that use the respective sectoral price development. A notable exception is the period from 2001 to about 2009, when the currency remained fairly constant. In the manufacturing sector, as well as in agriculture, there was even a real appreciation. In the services sector, the depreciation occurred much more slowly than in the previous years. Since the beginning of the global financial crisis in 2009, the currency started to experience a real depreciation in all sectors again.

FIGURE 7: Real exchange rate by sector
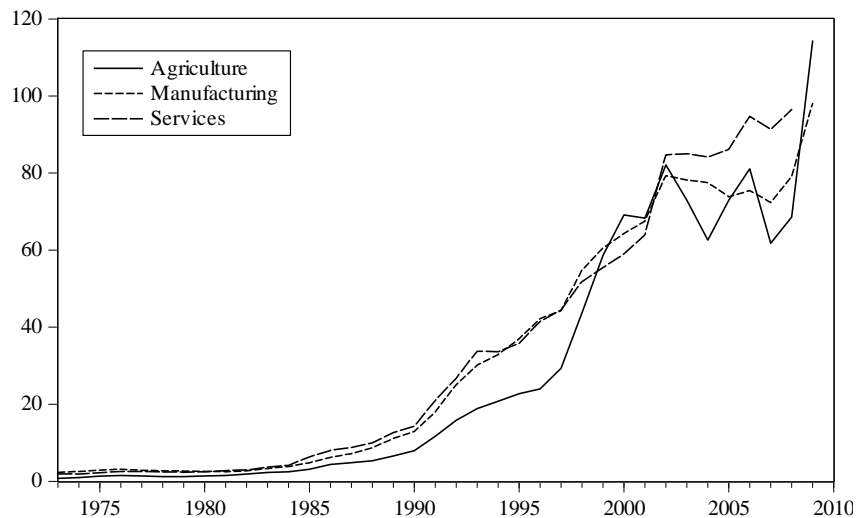
Source: International financial statistics, IFS, and Word Bank Development Indicators, WDI.

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[13] The pattern of the nominal exchange rate is displayed for comparison in figure A3 of the appendix.

In figure 8, we display the reactions of sectoral output growth to changes in the real exchange rate. Again, the first row of figures displays the reactions of sectoral output growth rates to an unexpected change in the real exchange rate. As the reactions to domestic credit, the reaction to the real exchange rate also varies across sectors. While the reaction of agriculture is insignificant of the full 10 year-period following the initial shock to the real exchange rate, there is a positive reaction in manufacturing that is statistically significant at the 5% level about 2-3 years after the shock to the exchange rate. This positive reaction is consistent with the view, that manufacturing is the most tradable among the three sectors that benefits from a depreciation via the reduced export prices. Less pronounced, but also statistically significant at the 10% level is the reaction of services to the shock in the real exchange rate. While services is considered to be a non-tradable good in most countries, Nepal might constitute an exception, as the tourism industry enters the national accounts as an export of services. A real appreciation makes tourism in Nepal more expensive for foreigners, while a deprecation makes it less expensive. Both the manufacturing and services sectors therefore experience a "textbook" reaction to the real exchange rate, while the reaction of the agricultural sector is statistically insignificant.

When we reduce the sample period, in order to capture the recent period of financial liberalization, we observe that a negative reaction of the growth rates in the agricultural sector turns statistically significant at the 10% level in the sample from 1980-2010 and at the 5% level in the period from 1985-2010. In the shortest sample from 1990-2010, the significance is reduced again to the 10% level, possibly due to the reduced number of observations. In the manufacturing and services sectors, the reduction of the sample period does not change the qualitative findings and also the quantitative effect does not change substantially, with significance levels between 5 and 10%.

The negative reaction of the agricultural sector to a change in the real exchange rate is quite interesting, as it cannot be explained by standard textbooks on international trade and finance. It is however, consistent with the view that small firms try to overcome their credit constraints by borrowing in foreign currency. When there is a real appreciation, it reduces the debt of the firms, and a depreciation increases the debt burden. Unlike the tradable sectors in manufacturing and services there is positive effect in the other direction from improved exporting opportunities. Furthermore, there is no foreign currency revenue that commoves with the debt burden.

The magnitude of this issue is likely to be less severe than in other countries, in which real exchange rate movements have triggered currency and banking crisis that included pronounced booms and recessions in the non-tradable sectors. However it is interesting that the agricultural sector in Nepal shares a non-common reaction to the real exchange rate with many other developing and middle income countries.

FIGURE 8: Reactions of sectoral output to an unexpected change the real exchange rate

| Agriculture | Manufacturing | Services |

Full sample

1980-2010

1985-2010
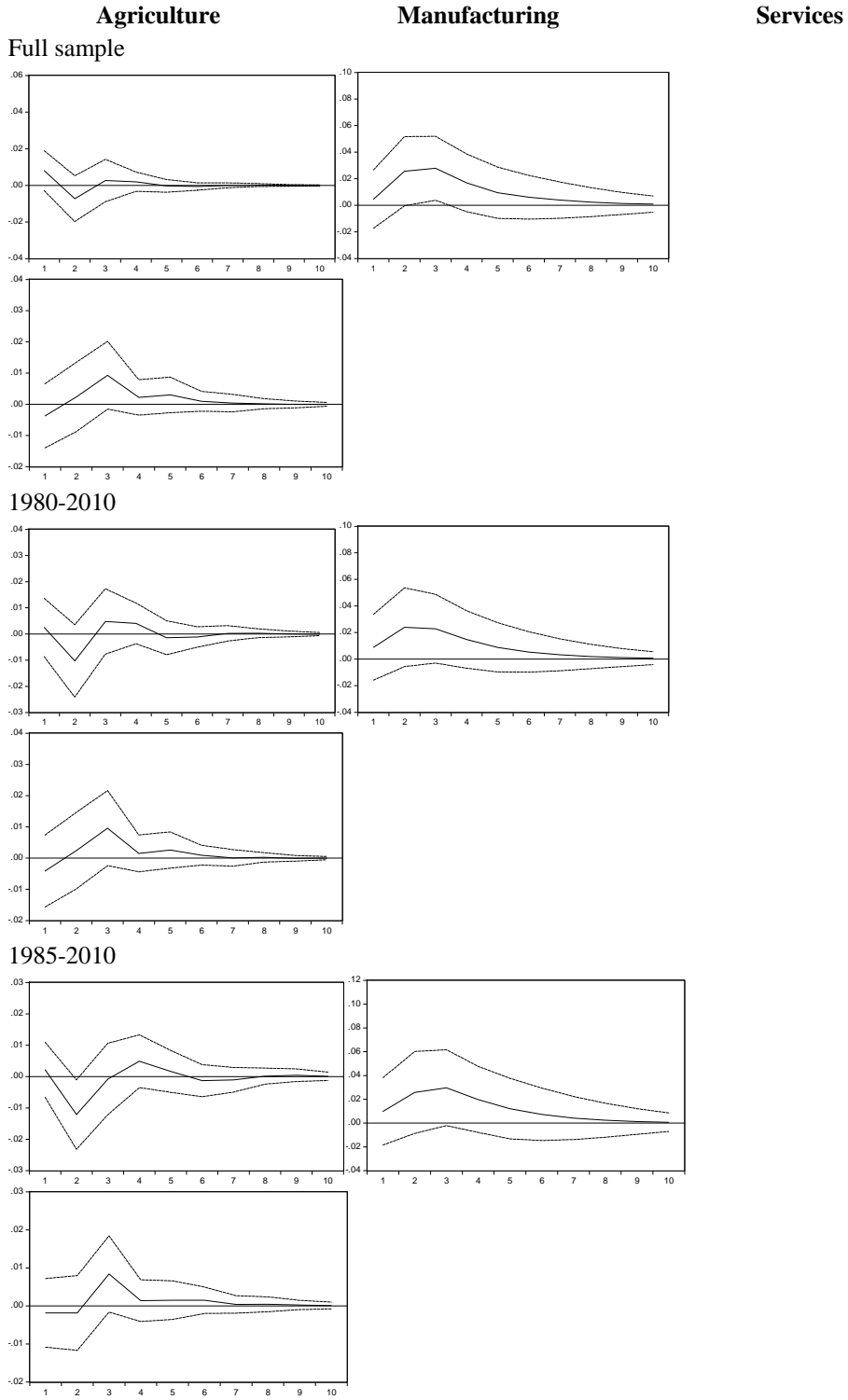
1990-2010
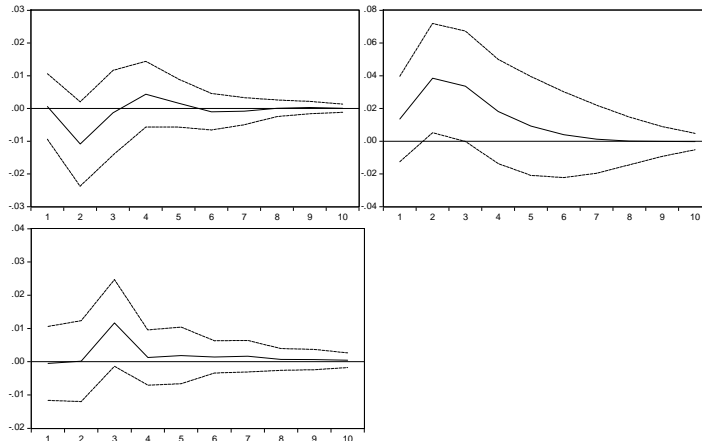
VI. FINANCIAL DEVELOPMENT, ECONOMIC GROWTH AND POVERTY

In the previous section, we have seen that the empirical link between output growth and domestic credit growth is quite different across the main sectors in Nepal. A question of central importance for a country that struggles with issues of poverty, income inequality and high unemployment rates is what this finding implies for welfare of the economy as whole.

Before addressing this question, it is important to note, that growth itself, even if uniformly distribute across sector and individuals, is not a concept that can easily discussed in the context of the welfare question. To grow means to invest now to be able to consume more later. A high growth path necessarily includes an intertemporal decision, where an initial consumption is lower, and future consumption is higher. It is therefore not a Pareto improvement to have higher economic growth. It requires an intertemporal utility function, as well as the assumption that the initial period of reduced consumption (and increased investment) is sufficiently short, that a given generation eventually is able to benefit from the increased future consumption opportunities. Finally, it is important that in the initial period, it does not fall below a minimum income level that is needed to sustain a living. This is where international financial liberalization - that is not discussed separately from domestic financial development in this paper - may actually help.

Accepting these shortcomings, it is important to understand what financial development implies for key variables that go beyond the analysis of average annual growth rates. As always, data availability is an issue, but in the case of Nepal, a quite good data base exists in form the National Labor Force Survey (NLFS). The pattern of inequality across sectors and between rural and urban areas are also widely documented in the literature, for instance in recent studies of Wagle (2010) and Sharma (2010). The two tables below show that there is reason to be concerned about Nepal's recent development, despite the relative stability and growth performance it has recently achieved.

The previous sections have documented that only a very small share of total domestic credit - 3% - is lend to the agricultural sector. Furthermore the agricultural sector does not display a positive significant reaction to increases in domestic credit and it may even be vulnerable to sudden exchange rate depreciation, as it does not benefit from the export-link to the exchange, and might be characterized by the phenomenon of currency mismatch.

Against this background, it is worrisome that more than 70% of the total population and up to 80% in rural areas are employed in the agricultural sector. Table 3 shows, that only in urban areas; this

number is substantially lower, with a share of 32%. The manufacturing sector on the other hand counts only for 6.6% of total employment - again with a higher concentration in urban areas - and the services sector accounts for 15% of employment.

Even in the absence of individual household data it can be said that the distribution of potential benefits and the participation and inclusion of the working population is clearly an issue that needs further attention when discussion the costs and benefits of financial development.

TABLE 3: Employment shares in main sectors

	Total	Urban	Rural
Agriculture	73.9	32.2	80.1
Manufacturing	6.6	14.0	5.5
Services	15.0	45.2	10.3
Other	4.5	8.6	4.1

Source: NLFS 2008, Table 7.6 and own calculations

The problem of the uneven participation of the workers in enforced by the fact that the agricultural sector, and rural areas in general are endowed with rater low income levels and wages, when compared to other professions. Table 4 shows that average monthly incomes vary considerably by occupation. The average monthly income across all occupations is 5117 Rupees. In agricultural sector, however, they are estimated to be only at 4276 in subsistence agriculture and 4554 in market agriculture. These are clearly below average values, not taking into account yet, the high unemployment rates in regions, where agriculture is among the few employment opportunities.

TABLE 4: Average monthly income across occupations

Total	5117
Legislators, senior officials	16142
Professionals	9484
Technician and assoc. profess.	6001
Clerks or office assistants	7243
Service workers	6246
Market agriculture	4554
Subsistence agriculture	4276
Craft and related trades workers	5186
Plant and machine operators	6248
Elementary occupation	3032
Armed forces	7222

Source: NLFS 2008, Table 7.13

VII. CONCLUSIONS

In this paper we have investigated the link between financial development and output growth at the sectoral level. For the manufacturing sector and the services sector, the recent experience in Nepal is reminiscent of the patterns observed in a large cross section of other developing countries. The services sector is borrowing from the domestic banks, while the manufacturing sector has other financial instruments available, including foreign direct investment, as well as the domestic stock market. Accordingly the reactions of the services sectors to changes in domestic credit are more pronounced, and we were able to identify this effect in set of simple bi-variate VAR regressions, in a sample of annual sectoral growth rates.

The agricultural sector, however displays an unusual pattern. It does not react significantly to changes in domestic credit and it reacts negatively to changes in the real exchange rate. The findings indicate that – at last so far – the agricultural sector, and therefore a large share of Nepal's working population, appears to have little participation and needs further attention when analyzing the benefits from the financial development that was achieved in recent years. It is important to take this empirical fact into consideration, when discussing the policy options of future changes in regulation and public policy related to financial sector development.

Concrete proposals on how to include the agricultural sector in the ongoing process of financial development have been made for instance in Sharma (2003), who argues that there is a need for small credit co-operations to engage in lending to rural households and to support mirco-finance.

Further research might go in several directions. First, the empirical analysis presented in this paper only constitutes a first step. A wide range of alternative specifications, control variables and identification schemes could be used to further evaluate the presented evidence. Also firm-level and bank level data would be very helpful to uncover the exact mechanism that is behind the aggregate, sectoral co-movements.

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APPENDIX

FIGURE A1: Decomposition of FDI by sector
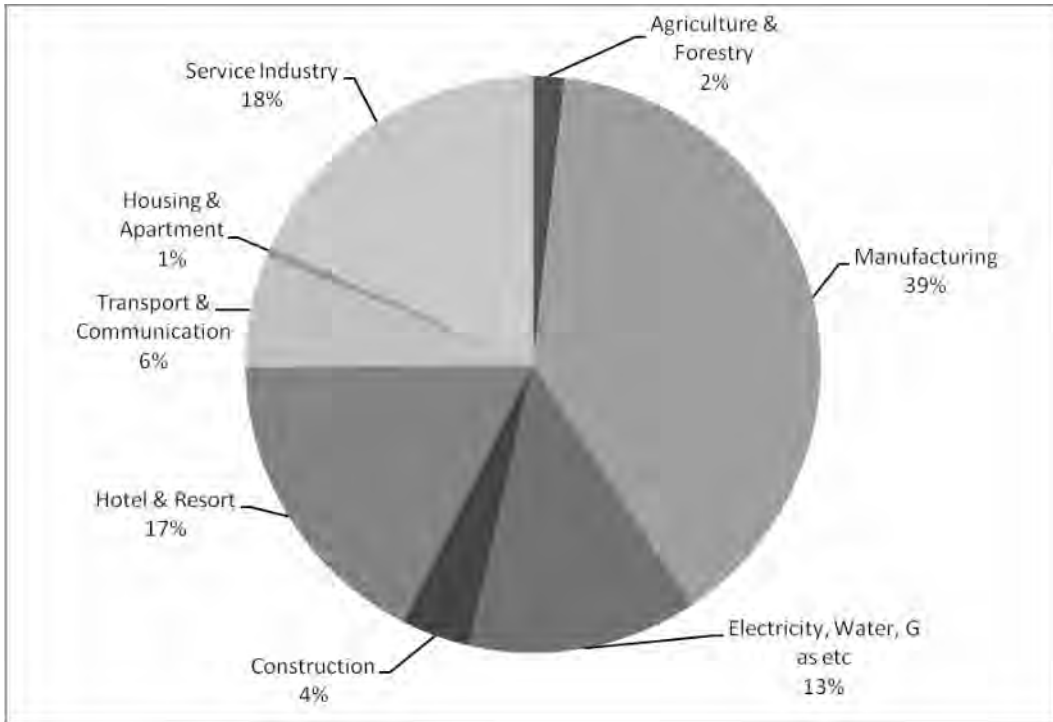
Source: Department of industries, as in Rana and Pradhan (2005)

FIGURE A2: Market capitalization of listed companies (as a percentage of GDP
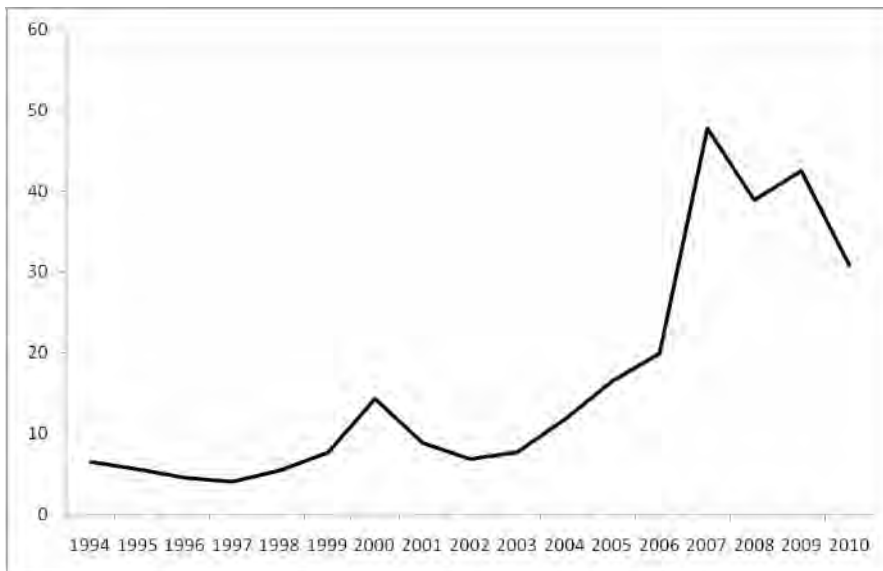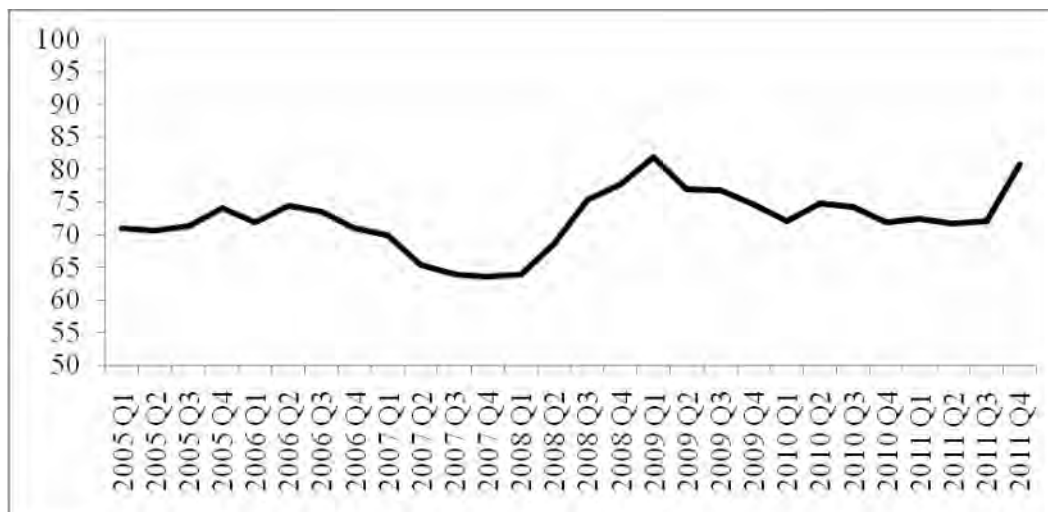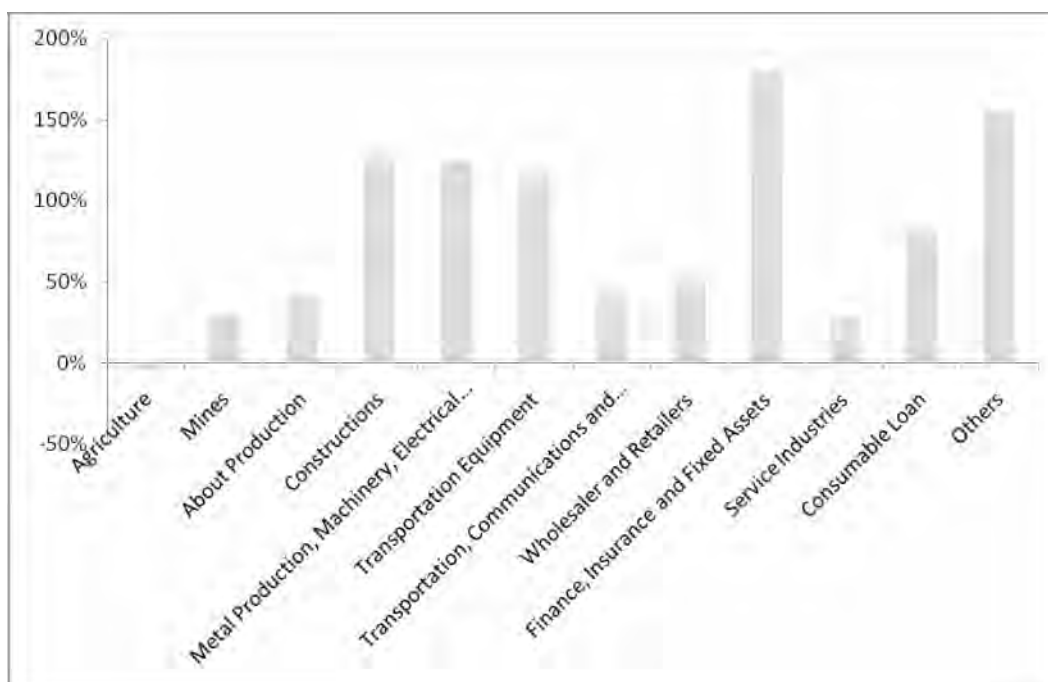
FIGURE A3: Nominal Exchange rate

Source: International financial statistics, IFS.

FIGURE A4: Sectoral lending (nominal) from 2007-2009 (cumulative percentage change)

Financial Sector Development:
Its challenges on economic growth and poverty alleviation in Nepal

Kushum Shakya[*], PhD

Abstract

As a result of liberalized market oriented economic policy since reinstatement of multi party democratic system in Nepal and after the introduction of the Financial Sector's Reform (FSR) in Nepal, number of financial sector institutes like commercial banks, development banks, financial companies, insurance companies, savings and credit cooperatives are increasing tremendously. As increasing the financial institutions its return is uncertain or low due to high risk and challenges to Nepalese economy in terms of economic growth and poverty alleviation. The objectives of this study are; i) to present the trends of economic indicators and poverty alleviation, ii) to show the trends and development of financial institutions, and iii) to identify the loan and credit status of financial institutions. This is a descriptive and development study. The major source of study is secondary.

A well-regulated and follow the rules of financial sector of any economy works as a facilitator for achieving sustainable economic growth. In addition, FSR is a strategy aimed at making the financial system able to attain the economic development. The positive changing economic situation shows the achievement of selected macroeconomic indicators like economic growth, Gross National Income, Gross Savings and total investments. Total investment is higher than national income and domestic savings. Thus, a financial institution plays an important role as a facilitator for achieving sustained economic growth in the economy and in addition, it reduces poverty in a country. Nepal has been successful in reducing poverty significantly in the past one and half decade – from 42 percent in 1996 to 25.4 percent in 2009, income inequality has been increasing alarmingly. However, it has to high risk to meet MDGs target because financial sector institutes have numerous challenges to achieve economic growth and poverty alleviation in Nepal.

Key Words: Financial Institutes, economic growth, poverty alleviation, problems and challenges

I. BACKGROUND

Today, poverty alleviation and economic growth are the top priorities of the Nepali government. Ever since democracy was restored in Nepal, there have been many government policies formed to fight against poverty. Microfinance banks and cooperatives have been established to uplift the poor family's socio-economic status.

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[*] Associate Professor, Central Department of Economics, Tribhuvan Univrsity, 65-Siddhartha Marg, Kuleswor Residence-14, Kathmandu, Nepal. Email: kushum@cedecontu.edu.np; kshakya555@gmail.com.

Financial sector's development (FSD) contributes to reduce poverty and to increase economic growth. It does so by allowing the poorer section of society to gain access to finances. The development of formal financial institutions, with a good system, not only benefits the rich but also the poor. In Nepal, the financial sector represents both banking and nonbanking sectors. The banking sector consists of the Nepal Rastra Bank (NRB) the Central Bank, and all the commercial banks that are operating within the country and are classified under the 'A' category of financial institutions. The nonbanking sector consists of development banks, finance companies, micro-credit development banks, saving and credit cooperatives; and nongovernmental organizations (NGOs) that perform limited banking activities. After introduction of the Financial Sector's Reform (FSR) in Nepal, number of commercial banks, development banks, financial companies, insurance companies, savings and credit cooperatives are increasing tremendously, for example, 4 in1980, 5 in1985, 7 in 1990, 44 in 1995, 98 in 2000, 181 in 2005, 193 in 2006, 208 in 2007, 235 in 2008, 242 in 2009, 263 in 2010 and 279 in 2011.

The financial sector offers financial services to consumers, businesses and other financial institutions. The number of financial institutions in Nepal is increasing, but its return is uncertain and low, indicating a high risk to the Nepali economy. The financial institutes provide loan to unproductive sectors like housing instead of productive sectors like cottage and small scale industries, businesses, medium enterprises and low income households. Therefore, the increasing number of financial institutes is posing a big threat to poverty reduction and economic growth in Nepal.

The real per capita income (GNI) level is low: 61 US cents or 38 Nepalese rupees a day in 1990 and 89 cents or about 89 Nepalese rupees a day in 2007. In nominal terms, the per capita income was $ 212 in 1990, $ 290 in 2006 and $ 300 in 2007. As a result, Nepal remains as one of the poorest countries in the world. Furthermore, the level of per capita income has improved slowly. Nepal's economic growth has been quite low for the last one decade. Also, the income inequality has been constantly increasing. This situation has posed a challenge to the country. Therefore, Nepal needs a high economic growth and needs to ensure that poor and disadvantaged people benefit, thereby reducing the existing inequality in class, caste/ethnicity and location. However, Nepal lacks a comprehensive development framework to promote inclusive growth. Only, some upstream policy work has emerged in the area of inclusive growth from the preliminary brainstorming and review report.

II. STATEMENT OF PROBLEM

A well-regulated financial sector of any economy works as a facilitator for achieving sustainable economic growth. The financial sector in Nepal is evolving widely. Recently, formal financial institutions have been proliferating. In addition, FSR is a strategy aimed at making the financial system capable to attain economic development. The changing economic situation shows achievement of selected macroeconomic indicators like economic growth, Gross National Income, Gross Savings and total investments. Total investment is higher than national income and domestic savings (Ministry of Finance, 2004, 2008).

The economic growth of Nepal is still not very satisfactory and, as a consequence, poverty reduction is not as progressive as planned. However, the financial sector of Nepal has been rising immensely, but if the financial sectors provide loan to unproductive sectors like housing rather than productive sectors, the results will definitely be the opposite. Thus, the challenge in the Nepalese economy is because of the increasing investment in financial sectors, which is more like a silent investment or unproductive investment. If banks do not operate correctly and mis-utilize loan and credits, the banks will be at risk. Among these institutions, the banking sectors share in the total deposit and lending is not only significantly high, but the problems in it are also

challenging. Therefore, this study focuses on the increasing number of financial institutes and its uncertain return, which is a serious challenge for the Nepalese economy in terms of economic growth and reduce poverty.

III. OBJECTIVES OF STUDY

The objectives of this study are as follows: i) to present the trends of economic indicators and poverty alleviation, ii) to show the trends and development of financial institutions, and iii) to identify the loan and credit status of financial institutions. This study has descriptive and development research design.

IV. METHODS

The analysis in this study has been done with the help of secondary sources such as the Ministry of Finance, Nepal Rastra Bank and others. The growth of financial institutes in Nepal shows since 1980 to 2011.

The data analysis uses descriptive of the financial institutions in Nepal. The study describes the trends and development of financial institutions and the loan and credit status of financial institutions. In addition, it also describes the economic growth and poverty reduction in Nepal.

V. FINANCIAL SECTOR DEVELOPMENT AND GROWTH: THEORETICAL AND EMPIRICAL PERSPECTIVES

Modern growth theory identifies two specific channels through which the financial sector might affect long-run growth: 1. through its impact on capital accumulation (including human as well as physical capital) and 2. through its impact on the rate of technological progress. These effects arise from the intermediate role played by financial institutions, which enable the financial sector to mobilize savings for investment, facilitate and encourage inflows of foreign capital (including FDI, portfolio investment and bonds, and remittances) and optimize the allocation of capital between competing uses, ensuring that capital goes to its most productive use.

Levine (2004) appraises and critiques the theoretical and empirical research on the connections between the operation of the financial system and economic growth. While subject to ample qualifications and countervailing views, the preponderance of evidence suggests that both financial intermediaries and markets matter for growth and that reverse causality alone is not driving this relationship. Furthermore, theory and evidence imply that developed financial systems ease external financing constraints that firms face, illuminating one mechanism through which financial development influences economic growth. However, Levine (2004) mentioned that economists disagree sharply on the role of financial sector in economic growth.

Juzhong Zhuang et al (2009) reviewed the theoretical and empirical literature on the role of financial sector development with a view to deepen understanding of the rationale of development assistance to financial sectors of developing countries. The review leads to the following broad conclusions: (i) there are convincing arguments that financial sector development plays a vital role in facilitating economic growth and poverty reduction, arguments that are supported by overwhelming empirical evidence from both cross-country and country specific studies, (ii) there are, however, disagreements over how financial sector development should be sequenced in developing countries, particularly the relative importance of domestic banks and capital markets, and, in developing the banking sector; the relative importance of large and small bank, (iii) while broadening the vulnerable groups' access to finance by microenterprises, small and medium-sized enterprises (SMEs), it is also widely believed that microfinance and SME credit programs need to

be well designed and targeted to be effective. In particular, these programs need to be accompanied by other support services such as provision of training and capacity building, assistance in accessing markets and technologies, and addressing other market failures; and (iv) financial sector development and innovation will bring risks, therefore, it is essential to maintain sound macroeconomic management, to put effective regulatory and supervisory mechanisms, and to carry out structural reforms in developing the financial sector.

A large number of evidence exists to support the theory relating to the strong linkage between financial sector development (FSD) and growth. Goldsmith (1969) used data on 35 countries from 1860 – 1963 and found evidence that there is a relationship between economic and financial development over long periods, and that periods of rapid economic growth have often been accompanied by an above-average rate of financial development.

King and Levine (1993) studied 80 countries over the period 1960 – 1989, keeping other factors that affect long-run growth in control. The study examined the capital accumulation and productivity growth channels separately, and used various different measures of financial development. The study found that a strong, positive relationship between the various financial development indicators and growth in long run. The sizes of the coefficients imply that it is a large impact. According to King and Levine, a country that has increased the amount of financial intermediation in an economy from mean of the slowest growing 25 percent of countries to the mean of the fastest growing 25 percent of countries would have increased its per capita growth rate by almost 1 percent a year. As the difference in average growth between these two sets of countries was about 5 percent per annum over the 30 year period that the analysis covered, this implies that FSD factors alone might explain around 20 percent of the growth difference between these two sets of countries.

Ahmad and Malik (2009) found that financial sector development affects per capita GDP mainly through its role in efficient resource allocation. In addition, foreign capital does not stimulate domestic capital accumulation, while domestic capital plays a significant role as a complementary factor to attract foreign capital. Allocation and utilization of capital are major parts to reduce poverty on one hand and to increase economic growth on the other.

NRB (2009) has mentioned that there are mixed empirical findings about the role of financial development indicators on economic growth. The study tried to determine the relationship between the indicators and Nepal's economic growth over the period FY 1975 - FY 2007. For this purpose, the study selected per-capita real GDP as a measure of growth and four proxies of financial development indicators.

VI. DIRECT AND INDIRECT IMPACT OF FSD ON POVERTY REDUCTION: THEORY AND EVIDENCE

The financial sectors increase income growth by expanding financial services that are accessible to the poor. As a result, this increase in the income of the poor leads to poverty reduction (Jalilian and Kirkpatrick, 2001). The provision of savings, loan and insurance facilities can reduce the vulnerability of the poor, and minimize the negative impacts that shocks can, sometimes, have on long-run income prospects. Thus, the value of financial services in helping the poorest to cope with risks can be as or more important than the expected financial return. The mobilization of savings also creates an opportunity for re-lending the collected funds into the community. The availability of credit can strengthen the productive assets of the poor by enabling them to invest in either productivity-enhancing 'technologies' such as new and better tools, equipment, or fertilizers etc., or to invest in education and health. All of these investments may be difficult to fund using regular household income, but all have the potential to provide a higher income in future. The

availability of credit can also be an important factor in the creation or expansion of small businesses, thus generating self- and wage-employment and increasing incomes.

Finally, remittances from abroad and domestic transfers are an important source of income for the poor, and provide an additional means for them to diversify their sources of income. FSD leads to lower costs, more secure and rapid transfers, and easier access to transferred funds, all of which will be of significant benefit to the poor recipients. However, the poor in developing countries often do not have access to ongoing and formal financial services. Therefore, they are forced to rely on a narrow range of often expensive and more risky informal services, which constrains their ability to participate fully in markets, to increase their incomes and to contribute to economic growth.

Jalilian and Kirkpatrick (2001) examined the link between financial development and poverty reduction using data for a sample of 26 countries, including 18 developing countries. The study used Bank Deposit Money Assets, and Net Foreign Assets as their measure of FSD. ***The results suggest that a 1 per cent change in financial development raises growth in incomes of the poor in developing countries by almost 0.4 per cent – a significant impact.***

Honohan (2004) found that FSD (measured by private credit to GDP) is negatively associated with headcount poverty, a coefficient suggesting that a 10 percentage point change in the ratio of private credit to GDP should (even at the same mean income level) reduce poverty ratios by 2.5 to 3 percentage points.

Banerjee et al (1993) and Galor et al (1993) argued that imperfection in financial markets create hurdles to borrowing funds for income-enhancing investments. As only the rich are able to overcome these hurdles, it serves to perpetuate the initial distribution of wealth. FSD overcomes these imperfections and reduces income inequality (i.e. there is a negative relationship between the two).

Clarke, Xu and Fou (2002) have used these alternative theories regarding the relationship between FSD and income inequality to empirically test data from 91 countries between 1960 and 1995. The study used credit provided by financial intermediaries to private sector, and claims on the nonfinancial domestic sector by banks as their measures of FSD. The findings support the theory that there is ***a negative relationship between FSD and income inequality rather than an inverted U-shaped relationship*** i.e. FSD reduces inequality, even where there are initially low levels of FSD. However, the study also found that the beneficial impact of FSD on income inequality is smaller in countries with larger modern (i.e. non-agricultural) sectors. It still reduces income inequality as long as the modern sector accounts for less than 99.6 percent of GDP (which was true of almost all countries in the sample). In an average country, estimations show that a ***1 per cent increase in private credit reduces inequality by 0.3 percent - a substantial impact***.

Some more recent studies found further evidence that FSD disproportionately benefits the poorer sections of the community. Beck, Demirguc-Kunt and Levine (2004) used data on developing and developed countries over the period 1960 to 1999 to assess whether there is a direct relationship between FSD (measured by credit to private sector) and changes in income distribution. The study found that the income of the poorest 20 percent of the population grows faster than average GDP per capita in countries with higher FSD, and that income inequality falls. The study also found that FSD contributes to reduction in infant mortality.

As noted, these studies use traditional measures of FSD, which may not be related to increase in access to financial services, and hence, may capture only the indirect impact of FSD on poverty through growth. However, Burgess and Pande (2003) used rural bank branch data from India, which may better capture the direct impact of access to financial services on poverty. Between

1977 and 1990, the Indian central bank mandated that a commercial bank could only open a new bank branch in a location with one or more existing bank branches and open four new bank branches in locations with no existing branches. This rule caused banks to open relatively more rural branches in Indian states with lower initial financial development during this period. Burgess and Pande examined the impact of this policy on poverty, and found that *a one percent increase in the number of rural banked locations reduced rural poverty by 0.34 percent, and increased total output by 0.55 percent by facilitating diversification out of agriculture*.

Finally, a number of studies have found evidence of linkages between FSD, child labor and education patterns (Dehejia and Gatti 2002). Poor households with high levels of income volatility may diversify their sources of income by allowing their children to work rather than go to school. Because financial services can help families adjust to unexpected changes in income in other ways, FSD serves to reduce the incidence of child labor and increase school attendance.

Guillaumont and Kpodar (2008) have investigated how financial development helps to directly reduce poverty and indirectly increase economic growth. The results obtained with data of developing countries from 1966 through 2000 suggest that the poor benefit from the banking system to facilitate transactions and to provide savings opportunities, but fail to reap the benefit from greater availability of credit. Moreover, financial development is accompanied by financial instability, which is detrimental to the poor. Nevertheless, the benefits of financial development for the poor outweigh the cost.

Ellahi (2011) has well-recognized the debate that financial sector development constitutes an important mechanism for long run economic growth. Through effective mobilization of domestic savings for productive investment, it also plays a crucial role for alleviation of poverty, especially for developing nations. This study examined the co-integration and causality between development of financial sector, indicators of economic growth and poverty reduction in Pakistan during the time period of 1975 to 2010. It found that there is no causality between finance development and economic growth and between poverty reduction and finance development. Major findings are that economic growth is the policy variable to accelerate financial sector development, and both, economic growth and FSD, could be used as a policy variable to reduce poverty.

VII.   MICRO-FINANCE AND DEPRIVED SECTOR CREDIT

Christopher J. Green et al (2006) examined ways in which financial sector development policy might contribute to poverty reduction, particularly by supporting growth of micro and small enterprises (MSEs). Specifically, the paper draws on case studies and empirical work on the changing role of MSEs in the development process and the access of MSEs to informal and formal finance, including the role of microfinance. A number of research priorities relating to the links among financial policy, small enterprise development and poverty reduction are identified for the immediate attention of researchers engaged in contributing to the achievement of the Millennium Development Goal (MDG) of halving global poverty by 2015.

Financial inclusion is a must for inclusive economic development. MoF (2010) has mentioned that microfinance program plays vital role for financial inclusion. It is imperative to bring proper policy and program for its expansion. For example, on March 17th 2011, Nepal Rastra Bank and Asian Development Bank implemented the 'Income of Small and Medium Farmers Project,' which aims at providing support to small and medium farmers of 10 districts of western and far western regions of Nepal. The purpose of doing so is to provide their high price agriculture product an easy access to market with low risk bearing situation. However, monitoring and implementing plays a vital role to fulfill all the plans. Similarly, micro-finance companies, rural

development banks, Grameen Banks, and others have targeted to improve the economic condition of rural poor women, which directly helps to reduce their poverty.

Dahal (2002) found that level of income has been positively changed after taking loan from the Rural Development Bank in Nepal also. In addition, the pattern of occupation also changed into small business and enterprises. Similarly, the borrowers have decreased no savings from 85 to 31 respondents after taking the loan. And, the average savings has been increased from Rs 85 to Rs 420. The study has shown that there is a positive impact on social aspects, including economic aspects.

VIII. Discussion

This is a major part of the study, which analyzes trends of macro-economic indicators and poverty, trends and development of financial institutions like commercial banks, development banks, finance companies and others. Also, it describes the status of loan and credit in financial institutions.

8.1 Macroeconomic Indicators and Poverty Reduction: Its Trends

The economic growth rate was 6.1 percent in 1999/00, 4.7 percent in 2000/01, -0.3 percent in 2001/02, 2.7 percent in 2002/03 and 3.5 percent in 2003/04 (Ministry of Finance 2004, 2003/04, 2004). Thus, in recent times, Nepal's economic growth rate is inordinately low, confined to 3.5 percent against the target of 5.5 percent as envisaged in the 3-year Interim Development Plan (2010/11-2012/13) and 4.5 percent estimated in the budget for 2010/11. Despite poor economic performance in the past, growth rate is estimated to remain at 5 percent in 2011 (Dahal, 2011).

The growth rate of remittances sharply declined from 51 percent in FY 2008/09 to 10.1 percent during FY 2010/11. Although it is extremely difficult to be specific about the size of foreign employment and remittances in Nepal, inflow of remittances according to official statistics marked RS 259.53 billion during FY 2010/11, which is estimated to be 19.3 percent of GDP (Dahal, 2011).

TABLE 1: Macroeconomic Indicators

Description	2006/07	2007/08	2008/09	2009/10	2010/11
GDP at current prices (Rs in billion)	727.83	815.66	988.05	1,171.90	1,346.81
Gross consumption/GDP	90.2	90.2	90.6	92.6	93.3
Gross domestic savings/GDP	9.8	9.8	9.4	7.4	6.7
Gross investment/GDP	28.7	30.3	31.7	35.0	30.2
Export/GDP	8.2	7.3	6.9	5.2	4.9
Import/GDP	26.8	27.2	28.8	32.3	28.9
Revenue/GDP	12.1	13.2	14.5	15.4	15.3
Tax Revenue/GDP	9.8	10.4	11.8	13.3	13.1
Total government expenditure/GDP	18.4	19.8	22.2	22.2	23.0
Budget deficit/GDP	4.1	4.1	5.0	3.5	3.8
Total deposit/GDP	46.0	51.7	55.5	52.5	50.8
Total domestic credit/GDP	49.5	53.6	56.1	55.0	55.2
Remittance income/GDP	13.8	17.5	21.2	19.8	19.3

Source: Dahal, M.K.(2011).

After announcement of MDGs, in 2005, Nepal has achieved the proportion of Nepal's population living on less than US$1 per day (World Bank et al, 2006) and 31 percent of the population is assessed to be below the national poverty line. The country's current poverty level is 25.4 percent, suggesting that it has been reduced by 5.5 percentage points since 2005. The Three Year Interim Plan (2010/11-2012/13) set a target of reducing the national poverty level to 24 percent by July 2010. In addition, NPC has set a target for the Three-Year Interim Plan of reducing poverty to 21 percent by July 2013, which is the same target in MDG as well.

TABLE 2: **Trends of Poverty Reduction in Nepal**

Indicator/Year	1990	2000	2005	2010	2015 (Target)
Proportion of population below US$ 1 per day	33.5	n.a	24.1	n/a	17
Proportion of population below national poverty line	42	38	31	25.4	21
Poverty gap ratio	n/a	11.75	7.55	6.1	-

Source: National Planning Commission. 2010.

However, large differences remain between urban and rural poverty rates, as urban poverty fell from 21.5 to 9.5 percent between 1995/96 and 2003/04, while the decline in rural poverty from 43.3 to 34.6 percent over the same period was less impressive. Thus, trends of rural poverty still remains almost four times higher compared to urban poverty (World Bank et al., 2006). However, Nepal's plan has targeted to reduce poverty two years earlier than MDGs, which is an equally challenging issue.

Nepal has been successful in reducing poverty significantly in the past one and half decade, as shown above, but income inequality has been increasing alarmingly. The Gini co-efficient that measures income inequality has gone up from 0.34 to 0.46 in this period. Tackling this increased inequality has become a big challenge for Nepal.

8.2 Trends and development of financial institutions

In Nepal, financial institutions like commercial banks, development banks, finance companies, insurance companies and cooperatives for savings and credit are increasing tremendously. With the economic liberalization initiated in mid-1980s, the Nepalese financial system witnessed significant developments. For instance, the financial system consisted of only two commercial banks and few other financial institutions before liberalization. During two decades of the post-liberalized regime, the financial system has reasonably developed, diversified and enriched.

The increasing number of financial market in Nepal has displayed an impressive growth in fiscal year 2007/08. Overall, as of mid-April 2011**,** there are 31 commercial banks of class A, 87 development banks in class B, 80 finance companies in class C, 21 micro-credit development banks in class D, 16 savings and credit cooperatives and 45 nongovernmental organizations (NGOs) licensed by the NRB to undertake limited financial transactions. Table 3 shows that the number of financial sectors institutes since 1980 to mid April 2011.

8.3 Loan and Credit Status of Financial Institutions

As increases number of finance sectors, loan and credit also increases simultaneously as shown by Nepal Rastra Bank. This section shows the loans and credit in commercial bank and other financial institutes and company, and the commercial bank has spent on loan more compared to the financial institutes and company (NRB, 2011).

Out of these institutions, the commercial banks, development banks, RRDBs, finance companies, financial cooperatives and NGOs are under the regulatory framework of the NRB. While the insurance board regulates the insurance companies and the securities board regulates the stock exchange, other institutions are under the regulation of the government. Along with the numerical growth and other institutional developments of the financial sector, the deposits and credits are expanding. However, the qualitative aspects of the financial system still requires improvement as reflected inadequacy of banks and financial institutions in providing increased benefits to the general public and in contributing adequately to the economic development raising income level, creating employment opportunities and building internal strength for the growth of the institutions themselves. Though various reform efforts were undertaken in the past to create a healthy financial sector as a pre-requisite to sustain economic growth in Nepal.

TABLE 3: Growth of Financial Institutes in Nepal,

Types of Financial Institutes	Mid-July											Mid-April*
	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011
Commercial Banks	2	3	5	10	13	17	18	20	25	26	27	31
Development Banks	2	2	2	3	7	26	28	38	58	63	79	87
Finance Companies				21	45	60	70	74	78	77	79	80
Micro-finance Development Banks				4	7	11	11	12	12	15	18	21
Saving & Credit Co-operatives Limited Banking Activities)				6	19	20	19	17	16	16	15	16
NGOs (Financial Intermediaries)					7	47	47	47	46	45	45	45
Total	4	5	7	44	98	181	193	208	235	242	263	279

Source: Nepal Rastra Bank, Banking and Financial Statistics, Mid- January, 2011, No.56.
* Ministry of Finance, Economic Survey, 2010/11, Vol. I.

The importance of micro, small and medium enterprises in income and employment creation is realizing. Therefore, it has started providing guarantee against credit extended by banks and financial institutions to small and medium enterprises (SMEs) since 2007/08 only. It is believed that this step will promote the credit flow to SMEs from the banking sector. The key to poverty alleviation is economic growth that is inclusive and reaches the majority of the people. But, it is equally risk for depositors because there is no insurance in financial institutions (9 June, 2009, Kantipur).

IX. CHALLENGING ISSUES ON ECONOMIC GROWTH AND POVERTY REDUCTION

9.1 General Challenges at National Level

Despite the above reviewed theoretical and empirical relationship of financial sectors with economic growth and poverty alleviation, the recent development in the financial sectors raise a number of challenges, which are discussed as follows:

9.1.1   Trends of Poverty profile

Overall, incidence of poverty (number of people below poverty line) declined from 42 percent to 31 percent – a rate of 3.7 percent per annum between 1995/96 and 2003/04. While the target for Three-Year Plan (20110/11-2012/13) of population below poverty line is 21 percent, the current status, FY 2009/10, is 25.4 percent (Ministry of Finance, 2010). The Millennium Development Goal (1990-2015) has also targeted to reduce poverty by 21 percent in proportion of population below national poverty line. Both the Three-Year Plan and MDG are very close to achieve the

goal. Poverty reduction has reduced by 50 percent in 2012/13 from 1995/96. This reduction occurred due to the increasing volume of remittance; however, it is not a permanent source to reduce poverty.

A comparison between poverty measurements of population groups whose poverty rates are higher than the national average of 31 percent shows that poverty rate is high among agricultural wage earners, small and marginal agricultural households, Dalits, Janjatis and Muslims, and illiterate households. Poverty rates are close to or more than 40 percent among these population groups. More than half of the agricultural wage earners live below poverty line, and poverty decline among this group has remained the lowest, followed by Muslims and Hill Janjatis. The greatest progress are made by Tharus (Terai Janjatis) followed by self-employed agricultural to get out of the poverty cycle. Poverty rate has declined considerably among the Dalits, but they continue to have high rate of poverty.

Scenario of Unequal performance in poverty reduction

1. Urban poverty declined faster (by 56%) than rural poverty (by 20%).

2. Rural poverty declined faster in Eastern Terai (by 33%) and Western Hills (by 32%), while in Eastern Hills, it increased (by 19%).

3. Poverty declined fastest in self employment trade sector (by 66%) while poverty in self employment agriculture sector declined slowest (by 24%).

4. Poverty in wage earning agriculture declined slowest by 4%, while it declined the fastest among professional wage earners by (74%)

5. Poverty decline was fastest (by 86%) among the households headed by an educated (at least at higher secondary level) while the poverty among the households of illiterate heads declined the slowest (by 18%).

6. Poverty declined slowest among Muslems by 6% followed by Hill Janajati by 10%.

Source: Centre Bureau of Statistics (2005).

Despite a remarkable achievement in poverty reduction, the poverty rate is still high at 31percent. Poverty is more concentrated among some population groups and spatial regions. Therefore, poverty reduction has been a top priority for Nepal since decades, and this priority can be met by developing the financial sectors.

9.1.2   Youth unemployment

Unemployment rate, among youth, at 15 percent is substantially higher than the national average of below 4 percent (MoF, 2008). Many youth aspire to work in non-agricultural, non-rural sectors and seek opportunities in urban areas or abroad for higher wages (Dukowicz et.al, 2008). According to the NLSS 2003/04, while 53 percent of remittance originates in overseas countries, migration within Nepal or to India (almost fifty-fifty) is the source of the remaining 47 percent of remittance (Centre Bureau of Statistics, 2005).

Agriculture can be attractive to the youth if it operates with a modern enterprise, which enlarges income opportunities. Transforming small agricultural activities into commercial farms that are connected to markets can unleash this potential of agriculture. Minimization of risk, innovation and new technology could help change the trend. Furthermore, remittance can be spent to enhance more growth and employment.

Nepal has already established the youth self-employment fund as a mechanism to provide unsecured low interest loans of upto Rs 200,000 to promote entrepreneurship among jobless

youths. At that time, the Fund had set an ambitious goal of providing self-employment to 50,000 youths. However, it has been able to extend loans to only 3,200 people so far. (The Daily Newspaper, *Republica*, March 1st, 2012). Therefore, financial sectors have to take care of their policy to provide loan to youth.

9.1.3   Increasing remittances through International Migration

Lokshin, Bontch-Osmolovski and Glinskaya**1** (2007) have measured the impact of local and international migration on poverty in Nepal. The study indicates that one-fifth of poverty reduction in Nepal occurring between 1995/96 and 2003/04 can be attributed to higher levels of work-related migration and remittances sent home. Thus, the increase in international work-related migration was the leading cause of this poverty reduction. Additionally, domestic migration also played an important role. This demonstrates that strategies for economic growth and poverty reduction in Nepal should consider aspects of the dynamics of domestic and international migration.

However, the increasing level of remittance is not a permanent solution to increase economic growth and poverty reduction. Therefore, the financial institutes should provide loans to targeted populations like youth and women in productive sector to control international and national migration for local development and to preserve human resources to help economic growth and to reduce poverty, significantly. Ministry of Finance (2010) shows that only 16 financial institutes mobilize the youth self-employment programs like rickshaws, agriculture and non-agriculture sectors. From an economic and demographic point of view, it is a good initiative to provide loans for youth self-employment program, rather than depending on remittance, but it has to be smoother and regular.

9.1.4   Rules and Regulation and Its Poor Implementation

Nepalese people are more attracted to invest in banks; as a result, a number of financial institutes are increasing, as shown above. Therefore, share holders prefer to invest in banking sectors more than non-banking sectors. For example, in a deposit of NRs. 720 million made in bank, NRs.530 million belongs to institutional deposit and NRs.190 million belongs to private deposit. But, with the increasing number of financial institutions, risks for depositors are also increasing due to lack of insurance, lack of management, no credit rating agency and no policy, rules and regulations to protect the deposit.

However, banks have to consider the lending system effectively, then it leads to production, reduce risks and provide guarantee. It also helps to reduce unemployment and poverty by providing loan services to low income households.

9.1.5 Urban-based financial sector institutes

About 80 percent of Nepal's population lives in rural areas and majority of them are poor; however major financial institutes are concentrated in urban areas only. NRB has published a report that majority of banks and financial institutes are established in urban areas, whether it is commercial bank, development bank and financial companies (The Kathmandu Post, March 12, 2012). The Kathmandu Post has shown that more than 95 percent of banks deposit and more than 97 percent of credit are concentrated in urban areas. This is due to banking and financial sectors not reaching out to rural areas. However, NRB has to implement serious steps to increase and establish branches in rural areas.

TABLE 5: Household Access to Bank accounts in Urban and Rural Area, 2006

Area	No Account	Bank	Finance Company	MFDB/ RRDB	FINGO/ Cooperatives	Multiple Accounts
Kathmandu and Lalitpur	23.8	50.5	9.5	1.0	2.4	12.9
Other Urban Areas	27.1	43.3	3.3	1.0	12.9	12.3
Rural	55.4	15.9	0.2	4.4	19.3	4.7
Average	51.0	26.4	0.9	3.9	17.9	5.9

Source: Ferrari Aurora et al (2006), Access to Financial Services Survey.

Table 5 shows that less than 25 percent of household do not have account even in Kathmandu and Laitpur, however, it is more than 55 percent of household in rural areas. In rural areas, micro-finances and cooperatives are more popular compared to banks. Therefore, access to financial institute has to increase in rural areas to reduce poverty and to increase economic growth. Ferrari, Aurora et al (2006) has also shown that only 49 percent of Nepalese households have deposit account with financial institutions. Not surprisingly, access to accounts is concentrated in urban areas only.

Thus, almost all commercial banks are urban based, except three banks: Nepal Bank Limited (NBL), Rastriya Banijya Bank (RBB) and Agriculture Development Bank Limited (ADBL). However, a branch covers only a sizeable population. MoF (2010) shows that population per commercial bank was 48,300 in 2007 and 45,700 in 2008; but, branches of these banks are higher compared to other financial sectors. However, these three state-owned banks- NBL, RBB and ADBL-have been suffering from high level of non-performing loans. There have been huge challenges for these banks due to willful defaulters. This has also hampered healthy competition in the banking sector. Therefore, stern action should be taken against the willful defaulters.

9.1.6 Access to Savings Services by the Poor

Due to availability of only urban-based financial institutes, poor people hardly get access to savings services, and therefore, do not save. The majority of rural people do not have access to financial sectors on one hand and lack savings services on the other. Thus, under such circumstances, how is it possible to reduce poverty of rural people?

9.2 Specific Challenges with respect to Financial Sectors

Besides the above mentioned general challenges, this section presents specific challenges of financial sectors. Microfinance play a major role to reduce poverty level and increase economic growth, therefore, majority of the specific challenges are focused on microfinances. Lohani (2010) has found the following challenges related to microfinance sectors.

9.2.1 Resource (fund) constraints

According to direction of the NRB, commercial banks, development banks and finance companies have to provide deprived sector loan 3, 2 and 1.5 percent of their transaction to micro finance. But, credit on micro hydro, hospital, youth for employment and small housing is countable in microfinance, which is almost half of the resources altered for microfinance from last year. Microfinances are expanding in villages and in unreached districts, but resources are limited. The NRB and Government should seriously implement the idea that 3 percent deprived sector loan must be available to microfinances.

9.2.2   High interest on deprived loan

Since, microfinance program is one of the major tools of poverty alleviation, Nepal Rastra Bank set the deprive sector policy to provide resources for the microfinance institutes. Every commercial banks, development banks and financial companies have to provide 3, 2 and 1.5 percent of their transactions in low interest rate (3-5 percent). But, now these banks have revised their deprived sector lending rate to 6-9 percent which is very high. Due to such high interest rate, cost of funds has increased. As a result, both the poverty alleviation program and the sustainability of microfinances have been affected. So, NRB should take effective steps to reduce deprived sector lending rate in order to strengthen microfinances and its efforts to reach remote areas.

9.2.3   High tax rate

All financial institutions are divided into four categories by the NRB. Microfinance lies in the category "Gha". In these categories, there are different types of rules regarding their establishment, their Credit Reserve Ratio (CRR) and other aspects. But, the corporate tax is equal to other commercial banks.

The profit of microfinance is lower than other banks, but Nepal Government charges 30 percent corporate tax to this profit, which is a very high rate for microfinance institutes. If Nepal Government exempts corporate tax for MFIs, the rebate amount of tax would be used to expand services to poor family and to strengthen institutes and capacity building of its staffs and clients.

9.2.4   Limited capacity of semiformal rural finance institutions

There are limited studies, research and information on microfinance banks. Without these progressive phenomena banks are in difficulty to achieve the objective of poverty alleviation, which is the top priority of the Government. Capacity building is one of the burning issues of microfinance institutes to provide microfinance services to the rural poor in long-term, micro finance institutions should be strong and sustainable. NRB, Nepal Government and other related agencies should be committed to enhance the capacity building of microfinance banks vertically and horizontally that is intuitional capacities, staffs capacities and as well as client's skill development.

Despite huge dependence of the poor on semiformal rural finance institutions, the majority of the cooperatives and microfinance NGOs are capacity constrained in key technical areas essential to rural finance operations such as accounting, auditing, strategic planning, financial analysis, and portfolio management. They also suffer from lack of appropriate management information systems, professionally trained staff and external audit mechanisms. This lack of management significantly limits their potential to expand their client base and to reach poor households. However, currently there is no institute or program that supports the capacity building of semiformal institutions. A training institute that can provide professional training in banking and financial subjects to a wide range of financial institutions is urgently needed.

9.2.5 Public deposit

Bank and financial institution act 2006 has provision that microfinance banks can accept public deposit with the approval of NRB. It has been essential to open public deposit in order to maintain the scarce fund. However, NRB is positive. Now, it has collected some deposit, even though it is a small amount from poor. In other South Asian countries like Bangladesh, MFIs have been activating public deposit, continuously and successfully.

9.2.6 Voice not heard

Policy level has not heard voices of the microfinance institutes. Current problems and constraints in this program have been presented to the Government for years, but Government has not taken it seriously. It affected the microfinance banks directly, but no sympathy has been shown to MFIs.

9.2.7 Sustainability and viability

Microfinance banks are in a cross-road. Tax is equal to commercial banks, interest on deprived sector loan is increasing day to day, lack of infrastructures, scattered houses, motivation and service provide to poor in center/group level (ward/block) is costly and atmosphere is not supportive of MF banks. Knowing the fact that microfinance is a significant tool to reduce poverty, micro finance development banks/institutions should be sustained and viable. So, Government and NRB should decide to exempt tax and to make resources available.

9.2.8 Lack of appropriate legal and regulatory framework for microfinance

There is no legal and regulatory framework for semiformal rural finance institutions in Nepal. Considering that more than 17,300 cooperatives and microfinance NGOs take deposits without license, lack of appropriate supervision of those institutions pose a considerable amount of problem for the security of depositors and the stability of the rural finance sector. The lack of proper regulatory authority also discourages rural finance institutions from improving their accounting, their internal controls and enhancing their overall operating capacity.

9.2.9 Need for an operational model in hills and mountains

The Grameen-type group-based lending model of microcredit has been effective in the Terai region. But, the model cannot be replicated in the hills and mountains where households are sparsely located, and roads and communication networks are scarce. More appropriate approaches for those areas need to be developed through pilot initiatives. The perceived high cost of access in the hills and mountains, however, discourages rural finance institutions from implementing such pilot programs.

9.2.10 Insufficient infrastructure

To promote healthy growth of the rural finance sector, supporting infrastructure such as a training institute is indispensable. Credit information services to rural finance institutions will improve their risk mitigation and overall rural finance sector governance. There is limited capacity of loan recovery by financial institutions, which burdens them with nonperforming loans and lowers credibility of the rural finance sector as a whole.

9.2.11 Lack of Monitoring and Supervision

Silwal (2007) has also concluded that a challenge of non-banking financial institutions in resources mobilization is monitoring and supervision by NRB. To achieve economic growth and poverty reduction in the country, NRB has to play a significant role. Otherwise, the number of financial institutes will increase without any formalities, which will prove risky for individuals, communities and the nation at large. Therefore, monitoring and supervision is a key factor to update financial activities and its status.

X. CONCLUSIONS

The study has shown that the number of financial institutes in Nepal is increasing after the establishment of FSR. The commercial banks have more lending than other financial institutes because the number of commercial banks is increasing. But, there is no guarantee of loan because it has very high risk for bankers and depositors. It is true that Nepal needs more financial institutes in future, but it has to be controlled by the NRB. Also, the loan system must be returnable to the Nepalese economy with negligible risk to the depositors. Thus, deposit insurance must be introduced to preserve depositors and financial institutes in the share market. To discourage unproductive investment and lending policy, it can be recommended that financial institutes have to provide loan for productive purpose rather than unproductive purpose.

In addition, the increasing number of financial sector institutions is definitely favorable to the Nepalese economy, but more than a dozen challenges pose obstacles to the growth of these financial institutes. Therefore, the outcomes of the financial sector will be low.

XI. RECOMMENDATIONS

Based on the conclusion, this section recommends increasing financial sectors to increase economic growth and poverty reduction.

1. Give priority to poverty reduction program by microfinances and other financial institutes.
2. Develop 'Going Rural' approach to establish financial sectors and branches.
3. Create rural based approach to encourage loan and credit and provide loan and credit to human resources like youth, women group and so on to control youth unemployment and brain-drain.
4. Utilize remittances in poverty reduction programs.
5. Update and regularize the rule and regulation to protect financial sector and save from unproductive and unhealthy environment.
6. Increase resources for microfinances to provide deprived sector loan with controlled lending rate.
7. Reduce corporate tax rate to MFI because it is equal to commercial banks.
8. Provide professional training programs in banking and financial sectors to rural finance operations such as accounting, auditing, strategic planning, financial analysis and portfolio management.
9. Provide banking transaction to the poor by collecting public deposit even though if it is a small amount.
10. Provide equal opportunity and change policies as required of bank and financial sectors.
11. Encourage microfinances and other financial institutions with regular authority to encourage rural finance institutions.
12. Focus on rural based lending model of micro credit in Mountains and Hills like in Terai region.
13. Promote rural finance section with supporting infrastructure and good management.
14. Update activities of financial sector institutions by regular monitoring and supervision for significant result.

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Does Financial Development cause Economic Growth?
A Vector Autoregression Approach
– Sri Lankan Experience

Sanjeewa J K Guruge[*]

Abstract

Economic growth and financial development are closely related. The interactions between them are crucial to an economy, which have attracted vast attention in research. This paper examines the causal relationship between economic growth and financial development in Sri Lanka during the period from 1971 to 2010, using a vector autoregressive (VAR) model taking financial repression and real interest rate too into consideration. Financial development is measured by constructing a single index using three variables namely, a) consolidated broad money supply as a percentage of nominal GDP, b) commercial bank assets as a percentage of commercial bank assets plus central bank assets and c) domestic credit to private sectors divided by nominal GDP. Granger causality tests are used along with the co-integration and vector error correction methodology (VECM). The empirical results reveal that financial development is the cause for economic growth in terms of short-term dynamics, while economic growth sustains financial development in the long-run. The findings are conciliatory to the contradictory evidence in many previous empirical studies with regard to whether economic growth leads financial development or financial development precedes economic growth. The study construes that it is necessary to launch the financial sector reform to improve the efficiency in the financial system, which results in positive reinforcement between economic growth and financial development.

I. INTRODUCTION

It has been a common practice to focus on the real factors of the economy in research on economic development. Then the pioneering work by some prominent analysts in the last few decades has directed research towards the interaction between financial development (FD) and economic growth (EG). Particularly, following the emergence of endogenous economic growth theories, the important role played by FD in achieving EG has been taken into consideration. A variety of empirical studies have been carried out in order to identify the causal relationship between FD and

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[*] Senior Manager, Public Debt Department , Central Bank of Sri Lanka, 30, Janadhipathi Mawatha, Colombo 01, Sri Lanka, Email: sjkg@cbsl.lk

EG. To achieve sustainable economic growth, it is essential to have an efficient financial system in a country. An efficient and healthy financial system helps enhance financial intermediation, achieve fairer prices for financial products, boost profitability, and raise quality in customer services.

This paper examines empirically whether FD leads EG or vice versa in a small open economy of Sri Lanka, to identify the importance of financial sector reforms for the development of the economy. Using time series data from 1971 to 2010, co-integration and causality tests are conducted to assess the roles played by FD and EG in an economy. The empirical examination is augmented by taking real interest rates (RIR) and financial repression (FR) into account, which is a major step forward compared with most previous studies. Sri Lanka is considered to be an interesting case for two main reasons. Firstly, Sri Lanka was the first country in the South Asian region to commence financial sector reforms and, therefore, it has a richer and longer history of financial sector reforms. A series of financial restructuring programs that aimed at improving the financial system had been launched since the independence. Removal of restrictions on banking products such as interest rates on deposits and loans, relaxation of exchange control, opening up of financial markets to foreign and domestic competition, and less government interference in financial markets were among these reforms. However, the effects of the reforms and the accompanied policies on the financial market and its functioning have yet to be scrutinized for the Sri Lankan economy. Lack of significant studies on the Sri Lankan experience is not only a scholarly matter, but also affects the Sri Lankan economy adversely. It hinders further reforms in the country and deprives the benefits to the public due to the non-implementation of further reforms. This paper therefore attempts to fill the gap to enrich academic knowledge and understanding as well as to benefit the Sri Lankan economy. Secondly, the database for Sri Lanka is considered relatively good by developing country standards. The use of annual data covering the period 1971–2010 is sufficiently long to allow for a meaningful time series investigation, which addresses the concerns raised for the lack of time series-based individual country studies.

With the extensive role of the government, the post-independent Sri Lankan economy had the characteristics by directed credit policies, import substitution, government controlled interest rates and tariff. An economy with such characteristics tend to experience negative real interest rates as explained by McKinnon (1973), Shaw (1973) and Fry (1995), and that was exactly what Sri Lanka had experienced during the said period. Except in the early years immediately after the independence from the Great Britain in 1948, extensive government control was a common element of the economy and accordingly, growth performance was poor, revealed in Table 1 and Table 2. Heavy government involvement in almost all aspects of the country and the economy is a feature for that period, with a number of government-led development programs.

TABLE 1: Growth Performance of Sri Lanka

	Real GDP Growth	Population Growth	Population Dependency	Unemployment	Capacity Utilization
1950-54	3.9[*]	2.7	68.6 (1953)	n.a.	n.a.
1955-59	2.5	2.8	n.a.	n.a.	n.a.
1960-64	4.5	2.5	76.1 (1963)	16.6 (1963)	n.a.
1965-69	4.8	2.4	n.a.	14.3 (1968)	65.0 (1969)
1970-77	3.1	1.6	82.1 (1971)	19.7 (1975)	60.0 (1977)

* between 1951 and 1954
Source: CBSL 1998

TABLE 2: Performance Indicators of Sri Lanka

	Terms of Trade (1990=100)	Government Debt/GDP (%)	Debt Service Ratio[*] (%)	Domestic Savings/GDP	Investment/ GDP
1950-54	427.8	21.7	2.3	n.a.	n.a.
1955-59	469.2	25.8	1.3	n.a.	n.a.
1960-64	409.9	43.7	1.8	13.5	15.3
1965-69	335.1	61.6	7.7	12.3	15.3
1970-77	212.9	63.1	20.7	13.7	15.1

* as a % of earnings from merchandise exports and services.

Source: CBSL 1998

A popular development policy in the framework of mainstream economics during that era was adopted so as to keep the cost of finance low. It was accompanied with the objective of promoting physical investment as against money holding as an asset, and monetary policy was formulated accordingly. In general, growth policies in Sri Lanka demonstrated the typical characteristics of "financial repression", according to the McKinnon-Shaw financial liberalization literature. Against the above backdrop, Sri Lanka went ahead with financial sector reforms more than three decades ago in 1977 as part of an economy-wide liberalization program. With the objective of transforming the existing network of financial intermediaries into a more efficient and dynamic financial system, reforms were mainly directed towards the removal of the repression in the financial system. It was expected that such reforms would reduce the enormous stress on the system, which causes the aggravation of deficiencies in resource mobilization. Further, these financial reforms were mainly directed towards the banking sector for its dominant roles. Most significantly, in order to make the real interest rate positive, interest rates were restructured at the beginning and a high interest rate policy was implemented subsequently with the aim of enhancing the pace of capital accumulation, investment and real economic growth. A number of supplementary policies were implemented as well to support the restructuring of interest rates.

This paper comprises of six sections. The next section includes the theoretical foundation of the study, with a review of the literature on the finance-growth nexus. Section 3 presents the analytical framework of how FD and EG are related and interact. The role of financial repression to this relationship is deliberated. Data, variable description and construction are covered in Section 4. Empirical assessment on the causal relationships between EG and FD, taking into account the effect of RIR and FR, is provided in Section 5. Finally, Section 6 concludes the study.

II. FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH – LITERATURE REVIEW

The causal relationship between FD and EG is a long-standing problem and it has been the subject for many empirical studies. Even though the question of causality raises all kinds of controversies, it is very important and essential for economists as well as policy makers to have a clearer understanding of this relationship for policy purposes. While the growth-finance nexus is well established, several different views exist in the literature with regard to the causal relationship between FD and EG. Three main competing views can be found in the literature. They are: firstly, FD causes EG; secondly, the opposing view that EG causes FD and; thirdly, the bi-directional or mutual causation view. In addition to these, there is another possibility which indicates that there exists no causal relationship between FD and EG and both FD and EG are driven by some other third variables.

Apparently It is not easy to establish a causal relationship between FD and EG. The limited understanding of researchers as to why and how financial deepening influences the changes in the behaviour of economic agents which finally affect the EG of a country can be considered as one of the reasons. Wachtel (2003) has therefore offered a simple explanation to the problem, arguing that the specific mechanisms that relate FD to changes in the behavior of the agents of an economy are still a "mystery". However, the view that FD leads to higher EG has been supported by a few of world institutions as well as many economics commentators. The World Bank and International Monetary Fund (IMF) have expressed the view that policies formulated to overcome financial repression will improve the economic performance of a country. Accordingly, they state that financial liberalization has had a domestic effect of the financial sector of a country which will influence the general economic performance positively. Further, in the World Development Report 1989, which mainly focused on financial system and development, the World Bank states that "In the past, governments' effort to promote economic development by controlling interest rates, directing credits to priority sectors and securing inexpensive funding for their own activities have undermined financial development". Therefore, the World Bank has indicated from the above expressions that EG of a country will have a great contribution from a balanced and robust financial system.

Generally speaking, Schumpeter (1912) is acknowledged as the first proponent of the above view. However, this supply-led theory can be traced far back to the 1870s when Bagehot (1873) argues that the financial system plays a critical role to facilitate the mobilization of capital in igniting industrialization in England. Schumpeter (1921) has reinforced this and presented the argument that FD leads to EG and therefore, financial institutions are necessary for the development of an economy. Further, Schumpeter (1912) has also suggested that a properly functioning banking system of an economy spurs technological innovation since it helps identify and fund the entrepreneurs who can implement innovative products and production processes. This view has been widely supported later by McKinnon (1973), Shaw (1973) and King and Levine (1993), among others. McKinnon (1973) considers an outside money model where all firms are confined to self-financing with the "complementary hypothesis". He asserts that money and capital should be viewed as complementary assets and accordingly, firms have to accumulate sufficient savings in order to finance their investment projects. However, according to the inside money model proposed by Shaw (1973), it is essential to set high interest rates to attract savings, which constitutes "debt intermediation". Then financial intermediaries are in a position to carry out borrowing and lending efficiently so as to promote investment which in turn leads to raise output growth of an economy. This view is in line with the endogenous growth literature. McKinnon (1973) and Shaw (1973) have criticized both neo-classical theory and Keynesian theory and pointed out that those theories are not capable of delivering required results, as far as developing countries are concerned. While the substitutability assumption between real money balance and physical capital given in neo-classical theory and its competitive relationship are subject to their criticism, Keynesian theory is likewise criticized for its short-term orientation. McKinnon (1973) and Shaw (1973) suggest that the economies in the developing world are financially repressed. Many empirical studies can be identified in this regards. Galbis (1977), Mathieson (1979), Kapur (1983), Fry (1989) and McKinnon (1989) have shown that the existence of financial repression through deliberate government intervention is due to several factors. First, and the most important in the case of less developed countries perhaps, the only established link between household savings and business investment is through the banking system. Direct control over the banking system appears to be attractive because it is the only important source of credit in developing countries. Second, there is a strong belief that markets are not necessarily self-equilibrating unless the government intervenes. Hence, active participation of the government in the financial system is deemed essential to counterbalance the expected market failures in terms of oligopolistic practice. Third, it is the influence of the Keynesian view that liquidity preference would push the nominal

interest rate above the required equilibrium for full employment, unless the authorities repress the system through capping interest rates or levying tax on money, because excessively high interest rates hinder investment. Fourth, the Soviet Union and Marxian ideology have had strong influence on the developing world. According to McKinnon (1973) and Shaw (1973), resource allocation by administrative authorities is not only inefficient but also the main source of macroeconomic instability, which tends to reduce savings, the real size of the financial system and, above all, economic growth.

A number of empirical studies have been conducted for various countries. Ang (2007) estimates a six equation model of FD verses EG for Malaysia. It has been found that FD leads to higher output growth via promoting both positive savings and private investment. Further, the hypothesis that FD leads to higher EG through improved efficiency of investment is accepted in this study. Direct government interventions such as allocation of resources through the employee provident fund (EPF) scheme and various public investment programs have made negative impact on EG of the country. Yung and Myung (2007) also support the view that FD leads EG for Korea. They examined this causal relationship by examining annual data for the period 1971-2002 which is the same period that the country has experienced a number of financial liberalization schemes and reforms as well as it phenomenal economic growth. The policy implication from their study is that Korea should give policy priority to financial sector reforms. Empirical research conducted by Bakaert *et al*. (2003) examines whether financial liberalization spur growth. They conclude that equity market liberalization leads to increased EG. They stress that the result is robust to alternative definitions of liberalization and is not affected by the tune in the world business cycle. Christopoulos and Tsionas (2001) investigate the long-run relationship between FD and EG adopting panel unit root test and panel cointegration procedures. Their empirical findings for developing countries clearly support the unidirectional causality view that FD causes EG. Fu (2000) shows the important role played by inflation in determining the impact of FD on EG by developing a simple endogenous growth model. FD contributes to the increase in EG only when the initial inflation rate of the country is relatively low. Choe and Moosa (1999) examine the causal relationship using Korea in a case study. Especially, they focuse on the relative development of financial intermediaries and capital markets as well as the impact they have made on the behavior of the business and household sectors. Their findings also lend support to the view that FD leads EG; further, financial intermediaries are more important in this relationship, compared with capital markets.

The second type of view maintains that EG leads FD. Robinson (1952) stresses that when there is development in the real sector in an economy, there is development in the financial sector. According to the view, when an economy is growing, the demand for financial services also increases and, as a result, there will be an expansion in the financial system. The demand for both physical and liquid capital will be increased with the growth of the real sector. As Berthelemy and Varoudakis (1996) pointed out, an environment of the above nature improves competition and efficiency in financial intermediation and markets. Similarly, Odhiambo (2007) argues that most of previous empirical studies conducted to investigate the causality between FD and EG have mainly concentrated on the use of the bi-variate causality tests. There is a possibility that the results have an omission-of-variable bias. Further, the country specific issues will not be satisfactorily addressed if cross sectional data is used for the study. Therefore, he has made an attempt to include savings as an intermitting variable to construct a tri-variate causality model to investigate the dynamic causal relationship between FD and EG in Kenya. The study has found a unidirectional causal relationship from EG and FD. Further, it has been revealed that savings contribute to the development of the financial sector of the country and EG causes savings to grow, which in turn causes FD. McKibbin and Ang (2005) examine this causal relationship using the time series data in the period 1960-2001 for Malaysia. Real interest rates and financial

repression are also taken into account in accessing the finance-growth link. They suggest that FD is stimulated by financial liberalization and therefore removal of repressionist policies makes a favourable impact on FD. They support the view that growth in the real sector leads to FD in the long-run even if there is a positive relationship between the two variables. An empirical study by Liang and Teng (2005) investigates the causal relationship for China. They have analyzed the long-run relationship among FD, EG, and other key growth factors in a theoretically based high dimensional system and their findings suggest that there is a unidirectional causality from EG to FD. Patrick (1966) reconciles the two conflicting theories by arguing that the direction of causality between FD and EG changes over the course of development. FD is able to induce real innovation of investment before sustained modern EG gets underway, and as modern EG takes off, the demand-driven response becomes dominant and the supply-led impetus becomes less and less important gradually.

The third view contends a bi-directional causality between FD and EG. Calderon and Liu (1999) carried out an empirical study, employing a "Geweke decomposition test" on pooled data of 109 industrial and developing countries to investigate the causal relationship. While supporting the mutual causation view, they claim the following specific findings: a) Granger causality coexist; b) the contribution to the causal relationship from financial deepening is more significant in the developing countries when compared with the industrial countries; c) a larger sampling interval leads to a larger effect of FD on EG and; d) economic growth is propelled by financial deepening through more rapid capital accumulation and higher productivity growth. Abu-Bader and Abu-Qarn (2006) use a tri-variate vector autoregressive framework to examine the causal relationship in Egypt. Investment is adopted as the third variable while four different measures of FD are employed. They strongly support the mutual causation view. Hondroyiannis *el al.* (2001) assess the causal relationship for Greece. Their results demonstrate that a bi-directional causality exists in the long-run. Further, they argue that economy performance is favourably influenced by both bank and stock market financing. At the same time, Al-Yousif (2001) uses both time series and panel data from 30 developing countries to examine the direction as well as the nature of the relationship between FD and EG. They support the bi-directional causality view but stress that it is not possible to generalize the relationship across different countries because each economy has country specific economic policies. The success or failure of these policies depends largely on the efficiency of the institutions implementing them. This is also the view of the World Bank.

As stated above, many economists have attempted to establish the causal relationship between FD and EG indicators. Numerous studies have been conducted with conflicting results. The relationship is far from being clear. As summarized in Odhiambo (2008), the popular view on the finance-growth nexus has been in favour of a supply-led response. Until very recently little has been revealed on the converse, where the development of the real sector can also foster the development of the financial sector. Previous studies have shown that, apart from the methodology used to examine the finance-growth link, the direction of causality may be sensitive to the choice of proxy for FD. In addition, it has been found that the clarity of the causality between the two variables may differ from country to country and over time.

III. ANALYTICAL FRAMEWORK OF THE STUDY

3.1   Financial Development

The financial system is very important for a country in performing several crucial roles in the economy. Two main roles of the financial system can be named as its monetary function and its financial intermediation function. The monetary function of the financial system plays several vital roles to facilitate payment systems of a country. Its roles are to provide a medium of exchange, store of wealth and a stable unit of account, removing inefficiencies in the barter system. Its

intermediation function facilitates the process of transferring savings to investments in an economy. Financial systems create liquidity in an economy through short-term borrowing and long-term lending. Since banks provide funds collected from savers and provide loans for investments in various sectors and industries in a country, the financial system reduces the risk through diversification. Further, the specialization gained by financial intermediation leads to increased operational efficiency in the financial system, as well as helps reap the benefits of the economies of scale in lending. Merton (1995) argues that a financial system provides: a) a payment system; b) a mechanism for pooling funds; c) a way to transfer resources across space and time; d) a way to manage uncertainty and control risk; e) price information to allow the economy to implement a decentralized allocation of resources and; f) a way to deal with asymmetric information problems. These functions can be performed in different ways in different economies.

As stated above, financial systems can make a significant influence on economic activities and therefore financial structure should be strong enough to achieve the expected objectives. Accordingly, policies should be formulated to develop an appropriate financial structure since it can promote, as well as hinder, FD of a country.

3.2 Financial Liberalization and Efficiency of the Financial System

Financial liberalization and deregulation policies are used by various countries with the aim of improving economic performance in the long-run, since it is believed that such policies lead to enhance the efficiency in financial markets. Financial repression policies as well as unnecessary regulations can hinder the performance of an economy, because efficient financial institutions and financial markets are said to be counter-productive to growth of an economy.

Various economists have documented that development of the financial sector will make significant favorable impact on various sectors of the economy and, thereby, helps reap benefits to the whole country. Corsepius and Fischer (1988), Fischer (1993), Dijkstra (1996) and Pill (1997) have all suggested that the efficiency of non-financial sectors of an economy would be improved due to the development of its financial sector through three distinct channels. First, the removal of the unnecessary financial regulations and price distortions will help increase financial savings of a country. These increased savings can be directed to productive and profitable investment projects of a country to improve macroeconomic performance with so called intermediation efficiency, which can be illustrated as follows:

Financial Intermediation $\Longrightarrow$ ↑ Positive Real Interest Rate $\Longrightarrow$ ↑ Intermediation Efficiency
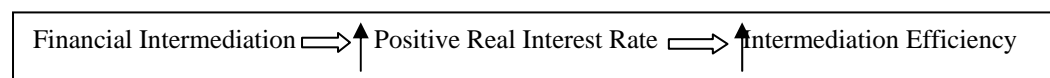
By creating positive and high deposit and lending rates, the overall efficiency of the financial intermediation is improved due to the financial liberalization. Second, the removal of unnecessary regulations leads to increase competition in the financial system and, thereby, the cost of financial intermediation is reduced, with so called operational efficiency:

Financial Liberalization $\Longrightarrow$ ↑ Competition $\Longrightarrow$ ↓ Operational Efficiency
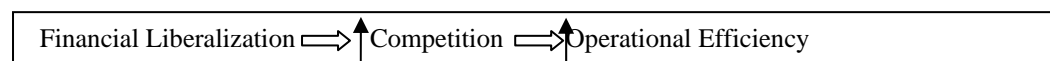
Finally, with the development and improvements in the financial market, the needs of an economy will also change with regard to the risk-return characteristics and accordingly better financial products should be generated to satisfy those changing needs, with so called dynamic efficiency:

Financial Liberalization $\implies$ ↓ Inflation $\implies$ ↑ Dynamic Efficiency
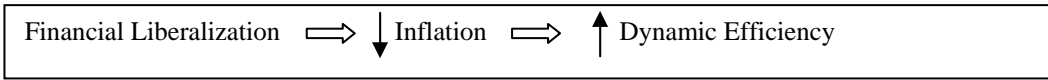
According to the above, keeping inflation at a lower level is the key to gain the benefits of dynamic efficiency. Low and stable inflation rates are very important for an economy since there is a strong and positive relationship between real interest rates and savings. On the other hand, if the inflation rate of an economy is high and volatile, it will increase the uncertainty in the financial market and lowers savings and investments in the economy, jeopardizing dynamic efficiency.

3.3 Financial Liberalization and Repression

If the monetary system of an economy is deliberately restricted and government policies distort the prices of financial assets, the financial system is said to be repressed. A government may implement such policies with the objective of extracting income from the financial system. It may also require the financial system to transfer a considerable amount of resources to some specific sectors decided by the government. These type of policies have the repression effect since they not only limit the ability of the financial institutions to attract savings but also limit their ability to use the collected funds in the most profitable and productive manner. Interest rate ceilings and directed credit programs are identified as two major and common policy instruments in financially repressed economies.

The process to remove these restrictions and distortions is usually called financial liberalization. A typical liberalization program implemented by a government is supposed to embrace two main factors. First, controls on both deposit and lending rates are eliminated or reduced as much as possible with the aim of allowing interest rates to be market determined. Second, steps will be taken to eliminate all quantitative controls so that financial intermediaries have greater controls for prudential supervision, which results to domestic finance deepening.

3.4 Economic Growth

EG is one of the most important macroeconomic variables. Theoretically, EG refers to the increase in real GDP over time. An economy's production capacity increases over time, accompanied by capital accumulation, technological progress and enhanced labor productivity. Currently, many economists focus on "inclusive growth", which has a broader meaning than EG alone. Inclusive growth is more than just some increase in production of an economy being distributed equitably and evenly, and it is the participation of all sections of a society in the growth story and their benefits from growth.

As far as developing countries are concerned, a major percentage of population of the country is based in rural areas. Accordingly, the demand for manufacturing and services sectors may increase mainly from the rural population. However, there is a huge disparity in purchasing powers in urban and rural areas. Inclusive growth advocates that growth takes place in all sectors of the economy in order to improve the standard of living of the entire nation. Requirement of skilled labor is a crucial factor, which should be taken into account when formulating policies to stimulate EG of an economy, since the growth process is considered to be knowledge-based and service-led in many countries. Meanwhile, the government should take steps to encourage entrepreneurial development by creating competitive environment and enhancing the availability of finances for new projects and enterprises. It is necessary to make sufficient investment in infrastructure and make available the skills and the required technology to achieve the growth objective. EG relies on the efficient allocation of investment and resources across sectors of the economy, supported by policies that encourage easier and affordable access to financial services.

IV. MODEL, DATA AND ECONOMETRIC METHODOLOGY

Annual data covering the period 1971–2010 are used in the study. The data series were directly obtained or compiled from Annual Reports of the Central Bank of Sri Lanka, as well as Monthly Statistical Bulletins of the Central Bank of Sri Lanka.

4.1 Measures of Financial Development

It is not an easy task to identify variables to measure FD of an economy and it is a major problem encountered in empirical studies of this nature. With the expansion of the financial system of a country, a diverse array of institutions and agents will be involved in financial services and a large number of complex financial services will be available to customers. It is generally accepted that, the ability of financial intermediaries to reduce information and transaction costs, manage various risks inherent to the financial system, facilitate financial transactions and mobilization of savings can be the elements for measuring the extent of financial deepening. Nevertheless, it is difficult to identify the data which can be used to measure those variables reliably.

Traditionally, money supply as a percentage of GDP of a country, which can be calculated easily, has been used as a proxy to measure financial deepening of an economy. However, that kind of measure shows only the extent of transaction services provided by the financial system and it does not reflect properly the financial systems' ability to implement an efficient financial intermediation process. Further, money supply of a country is affected by foreign funds available in the economy, which also makes it inappropriate to use such a variable alone to measure FD of an economy.

TABLE 3: Total Assets of the Major Financial Institutions

	2010	
	Rs. billion	**Share in Total %**
Banking Sector	**4,533.2**	**67.7**
Central Bank	985.4	14.7
Licensed Commercial Banks	2,969.3	44.4
Licensed Specialised Banks	578.5	8.6
Other Deposit Taking Financial Institutions	**400.9**	**6.0**
Registered Financial Companies	233.6	3.5
Co-operative Rural Banks	160.6	2.4
Thrift and Credit Co-operative Societies	6.7	0.1
Other Specialised Financial Institutions	**354.8**	**5.3**
Specialised Leasing Companies	154.1	2.3
Primary Dealers	125.8	1.9
Stock Broking Companies	13.2	0.2
Unit Trusts	23.0	0.3
Market Intermediaries[*]	37.0	0.6
Venture Capital Companies	1.6	0.0
Credit Rating Agencies	0.1	0.0
Contractual Savings Institutions	**1,401.5**	**21.0**
Insurance Companies	221.7	3.3
Employees' Provident Fund	902.0	13.5
Employees' Trust Fund	125.9	1.9
Approved Private Provident Funds	126.2	1.9
Public Service Provident Fund	25.7	0.4
Total	**6,690.4**	**100.0**

* excluding assets of licensed banks, RFCs and SLCs which are registered as market intermediaries
Source: CBSL Annual Report 2010

Bank credit to the private sector is also used as an alternative to measure FD of a country. This is considered superior to the money supply variable, since it is arguably expected that the private sector has the ability to utilize funds more efficiently and productively when compared with the public sector.

Another commonly used variable is identified in an empirical study by King and Levine (1993) as the assets of commercial banks as a percentage of the total assets of commercial banks and central banks. It measures the relative importance of commercial banks in the financial system. This variable is widely used since it is generally expected that commercial banks are able to identify investments due to their profit motives as well as high competition in financial markets. To illustrate the variables that many be relevant to the construction of the FD index, major financial institutions of Sri Lanka and their asset details are provided in Table 3.

However, there are arguments for and against the use of the above variables to measure FD and no universal consensus has been reached as to what kinds of variables should be used for FD. Accordingly, it is more appropriate to develop a single index taking all the above variables into account. Accordingly, the FD index is constructed, consisting of: a) consolidated broad money supply (M2b) as a percentage of nominal GDP; b) commercial bank assets (CBA) as a percentage of commercial bank assets plus central bank assets (TBA) and; c) domestic credit to private sectors (CPS) divided by nominal GDP. The index is constructed in the following steps. First, it is to work out the standardized logarithmic ratios by subtracting the mean ratio from individual ratios and then dividing the demeaned ratio by the standard deviation of the ratios. The standardized money supply ratio is derived as:

$$MS_t = \frac{Ln\left(\frac{M2b}{GDP}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{M2b}{GDP}\right)_t}{\left\{\frac{1}{T-1}\left[Ln\left(\frac{M2b}{GDP}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{M2b}{GDP}\right)_t\right]^2\right\}^{0.5}} \qquad (1a)$$

The standardized bank asset ratio is:

$$BA_t = \frac{Ln\left(\frac{CBA}{TBA}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{CBA}{TBA}\right)_t}{\left\{\frac{1}{T-1}\left[Ln\left(\frac{CBA}{TBA}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{CBA}{TBA}\right)_t\right]^2\right\}^{0.5}} \qquad (1b)$$

The standardized credit ratio is:

$$CD_t = \frac{Ln\left(\frac{CPS}{GDP}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{CPS}{GDP}\right)_t}{\left\{\frac{1}{T-1}\left[Ln\left(\frac{CPS}{GDP}\right)_t - \sum_{t=1}^{T} Ln\left(\frac{CPS}{GDP}\right)_t\right]^2\right\}^{0.5}} \qquad (1c)$$

In the second step, the logarithmic FD index is derived as a weighted average, equally weighted in this case, of the three standardized ratios:

$$LFD_t = \frac{MS_t + BA_t + CD_t}{3} \qquad\qquad (2a)$$

The FD index is simply the weighted average of the three variables and it is set at 100 for 1971 as the base year. The resulting index is presented in Figure 1.

FIGURE 1: Financial Development Index
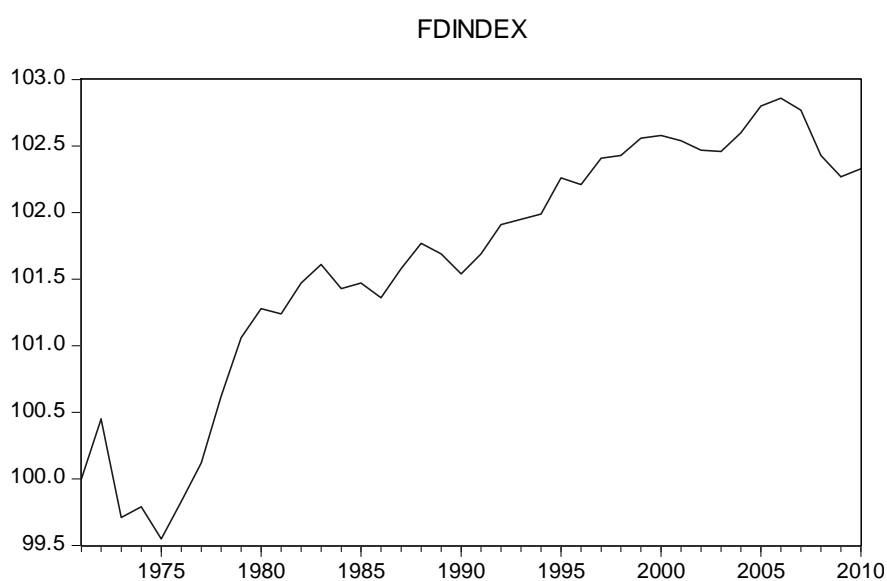
As the above graph illustrates, there is a steady growth in the FD index in Sri Lanka during the last four decades even if there are some fluctuations around some years. Especially, after embarking on the road to liberalization in 1977, there have been significant expansions in the activities in the financial system and, as a result, the number of financial instruments as well as financial institutions has increased considerably.

4.2   Real Interest Rates

Real interest rates are very important for a country since it influences the economy in various ways. McKinnon (1973) and Shaw (1973) argue that there is a positive link between high interest rates and economic growth. When there are repressionist policies in an economy, particularly with regard to the ceilings on interest rates, the economy will experience negative real interest rate under high inflationary conditions. However, there is no generally accepted method of calculating real interest rates and several different methods have been used by researchers. Further, the existence of various types of nominal interest rates of an economy makes that task more complicated. Larsen *et al.* (2003) have used several methods to estimate real interest rates for the UK. These methods include yields on index-linked bonds, yields on bonds minus an appropriate measure of inflation expectations and a 'consumption-based' measure.

FIGURE 2: Real interest rate movement

RIR
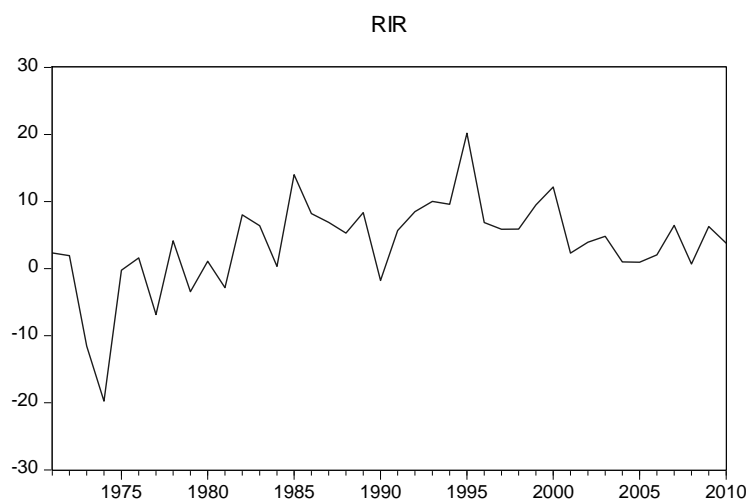
In this paper, an average nominal interest rate is calculated using four different interest rates to represent various financial activities of the economy. These interest rates are, Average Weighted Deposit Rate (AWDR), Average Weighted Lending Rate (AWLR), Inter Bank Call Loan Rate (IBCLR) and 91 day Treasury bill rate and the resulting average nominal rate is adjusted for the inflation using the GDP deflator to estimate the real interest rate. Figure 2 shows the real interest rate estimated using the above procedure for the period under review. As the graph illustrates, there is a significant fluctuation in the real interest rate during the last four decades. Even if there are significantly negative values prior to implementing the liberalization policies, it has become positive in most of the years after 1977.

4.3   Measurement of Financial Repression

The policies implemented by the government or the monetary authority can be considered to have the financial repression effect, if these policies lead to the distortion in the prices of financial products, or to the restraint on the ability of financial intermediaries to engage in the financial intermediation process freely. Measurement of FR is also challenging since there is no proper variable to quantify the level of repression in the financial system.

Therefore, three key series of FR policies are used to construct the FR index. One of them is interest rate controls dummy (ICD), which takes the value of 1 if there are interest rate controls in the economy in a given year, and zero otherwise. The other two variables are statutory reserve requirement (SRR) and liquid asset requirement (LAR) that should be complied by commercial banks in Sri Lanka and they are measured in percentages. Under Sections 10C, 93, 94, 96 and 97 of the Monetary Law Act (Chapter 422) in Sri Lanka, commercial banks are required to maintain reserves with the Central Bank and the rations so maintained shall not be less than 5 percent or more than 20 percent in the case of time and savings deposits and shall not be less than 10 percent or 40 percent in the case of demand deposits and unused balances of overdrafts allowed. However, these limits on SRR were removed in December 2002 by Monetary Law (Amendment) Act, No. 32 of 2002. Credit ceilings were imposed for the first time in 1963. An overall ceiling on credit to the private sector was imposed in 1965 and in 1968. LAR for the commercial banks was introduced in 1989 and the liquid assets ratio that should be maintained by commercial banks remains unchanged from the time of introduction at 20% of deposit liabilities.

According to the above factors, a summary measure of FR that represents the joint impact of the financial repressionist policies is developed using the same approach which used to construct the FD index. The inverse of this measure can be interpreted as the extent of financial liberalization. The index is constructed as follows. First, it is to obtain the standardized logarithmic measures by subtracting the mean value from individual figures and then dividing the demeaned figure by its standard deviation. The standardized logarithmic statutory reserve is defined as:

$$LSR_t = \frac{Ln(SRR_t) - \sum_{t=1}^{T} Ln(SRR_t)}{\left\{ \frac{1}{T-1} \left[Ln(SRR_t) - \sum_{t=1}^{T} Ln(SRR_t) \right]^2 \right\}^{0.5}} \quad (3a)$$

The standardized logarithmic liquidity ratio is:

$$LLR_t = \frac{Ln(LAR_t) - \sum_{t=1}^{T} Ln(LAR_t)}{\left\{ \frac{1}{T-1} \left[Ln(LAR_t) - \sum_{t=1}^{T} Ln(LAR_t) \right]^2 \right\}^{0.5}} \quad (3b)$$

The standardized interest rate control is:

$$IC_t = \frac{ICD_t - \sum_{t=1}^{T} ICD_t}{\left\{ \frac{1}{T-1} \left[ICD_t - \sum_{t=1}^{T} ICD_t \right]^2 \right\}^{0.5}} \quad (3c)$$

Second, the logarithmic FR index is derived as a weighted average, equally weighted in this case, of the three standardized variables:

$$LFR_t = \frac{LSR_t + LLR_t + IC_t}{3} \quad (4a)$$

The FR index is simply the weighted average of the standardized variables and it is also set at 100 for 1971 as the base year. The resulting index is presented in Figure 3.

FIGURE 3: Financial Repression Index

FRINDEX
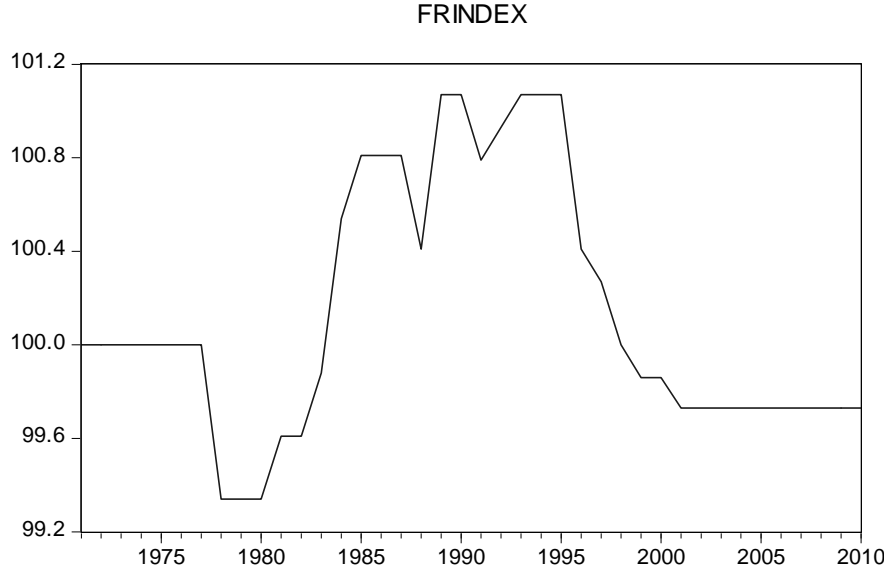
4.4 Economic Growth

The two most common measures of economic growth are growth in real GDP and growth in per capita output or GDP. The latter is considered to be more meaningful since it indicates there are more goods and services available per person and therefore, it shows a rise in the economy's standard of living. Accordingly, per capita GDP was used to measure economic growth from 1971 to 2010. Figure 4 shows the growth of per capita GDP over the last forty years. As the graph shows, per capita GDP of Sri Lanka has risen steadily during the last four decades since Sri Lankan economy recorded reasonably high growth rates consistently despite the numerous challenges faced by international markets.

FIGURE 4: Growth in per capita GDP

EG
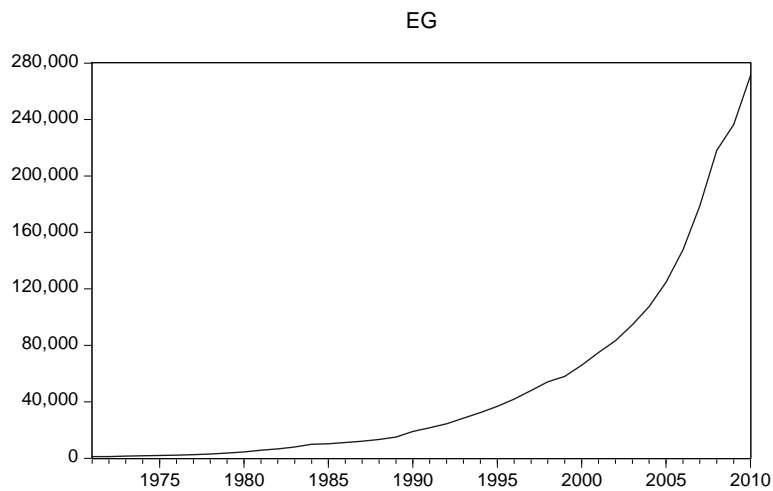
V. EMPIRICAL ASSESSMENT, RESULTS AND ANALYSIS

The causal relationships in the long-run, in the short-term and overall causality are empirically examined in this section. For a long-run causal relationship to exist, the variables involved must be integrated of order 1 individually and cointegrated between them. Therefore, the econometrics analysis is conducted in three steps. First it is to test for unit roots in individual time series. Second, cointegrating relationships are examined using the Johansen procedure. As Engle and Granger (1987) state that, cointegrated variables must have an error correction representation and accordingly a vector error correction model (VECM) is formulated, capturing the long-run comovements as well as short-term dynamics.

5.1 Tests on Unit Roots and Cointegration

The Augmented Dickey–Fuller (ADF) test and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) (1992) test are applied in this study. The null hypothesis of the ADF test is that the time series has a unit root, while the null of the KPSS is that the time series is stationary. The combined use of these two measures could prevent the potential bias towards accepting or rejecting stationarity in time series data. The Phillips-Perron (PP) test has the same null as the ADF test, so it does not increase the power of tests by adopting both ADF and PP tests. Table 4 reports ADF and KPSS test results, which confirm that the EG, FD and FR variables are non-stationary in their levels and become stationary after taking the differencing operation once. The real interest rate variable, RIR, is stationary in its original form. So the three I(1) variables of EG, FD and FR will be included in the test for cointegration relationships, while RIR will be included in the VECM but outside the cointegration vector.

TABLE 4: Summary of Unit root test results

	ADF		KPSS	
	level	First difference	level	First difference
EG	-2.3083	-5.1587***	2.7606†††	0.1445
FD	-1.3045	-6.0268***	1.4043†††	0.1706
FR	-1.3307	-5.4219***	3.2840†††	0.1340
RIR	-4.2260***		0.3846†††	

* reject a unit root at the 10% level, ** reject a unit root at the 5% level, *** reject a unit root at the 1% level
† reject stationarity at the 10% level, †† reject stationarity at the 5% level, ††† reject stationarity at the 1% level

The Johansen procedure for testing cointegrating relationships is adopted in this study. The Johansen procedure is considered to be sensitive to lag length choice and, therefore, the optimal lag length for the variables is examined prior to performing cointegration tests. According to the sample size, a maximum lag length of six is considered to be appropriate for this model. As the results in Table 5 indicate, the optimal lag length is two by four out of five criteria. It is the inherent property of the AIC and SC that the SC penalizes the inclusion of long lag lengths more than the AIC does, so it is usual that the SC chooses one lag at the circumstances, while all other criteria indicate two lags. Results presented in Table 6, both trace statistics and maximum eigenvalue statistics, suggest that there is one cointegration vector amongst the three I(1) variables of EG, FD and FR. The trace statistic of 29.9743 exceeds the 0.05 critical value of 24.2759 for the null hypothesis of none cointegration vector, so the null of none cointegration vector is rejected, implying there is at least one cointegration vector. The next null of at most one cointegration vector cannot be rejected by a trace statistic of 8.2369, which is smaller than the 0.05 critical value of 12.3209. Combining these two tests for none and at most one cointegration vector, the number

of cointegration vectors is confirmed to be one. The maximum eigenvalue statistics further confirm that there is one and only one cointegration vector, with a maximum eigenvalue statistic of 21.7375 exceeding the 0.05 critical value of 17.7973 for the null hypothesis of none cointegration vector, and a maximum eigenvalue statistic for the next null of at most one cointegration vector being lower than its corresponding 0.05 critical value. Table 7 presents this cointegration vector where the coefficient of EG has been standardized to be unity. The cointegration relationship appears to be between EG and FD, as the coefficient of FR is statistically insignificant. It is reasonable, observing Figure 4, the graphic illustration of the FR index, which shows no patterns of comovements with the EG and FD variables.

TABLE 5: Determination of Lag Lengths

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-88.8505	-	0.0454	5.4200	5.6867	5.5121
1	94.4317	314.1980	2.16e-06	-4.5390	-3.8724*	-4.3088
2	107.0858	19.5235*	1.78e-06*	-4.7478*	-3.6812	-4.3796*
3	112.2199	7.0412	2.32e-06	-4.5269	-3.0604	-4.0206
4	116.7817	5.4742	3.22e-06	-4.2732	-2.4068	-3.6290
5	129.9363	13.5304	2.89e-06	-4.5106	-2.2443	-3.7283

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

TABLE 6: Johansen Cointegration Test for EG, FD and FR

(a)   Trace statistics

Number of cointegration vectors	Eigenvalue	Trace Statistic	Critical value (0.05)	*p*-value**
None*	0.4443	29.9743	24.2759	0.0086
At most 1	0.1889	8.2369	12.3209	0.2189
At most 2	0.0131	0.4893	4.1299	0.5473

Trace test indicates one cointegrating vector at the 0.05 level

 * denotes rejection of the hypothesis at the 0.05 level

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

(b)   Maximum eigenvalue statistics

Number of cointegration vectors	Eigenvalue	Maximum eigenvalue Statistic	Critical value (0.05)	*p*-value**
None*	0.4443	21.7375	17.7973	0.0121
At most 1	0.1889	7.7476	11.2248	0.1912
At most 2	0.0131	0.4893	4.1299	0.5473

Maximum eigenvalue test indicates one cointegrating vector at the 0.05 level

 * denotes rejection of the hypothesis at the 0.05 level

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

TABLE 7: Estimated Cointegration Vectors

EG	FD			FR			Constant
Coef	Coef	Std err	t - stat	Coef	Std err	t - stat	Coef
1.0000	-2.0203***	0.2421	-8.3468	0.2035	0.3444	0.5910	1.8297

* significantat the 10% level, ** significant at the 5% level, *** significant at the 1% level

5.2 Error Correction Modeling

As Engle and Granger (1987) verify, cointegrated variables must have an error correction mechanism (ECM) representation that augments a VAR in a form of the VECM. Accordingly, a VECM is formulated to reintroduce the information lost in the differencing process, thereby allowing for the long-run equilibrium as well as short-term dynamics to take effect in the modeling process. The VECM, which encompass three I(1) variables of EG, FD and FR, and one stationary variable of RIR that is also exogenous to the system, is presented as follows:

$$\Delta EG_t = \mu_1 + \theta_1 ecm_{t-1} + \sum_{\tau=1}^{p} \rho_{11\tau} \Delta EG_{t-\tau} + \sum_{\tau=1}^{p} \rho_{21\tau} \Delta FD_{t-\tau}$$

$$+ \sum_{\tau=1}^{p} \rho_{31\tau} \Delta FR_{t-\tau} + \sum_{\tau=1}^{p} \rho_{41\tau} RIR_{t-\tau} + \varepsilon_{1t} \tag{5a}$$

$$\Delta FD_t = \mu_2 + \theta_2 ecm_{t-1} + \sum_{\tau=1}^{p} \rho_{12\tau} \Delta EG_{t-\tau} + \sum_{\tau=1}^{p} \rho_{22\tau} \Delta FD_{\tau}$$

$$+ \sum_{\tau=1}^{p} \rho_{32\tau} \Delta FR_{t-\tau} + \sum_{\tau=1}^{p} \rho_{42\tau} RIR_{t-\tau} + \varepsilon_{2t} \tag{5b}$$

$$\Delta FR_t = \mu_3 + \theta_3 ecm_{t-1} + \sum_{\tau=1}^{p} \rho_{13\tau} \Delta EG_{t-\tau} + \sum_{\tau=1}^{p} \rho_{23\tau} \Delta FD_{t-\tau}$$

$$+ \sum_{\tau=1}^{p} \rho_{33\tau} \Delta FR_{t-\tau} + \sum_{\tau=1}^{p} \rho_{43\tau} RIR_{t-\tau} + \varepsilon_{3t} \tag{5c}$$

where ΔEG_t is change in EG from year t-1 to year t, ΔFD_t is change in the FD index, ΔFR_t is change in the FR index, all being from year t-1 to year t; RIR_t is the real interest rate in year t; ecm_{t-1} represents the error correction mechanism that is the cointegration vector reported in Table 7; and ε_{1t}, ε_{2t} and $\mathcal{E}_{3t}$ are residuals in the three equations. μ_1, μ_2 and μ_3 are intercepts; and θ_1, θ_2 and θ_3 are the coefficients for the error correction term in the three equations. $\rho_{ij\tau}, i, j = 1,2,3, \tau = 1,...p$ is the coefficient for variable i in the equation for variable j at lag τ; and $\rho_{4j\tau}, j = 1,2,3, \tau = 1,...p$ is the coefficient of the real interest rate variable, which is exogenous, in the equation for variable j at lag τ.

TABLE 8: Estimated VECM Results

	ΔEG_t	ΔFD_t	ΔFR_t
Intercept	0.1476***	0.1079	0.1182
	(0.0422)	(0.1338)	(0.2450)
	3.4968	0.8062	0.4729
ecm_{t-1}	-0.0033	0.1610***	-0.2062**
	(0.0160)	(0.0506)	(0.0946)
	-0.2056	3.1795	-2.1794
ΔEG_{t-1}	0.2443	-1.6476**	-0.6386
	(0.2408)	(0.7633)	(1.4261)
	1.01412	-2.1585	-0.4478
ΔEG_{t-2}	-0.2711	1.0446	0.3354
	(0.2212)	(0.7008)	(1.3093)
	-1.2259	1.4906	0.2562
ΔFD_{t-1}	0.0080	0.4920***	-0.2626
	(0.0425)	(0.1346)	(0.2516)
	0.1881	3.6541	-1.0439
ΔFD_{t-2}	0.0878**	0.4408***	0.0568
	(0.0378)	(0.1197)	(0.2236)
	2.3244	3.6829	0.2540
ΔFR_{t-1}	0.0091	-0.0697	0.0437
	(0.0318)	(0.1007)	(0.1881)
	0.2854	-0.6927	0.2323
ΔFR_{t-2}	-0.0319	0.1587	0.1168
	(0.0324)	(0.1027)	(0.1919)
	-0.9836	1.5444	0.6084
RIR_{t-1}	0.0012	-0.0115	-0.0079
	(0.0020)	(0.0064)	(0.0119)
	0.6082	-1.8193	-0.6685
RIR_{t-2}	-0.0034*	0.0111*	-0.0113
	(0.0019)	(0.0059)	(0.0111)
	-1.8335	1.8779	-1.0213

For each variable, first row is coefficient, second row is standard error (in parentheses), third row is t – statistic

* significantat the 10% level, ** significant at the 5% level, *** significant at the 1% level

According to the VECM results reported in Table 8, there exists bi-directional Granger causality between EG and FD. However, while EG Granger causes FD in both long-run and short-term, FD Granger causes EG only in the short-term. The coefficient of the ECM term is statistically significant in the FD equation but insignificant in the EG equation, so it is FD that responds to the disequilibrium in the cointegration vector. In the short-term, EG causes FD to change at lag one and FD causes EG at lag two. The long-run and short-term results are conciliatory to the contradictory findings in many of previous empirical studies. The long-run results suggest that higher EG above the equilibrium between EG and FD boosts FD, with a positive coefficient for the ECM term in the FD equation. It is also found that FD enhances EG in the short-term, given a positive coefficient for the FD variable at lag two in the EG equation. FD enhances itself as well, with the coefficients for the FD variable at both lag one and lag two positive and significant in the FD equation. Further, FD may sacrifice to faster than usual growth in EG in the short-term, indicated by a negative coefficient for the EG variable in the FD equation.

FR does not appear to have significant influence on FD and EG, though it may serve as a further indication to the status of FD. Higher than usual FD, or an FD value that is above the equilibrium between EG and FD, Granger causes FR to intensify, as indicated by a negatively significant coefficient for the ECM term in the FR equation. This implies that excess growth in FD may lead to higher FR, which has been witnessed in many economies in the world. The role of RIR appears to be limited. It has a negative effect on EG and a positive effect on FD. The former has no obvious backing by convincing theories. Nevertheless, the coefficients are only significant at a modest 10% significance level.

VI. CONCLUSION

Causal relationships between FD and EG in Sri Lanka have been examined in both long-run and shorter-term, taking into account of the effect of FR and RIR. Two indexes have been constructed for the measurement of FD and FR. The former captures several aspects of the improvement of the financial system in an economy and therefore, is able to overcome the limitations of using a single variable. Similarly, several aspects of financial sector policies, which limit the ability of financial institutions to engage freely in financial intermediation, have been taken into consideration in the construction of the FR index.

The empirical findings of this study suggest that financial liberalization policies implemented by Sri Lankan government have contributed towards the enlargement of the financial system of the country and accordingly, and as a result, the FD index has steady grown over the last four decades. Further, financial repressionist policies have negative effect on FD in the long-run. The empirical results of the study show that FD has a significant positive impact on economic growth in Sri Lanka, even though featured with short-term effects. Accordingly, a major policy implication that emerges is that it is very important for the government to implement financial sector reforms and develop the financial sector since it facilitates mobilization of savings, private capital formation, and economic growth. Further, a developed and efficient financial system helps instil confidence among depositors so that resources can be effectively mobilized to increase productivity in the economy. Crucially, EG causes FD in both long-run and short-term. While FD has actively contributed to the short-term dynamics in the economy, it is EG that fosters, sustains and nourishes FD and EG itself. Further enhanced economic performance takes effect favourably on the financial sector and makes a significant positive impact in the long-run.

These findings, whilst pointing to a bi-directional causal relationship between EG and FD in Sri Lanka, advocate that such causal relationship is asymmetric – EG causes FD to grow in both long-run and short-term but FD causes EG only in the short-term. Therefore, these long-run and short-term results are conciliatory to the contradictory findings in many of previous empirical studies,

which help promote more research in this important area at a higher and more advanced level. Moreover, these findings also have policy implications that properly formulated financial sector development programs provide a link in the chain of EG and FD interactions, to ensure a positive dynamics in the interactions, which in turn promote and support FD and EG in the long-run. Nonetheless, it is important to note that these conclusions are obviously based on a case study of the Sri Lankan economy and, whether they can be extended universally would be subject to further examinations and studies. Further, it is worthwhile to take into consideration the diverse growth conditions experienced by various countries, particularly emerging economies.

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SESSION REPORT

Name of Session Chair	Dr. Min Bahadur Shrestha		
Session Title	**Financial Sector Economic Growth and Poverty Alleviation – I**		
Session Location	Durbar Hall	Session Time	10.30-12.00

Presentation Session:

SN	Title and Summary
1	**Title**: **Sectoral Output Growth and Financial Development in Emerging Economies M Evidence From Nepal**
	Summary This paper explores the linkages between financial development and sectoral output growth in a vector-auto regression (VAR) analysis. The study exhibits that service sector reacts strongly to increases in domestic credit, while agriculture and manufacturing sector are not significantly affected by increase in bank lending. This paper raises issues of non-inclusion of the agricultural sector in the on-going process of financial development and recommended to take into account of this fact when discussing the policy options of future changes in regulation and public policy related to financial sector development.
	Issues Raised: 1. Impact of external shock on Nepal's economic performance.
2	**Title**: **Financial Sector Development : Its Challenges on Economic Growth and Poverty Alleviation in Nepal**
	Summary This paper aims to present the trend of financial sector development, economic indicator and poverty alleviation in Nepal. The paper revealed that the number of financial institution is increasing after the establishment of FSR in Nepal but challenges are ahead to meet the target of MDGs pertaining to poverty. The findings of this study revealed that Nepal needs more financial institutions for economic development and poverty alleviation but the financial sector needs to be prudently regulated by central bank.
	Issues Raised: 1. 1.Type of financial expansion will increase financial inclusion 2. 2.Inclusive Growth/Quality of Growth

3	**Title**: **Does Financial Development Cause Economic Growth? A Vector Autoregression Approach**
	Summary
	This paper examines the causal relationship between economic growth and financial development in Sri Lanka during the period from 1971 to 2010, using a vector autoregressive (VAR) model taking financial repression and real interest rate too into consideration. The empirical results reveal that financial development is the cause for economic growth in terms of short-term dynamics, while economic growth sustains financial development in the long-run.
	Issues Raised
	1. Long run and short run relation should be analysed.
	2. Existences of two way two-way relationship between growth and liberalization.

Session Moderator

Signature and date