

Financial Institutions and Economic Growth:
The case of Nepal

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ABSTRACT

Financial Institutions have been regarded to be the core area of economic development. However, Nepal could not achieve satisfactory level of economic development and growth due to Maoists war (1996-2006) and the political instability. The increase in size and number of commercial banks are limited only in the urban areas so that banking services are not accessible to the general public.

This paper examines interaction between financial development and economic growth in Nepal employing correlation analysis, regression analysis, financial ratios and other related theories.

As we found that financial institutions have grown rapidly which has implication in overall economy of the nation. The economic indicators such as GDP, GDP per capita, loan assets of commercial banks, investment, deposit, number of commercial banks, and inflation rate from fiscal year 2001 to 2007 are used for the analysis of this study.

The relevant ratios of commercial banks such as deposit, investment, and profitability are found to be in increasing trend. The growth rate of GDP/capita is however volatile in the study period, the regression result of Deposit/GDP is weakly significant under the study period $\{(0,06)^*\}$. The investment growth rate is not significant at all possibly due to the time lag of the effect of investment on the economic development.

Furthermore, correlation between Growth rate of GDP and deposit/GDP ($\rho=0.49$). The Growth rate of GDP and investment over GDP is positive related with a correlation coefficient of 0.82. This has confirmed our beliefs in the set out of the thesis.

1 INTRODUCTION

1.1 Motivation of the study and background

Economic growth for developing countries has important indications for poverty elimination and world economic development. This has been the goals of world financial institutions such as World Bank and IMF. To study economic development of Nepal can provide a real world example of a politically complicated and poverty stricken country's development process, the importance of economic freedom of the country to its development and indications to the future path of the development.

Developing countries have welcomed the multinational banking in order to attract more foreign investments and facilitate the industrial development. There are a number of countries which changed their economic status after the multinational banking intervention such as Korea, Thailand, and Mexico etc. All of these countries opened the door for the foreign investment through MNBs when they were in deep financial trouble. Now MNBs' banking concept is adopted by all countries as a tool to meet the need of capital and funding needs to boost the industrial sector (Manandar, 2008).

Over the past few years, service sector has been growing rapidly and accounted for about 20 percent of total international trade. The rate of increase of the service sector is higher than the goods sector. The main importer and exporter of commercial services are developing countries. The Asian economy has grown tremendously because of the increment in the trade of commercial services, construction services, computer software, data processing and tourism. Thus the role of commercial banks is remarkably enhanced in all the countries to support the increasing need of the service sector and the economy in general (Economic survey, 2008).

As Bhaskar Sharma (2000) in *Business Age* pointed out "one of the most important achievements as a result of the growth in the number of commercial banks in

the post liberalization period is in the area of domestic banking savings.” “Deposit-GDP ratio, one of the most important economic parameters is widely employed to analyze the efficiency of the banking system. More savings from the economy would make more funds available for investment.” This has become our motivation of the study.

1.2 Objectives of the study

The objectives of the study are:

To offer a detailed and realistic study of Nepal over the recent decades;

To review partially the literature concerning growth theory, economic growth and financial institutions;

To investigate the contribution of Financial Institutions to the economic growth using Deposit/GDP ratio, etc., in a developing country setting in Nepal; and

To study the development of the commercial banks in Nepal in recent decades.

1.3 The problem statement of the study

Is investment growth of the financial institutions significantly related to the GDP per capita? And is the percentage of deposit over GDP significantly contributing to GDP per capita growth? We use Nepal as the study object.

1.4 Limitation of the study

There are various types of financial institutions operating under various sector of economy but this study concentrates on the commercial banks of Nepal due to obvious reasons stated in part 2. Furthermore this study limits its coverage on the growth and development of commercial banks during the past seven years, that is, from 2001 to 2007. The research data is based on secondary data. Certain important areas of study are

omitted, e.g. corporate governance, political stability, remittance, and technological advancement to the development of Nepalese economy due to the scope of the study.

1.5 Structure of the study

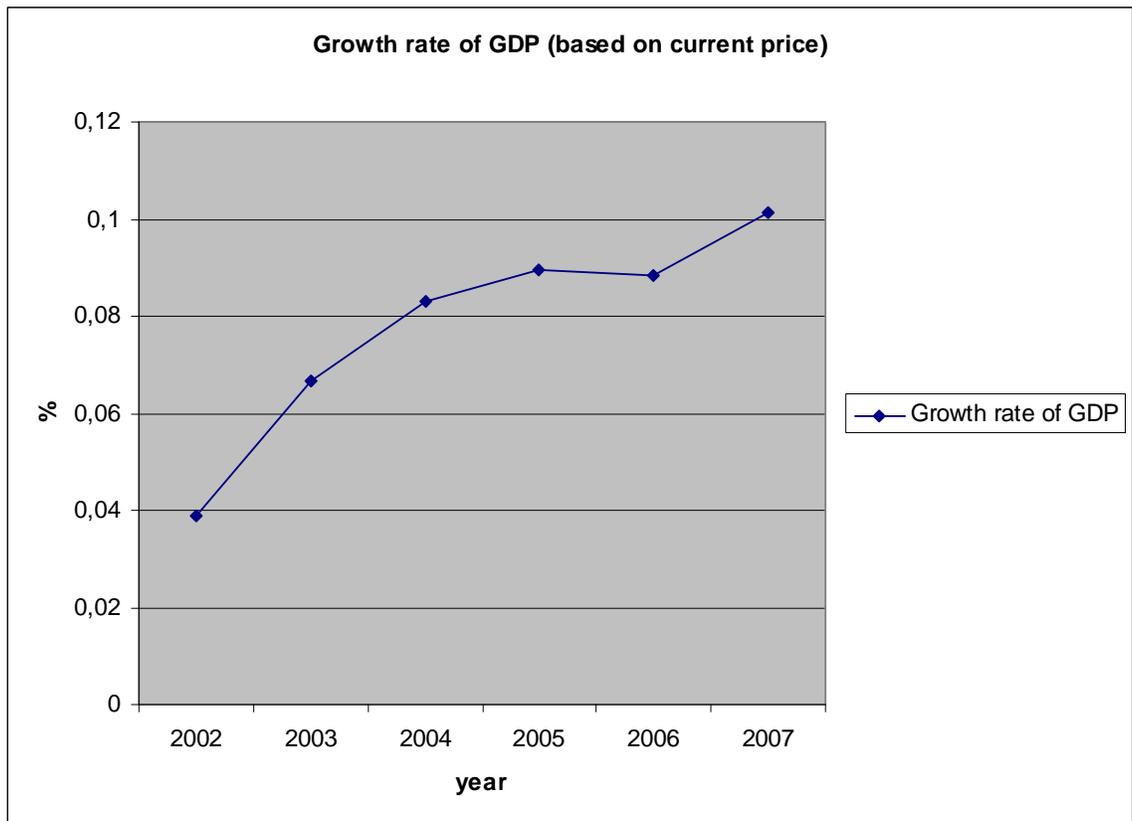
The whole thesis is divided into six chapters. The second chapter gives a detailed background study and overview of the financial sector. The third chapter is the theory which describes the growth theory and the models related to both growth theory and the banking sector. The fourth chapter is the methodology and data which presents different statistical tools used and data presentation. The Summary and Conclusions constitutes the last chapter of this thesis.

2 Background study of Nepalese economy

Nepal is one of the poorest countries in the world. It is landlocked and covered by mountains as well as hills. The main profession of Nepalese people is agriculture. More than 70 percent of the people are found to be engaged in agriculture sector and rest is employed in service and industry. Unemployment is approximately 40 percent and country severely lacks skilled manpower. However, the productivity of agriculture is falling down and the population of the country is at an increasing trend. Therefore, the traditional occupation is not enough to meet the growing needs of Nepalese people. Now Nepalese people have started to think about the alternative sources of income where financial institutions have been regarded to be the core alternative ways to solve this problem. Press trust of India reported on economic data released by Nepal Central Bureau of Statistics on July 9, 2008 that Nepal's economic is in recovery path with 5.56 percent growth in current fiscal year, most impressive performance in last 7 years, per capita income now stands \$470, increase of 11 percent growth shown by number become less obvious when the steep rise inflation rate is considered. Nepal inflation rate now stands at 9 percent so gains made by 11 percent rise in per capita income will not make much difference in the common man's daily life (Ghimire, 2008).

Nepal is also the least developed country in the world in terms of GDP per capita. About one third of the total population is living below the poverty line. The contribution of agriculture sector to the GDP constitutes 38 percent. The GDP rate is slowly accelerating. The GDP increased 2.7 percent in the year 2007 (Statistical pocket book-2007).

Graph-1



Industrial activities in the country involve processing of agricultural products including jute, sugarcane, tobacco, and grain. The Maoist war has led to the decrease of tourism which is the key source of foreign exchange income. Nepal has good prospects of expanding tourism and hydropower for the economic development. Low economic growth and persistent deficits in financial and trade balances in recent years have left Nepal with very limited resources for development funds needed for nation building. At

present the major part of development expenditure comes from other countries as loans and donations. Nepal has adopted mixed economic policy¹. Many financial institutions were established within the country to achieve social economic development of the country (Economic survey 2007).

The Nepalese monarch ended the century old system in 1951. Reforms in 1990 established a multiparty democracy with constitutional monarchy in the country. Nepal communist party Maoist started insurgency in 1996. The Nepal Communist Party Maoist had previously started civil war (1996-2006) which they termed `` people's war`` with an aim of establishing a ``People's republic of Nepal``. A comprehensive peace agreement signed in November 2006 had ended the decade long armed conflict in which thousand of civilians, Maoist guerrilla fighters and the then royal Nepalese army personnel were killed and displaced. This insurgency adversely affected the economic development of the country in the study period. Ten members of the royal family, including the King Birendra Bir Bickram Saha Dev and Queen Aishwarya Rajya Laxmi Devi Saha were killed in 2001 allegedly by the then crown prince Dipendra. After the royal massacre, Gyanendra Shah (Gyanendra's brother, Birendra) succeeded to the throne upon the death of his nephew Dipendra who was King for only three days while in a coma.

In February 2005, the new king Gyanendra dismissed the prime minister and his cabinet after they dissolved the parliament. The king declared a state of emergency, imprisoned party leaders, and assumed power and took complete control of the government. The king allowed parliament to reconvene due to mass protests organized by the seven parties and the Maoists in 2006. The election of constitutional assembly is held in 2008 and the nation is declared as republic by the first meeting of constituent assembly (Khadaka, 2007). Due to such political instability the country failed to achieve satisfactory level of social and economic development and growth.

¹ A mixed economy is an economic system that incorporates aspects of more than one economic system. This usually means an economy that contains both privately owned and state owned enterprises. Or that combines elements of capitalism and socialism or mixed of market economy and planned economy characteristic.

Nepal has a reasonably diversified financial sector as evidenced by the number and variety of institutions that play an active role in the society, relative to Nepal's small and underdeveloped economic base over the past 20 years, Nepal's financial sector has become deeper, and the number and type of financial intermediation has grown rapidly with in this period. The Nepalese financial sector has grown significantly both in terms of business volume and size of assets and market capitalization (Nepal Development Forum march 2000).

The financial sector was not opened up for private sector until the early 1980s in Nepal. At the beginning of the 1980s when financial sector was not liberalized there were only two governments controlled commercial banks; Rastriya Banajya Bank and Nepal Bank Limited and two development banks performing banking activities in Nepal. The economic reforms initiated by the government more than one and half decade ago have changed the landscape of several sectors of the Nepalese economy. As a result of this policy, large number of banks and financial institutions mushroomed across the country. The Nepalese financial market is comprised of regulated and non regulated sector. The Nepalese organized financial sector is composed of banking and non banking sector. Besides commercial bank, micro credit institution, cooperatives and NGOs; there are other institutions that perform near bank services like postal saving, employee provident fund, mutual fund and citizen investment trust, insurance companies and Nepal stock exchange etc. Similarly brokers, security dealers, market makers and money exchangers are other players of financial market. However,² Nepal Rastra Bank's regulatory and supervisory regime is limited to the commercial bank, development banks, finance companies, micro credit development banks, saving and credit cooperatives and non government organizations of which license for operation is provided by Nepal Rastra Bank . The following table depicts the types and number of financial institution licensed

² Nepal Rastra bank (NRB), the central bank of Nepal, established in April 26, 1956, under the NRB act 2012 is the sole authority for licensing and supervising banks and financial institutions in Nepal. Replacing NRB act 2012, the NRB act 2018 has empowered Nepal Rastra Bank to conduct the supervision of financial institutions and has provided more autonomy, authority and accountability to the core central banking function, which undoubtedly includes the supervision function as well.

by NRB by mid July 2007 (N.R.B Bulletin, 2007) and the financial institutions are classified into ABCD according to capital size. The higher the capital required to register the financial institution, is ranked as A and lower B, C, D and none classified respectively.

Table-1 Number of Financial Institutions

SN	Types of Financial institutions	Class	Number
1	Commercial Banks	A	20
2	Development Banks	B	29
3	Finance Companies	C	70
4	Micro Credit Development bank	D	11
5	Saving and Credit Cooperative	Non Classified	19
6	Non Government Organization	Non Classified	47

Sources: Banking and Financial Statistics (mid July 2007, No. 47)

Nepal Rastra Bank has been given various rights and powers including rights of granting license to banks and financial institutions, their monitoring, inspection and supervision and also taking over the management if it appears that transactions of the bank are detrimental to the interest of the depositors. It has authority even to cancel license in case of material non-compliance of various prudential norms and relevant laws and regulations. The following table depicts total assets of licensed institutions and the share of various types of financial institutions.

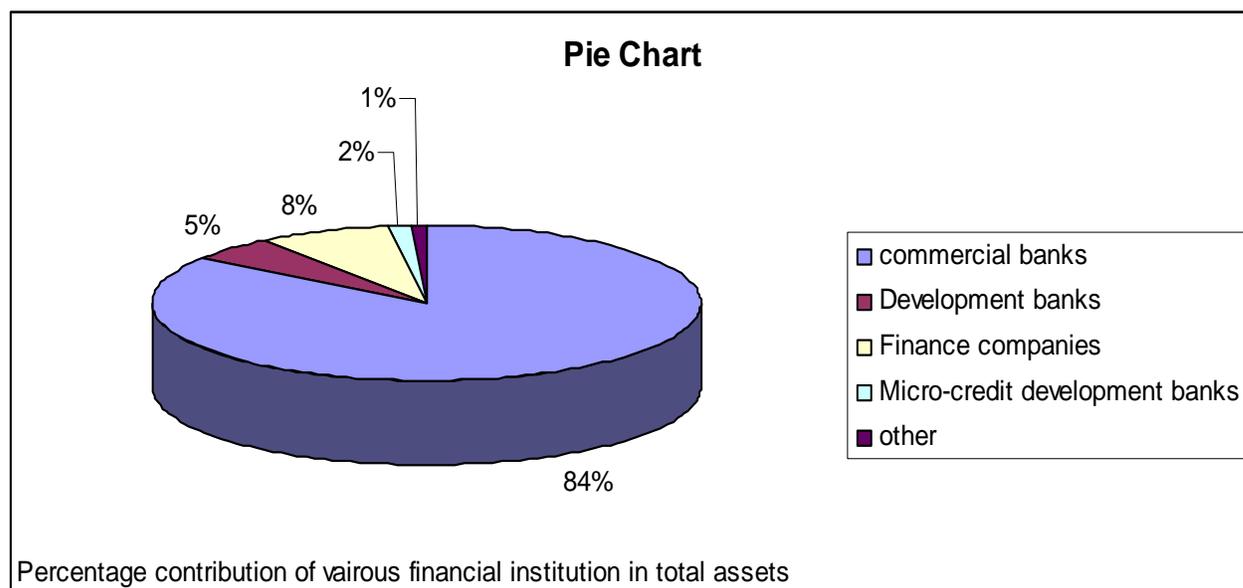
Table-2

Bank and financial institutions	Total Assets (million Rupees)	Share %
Commercial Banks	428,691	84.7
Development Banks	26,622.40	5.26
Finance companies	38,870.75	7.68
Micro-credit Development Banks	8,499.30	1.62

Other (Cooperative and NGO)	3,745.34	0.74
Total	506,129.34	100

Sources: Banking and Financial Statistics (mid-July 2007)

Graph-2



2.1 Overview of Commercial Banks in Nepal

There is no doubt that the banking sector is important for both developed and developing economies. Developed economies already have a highly sophisticated financial market in place where as developing economies have no or only rudimentary institutions in place.

Financial markets play a key role in the development of a country. They are the intermediary link in facilitating the flow of fund from domestic savings into productive investment which ultimately help to lower the cost of capital to investors and accelerate

economic growth of the country. Financial intermediation between borrowers and savers is done by commercial banks and other non bank entities. Now a day, the crucial importance of financial intermediation in economic development has come under the increasing scrutiny by both economists and policy makers in developing countries. However, financial development in many developing economies is still faced by a number of obstacles such as macroeconomic instability, the fragility of stock markets, the limitation of capital markets, and the inefficiency of development and specialized banks. Despite some of these limitations, banking systems in underdeveloped countries remain integral components of the general economic systems. And they can be seen as a key element in any development effort (Zeinab2006)

Though Nepalese financial sector is reasonably diversified with financial institutions having institutional arrangement of varied nature, commercial banks are the major player in this system and they occupy substantial share in the structure of financial sector (See table 2). The commercial banks are supervised by the bank supervision department of NRB while the rest of these institutions are supervised by Financial Institution Supervision. Safe and sound banking is of crucial importance to the financial stability and sustainable development of the country.

The first conventional bank in Nepal was the Nepal Bank Limited, established in 1937 followed by Rastriya Banijya Bank in 1966. These banks have the largest networks and they have their operations even in the remote areas of the country. Rastriya Banijya bank is fully owned by the government while the government has controlling stake in Nepal Bank Limited. As the financial market was barred for private investor up until the mid 1980s these two banks were the only players in the banking industry³. Table 3 provides the detailed information about the date of incorporation of the commercial banks in Nepal.

³ The economic liberalization policy adopted in the mid of 1980s brought about a surge in the banking industry. The large numbers of banks were established and the numbers continue to grow to the present day.

Table-3 List of Commercial Banks and incorporation in Nepal (Mid July 2007)

SN	Name	Date of incorporation	Head office
1	Nepal Bank Limited	1937/11/15	Kathmandu
2	Rastriya Banijya Bank	1966/01/23	Kathmandu
3	NABIL Bank Limited	1984/07/16	Kathmandu
4	Nepal Investment Bank Limited	1986/02/27	Kathmandu
5	Standard Charter Bank Limited	1987/01/30	Kathmandu
6	Himalayan Bank Limited	1993/01/18	Kathmandu
7	Nepal SBI Bank Limited	1993/07/07	Kathmandu
8	Nepal Bangladesh Bank Ltd.	1993/06/05	Kathmandu
9	Everest Bank Ltd.	1994/10/18	Kathmandu
10	Bank of Kathmandu Ltd	1995/03/12	Kathmandu
11	Nepal Credit and Commerce Bank Ltd	1996/10/14	Kathmandu
12	Lumbini Bank Limited.	1998/07/17	Kathmandu
13	Nepal Industrial and Commercial Bank Ltd.	1998/07/21	Kathmandu
14	Machhapuchhre Bank Ltd	2000/10/03	Pokhara
15	Kumari Bank Limited	2001/04/03	Kathmandu
16	Laxmi Bank Ltd	2002/04/03	Birgunj
17	Siddhartha Bank Ltd	2002/12/24	Kathmandu
18	Agriculture Development Bank Ltd.	2006/03/16	Kathmandu
19	Global Bank Ltd.	2007	Kathmandu
20	Citizen Bank International Ltd	2007	Kathmandu

Source: Banking and Financial Statistics, NRB, 2007

2.1.1 Growth of the Number of Commercial Banks

From table 3, it is easy to find out there is a significant growth in the number of commercial banks authorized by NRB in Nepal in the last two decades. At the beginning

of the 1980s when the financial sector was not liberalized, there were only two commercial banks. After the liberalization and especially in the 1990s, financial sector has grown both in terms of the number of banks and financial institutions and their branches. This definitely has made a positive impact on the economic development of Nepal.

2.1.2 Employment in the Banking Industry

As of mid July 2007, the total number of employees in the banking industry is about 14000. The three public banks, whose system generate the majority of the employment and processes are still based largely on the manual system. Though, these banks have reduced their staff size almost in half since Mid July 2001, under the various phases of voluntary Retirement schemes initiated under the reform process, they still have a sizable working force. During 2005/06, the number of employees in the three public sector banks was 11235 where as the private sector banks had 2527 employees. However, the private banks, meanwhile, are steadily increasing their number of staff in direct alignment with the proliferation in the business. As a large part of their system the procedures are automated, the number of staff employed by these banks is relatively small. Due to inclusion of ADB in the public sector commercial bank, the share of working force in the public banks seems to be bigger. However, if we analyze trends, the total number of employees in the public bank is decreasing every year.

3 THEORY OF ECONOMIC GROWTH AND FINANCIAL DEVELOPMENT

This section is divided into four subsections which are a) the role of financial institution in economic growth, b) factors affecting economic growth and the growth theory c) analysis, contribution, and effects to economic growth, and d) empirical evidence in the case of Nepal.

3.2 The role of financial institution in economic growth

The financial institutions play a key role in development of a national economy because it functions as a medium of collecting and mobilizing resources to finance a business and development project that are essential for economic development (Eichengreen, 1997). A country without good financial system can be a major problem for the economy to function properly, to mediate sustainable private investment and promote entrepreneurship.

Financial institutions ease market friction and influence the allocation of resources over different sectors of the country (Levine, 2004). The author introduces five key functions of financial system that are essential to economic growth.

- 1. Produce information about possible investment and allocation capital**
- 2. Monitor investments and provide expert corporate governance**
- 3. Facilitate the trading, diversification and management of risk**
- 4. Mobilize and pool saving**
- 5. Ease the exchange of goods and services**

Financial intermediaries help to reduce the transaction cost of obtaining information about company, manager, market situation which are essential to make investment decision. They also help to identify the best investment opportunities. Besides this, they also monitor the fund they lent to the business organization or other types of borrowers which ensure the effective utilization of fund which in turn makes savers more willing to invest. As a result the business sector of a country tends to move in positive direction making progress possible. Thus the effectiveness of a financial corporation directly influences firm's performance which in turn impacts on aggregate growth rate.

In case of India, there exists bi-directional casualty between financial deepening economic growths. Thus policies which effect financial deepening are likely to have an

effect on economic growth and vice versa. The financial sector policies may affect financial deepening by altering bank behavior and in particular by changing bank's willingness to attract deposits (Demetriades and Luintel, 1996)

3.3 Factors that Affect Economic Growth: the New Growth Theory

Unlike the traditional believe of technological innovation and physical investment that are main reasons for productivity changes, new growth theory, and the increasing returns associated with knowledge that dawned in the late 1980s to 1990s have come to dominate the theoretical thinking. We have witnessed huge productivity growth nearly over night by knowledge firms and extraordinary growth in the stock returns associated with expected future returns on hardly any fixed assets, knowledge oriented firms for example, Microsoft or Google. Those new type of firms have been the ground for the new growth theory. Innovation in terms of organizational form and risk structure, have forced the economic theory to conform to the new development. Consequently, New Growth Theory emphasizes the importance of investing in new knowledge creation in order to sustain growth. The paradigm shift on emphasizing research and development, on the education system, and on entrepreneurship and the tolerance for diversity have helped to identify the new era of knowledge increasing society. (See, for example, Richard Florida, 2002; Nordström and Ridderstråle, 1999)

The new growth theories are equally applicable to the develop countries and developing countries. It concerns the stages of development rather than the methodology and theoretical underpinning. The economic growth of a country is determined by some most basic preconditions which may be more or less similar to all the countries which are a) Market b) Property right and c) Monetary exchange (Stiglitz, and Driffill, Economic, 1993). The market signals to the customer that creates an incentive to demand or supply

goods and services on the basis of market generated information⁴. In order for the markets to work well, there must be other factors such as property right and monetary exchange that coordinates each other. As Hayek (1945) famously proclaims that the price system is such a mechanism for communicating information if we want to understand its real function.

With the development of society, exchange system move up from barter system to the monetary exchange system. Human society did not experience economic growth before the above mentioned precondition. By specializing and trading, everyone acquire goods and services at the lowest price possible. Some institutions evolved with the development of economy and facilitate to acquire the goods and services which permit economic growth.

3.4 Growth Accounting and Neoclassical Growth Theory

The real GDP is primarily created by three basic factors a) The quantity of labor (L), b) The quantity of capital (K) and c) The stage of technology (T). The equation of these three factors that shows increment in the real GDP due to change in land, labor and capital, is called growth accounting. Other definitions exist. A method whereby a set of economic techniques or theories are used to determine what specific factor, or factors, contributed to an economy's growth (source: Investopedia).

The objective behind the growth accounting is to decompose the factors that contribute to output or real GDP growth with the increases in labor, capital and technology. The tool that measures the growth accounts is popularly known as production function, which is denoted by

$$Y = f(L, K, T) \dots\dots\dots 1$$

⁴ See, for example, Friedrich Hayek, 1945, “if detailed economic plans could be laid down for fairly long periods in advance and then closely adhered to, so that no further economic decisions of importance would be required, the task of drawing up a comprehensive plan governing all economic activity would be much less formidable.”

Where Y denotes output, L denotes labor, T denotes Technology, K denotes capital so production or output(Y) is determined by the input of land, labor, and capital. Production tended to grow (ΔY) with the increase of the input of land, labor and the overall productivity. The real GDP (Y) is the function of the volume of labor (L), capital (K) and advance technology (T). The growth of real GDP (ΔY) heavily depends on how fast the increase in the land, the volume of labor and capital used.

There are a number of fundamental theories of economic growth developed and revised with the span of time which give us insight into the analysis of the process of economic growth, about which we briefly describe in the following paragraphs.

The **classical growth theory** was developed by the leading economists of the eighteenth century and early nineteen century, Adam Smith, Thomas Robert Malthus and David Ricardo, but most closely associated with the name of Malthus and sometimes it is called the Malthusian theory With the publication of the book “An inquiry into nature and causes of the wealth of nation”, Adam Smith popularized this theory in 1776 (Sachs, Larrain, 1993).

The growth depends on the inputs imposed which can be represented as:

$$K = f_1(B) \dots\dots\dots 2$$

The capital is essential to accelerate the economic development of a country which always comes from the banks. The role of banking sector in economic development is significant as they are the sources of capital formation for any industries. If there is no development of banking industry in a country, it is supposed to be a capital deficiency. Therefore the capital (K) is the function of bank (B).

$$L = f_2(B) \dots\dots\dots 3$$

The labor (L) is the function of bank (B) because with the increase in the number of banks, the number and size of business increase, as a result, employment opportunity increases. The sources of financing would be easy with the increase in the number of

banks because of the fact that the number of business tend to increase. Since the employment increases, this would have positive impact on the overall economy and growth.

$$T = f_3(B) \dots\dots\dots 4$$

The technology is also a major means of production which enables to produce more output with lower cost of production. The technological advancement is another challenge to any business organization, only that organization can survive for long that can deal with the change in technology. The process of technological advancement requires huge amount of capital which can be funded through the bank, consequently, the size of the business increases and the economy of the country grows. Now, it can be said that technology (T) is also a function of the bank (B).

If we apply all functions (1, 2, 3, and 4) in a single equation, the production function (Y) is as follows;

$$Y = f \{f_1(B), f_2(B), f_3(B)\} \dots\dots\dots 5$$

The production function (Y) refers to the function of technology (T), labor (L), and capital (K). The function of land labor and capital are a function of the bank. Thus the production function (Y) is also a function of bank (B) which means the production increases with the increase in the size and the number of banks, other things being equal.

Neo-classical growth model (Solow Growth Model, 1956) assumed that increase in national economy is due to changes in technology, capital investment and labor force growth. The capital is subject to diminishing returns. When the technology change does not occur, and labor force stays the same, the growth will stop eventually if capital increase can not make up for the capital depreciation. Given a fixed stock of labor, the impact on output of the last unit of capital accumulated will always be less than the one

before. Within the Solow growth model, the Solow residual⁵ or total factor productivity is an often used measure of technological progress. The equation below represents total output (Y) as a function of total-factor productivity (A), capital input (K), labor input (L), and the two inputs' respective shares of output (α is the capital input share of contribution).

$$Y = A \times K^{\alpha} \times L^{1-\alpha}$$

The annualized growth rate of A and is called the Solow residual

This theory is the first but highly influential contribution to the theoretical concept of economic growth. It does not, however, consider the role of financial factors; it only considers the real economy in which physical input translated into output without any intermediation of banking sector other than technological advancement.

Robert Solow^{6,7} suggested the most popular version of neoclassical growth theory in the 1950s but it is worth mentioning that it was Frank Ramsey⁸ first ingeniously presented the theory in the 1920s. As legend goes, Keynes encouraged Ramsey to work on economics and young Ramsey responded to Keynes's urging by writing three papers in economic theory all of which were of fundamental importance, though it was many years before they received their proper recognition by the community of economists.

⁵ The residual, is that part of growth not explicable by measurable changes in the amount of capital, K , and the number of workers, L . It is a "residual" because it is the part of growth that cannot be explained through capital accumulation, which is dedicated to technological growth and efficiency.

⁶ The Ramsey growth model is a neo-classical model of economic growth based primarily on the work of the economist and mathematician Frank Ramsey. The Solow growth model is similar to the Ramsey growth model, however without incorporating an endogenous saving rate.

⁷ The significance of this theory is that it introduces the impact of population growth or decline in national economy. If the opportunity cost is high to give birth to children women tend to work more as a result population growth would be negative and vice versa. Similarly, with the growth of economy increases the life expectancy which results in the population growth.

⁸ See Ramsey 1927, 1927, 1928. Ramsey's theories on subjective probability and utility, optimal taxation and optimal one-sector economic growth are later recognized as the original thoughts in these fields apart from his mathematical contributions to choice under uncertainty.

The Ramsey Growth Model:

Equation 1: The law of motion for capital accumulation:

$$\dot{k} = f(k) - \delta k - c$$

Where k is capital per worker, c is consumption per worker, $f(k)$ is output per worker, δ is the depreciation rate of capital. This equation simply states that investment, or increase in capital per worker is that part of output which is not consumed, minus the rate of depreciation of capital.

Equation 2 involves a saving rate, which states the marginal utility of consumption today = the marginal utility of consumption in the future.

The rate of return on savings = rate at which consumption is discounted - percent change in marginal utility times the growth of consumption.

Mathematically, equation 2 can be stated as:

$$r = \rho - \%dMU * \dot{c}$$

Solving the above dynamic equation for consumption growth we get:

$$\frac{\dot{c}}{c} = \frac{r - \rho}{\theta}$$

Which states that the rate of change of consumption is related to the rate of return on saving r , the discount rate of consumption ρ and a parameter θ . Equation 2 is also called Euler equation. Setting \dot{k} and \dot{c} equal to zero we can find the steady state of this model.

Paul Romer (1990) and Robert Lucas, Jr. (1988) subsequently developed alternatives to Solow's neo-classical growth model, which is often called the endogenous growth model as opposed to Solow's exogenous growth model. According to Romer (2007),

“If a poor nation invests in education and does not destroy the incentives for its citizens to acquire ideas from the rest of the world, it can rapidly take advantage

of the publicly available part of the worldwide stock of knowledge. If, in addition, it offers incentives for privately held ideas to be put to use within its borders—for example, by protecting foreign patents, copyrights, and licenses, by permitting direct investment by foreign firms, by protecting property rights, and by avoiding heavy regulation and high marginal tax rates—its citizens can soon work in state-of-the-art productive activities.... The challenge now facing all of the industrialized countries is to invent new institutions that encourage a higher level of applied, commercially relevant research and development in the private sector. As national markets for talent and education merge into unified global markets, opportunities for important policy innovation will surely emerge.”

The endogenous growth theory pointed a plausible path for the nations in different stages of development to catch up by remixing their available resources and seeking higher growth.

Aghion and Howitt (1992) present a model with economic growth results exclusively from technological advancement which in turn results from competition among research firms that generate innovations could very well explain the process of growth. The model is based on Schumpeter's process of creative destruction. Each innovation consists of a new intermediate good that can be used to produce final output more efficiently than before. Research firms motivated by the prospect of monopoly rents that comes from a successful patented innovation. But those rents in turn will be destroyed by the next innovation, which limit and discourage the incentives of the innovation in the first place. (Aghion and Howitt 1992).

The links between the technological innovation and financial institutions can be found by introducing the factor of efficient financial system which handles the investment. The more advanced the financial system is, the better it can serve the society with effective financing. In the new era of knowledge intense firms, economic development is closely connected to a sound financial institutional development. For example, which research firms get the adequate funding at the exact time also influence the direction of the market competition and the results of technological achievement. In our point of view, the paper can be extended in this direction including a financial firm with various degrees of efficiency which can have real result on the economy.

3.5 Economic freedom and the effects to economic growth

Economic liberalization is a term which describes the phenomenon that fewer government regulations and restrictions in the economy in the exchange for greater participation of private entities.

In developing countries, economic liberalization means opening up of the financial market to foreign capital and investments. Most of the developing countries liberalize their financial sector to keep competitiveness in attracting and retaining both their domestic and foreign investments. However some country's like North Korea, Saudi Arabia and United Arab Emirates have fallen behind in the liberalization process, whereas China, Brazil, and India have achieved rapid economic growth after adoption of liberalization policy in their economy. With the concept of liberalization, the big multinational banking and finance companies have started their business in the developing countries thus the size and sources of financing increased, consequently, positively impacted the overall economy of both parts.

The term globalization has been used by economists since 1981⁹ (Obstfeld and Rogoff, 1999), however, this concept was not so popular until the latter half of the 1980s and 1990s. The earlier version of the concept of globalization or 'corporate giants' was coined by the American business man named Charles Taze Russel in 1897.

Globalization can simply be defined as the international integration. With the development of society and growth of the population, the concept of globalization developed rapidly in the last few decades. The term globalization is suppose to make the world one society through the integration of the socio-economic, cultural, geographical, ecological, political, and transportation system of the world. Thus the globalization can be defined as the process by which people of the world are unified into a single society.

⁹ The term globalization was first used by Economist in 1981 while foreign trade was rapidly grown at that period.

During the Second World War, there was substantial set back in the economic activities. After the war, Bretton Woods conference was initiated and as a result, a number of international organizations were founded to continue the process of globalization, to promote the growth and to manage the international trade. The World Bank (WB) and international monetary fund (IMF) were established to facilitate the international trade without barriers and to increase economic liberalization. These two institutions have been working to promote the economic liberalization and to increase the flow of fund in those countries where there is scarce of fund to develop their economy. They also facilitate to acquire advanced technology to reduce cost of production and ultimately lower the trading cost. To reduce the restriction of free trade, the General Agreement on Tariffs and Trade (GATT) has been established which led to a series of agreements to remove restrictions of free trade (Obstfeld and Rogoff, 1999). After the World War II, the free trade has significantly increased lowering tariffs and other restriction through the initiatives of GATT which was the foundation of World Trade Organization (WTO). WTO plays the major role to minimize the international trade dispute among the countries and facilitate tariff-less trade. Other similar types of regional organizations have been established to promote free regional trade such as SAARC, NAFTA etc.

The concept of globalization and liberalization emerged to address the trade related issues and facilitate the fund flow all over the world without restriction. One can supply as well as receive the funds through multinational companies or banks. The process of creating business benefits all and harms none, so all countries experience the growth and development in their overall economy.

Normally, the freer the economy the better will be the economic growth potential. However, among the members of WTO, developing countries are found to be too rigid to undertake commitments; developing countries have been found to have more protected market than developed countries. Governments of developing countries impose more restriction in international trade to protect domestic industries with foreign competition. Developing countries are reluctant to full fledged liberalize trade although they have benefited from the concept of liberalization and globalization. (Khanal and Sharma 2004)

The data from heritage foundation, Nepalese economy is 54 percent free, according to 2008 assessment, which makes it the world's 112th freest economy. Economic freedom index is a composite index of ten economic variables and ranges from 1 best and 5 worst. For Nepal, the index of economic freedom is available from 1996 to 2006. It was 3.53 in 1996, it's slightly increase to 3.89 in 1997 and gradually improve to 3.53 in 2006. In 2006, Nepal is ranked as most unfree country in the world. As a developing nation with wide spread civil unrest, Nepal faces significant challenges, investment freedom, financial freedom, trade freedom, property right freedom are weak. There are many reasons on lack of foreign investment that put a limit on Nepal's economy. Further more, the regulations are enforced by an inefficient and corrupt bureaucracy. Property rights are not secured by the judiciary system which is also subject to substantial corruption and political influence.

4 Methodology and data

4.1 Correlation analysis on financial ratio

Correlation analysis on ratio involves methods of calculating and interpreting the correlation coefficient of financial ratios to assess the firm's performance (Gitman, 2001). For how to calculate correlation coefficient, see appendix A. A ratio may be defined as a fixed relationship between two numbers. The relationship between two financial variables expressed in the form of ratio can represent financial condition and performance of a firm. Evaluation of this type is necessary for the management, and financial analysts who are interested in the performance of the firm. The basic inputs to ratio analysis are from the firm's income statement and balance sheet.

The different financial ratios such as Deposit to GDP, Investment to GDP, and Investment to Deposit ratio, and Return on Assets are used to analyze the study, and the relationship of these variables with the growth rate of GDP per capita are highlighted.

4.2 Regression analysis¹⁰

According to our study on the production function and our own analysis of the financial institution's contribution to the economic growth, we constructed a model of regression as follows:

$$\Delta(GDP / Capita) = \alpha + \beta\Delta(Investment\ growth) + \gamma(Deposit / GDP) + \varepsilon$$

We expect that the relationship between the Deposit /GDP is positively related to the GDP per capita growth. Also the growth rate of investment should contribute to GDP/capita growth.

4.3 Sources of Data

We use mainly secondary data for the study. The data are obtained from: the Nepal Rastra Bank Bulletin, published by the Central Bank of Nepal; Yearly Economic Survey, published by the Ministry of Finance of Nepal; Annual Reports of Commercial Banks published by the respective banks; Statistical Pocket Book, published by Bureau of Statistics; publications of World Bank and International Monetary Fund

4.3.1 Presentation of the Data

The sample data used in this research is comprised of 20 commercial banks during the period of 2001 to 2007. Table 1 represents deposit of money by the customers in 20 commercial banks from the period 2001 to 2007. Likewise, investment is the commercial banks' investment in different sectors. Likewise, total assets and profit are profit earned by commercial banks and total assets possess by the commercial banks.

¹⁰ For the method of regression analysis, see appendix B.

Table 4, Yearly Deposits, Investment, Total Assets and Profit of the Commercial Banks vs. GDP in Nepal (year 2001-2007)

Year	Deposit (Rs. in million)	Investment (Rs. in million)	Total Assets (Rs. in million)	Profit (Rs. in million)	GDP (Rs. in million)
2001	181,767	25,446.5	251,482.61	-7,843	441,518
2002	185,144.7	34,209.8	274,931.64	-9,428	459,443
2003	203,879.3	45,386.3	305,635.57	-3,317	492,230
2004	233,811.2	49,668.6	339,778.04	3,707	536,749
2005	252,409.8	60,181.1	411,240.56	5,205	589,412
2006	291,245.5	82,173.7	426,877.16	7,983.51	646,469
2007	337,497.2	93,530.80	490,620.63	87,97.9	719,476

Table-5

Year	Number of Banks	Population	Inflation (%)
2001	16	25,284,463	2.4
2002	16	25,873,917	2.9
2003	17	26,469,569	4.8
2004	17	27,070,666	4
2005	17	27,676,547	4.5
2006	18	28,287,147	8
2007	20	28,901,790	8.6

Source: CIA World Fact book

5 Analysis of the results

5.1 Correlation Analysis on Financial Ratio

Table-6

	<i>Growth of (GDP/capita)</i>	<i>Deposit/GDP</i>	<i>Investment/GDP</i>	<i>Investment/Total Deposit</i>	<i>Net Income/Total Assets</i>
Growth of (GDP/capita)	1				
Deposit/GDP	0,487544	1			
Investment/GDP	0,817161	0,529956	1		
Investment/Total Deposit	0,832905	0,381053	0,985913	1	
Net Income/Total Assets	0,975005	0,339213	0,861732	0,870348	1

The correlation coefficient (ρ) between Growth of GDP/capita) and Deposit/GDP is 0,49. This means that the two variables are positively related to each other confirming our previous belief. The Growth rate of GDP and investment over GDP is positive related with a correlation coefficient of 0.82. Furthermore, The Deposit/GDP ratio is also related to Investment/GDP with $\rho=0,53$ which shows that there is significant relationship between the two variables.

Investment/Total Deposit has a high positive relationship with the net income/Total assets ($\rho=0,87$). This shows the fraction of investment over Deposit is positively related to the performance of the banking system. Net Income/Total Assets has a correlation coefficient nearly equals to 1 with the growth rate of GDP/capita, this also raises caution when we choose our explanatory variables in the regression analysis, since the variables in the study has a tendency to be related to each other. A proxy is needed to replace the highly correlated explanatory variable.

5.2 Regression result

In our regression we have included (as in the previous section) Deposit /GDP and growth rate of Investment to the growth rate of GDP per capita. We show the summary statistics of these variables in table 7. See also Graph 3 for the development of the variables from 2001 to 2007.

Table 7: Summary statistics: Growth rate of GDP, growth rate of investment, and Deposit/GDP.

	<i>Growth rate of GDP</i>	<i>growth rate of investment</i>	<i>Deposit/GDP</i>
Mean	0,0779	0,1921	0,4334
Standard Error	0,0091	0,0312	0,0098
Median	0,0856	0,2105	0,4319
St. Deviation	0,0222	0,0765	0,0241
Sample Var.	0,0005	0,0059	0,0006
Minimum	0,0390	0,0862	0,4030
Maximum	0,1015	0,2676	0,4691
Sum	0,4676	1,1524	2,6006
Count	6	6	6

Graph 3: Growth Rate of GDP/capita, Investment Growth and Deposit/GDP.

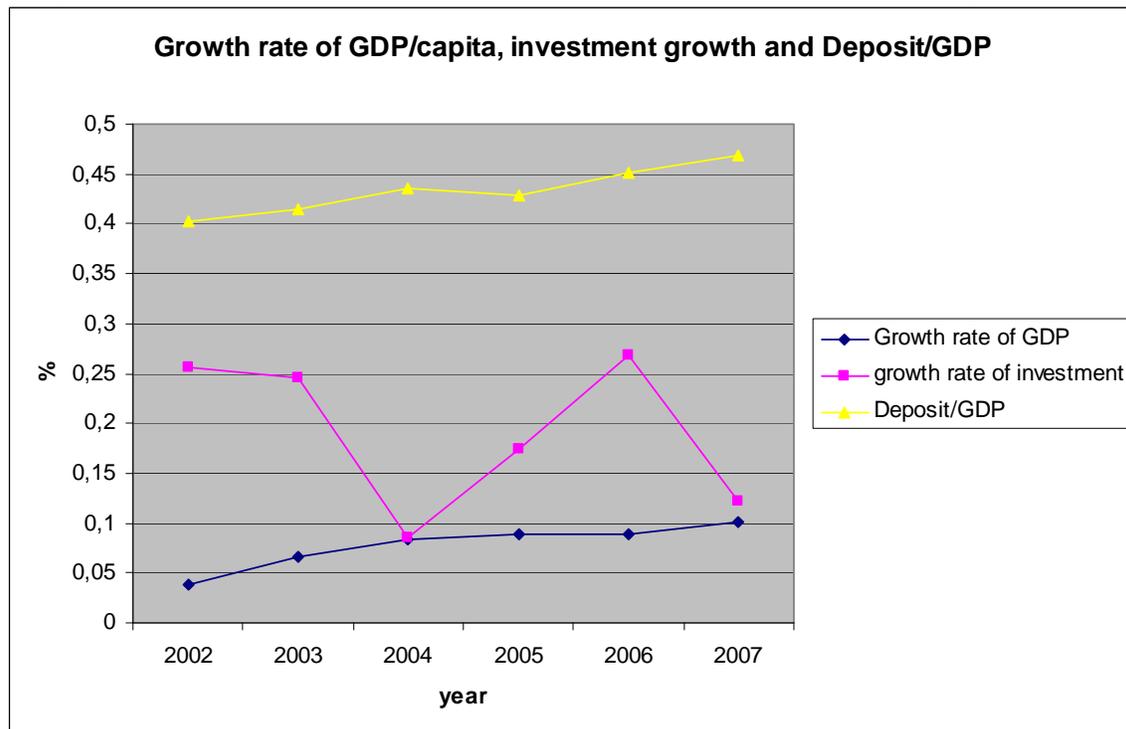


Table: 8 Regression result of Deposit/GDP and growth rate of investment on GDP per capita

Dependent variable: Growth rate of GDP /capita								
	<i>Coeff.</i>	<i>St. Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>R square</i>	<i>Adj R square</i>	<i>F</i>	<i>Sig. F</i>
Intercept	-0,23	0,12	-1,93	0,15	0,81	0,69	6,54	0,08
Growth rate of invest.	-0,05	0,08	-0,61	0,58				
Deposit/GDP	0,74	0,26	2,85	0,06				

The reason we choose the variable Investment growth is to show the incremental investment effect on the DGP/capita. Also this variable has lower level of correlation with Deposit/GDP reducing the multi-collinearity problem in the regression. The result shows that the investment is not significantly related to the GDP per capita growth, the reason can be two-fold: lack of value increasing investment opportunities in Nepal; secondly, the time lag of the effect of the investment and that the data we used is limited in commercial banking sector which could have contributed to the insignificant result.

The result shows that the Deposit/GDP ratio is moderately significant to economic growth (p value=0,065*). The parameter value equals 0,74 meaning 1 percentage change of Deposit/GDP ratio result in 0,74 % changes in the growth rate of GPD/capita.

6 Conclusion

In this study we have focused on commercial banks' role in the development of the economy. The commercial banks in Nepal have increased tremendously in terms of number and total assets, deposit, investment and capital after the adoption of the liberal policy in 1980 towards the private sector, which lead to the effect of increased privatization, liberalization and globalization.

The Number of commercial banks were two before 1980s, which are now twenty (until the study period), and are 439 branch banks. It indicates that commercial banking is increasing rapidly in Nepal. The increase in size and number are limited only in the urban areas. Banking services are not easily accessible to the general public in Nepal and the people staying rural part of the country.

The ratio of Deposit to GDP is found to be significant at 6,5% level to the growth rate of the GDP per capita, the parameter value is 0,74. The correlation analysis shows

that these two variables are highly correlated with the coefficient equals to 0.49. This has proved our beliefs that the savings rate in a country is crucial to the economic development (GDP per capita), especially for developing countries.

For future research, we intend to focus on obtaining better quality of data, with longer period of time, adding also more countries and using panel data methodology to increase the generalizability and credibility of the study. We intend to do further studies to follow up this subject and help to relieve the poverty burden on the millions of people around the world.

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Appendix

A: Correlation Coefficient

The correlation coefficient is a measure of strength of the linear relationship between the variables. The value of correlation coefficient lies between +1 and -1. The magnitude of correlation coefficient indicates the strengths of linear relation while its sign indicates the direction. A high numerical value of correlation coefficient that is the value close to +1 or -1 represents a strong linear relation. A value of correlation coefficient close to zero means that the linear association is very weak.

The value of correlation coefficient (r) can be calculated from n pairs of observation(x, y) according to the following formula;

$$r = \frac{S_{xy}}{\sqrt{S_{xx}}\sqrt{S_{yy}}}$$

Where,

$$S_{xy} = \sum (X - \bar{X})(Y - \bar{Y}), S_{xx} = \sum (X - \bar{X})^2, S_{yy} = \sum (Y - \bar{Y})^2$$

S_{xy} is the covariance of X and Y variable. S_{xx} is the variance of X, and S_{yy} is the variance of Y.

B: regression analysis

The subject of regression analysis concerns the study of relationship among variables. It treats two variable or several variables data. A regression problem involving a single predictor arises when we wish to study the relation between two variables x and y and use it to predict y from x . The variable x acts as an independent variable whose values are controlled by the experimenter. The variable y depends on x and is subject to unaccountable variations or errors.

According to least square estimates, the regression between two variables can be calculated by using the following formula;

$$Y = a + bX$$

Where;

a = the intercept of the line with y- axis

b= slope of the line or change in y per unit change in x .

X = Independent variable

Y= Dependent or response variable.

Where, $a = Y - bX$

$$b = \frac{S_{xy}}{S_{xx}}$$

Table-9

Year	Growth of deposit	Growth of investment	Growth of total assets	Growth of profit	Growth rate of GDP per person
2001	-	-	-	-	-
2002	1.86	34.44	9.32	-20.21	-1.18
2003	10.12	32.67	11.17	-6.48	-0.09
2004	14.68	9.43	11.17	211.76	2.52
2005	7.95	21.65	21.03	40.41	2.77
2006	15.38	36.54	3.80	53.38	-0.63
2007	15.88	13.82	14.93	10.20	0.003