

PERFORMANCE OF FINANCIAL INSTITUTIONS IN BHUTAN

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Bhutan is a small landlocked country in South Asia, located in the eastern Himalayas, and bordered by India and China. With a population of about 687,000, the country has a small economy that is also fragile. Nevertheless, its banking system plays an essential role in the growth and development of the country. This paper analyses the financial performance, the development and growth of bank and non-bank financial institutions of Bhutan for the period 1999-2008 using both traditional and data envelopment analysis (DEA). The DEA analysis shows that the country's financial institutions are efficient, with the Bhutan National Bank being the most efficient. Overall, the paper finds that the return on equity (ROE) of the financial institutions in Bhutan are comparable to that of international banks and the development of the financial sector in Bhutan has contributed to the growth of the Bhutanese economy.

JEL Classification: G20, G21, G28, O16.

Key words: Financial institution, performance, loan, deposit, net income, Bhutan.

I. BACKGROUND

The role the financial system plays with regard to economic growth has been well researched both theoretically and empirically. As Bagehot (1873) argued, the distinguishing characteristic of British financial markets to mobilize savings to finance a variety of long-term illiquid investment opportunities led to industrialization in

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England. Schumpeter (1911) stressed that services provided by financial intermediaries and financial institutions facilitated technological innovation and economic development, thereby growth, by mobilizing resources and savings, evaluating projects, managing risks and monitoring the implementation of projects. Over the years, a volume of empirical research on the nexus between financial development and growth has been conducted. Some of the seminal empirical works in this area that establish a close relationship between economic and financial development are Goldsmith (1969), McKinnon (1973), King and Levine (1993a), Roubini and Sala-i-Martin (1991), Herring and Santomero (1991). These studies have explained in detail the link between financial development and steady state growth.¹ A number of cross country empirical studies on growth (Barro, 1991; Mankiw, Romer and Weil, 1992; Levine and Renelt, 1992; King and Levine, 1993b) have also established a strong link between financial development and growth after controlling relevant variables affecting growth. However, some studies also advocate that financial sector development is a result of economic development (Robinson, 1952; Greenwood and Jovanovic, 1990). Overall, it has been well established in literature that the financial sector plays a significant role as a mediator among economic agents, which leads to better resource mobilization, investment, risk management and overall economic development.²

At the macro level, the performance of the financial sector needs to be regulated and monitored with controlled checks as a way to deter serious setbacks to the economy, such as what occurred following the global financial crisis of 2008. On the other hand, at the micro level, competition in the financial sector places pressure on financial institutions to constantly improve their performance and operate efficiently. Banking institutions, which basically control the financial sector in developing and less developing countries, such as Bhutan, face a dynamic and competitive environment due to fast-paced global connectivity. While technological innovation creates more ways to deliver financial services, modern day consumers demand new services at their doorstep.

The financial sector in Bhutan is undergoing a transformation in which it is expected to efficiently fulfil the role of a mediator of resources in the economy. Due to growing competition in the financial sector, risk, profitability and balance-sheet structure management would not only play an important role in maintaining macroeconomic stability but also in the stability of the financial sector in Bhutan. The

¹ However, some studies, such as Robinson (1952) and Lucas (1988), suggest that the role of financial development for growth has been overstressed.

² See Herring and Santomero (1991) for role of financial sector in economic performance.

financial sector is an important source of finance for businesses in a small economy such as Bhutan.³ Since it is at the nascent stage in Bhutan, it is important to examine the performance of the country's financial institutions. The measurement of the financial performance of the financial institutions is well advanced within finance and management fields. However, as there has been no such study on the financial sector in Bhutan, this research systematically analyses the financial data of Bhutanese financial institutions and examines the performance of the financial institutions for the period 1999-2008. The data have been compiled from the published annual reports of the financial institutions. The main contributions of this research are that it organizes the data in a comparable manner, provides an overview of the financial sector and analyses the performance⁴ of the financial institutions during a recent 10-year period.

The approaches for analysing the efficiency and performance of financial institutions can be broadly categorized as being parametric or non-parametric.⁵ We use the traditional approach as well as the data envelopment analysis (DEA) to evaluate the performance of financial institutions in Bhutan. The traditional approach, which is used initially, includes an analysis of major financial indicators of these institutions over time to reflect a comparative performance. Next, we use DEA with different input-out variables on the basis of established studies in this area.

Bhutan is a small landlocked country in South Asia, located in the eastern Himalayas, and bordered by India and China. The country is home to a population of about 687,000, spread over an area of approximately 47,000 sq.km., with about 70 per cent of the land area under forest cover (World Bank, 2010). Much of the population lives in the central highlands, and almost two-thirds of the people are classified as rural inhabitants. The terrain is mostly hilly, with alpine peaks in the north, and some subtropical plains in the south.⁶ Despite being landlocked, with difficult terrain and a widely dispersed population, the economy of Bhutan witnessed steady economic growth of 7 to 8 per cent annually over the last two decades, mainly

³ However, the rural population still depends on the informal source for financial business and other activities.

⁴ The definition of performance or efficiency in financial institution is very broad. It depends on marketing strategy, organizational structure and human resource management (Roth and van der Velde, 1991; 1992; Heskett, Sasser and Schlesinger, 1997).

⁵ See Berger and Humphery (1997) for complete review of 122 studies using alternative approaches.

⁶ It is in the eastern Hindu Kush Himalayan range and surrounded by autonomous region of Tibet, China and Indian states. Bhutan is governed through three levels of administration – the central government agencies, district administrations, and block administrations. The country is currently divided into 20 districts (Dzongkhag), which are further divided into blocks (Gewogs) (Bhutan, Planning Commission, 2005).

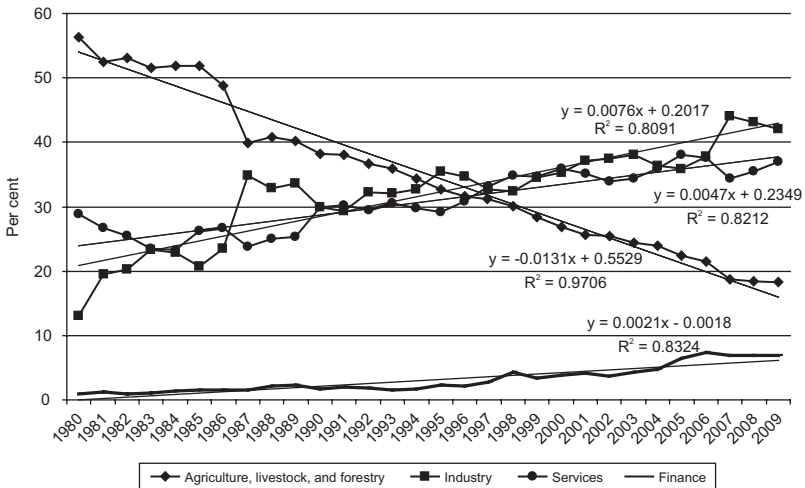
supported by the secondary sector (see table 1). However, the growth and contribution of the agriculture sector has slowed (from 56 per cent in 1980 to 18 per cent in 2007), particularly since 2000. While the contribution of the service sector to the economy has not shown much change, that of the finance and insurance sectors has improved marginally.⁷ According to the World Bank (2010) the country's per capita gross national income (GNI), one of the highest in South Asia, rose from \$730 in 2000 to \$1,900 in 2008.

Table 1. Structure and growth of Bhutanese economy: 1980-2010

Year	Contribution to economy				Growth of economy
	Primary	Secondary	Tertiary	Finance	Growth rate (%)
1980-1985	43.73	17.07	39.22	2.25	8.05
1986-1990	38.66	21.80	39.56	3.00	10.14
1991-1995	35.08	26.24	38.66	2.54	4.70
1996-2000	31.56	30.68	37.76	3.38	6.34
2001-2005	26.52	34.88	38.62	3.92	7.64
2006-2010	21.01	39.47	36.37	5.74	9.32

Source: National Statistical Bureau of Bhutan.

Figure 1. Share and trend of different sectors: 1980-2009



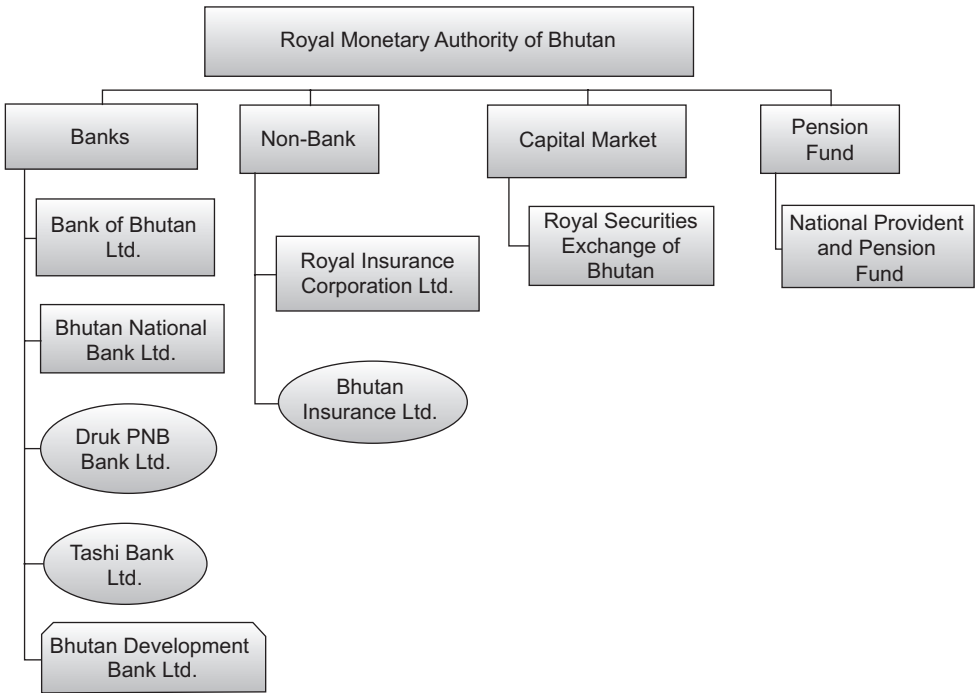
Sources: National Statistical Bureau of Bhutan (1999-2008) and authors' calculations.

⁷ See annex table A.1.

II. THE EVOLUTION AND STRUCTURE OF THE BHUTANESE FINANCIAL SECTOR

Established in 1982, the Royal Monetary Authority of Bhutan serves as the central bank of Bhutan. It is in charge of regulating the financial sector and formulating the monetary policy. The country has five banks⁸ and two non-bank financial institutions.⁹ In addition, the Royal Securities Exchange of Bhutan, the country's stock exchange, and the National Pension and Provident Fund are important components of the Bhutanese financial sector. Figure 2 reports the structure of the financial sector in Bhutan.

Figure 2. Structure of the financial sector in Bhutan



⁸ Bank of Bhutan Ltd., Bhutan National Bank Ltd., Druk Punjab National Bank Ltd., TBank Ltd. and Bhutan Development Bank Ltd.

⁹ Royal Insurance Corporation of Bhutan Ltd. and Bhutan Insurance Corporation Ltd.

Bhutan: evolution of major banks and financial institutions in bank

The Bank of Bhutan was established on 28 May 1968 as a joint venture with the Chartered Bank of India, Australia and China, which owned 25 per cent of the bank. As the public sector commercial bank with paid-up capital of 2.5 million Bhutanese ngultrum (Nu) (\$448,000) and a reserve amount of the same total, it carried out the function of a central bank until the establishment of the Royal Monetary Authority of Bhutan. The pace of growth of Bank of Bhutan was marginal due to the non-convertibility of the local currency until 1972 when it was reconstituted under the Royal Charter of Bank of Bhutan (1972) wherein the State Bank of India became a partner in capital and management with 40 shares.¹⁰ In 2008, the Bank of Bhutan had a network of 26 branches and three extension counters with a paid-up capital of Nu 400 million (\$7.2 million). It enjoyed a complete monopoly until 1997 when the Unit Trust of Bhutan, an undertaking of the Government of Bhutan, was converted into country's second national bank, with initial capital of Nu 2.5 million (\$448,000), contributed by the Government and the Royal Insurance Corporation of Bhutan. Set up on 7 January 1975 as the country's only insurance company, the Royal Insurance Corporation of Bhutan continues to enjoy a monopoly in the country's insurance market. Initially, it managed the provident fund of government employees and public sector companies. However, in 2000, the National Pension and Provident Fund was created to manage the pension and provident fund of government and public sector employees.

Bhutan Development Finance Corporation Ltd. was established on 31 January 1988 as a financial institution to cater to the financial needs of the micro, small and medium enterprises with a special focus on agricultural development. It took over the administration of rural financial assistance from the Royal Monetary Authority. Loans were granted for improving farmland, acquiring livestock, and meeting short-term, seasonal requirements (Worden, 1991). Some of the funding for the corporation came from the Asian Development Bank (ADB), including an initial \$2.5 million loan in 1988 for the expansion of small- and medium-sized, private-sector industrial development. By 1991, the corporation had been privatized (Worden, 1991). The Government of Bhutan owns 87 per cent, with the remaining 13 per cent stake held by three financial institutions. The Bhutan Development Finance Corporation Ltd. was transformed into Bhutan Development Bank Ltd. in 2010. To develop the country's capital market, the Government with technical assistance from ADB set up the Royal Securities Exchange of Bhutan Ltd. in 1996. The exchange is owned by four

¹⁰ The State Bank of India share in Bank of Bhutan was reduced to 25 per cent in 1982 and then further to 20 per cent in 1987.

brokerage firms, namely Bank of Bhutan Securities Ltd., Bhutan National Bank Securities Ltd., Druk Securities Ltd. and Royal Insurance Corporation of Bhutan Securities Ltd. T Bank focuses its operations locally while the Druk PNB Bank has a 51 per cent stake in Punjab National Bank of India. Overall, there have been efforts to create institutions and inject competition in the financial sector to fulfil different socioeconomic objectives. It is, therefore, important to analyse the performance of these institutions in order to comprehend their efficiency and sustainability.

Recent development

In recent years, the Bhutanese financial sector has experienced some major positive changes despite being affected by the global meltdown.¹¹ The tourism and hotel industries, major contributors to the economy and livelihood of the people, witnessed a decline in the tourist arrivals while the important ferro-silicon industries suffered due to a fall in the prices of the ferro-silicon products in the international market. The impact of the global meltdown on the tourism and steel industries trickled to the financial sector due to credit exposure in these two sectors of more than Nu 3 billion (\$52 million). As a response to the crisis as well as part of a drive to improve its operating performance, the ownership of Bank of Bhutan was transferred to Druk Holding Investment and major efforts were made to modernize the bank's services by using Flexcube CBS technology in eight branches under the guidance of Tata Consultancy Services. The implementation of the more advance technology has enabled the bank to introduce convenient delivery channels, such as SMS Banking, as well as on 28 May 2009, be the first bank in Bhutan to launch Internet banking facilities. The bank also constructed a \$1 million, Tier-III, state of the art data centre, the first of its kind in the country.

Taking into account the high level of importance customer satisfaction has on a bank's performance (Roth and van der Velde, 1991; 1992), the Bank of Bhutan regularly conducts feedback surveys to monitor the customer satisfaction level. In order to improve its services and customer conveniences, the bank introduced Sunday banking on 30 November 2008 to provide seven-day services to the customers in addition to the introduction of automated teller machines (ATMs) and Internet and mobile banking to improve the customer satisfaction level. Coinciding with the centenary and the coronation celebrations, Bank of Bhutan initiated social sector targeted loan schemes to assist, for example, the education sector and pensioners, and increased its loan base from 6,000 to 20,000 customers. The new technology, extensive branch network, a network switch and the planned installation

¹¹ Although Bhutanese economy is weakly linked with the global economy, it was not completely immune from the global recession. Therefore, the global meltdown affected the economy marginally.

of 100 ATMs across the country, will enable the bank to provide “any time”, “anywhere” banking in the country. The bank implemented new organizational structures in order to improve its operations, including the creation of zonal offices to enable faster delivery of services. Another initiative is to give scholarships to 60 Bank of Bhutan employees for masters and post graduate studies abroad over a 10-year period.

Similarly, Bhutan National Bank upgraded to Flexcube CBS technology with a higher version and also introduced new delivery channels, including SMS and Internet banking and ATMs. In addition, the bank hired the services of the consulting firm Ernst and Young to restructure its operations in order to be better prepared to face the new competition in the Bhutanese financial market, resulting from the introduction of three new commercial banks.

The Royal Insurance Corporation of Bhutan has implemented a voluntary retirement scheme to make the organization more lean and in a better position to face the competition from Bhutan International Ltd., an insurance company that was introduced in September 2009. The corporation has also introduced new products and reduced policy premiums. The Bhutan Development Bank Ltd. moved its corporate office to a new building and obtained a licence, which enables it to accept deposits and function as a rural bank.

Although during the period 2005-2010 the Bhutanese financial sector has seen significant changes, it is too early to analyse their impact on the economy. A few of the recent major changes in the financial sector are as follows:

Two new commercial banks have begun operating in Bhutan, thereby increasing competition in the banking and financial sector. This has resulted in more comprehensive and innovative financial products and fair pricing of services and cost of capital in Bhutan. The Bhutan Development Finance Corporation was converted into Bhutan Development Bank Ltd. in 2010 and Druk PNB Bank began operating on 27 January 2010 by opening its first branch at Thimphu. Subsequently, it has opened two more branches, in Phuentsholing and in Wangdue. T Bank started its operation on 12 March 2010.

Bank of Bhutan Ltd., the oldest commercial bank, embarked on plan to connect all of its branches through a central server in 2008 by installing core bank solution technology. Prior to that, more than half of its branches were operated manually and the rest by using in-house developed computer software. By 2010, all the Bank of Bhutan branches were connected to the central server, enabling customers to do bank transactions from any branches. The other commercial banks

in Bhutan have since implemented core banking solution technology, making it possible for customers to operate from any branches.

1. The Royal Monetary Authority of Bhutan has implemented a central switch entitled the “Bhutan Financial Switch”, which connects all the banks in Bhutan. This provides a platform for the interbank settlements on a real-time basis. It also enables customers of any of the bank to withdraw funds from any ATM.

2. Bhutan National Bank had ATMs connected to central servers since its establishment only in Thimphu and Phuentsholing while Bank of Bhutan had a stand-alone ATM in Thimphu and Phuentsholing. Currently, there are several ATMs spread throughout the country and connected through the central switch.

3. The paid-up capital requirement for banks was increased to Nu 300 million (\$5.4 million) in 2008 from Nu 200 million (\$3.5 million) while the initial paid-up capital was set at Nu 200 million (\$3.5 million) with a requirement that it be raised to Nu 300 million (\$5.4 million) within three years from the commencement of business.

4. The establishment of Bhutan Insurance Ltd. reduced the monopoly of the Royal Insurance Corporation of Bhutan Ltd. As a result, there has been a dramatic improvement in insurances services and a reduction in costs related to insurance.

5. In 2009, the Royal Monetary Authority of Bhutan launched the Credit Information System (CIS). Funded by the financial institutions of Bhutan, CIS contains information on the borrowers (clients) of all financial institutions and is accessible instantly to all financial institutions for a minimal fee. This is expected to help in improving the quality of loans, which in turn, would cut the loan default rate and reduce the stock of non-performing assets.

6. In 2010, The Royal Monetary Authority introduced an electronic fund transfer and clearing system for automated clearing of the instruments between financial institutions in Bhutan.

7. Another major development in the banking sector in Bhutan is an initiative to introduce the Visa/MasterCard branded credit and debit cards. Bank of Bhutan was the first bank in Bhutan to obtain membership to the Visa International and MasterCard World Wide Services networks, followed by Bhutan National Bank and Druk PNB Bank. Foreigners travelling to Bhutan are able to use their Visa and MasterCard debit/card cards to make payment through a point of sale (POS) terminal and also withdraw cash from ATMs in Bhutan. In addition, Bhutanese travellers overseas are able to use cards to make payments through POS and withdraw cash from ATMs outside Bhutan.

8. A problem for Bhutanese economy has been the ongoing Indian rupee crisis, which has resulted in a large rupee deficit, which is being financed by the Government. The Bhutanese national currency, the ngultrum, and the Indian rupee have been pegged one to one since the introduction of the national currency. Initially, the ngultrum was freely circulated in parts of Assam and North Bengal and accepted as legal tender due to the convertibility of the ngultrum into the rupee. But, later, the central bank imposed a stringent measure on use of rupee to procure goods and services from India. This has resulted in a large rupee deficit due to the strong demand for goods and services from India. During the initial years of the introduction of the national currency, this problem did not persist because the developmental activities in Bhutan were being financed by India and the purchasing power of the Bhutanese people was low as the country was largely an agrarian society. However, amid rapid development and significant economic growth combined with the inflow of foreign aid in hard currency from multilateral organizations and other bilateral organizations, an increase in procurement of good and services from India has occurred. Also, the increase in tourist inflows from countries other than India has led to an inflow of hard currency while most of the goods and services are being imported from India. This basically, has led to growth in the hard currency and the depletion of Indian rupee assets in Bhutan. The interest that the central bank is paying to finance the deficit is basically to maintain the peg. At this point, relaxation of the peg would hurt confidence in the financial sector. Such a move would adversely affect economic growth as Bhutanese people would be less inclined to save and invest. As such, the property market, the only investment available for Bhutanese investors, has been escalating in Bhutan in line with a rapid increase in money supply. In addition to placing pressure on land and real estate, the restrictions on the use of the Indian currency have led to hoarding of the rupee in Bhutan. Unless the central bank provides enough rupees to the Bhutanese on demand, it will be difficult to maintain the one to one peg. In addition, of note, in the long run after the completion of a major hydropower project in Bhutan, the availability of the Indian rupee will rise dramatically and Bhutan could suffer from huge excess liquidity if the one to one peg is not maintained today.

Performance of recently established banks

Leverage (asset/capital ratio)

The comparative analysis of the leverage (asset/capital ratio) shows that the recently established banks (T Bank and Druk PNB Bank) are much more leveraged than older banks, namely Bank of Bhutan and Bhutan National Bank (see table 2). Of the four banks in Bhutan, Bhutan Development Bank is the least leveraged with an asset to capital ratio of three times. This may be due to the fact that the bank was a non-bank financial institution until 2009 and it is taking time to leverage itself. In the

near future, we may notice that the assets to capital ratio of the bank may rise to the level of the other banks. Due to the increase in competition in the banking sector resulting from the launching of three additional banks, namely T Bank, Bhutan Development Bank and Druk PNB Bank, the leverage ratio of the banks in Bhutan is expected decline to a level comparable to the banks within the South Asian Association for Regional Cooperation (SAARC) region.

Table 2. Leverage (asset/capital ratio)

Financial institutions (FIs)	Calendar year 2010
Bank of Bhutan Ltd.	10.7
Bhutan National Bank Ltd.	11.6
Druk PNB Bank Ltd.	13.7
T Bank Ltd.	13.9
Bhutan Development Bank Ltd.	2.9
Royal Insurance Corporation of Bhutan Ltd.	5.7
Bhutan Insurance Ltd.	2.1

Source: Author's calculations based on data from Royal Monetary Authority of Bhutan, *Selected Economic Indicator*.

Bank of Bhutan and Bhutan National Bank together hold more than 70 per cent of the total assets held by the banks while the assets of the newly established banks hold less than 5 per cent each of total assets (see table 3). With greater competition and the introduction of more innovative financial products, the more equitable distribution of assets among the banks may occur.

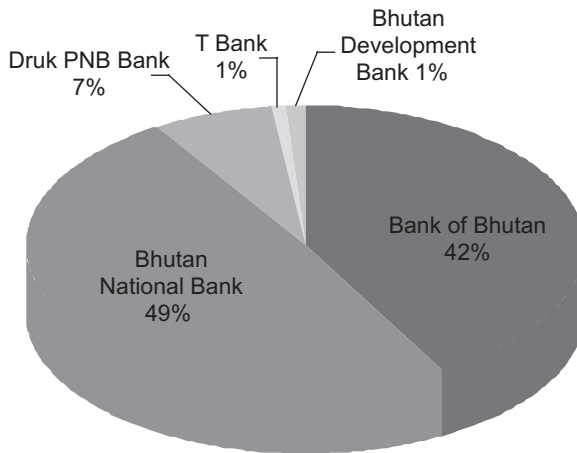
Table 3. Market share of financial institutions based on assets

Financial institutions (FIs)	Share to total assets of FIs		
	Apr 2010	Dec 2010	Sep 2011
Bank of Bhutan Ltd.	41.8%	43.4%	38.8%
Bhutan National Bank Ltd.	41.6%	32.5%	33.5%
Druk PNB Bank Ltd.	2.1%	6.3%	5.5%
T Bank Ltd.	0.7%	2.6%	4.3%
Bhutan Development Bank Ltd.	6.2%	6.1%	7.8%
Royal Insurance Corporation of Bhutan Ltd.	7.4%	8.7%	9.7%
Bhutan Insurance Ltd.	0.3%	0.4%	0.5%
Total (Nu in million)	50 349.7	64 302.5	64 362.5

Source: Author's calculations based on data from Royal Monetary Authority of Bhutan, *Selected Economic Indicator*.

In 2010, Bhutan National Bank held 49 per cent of the total deposits of the banking sector in Bhutan followed by Bank of Bhutan, which held about 42 per cent. The shares of Druk PNB Bank of T Bank and Bhutan Development Bank were 7 per cent and 1 per cent, respectively (figure 3). On the basis of the deposit market, Bhutan National Bank is the leading bank. The deposit share of the newly established bank may rise over time but it may take many years to catch up with the older banks as the newly established banks are concentrating only on the urban market.

Figure 3. Market share of banks based on deposits share on the total deposit, 2010



Source: *Selected Economic Indicators*, Royal Monetary Authority of Bhutan.

Composition of deposits

An analysis on the composition of the deposit shows that 77 per cent of the deposits of Bank of Bhutan are demand deposits, with the remaining 23 per cent, time deposits. The composition is an indication of the risk of liquidity (see table 4). The high proportion of demand deposits is a reflection on the fact the bank has been the main bank used by government as well as major government companies and projects. As government and government companies' deposits are replenished regularly, the bank is secure in terms of liquidity. In addition, these types of deposits reduce the bank's cost of capital as most of them are held interest free. Also of note, the Bank of Bhutan is part of Druk Holding Investment Groups, which owns major government companies and can raise deposits at times of a liquidity crunch.

Table 4. Composition of deposits

	2010 December	
	Demand deposit	Time deposit
Bank of Bhutan	77%	23%
Bhutan National Bank	34%	66%
Druk PNB Bank	48%	52%
T Bank	29%	71%
Bhutan Development Bank	70%	30%

Source: Author's calculations based on data from Royal Monetary Authority of Bhutan, *Selected Economic Indicator*.

III. BRIEF SURVEY OF PREVIOUS LITERATURE

Literature on the performance of financial institutions is plentiful. A large number of studies either use a traditional approach for analysing financial indicators or parametric (Stochastic Frontiers Analysis) and non-parametric analysis (such as DEA) to evaluate performance and efficiency of financial institutions. The definition of performance or efficiency varies across studies and therefore the approaches used to examine are also different. Below, we briefly review a few studies which used the DEA approach for efficiency analysis.

Berger and Humphrey (1997) review 130 efficiency studies of financial institutions, including commercial banks. They explain that efficiency estimates of financial institutions in 21 countries vary across studies due to the use of different methods utilized in different studies. They found that the various efficiency methods do not necessarily yield consistent results and suggest some ways that these methods might be improved to bring about findings that are more consistent, accurate and useful. Avkiran (1999) used two DEA models, taking interest expense and non-interest expense as input variables and net interest income and non-interest income as output variables to examine the efficiency of Australian trading banks for the period 1986-1995. They found that efficiencies rose in the post-deregulation period and that acquiring banks were more efficient than target banks.

Chen and Yeh (1998) calculated the operating efficiencies of 34 commercial banks of Taiwan Province of China using the DEA model wherein input variables included staff employed and interest expense and output variables included loans, investment interest revenue, non-interest revenue and bank assets. Al-Shammari and Salimi (1998) examined the comparative operating efficiency of Jordanian commercial banks from 1991 to 1994 using a modified version of DEA. They found that the majority of banks were fairly inefficient during the study period. Noulas (2001)

employed both the DEA model and the traditional approach to study the effect of banking deregulation on private and publicly owned banks. The interest expense and non-interest expense were the input variables, and interest revenue and non-interest revenue were the output variables. The results revealed that state banks were less efficient than the private and that the gap widened during the study period.

Barr and others (2002) used five input variables, namely salary expense, premises and fixed assets, other non-interest expenses, interest expenses and purchased funds and four output variables, namely earnings, assets, interest income and non-interest income to evaluate the productive efficiency of commercial banks in the United States of America from 1984 to 1998. The authors found strong and consistent relationships among efficiency, inputs and outputs, as well as independent measures of bank performance. Grigorian and Manole (2002) used DEA for 17 European countries and found that foreign banks were more cost efficient than domestic banks. Furthermore, Jemric and Vujcic (2002) examined the efficiency of banks in Croatia by using two DEA models. They also found that foreign banks were more efficient. Similarly, Sturm and Williams (2004) and Havrylchuk (2006) used DEA and found that new foreign banks were more efficient than domestic banks in Australia and Poland.

Analysing the performance and efficiency of financial institutions using DEA is very popular. The present study contributes to the literature by carrying out an analysis of performance of four major financial institutions in Bhutan by using the DEA method and traditional ratios. It is hoped that the study would be useful to scholars and policymakers.

IV. ANALYSIS OF PERFORMANCE: TRADITIONAL APPROACH

In this section we analyse the performance of four major financial institutions by examining their profitability/earning/operational strategies productivity/efficiency, leverage and liquidity, capital adequacy, growth and aggressiveness and market shares by using traditional methods of looking at important financial indicators. The indicators for each financial institution are reported separately in annex tables A.1 to A.6.

Profitability/earning/operational analysis

Return on assets

The return on assets (ROA) of Bank of Bhutan was very low during the period 1999-2008, averaging 1.1 annually. This was because government-owned companies tended to park their short-term volatile funds with the bank. These funds cannot be

invested to generate revenue. The average yearly ROA of Bhutan National Bank stood at 1.7 per cent during the period. However, the rate was closer to 2 per cent for most of the years with the average being weighed down by a fall in the rate to close to 1 per cent over a three-year period 2002-2004. The average ROA of Royal Insurance Corporation of Bhutan was 3.5 per cent, higher than Bank of Bhutan and Bhutan National Bank, with a standard deviation of 1.6, which was significantly higher than both banks. The Bhutan Development Finance Corporation, meanwhile, posted an average yearly ROA of 3.7 per cent for the period 1999-2008. The ROA of non-bank financial institutions was much higher than that of banks even though they can use only 63 per cent of their deposit base to generate income due to the cash reserve ratio requirement of 17 per cent and statutory liquidity requirement of 20 per cent.

Return on capital

The return on capital (ROC) reflects the performance of the company. Bank of Bhutan had a relatively high ROC in initial years of the study period but the rate fell in the later years, resulting in a yearly average ROC of 16.3 per cent for the study period, a rate that is acceptable based on most international standards. The average ROC rates of Bhutan National Bank and Royal Insurance Corporation of Bhutan were much higher at 21.7 and 19.9 per cent, respectively, than that of Bank of Bhutan. In general, these two institutions performed much better and were more stable than their counterparts during the study period. The Bhutan Development Finance Corporation posted the lowest ROC for the study period, with a yearly average of 11.9 percent. However, of note, the rate improved in the later years of the study period starting in 2004. The performances of Bhutan National Bank, the Royal Insurance Corporation of Bhutan and Bank of Bhutan, with averages that exceeded 15 per cent, is comparable to any global financial institution.

Return on loans and investment

The average yearly return on loan and investment (ROI) of the financial institutions in Bhutan was about 4 per cent during the period 1999-2008. The ROI figures of both Bank of Bhutan and Bhutan National Bank fluctuated widely, with high standard deviations. Though the average yearly ROI rate of Royal Insurance Corporation of Bhutan and the Bhutan Development Finance Corporation were comparable, they tended to post higher rates during the later years of the study period, with an average annual rate of 5 per cent.

Revenue to asset ratio

The revenue to assets ratio (RAR) shows how well assets are being utilized to generate revenue for the financial institutions. The average yearly RAR of Bank of

Bhutan for the study period was 5.5 compared to 7.4 and 6.1 for Bhutan National Bank and Royal Insurance Corporation of Bhutan, respectively. The RAR of Bank of Bhutan trended lower, indicating that the bank was unable to utilize its assets optimally. The declining revenue can be attributed to the fact that in the later years of the study the bank could no longer generate revenue from assets in its current account deposited in the State Bank of India. In addition, as mentioned previously, government-owned corporations and the salaries of civil servants are deposited in the bank. These funds are short-term in nature and too volatile to use for revenue. During the study period, the average yearly revenue to assets ratio of the Bhutan Development Financial Corporation was 11 per cent and throughout the study period it was always greater than 10 per cent.

Productivity/efficiency analysis

During the study period, the average loans and investment per employee (ALIP) of Bank of Bhutan and Bhutan National Bank stood at Nu 7.8 million (\$136,000) and Nu 14.7 million (\$257,000), respectively. Though the ALIP increased for both banks, the rise was much faster for the latter, which posted the highest ALIP during the last few years of the study period. Notably, Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation had an ALIP of Nu 8.6 million and Nu 7.4 million, respectively, for the ten years. Similarly, Bhutan National Bank had the highest average profit per employee, Nu 500,000 (\$9,000), was followed by Nu 400,000 (\$7,000) for Royal Insurance Corporation of Bhutan and Nu 300,000 (\$5,200) for Bank of Bhutan and Bhutan Development Finance Corporation for the reference period 1999-2008. Overall, we observe that all the four institutions have been improving in efficiency indicators, such as ALIP and average profit per employee.

Leverage and liquidity analysis

The loan and investment to capital helps us to measure how leveraged a firm is. During the study period, the average annual loans and investment to capital ratio of Bank of Bhutan, the Bhutan National Bank, Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation were 4.3, 5.8, 5.4 and 2.2, respectively. This indicated that Bhutan National Bank was the most leveraged followed by Royal Insurance Corporation of Bhutan, Bank of Bhutan and Bhutan Development Finance Corporation. In addition, the average loans and investment to total assets of Bank of Bhutan was 29.6 per cent as compared to 49.4 per cent for Bhutan National Bank. The average loan and investment to asset of Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation was 84.4 per cent and 85.5 per cent, respectively, indicating that these two financial entities were the most leveraged institutions in Bhutan. The average loan to deposit ratio of Bank of

Bhutan and Bhutan National Bank were 25.5 and 51.9 per cent, respectively, whereas the average loan and investment to deposit ratio was 34.5 and 58.2 per cent, respectively during the ten-year period 1999-2008. More importantly, we observe that all four financial institutions had been continuously improving in these indicators (see annex tables A.1-A.4) and were almost comparable to international standards.

Capital adequacy

Capital to asset ratio

This ratio measures first the financial health of the bank and second the ability of the bank to withstand the losses. The average capital to asset ratios (CAR) of Bank of Bhutan, Bhutan National Bank, Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation were 7 per cent, 8.4 per cent, 17.5 per cent and 30.6 per cent, respectively. The low capital to asset of the banks can be attributed to the fact that the country imposed on financial institutions a 17 per cent cash reserve ratio and a 20 per cent statutory liquidity ratio. In addition, the assets of the Bank of Bhutan remained idle in the form of cash and balances with Royal Monetary Authority of Bhutan as these are short and volatile deposits of the governments, government projects and other large government corporations. During the 10-year period, the CAR of Royal Insurance Corporation of Bhutan improved much faster starting in 2004 whereas Bhutan Finance Development Corporation had a fairly strong CAR in the initial years.

Capital to net loan

The capital to net loan ratio (CNL) measures the equity cushion available to absorb losses on the loan book. We observe that Bank of Bhutan and Bhutan Development Finance Corporation are in a much better position to absorb the losses in the loan book with average CNL ratios of 34.3 per cent and 36.0 per cent, respectively, during the study period. However, the CNL of Bank of Bhutan declined during the 10-year period (from 40.1 in 1999 to 18.7 in 2008) whereas that of Bhutan Development Finance Corporation stayed above 30 per cent. The average yearly CNL ratios for Bhutan National Bank and Royal Insurance Corporation of Bhutan were 20.3 per cent and 22.6 per cent, respectively, for the reference period.

Capital to net loan and investment

Similar to CNL, capital to net loan and investment (CNLI) measures the equity cushion available to absorb losses on loans and investments. The average yearly CNLI of Bank of Bhutan, Bhutan National Bank, Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation were 24.1 per cent, 18.3 per

cent, 20.3 per cent and 35.9 per cent, respectively. As with CNL, Bank of Bhutan and Bhutan Development Finance Corporation were better placed in this indicator though their CNLI ratio trended lower in the later years of the reference period.

Growth and aggressiveness

Bank of Bhutan

During the 10-year study period, the assets of Bank of Bhutan grew on a year-to-year basis reaching Nu 21 billion (\$380 million) in 2008 from Nu 7.4 billion (\$133 million) in 1999. During the same period, loans and investments increased from Nu 2.2 billion (\$36 million) in 1999 to Nu 8.7 billion (\$156 million) in 2008. The deposits base increased from Nu 6.3 billion (\$113 million) in 1999 to Nu 18.4 billion (\$330 million) in 2008. The reserve and capital increased from Nu 451.3 million (\$8.1 million) in 1999 to Nu 1.5 billion (\$27 million) in 2008. Although the assets, loan and investment, deposits, revenue and reserve and surplus increased substantially in 2008, the operating cost increased marginally from Nu 86.5 million (\$1.6 million) in 1999 to Nu 197.5 million (\$3.5 million) in 2008.

Bhutan National Bank

We observe that Bhutan National Bank was quite aggressive during the 10-year period, with the bank experiencing impressive growth of its assets, deposit base, and loans and investment. The bank's assets expanded to Nu 16.7 billion (\$300 million) in 2008 from Nu 2.8 billion (\$50 million) in 1999 while the volume of loans increased from Nu 819.6 million in 1999 (\$14.3 million) to Nu 9.2 billion (\$165 million) in 2008. During the same period, the loans and investments increased from Nu 834.0 million (\$15 million) in 1999 to Nu 9.7 billion (\$174 million) in 2008. The deposit base and revenue increased from Nu 2.5 billion (\$45 million) in 1999 to Nu 14.6 billion (\$262 million) in 2008 and from Nu 199.2 million (\$3.6 million) in 1999 to Nu 1,149.6 million (\$20.7 million) in 2008, respectively. However, the operating expenses also increased from Nu 37.6 million (\$675,360) in 1999 to Nu 217.2 million (\$3.9 million) in 2008.

Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation

The assets of Royal Insurance Corporation of Bhutan declined from Nu 2.5 billion (\$45 million) in 1999 to Nu 1.3 billion (\$23.3 million) as management of the government employee provident fund was changed from the corporation to the National Pension and Provident Fund. Gradually, the corporation rebuilt its asset base to reach Nu 2.7 billion (\$48 million) in 2008. Similarly, all other indicators such as

loans, investment, revenue and operating cost, also increased during the study time. Bhutan Development Finance Corporation also achieved positive growth in most of the financial indicators during the study period.

Market shares

The market shares of the four major financial institutions have changed over time. In 1999, they were 55.8 per cent, 21.2 per cent, 18.4 per cent and 4.6 per cent of the total assets of the financial institutions for Bank of Bhutan, Bhutan National Bank, Royal Insurance Corporation of Bhutan and Bhutan Development Finance Corporation, respectively. By 2008, they had changed to 49.0 per cent, 38.9 per cent, 6.2 per cent and 5.9 per cent, respectively. Notably, the shares of Bank of Bhutan and Royal Insurance Corporation of Bhutan declined while the position of Bhutan National Bank increased. In terms of loans, the share of Bank of Bhutan held steady at about 36 to 37 per cent, whereas the share of Bhutan National Bank increased from 26.8 per cent in 1999 to 42.5 per cent in 2008. Royal Insurance Corporation of Bhutan saw its share of total loans decrease substantially from 22.6 per cent in 1999 to 10.1 per cent in 2008 while the share of Bhutan Development Finance Corporation declined from 14.7 per cent in 1999 to 10.2 per cent in 2008. Bank of Bhutan saw its share of total deposits decline from 71.7 per cent in 1999 to 55.8 per cent in 2008 while the share of Bhutan National Bank increased to 44.2 per cent in 2008 from 28.3 per cent in 1999.

V. DATA ENVELOPMENT ANALYSIS

The definition of performance or efficiency in a financial institution is very broad. It depends on marketing strategy, organizational structure and human resource management (Roth and van der Velde, 1991; 1992; Heskett, Sasser and Schlesinger, 1997). There are different approaches to analysing the efficiency and performance of financial institutions which can be broadly categorized as being either parametric or non-parametric.¹²

DEA is a non-parametric approach. It is a linear programming technique which gives the set of best practices showing the optimal relations between outputs and inputs (see Charnes, Cooper and Rhodes, 1978). We use popular DEA with different input-output variables for the efficiency analysis.

We did an input-oriented constant returns to scale DEA. Three different DEA were done with different input-output variables. In the first model, we used capital as an input variable and revenue and profit as output variables. In the second model, we

¹² See Berger and Humphery (1997) for complete review of 122 studies using alternative approaches.

used capital and employee as input variables and revenue and profit as output variables. In the third model, we used assets, capital and employees as input variables and revenue and profit as output variables.

As indicated early, Bank of Bhutan functions as the banker for the government and government-owned companies. Consequently, its asset base can become highly inflated during times when large government funds, such as revenue and grants, and government-owned companies are deposited in the bank. However, most of these large deposits are short-term and are withdrawn within short span of time, restricting them from being used to generate revenue. As these types of assets are volatile, when they are used as one of the input variables to measure efficiency, the results are misleading. Hence, the DEA result with assets, capital and employee as an input variable and revenue and profit as an output variable shows Bank of Bhutan as the least efficient financial institution.

The DEA 1 (input variable: capital; and output variable: revenue and profit) and DEA 2 (input variable: capital and employee; and output variable: revenue and profit) on efficiency produced a similar result for the study period. They indicated that Bhutan National Bank during the study period was the most efficient with the exception of certain periods during which Bank of Bhutan and Royal Insurance Corporation of Bhutan were more efficient. They also indicated that Bhutan Development Finance Corporation was the least efficient financial institution during the period 1999-2008 except in 2005. Using Bhutan National Bank as a benchmark, we observe that Bhutan Development Finance Corporation was less than 50 per cent efficient in comparison with Bhutan National Bank for the years 1999, 2000, 2001 and 2007. The efficiency of Royal Insurance Corporation of Bhutan was 89 per cent, 82 per cent and 77 per cent in 2006, 2007 and 2008, respectively, in comparison to Bhutan National Bank. In 2006, 2007 and 2008, the efficiency of Bank of Bhutan was 76 per cent, 76 per cent and 70 per cent, respectively, in comparison to Bhutan National Bank. In 2006, 2007 and 2008, the efficiency of Bank of Bhutan was 66 per cent, 44 per cent and 52 per cent, respectively, in comparison to Bhutan National Bank.

Overall, Bank of Bhutan was the second most efficient financial institution in 1999 and 2000 and most efficient from 2001 to 2004. Royal Insurance Corporation of Bhutan was the most efficient financial institution in 2002, 2003 and 2004 while 2005 to 2008, Royal Insurance Corporation of Bhutan was the second most efficient financial institution after Bhutan National Bank.

**Table 5. Input-oriented constant returns to scale efficiency
(comparison of different FIs for year)**

Inputs	Capital				Capital and employee				Assets, capital and employee			
	Revenue and profit				Revenue and profit				Revenue and profit			
Year	Bank of Bhutan	Bhutan National Bank	Royal Insurance Corporation of Bhutan	Bhutan Development Finance Corporation	Bank of Bhutan	Bhutan National Bank	Royal Insurance Corporation of Bhutan	Bhutan Development Finance Corporation	Bank of Bhutan	Bhutan National Bank	Royal Insurance Corporation of Bhutan	Bhutan Development Finance Corporation
1999	0.99	1.00	0.55	0.33	0.99	1.00	0.55	0.33	0.99	1.00	0.58	1.00
2000	0.78	1.00	0.46	0.28	0.78	1.00	0.46	0.28	0.78	1.00	0.60	1.00
2001	1.00	1.00	0.87	0.38	1.00	1.00	0.87	0.38	1.00	1.00	1.00	1.00
2002	1.00	1.00	1.00	0.54	1.00	1.00	1.00	0.84	1.00	1.00	1.00	1.00
2003	1.00	0.76	1.00	0.66	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00
2004	1.00	1.00	1.00	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2005	0.71	1.00	0.97	0.82	0.71	1.00	0.97	0.82	0.71	1.00	1.00	1.00
2006	0.76	1.00	0.89	0.66	0.76	1.00	0.89	0.78	0.76	1.00	1.00	1.00
2007	0.76	1.00	0.82	0.44	0.76	1.00	0.82	0.49	0.76	1.00	1.00	1.00
2008	0.70	1.00	0.77	0.52	0.70	1.00	0.77	0.52	0.70	1.00	1.00	1.00

Table 5. (continued)

Input-oriented constant returns to scale efficiency of FIs
(comparison of each financial institution across 10 years)

DMU	Bank of Bhutan			Bhutan National Bank			Royal Insurance Corporation of Bhutan			Bhutan Development Finance Corporation		
	DEA 1	DEA 2	DEA 3	DEA 1	DEA 2	DEA 3	DEA 1	DEA 2	DEA 3	DEA 1	DEA 2	DEA 3
1999	0.98	0.98	0.98	0.81	0.81	0.81	0.61	0.61	0.61	0.92	0.92	0.92
2000	0.96	0.96	0.96	1.00	1.00	1.00	0.81	0.81	0.81	0.95	0.95	0.95
2001	1.00	1.00	1.00	0.89	0.96	0.99	1.00	1.00	1.00	0.80	0.80	0.81
2002	0.78	0.85	0.85	0.77	0.80	0.80	0.90	0.90	0.90	0.86	0.86	0.87
2003	0.69	0.90	0.90	0.43	0.62	0.80	0.78	0.78	0.78	0.99	0.99	0.99
2004	0.60	0.84	0.84	0.50	0.66	0.78	1.00	1.00	1.00	1.00	1.00	1.00
2005	0.50	0.70	0.70	0.58	0.80	0.92	0.82	0.96	0.96	1.00	1.00	1.00
2006	0.60	0.94	0.94	0.61	0.77	0.83	0.87	0.98	1.00	0.94	1.00	1.00
2007	0.55	0.88	0.88	0.61	0.87	0.96	0.84	1.00	1.00	0.87	0.87	0.98
2008	0.57	1.00	1.00	0.66	1.00	1.00	0.77	1.00	1.00	1.00	1.00	1.00

Source: Author's estimations.

DEA 1: inputs: capital; output: revenue and profit.

DEA 2: inputs: capital and number of employee; output: revenue and profit.

DEA 3: inputs: assets, capital and number of employee; output: revenue and profit.

VI. COMPARISON WITH OTHER COUNTRIES

Chansarn (2008) finds that the efficiency of Thai commercial banks is very high and stable while this study finds that the efficiency of the bank and non-bank financial institutions in Bhutan is also high but somewhat volatile. Unlike other small countries of the region, such as Bangladesh, Maldives, Nepal and Sri Lanka, the financial institutions in Bhutan have enjoyed fairly good growth in terms of credit, business volume and asset size with less volatility mainly due to strong regulation, the small size of the companies, the low level of integration and growing investment. Given the economic growth and changes in the demand of the financial services, the financial institutions in Bhutan and other small countries in the SAARC region must move into providing specialized financial services rather than focusing on the traditional ones. The following table gives a comparative picture of the performance of Bhutanese financial institutions vis-à-vis financial institutions in South Asia (see table 6).

The table below shows the comparative analysis of the financial institutions of Bhutan with the institutions in South Asia with respect to three indicators, namely ROA, asset to capital ratio (leverage) and net interest margin. The ROA of Bank of Bhutan and Bhutan National Bank are on the higher side of the benchmark. The ROA of Bhutanese banks have been higher than Indian, Bangladeshi and Nepalese banks but lower than the Pakistani banks. The ROA were fairly consistent from 2001 to 2006 in the Bhutanese banks while in other countries there were wide variances. This may be due to the fact that the Bhutanese economy did not experience any shock and also that during this period, only two banks operating in Bhutan, which enjoyed monopoly conditions but were not necessarily efficiently run. Similar to other countries, the ROA of the non-bank financial institutions was much higher than their counterparts in other South Asian countries.

Leverage as measured by the ratio of assets to capital measures is the extent to which assets of the financial institutions are financed by funds other than their own. The table shows the following: the leverage ratios of banks in Bangladesh, India, Nepal and Sri Lanka were lower than the benchmark range; the leverage for the banks in Pakistan was within the benchmark range but on the lower side; and the leverage for the banks in Bhutan were on the higher side of the benchmark range. This indicates that the banks in Bangladesh, India, Nepal, Sri Lanka and Pakistan were conservative or faced stiff competition in raising deposits and extending credit while the banks in Bhutan enjoyed a monopoly and were able to leverage much more than the banks in the region.

Table 6. Comparative analysis with regional banks and the benchmark

	Bhutan							Benchmark		
	Bangladesh	India	Nepal	Pakistan	Sri Lanka	Bank of Bhutan	Bhutan National Bank		Royal Insurance Corporation of Bhutan	Bhutan Development Finance Corporation
Return on assets (ROA)										
2001	0.74	0.90	-3.04	0.60	0.84	1.80	1.90	2.30	3.00	0.50-1.40
2002	0.54	1.10	-3.37	1.50	1.11	1.20	0.80	3.10	3.20	0.40-1.50
2003	0.59	1.50	-0.85	2.10	1.36	1.40	1.00	2.90	3.30	0.60-1.90
2004	-0.63	1.70	1.47	2.00	1.43	1.20	1.20	5.00	4.90	0.70-1.70
2005	1.30	1.30	1.79	2.90	1.70	0.90	1.90	4.40	5.50	0.70-1.80
2006	1.66	1.31	1.90	3.20	1.83	1.20	1.90	5.30	5.50	0.50-1.80
Leverage										
2001	4.17	4.96	3.27	4.58	3.90	14.60	13.60	10.10	3.30	6.58-15.01
2002	4.34	5.24	3.71	4.11	4.71	15.20	15.40	6.90	3.30	6.92-14.64
2003	4.77	5.75	3.87	5.03	5.53	13.00	8.30	6.30	3.70	6.01-15.39
2004	4.16	5.90	-3.00	6.45	5.63	12.80	10.00	4.70	3.20	6.41-15.18
2005	4.42	6.35	-4.65	7.64	6.93	13.10	10.30	4.40	3.00	6.32-15.25
2006	5.33	6.57	-4.14	8.94	6.78	13.60	12.20	3.90	2.80	6.02-14.37
Net interest margin										
2001	1.66	2.98	1.76	3.24	3.30	1.90	2.80	..	6.50	1.81-3.55
2002	1.04	2.66	0.92	3.10	3.78	1.20	2.10	..	8.10	1.83-3.55
2003	1.09	2.85	1.58	2.98	4.16	1.50	3.00	..	7.90	1.70-3.37
2004	1.97	3.07	1.99	2.87	3.97	1.40	3.40	..	9.30	1.45-3.12
2005	2.38	3.07	2.22	4.11	4.05	1.10	4.00	..	9.30	1.17-3.13
2006	2.04	3.01	2.26	4.41	4.31	1.50	3.80	..	8.40	1.04-2.93

Sources: Sophastienphon and Kuliathunga (2010) and authors' calculations from annual reports of financial institutions in Bhutan.

Similar to other banks in the region, the net interest margin of the banks in Bhutan was well within the benchmark range. However, the net interest margin of the Bhutan National Bank was close to the upper limit of the benchmark but the interest margin of the Bank of Bhutan trended towards the lower side of the benchmark.

VII. FINANCIAL SECTOR DEVELOPMENT AND ECONOMIC GROWTH

Granger causality: the vector error correction procedure

Our next step is to ascertain the direction of causality between economic growth (GDP) and financial sector development. Here the financial development is represented by total credit to private sector (CREDIT) and also total financial assets of financial institutions (ASSETS). As all three variables are found to be integrated of order one (see table 7), the vector error correction (VECM) procedure was used to see the direction of causality between economic growth and financial development. The general model for Granger causality for I(1) (see Engle and Granger, 1987) variables is given as:

$$\Delta GDP_t = \lambda + \sum_{i=1}^{p-1} \alpha_i \Delta GDP_{t-i} + \sum_{j=1}^{p-1} \beta_j \Delta ASSET_{t-j} + \Theta (GDP - \kappa ASSET)_{t-1} + U_t \quad (1)$$

$$\Delta ASSET_t = \tau + \sum_{i=1}^{p-1} \gamma_i \Delta GDP_{t-i} + \sum_{j=1}^{p-1} \delta_j \Delta ASSET_{t-j} + \Phi (ASSET - \kappa GDP)_{t-1} + U'_t \quad (2)$$

where the lagged ECM terms $(GDP - \kappa ASSET)_{t-1}$ and $(ASSET - \kappa GDP)_{t-1}$ are the lagged residuals from the co-integrating relation between GDP and ASSET. As Engle and Granger (1987) have argued, failure to include the ECM term will lead to misspecified models which can result in erroneous conclusions about the direction of causality. Thus, if GDP_t and $ASSET_t$ are I(1) and cointegrated, Granger causality tests can be carried out using (1) and (2). However, there are now two sources of causation of GDP_t by $ASSET_t$, either through the lagged dynamic terms $\Delta ASSET_t$ if all the β_i are not equal to zero, or through the lagged ECM term if θ is non-zero (the latter is also the test of weak exogeneity of GDP). Similarly, $ASSET_t$ is Granger caused by GDP_t either through the lagged dynamic terms $\Delta ASSET_t$ if all the γ_i are not equal to zero, or through the lagged ECM term if Φ is non-zero. The similar VECM model has been estimated between economic growth (GDP) and total credit to private sector (CREDIT). The results are reported in table 8. They show that there is an unidirectional causality from financial assets to growth as the ECM term is significant at 5 per cent. However, there is mutual feedback between economic growth and credit to private

sector. Overall, the results reveal that financial sector development in Bhutan leads to economic growth.

Table 7. ADF unit root test

Variables	Level		First difference	Result
	Without trend	With trend	Without trend	
Ln GDP	-1.27	-1.54	-4.31**	I(1)
Ln ASSETS	-0.95	-1.04	-5.62**	I(1)
Ln CREDIT	-0.36	-0.51	-4.76**	I(1)

Note: **Represent statistical significance at the 1% level. AIC criterion is used to choose the optimal lag length.

Table 8. Causality between real GDP and finance using VECM

Causality between GDP and infrastructure			
Dependent variable	$\sum_{j=1}^p \text{Ln } \Delta \text{ASSET}_{t-j}$	$\sum_{j=1}^p \text{Ln } \Delta \text{GDP}_{t-j}$	Lagged ECM term
	$\Sigma \beta_1 = 0$: F-stat (p-value)	$\Sigma \beta_1 = 0$: F-stat (p-value)	$\Theta = 0$: t-stat (p-value)
$\Delta \text{Ln GDP}$	0.32 (0.85)	-	-1.11 (0.15)
$\Delta \text{Ln ASSET}$		0.79 (0.61)	-2.64* (0.02)
Causality between GDP and credit			
	$\sum_{j=1}^p \text{Ln } \Delta \text{CREDIT}_{t-j}$	$\sum_{j=1}^p \text{Ln } \Delta \text{GDP}_{t-j}$	Lagged ECM term
$\Delta \text{Ln GDP}$	3.35 (0.11)	-	-2.33* (0.03)
$\Delta \text{Ln CREDIT}$		1.45 (0.27)	-0.92 (0.21)

Notes: * denotes significance at 5% level. Optimal lag is selected on the basis of Akaike Information Criterion (AIC).

VIII. CONCLUSIONS AND POLICY RECOMMENDATIONS

The financial sector in Bhutan has grown over the study period in terms of assets, loans and investment, deposit base, revenue and profit. The return of capital (ROC) and return on loan and investment (ROI) of the sector was impressive and comparable to international standards. The analysis finds that in terms of ROC and also efficiency, Bhutan National Bank was the most efficient financial institution in Bhutan. The reason for its relatively high level of efficiency could be that it started fresh with a manageable business size. In terms of liquidity and capital adequacy, Bank of Bhutan seemed to be more secure and stable while Bhutan National Bank was much more leveraged. Therefore, Bank of Bhutan has much room to expand further provided it expands its deposit base and does not lose out to new banks.

The economy of Bhutan is projected to expand rapidly supported by the following actions: (a) the implementation of several joint venture power projects between the Government of India and the Government of Bhutan; (b) the opening up of the tourism sector; (c) steps to liberalize the economy to attract foreign direct investment; (d) the establishment of special economic zones; (e) efforts to liberalize the power sector for the private sector; (f) the establishment of information technology (IT) parks; (g) the move to allow the leasing of agricultural land for large agro-companies; and (h) the establishment of new banks. In line with the expanding economy, the Bhutanese financial sector is also expected to witness tremendous growth and experience major changes in the next decade.

This paper uses the data envelopment analysis (DEA) in the performance measurement of Bhutanese financial institutions along with some traditional measures, such as return of equity, return on assets and the credit-deposit ratio, during the period 1999-2008. These two methodologies are used to provide a more comprehensive and complete picture of the Bhutanese financial institutions' performances. The main findings of this study are the following. Firstly, most of the financial institutions appear efficient when both the DEA and the traditional measures are used in comparison to the commercial bank and financial institution in other countries. Secondly, state-owned financial institutions were less efficient than the privately owned financial institutions. This may be due to the fact that the private financial institutions, to a large extent, are driven by corporate goals and performance. Thirdly, two traditional ratios, namely loans to deposits and loans to total assets, indicate that the Bank of Bhutan (80 per cent state-owned and 20 per cent owned by the State Bank of India) to some extent did not use its available resources properly. This suggests that there was excess liquidity in the system and that Bank of Bhutan should develop new strategies in order to utilize the available resources. Next, the individual banks can identify competition and benchmark

themselves with respect to competition with international banks and strive for excellence. Moreover, a large majority of the Bhutanese people do not have access to the financial services, such as e-loans, deposits and insurance. Therefore, some of the banks should target this section of population. Furthermore, as most of the bank and non-bank financial institution provides traditional banking and financial services, such as loans, deposit-taking and insurance, the central bank and the Government must encourage the establishment of more private banks with a mandate to offer specialized financial services. Finally, the causality analysis reveals that financial sector development in Bhutan leads to economic growth.

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APPENDIX

Annex table A.1. Performance indicators of Bank of Bhutan

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Leverage and liquidity												
Loans and investment/capital ratio	4.8	4.1	4.1	4.6	3.1	4.1	3.5	4.0	4.5	5.7	4.3	0.7
Loans and investment/total assets (%)	29.2	24.6	27.7	30.2	23.5	32.2	26.9	29.4	31.1	41.2	29.6	4.9
Assets/capital (%)	16.4	16.7	14.6	15.2	13.0	12.8	13.1	13.6	14.6	13.9	14.4	1.4
Loans and investment to deposits (%)	34.3	29.6	32.7	35.4	28.0	38.3	31.4	33.2	35.2	47.1	34.5	5.3
Profitability/earning/operation												
Return on assets (ROA) (%)	1.0	1.0	1.8	1.2	1.4	1.2	0.9	1.2	0.9	0.8	1.1	0.3
Return on loans (ROL) (%)	6.3	7.3	11.2	5.9	7.9	5.0	4.4	4.5	3.5	2.1	5.8	2.6
Revenue to assets (%)	6.6	6.3	7.5	5.7	5.9	5.0	4.2	4.6	4.1	4.5	5.5	1.1
Net interest margin (net interest/assets) (%)	0.9	0.5	1.9	1.2	1.5	1.4	1.1	1.5	1.7	2.0	1.4	0.5
Productivity/efficiency												
Loans and investment per employees	5.1	4.8	5.8	7.2	5.7	8.3	7.0	9.0	10.4	14.5	7.8	3.0
Net profit per employee	0.2	0.2	0.4	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.3	0.1
Interest expense/total expenses (%)	77.2	81.7	80.9	83.2	80.7	74.9	70.7	66.4	59.6	59.7	73.5	9.0
Income and sources of fund diversification												
Share of interest income (%)	74.1	70.5	78.9	78.2	76.4	73.4	74.5	72.5	75.8	75.0	74.9	2.6
Credibility or cost of fund:												
Interest expense/deposit (IE/D) (%)	4.6	4.8	4.7	3.9	3.6	2.8	2.4	2.1	1.7	1.6	3.2	1.3

Annex table A.1. (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Capital adequacy												
Capital funds/total assets (%)	6.1	6.0	6.8	6.6	7.7	7.8	7.6	7.4	6.9	7.2	7.0	0.6
Capital funds/net loans and investment (%)	20.8	24.4	24.7	21.8	32.7	24.2	28.3	25.0	22.1	17.4	24.1	4.2
Growth and aggressiveness												
Growth of assets (%)	..	13.9	12.0	22.5	2.9	11.5	9.6	17.5	14.5	7.3	12.4	5.7
Growth of loans and investment (%)	..	-4.0	26.2	33.3	-19.9	52.7	-8.4	28.5	21.1	42.3	19.1	24.5
Growth of deposits (%)	..	11.1	14.2	23.4	1.2	11.6	11.6	21.5	14.2	6.4	12.8	6.8
Growth of profit (%)	..	21.9	98.4	-20.4	20.7	-0.0	-16.3	44.5	-7.7	-8.6	14.7	37.8
Growth in revenue (%)	..	9.8	33.0	-7.5	6.0	-4.7	-7.6	28.5	2.7	17.0	8.6	15.0
Growth reserve and capital (%)	..	12.4	27.8	17.9	20.0	13.1	7.2	13.4	7.0	12.4	14.6	6.5
Market shares												
Share to total assets (%)	55.8	58.9	59.4	61.1	59.0	58.0	57.3	56.1	57.6	49.0	57.2	3.3
Share to total loans and investment (%)	48.6	45.2	45.5	46.1	34.4	37.5	34.0	36.7	34.5	37.8	40.0	5.6
Share deposits (%)	71.7	67.5	69.0	68.6	68.6	66.0	66.0	63.8	66.8	55.8	66.4	4.3

Source: Author's calculations.

Annex table A.2. Performance of indicators of Bhutan National Bank

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Leverage and liquidity												
Loans and investment/capital ratio	4.6	3.8	4.0	6.2	4.4	6.7	6.2	6.9	7.7	7.6	5.8	1.5
Loans and investment/total assets (%)	29.6	25.2	29.7	40.0	53.4	66.4	60.1	56.5	74.9	58.2	49.4	17.2
Assets/capital	15.5	15.0	13.6	15.4	8.3	10.0	10.3	12.2	10.3	13.0	12.4	2.6
Loans and investment to deposits (%)	33.5	28.6	34.0	44.8	64.7	79.7	72.9	65.9	91.1	66.7	58.2	21.6
Profitability/earning/operation												
Return on assets (ROA) (%)	1.7	2.7	1.9	0.8	1.0	1.2	1.9	1.9	2.4	1.9	1.7	0.6
Return on loans and investment (ROL) (%)	5.7	10.7	6.4	2.0	1.9	1.8	3.2	3.4	3.2	3.2	4.1	2.8
Revenue to assets (%)	7.1	9.0	8.9	6.8	6.9	6.8	7.6	6.8	7.7	6.9	7.4	0.9
Net interest margin (net interest/assets) (%)	2.9	3.1	2.8	2.1	3.0	3.4	4.0	3.8	5.3	3.7	3.4	0.9
Productivity/efficiency												
Loans and investment per employees	6.2	6.7	7.4	11.1	13.1	19.9	16.1	17.4	24.4	25.0	14.7	7.0
Net profit per employee	0.4	0.7	0.5	0.2	0.3	0.4	0.5	0.6	0.8	0.8	0.5	0.2
Interest expense/total expenses (%)	70.3	75.8	79.7	76.9	72.7	67.8	67.4	62.7	60.2	62.8	69.6	6.6
Income and sources of fund diversification												
Share of interest income (%)	85.7	79.7	84.6	89.3	93.6	89.0	85.7	90.6	98.8	85.8	88.3	5.3
Credibility or cost of fund												
Interest expense/deposit (IE/D)	3.6	4.6	5.4	4.4	4.2	3.1	3.1	2.7	2.8	2.5	3.7	1.0
Capital adequacy												
Capital funds/total assets	6.5	6.7	7.4	6.5	12.0	10.0	9.7	8.2	9.7	7.7	8.4	1.9
Capital funds/net loans and investment	21.8	26.4	24.7	16.2	22.5	15.0	16.2	14.5	13.0	13.2	18.4	5.0

Annex table A.2. (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Growth and aggressiveness												
Growth of assets	..	36.1	7.6	22.8	9.8	24.5	12.7	28.9	4.3	59.7	22.9	17.4
Growth of loans and investment	..	15.7	27.1	65.2	46.5	54.7	2.0	21.2	38.2	24.1	32.8	20.1
Growth of profit	..	73.4	6.2	-6.3	11.9	21.5	27.1	14.2	19.1	42.3	23.3	23.1
Growth in revenue	..	115.1	-24.1	-48.7	42.0	43.9	85.2	26.5	30.1	24.4	32.7	49.6
Growth reserve and capital	..	40.3	19.0	8.3	103.3	3.2	9.9	8.8	23.9	26.1	27.0	30.9
Market shares												
Share to total assets	21.2	26.7	25.9	26.7	27.5	30.2	30.6	32.9	30.8	38.9	29.1	4.8
Share to total loans and investment	18.7	21.0	21.3	26.7	36.4	40.3	40.6	41.3	44.4	42.4	33.3	10.2
Share deposits	28.3	32.5	31.0	31.4	31.4	34.0	34.0	36.2	33.2	44.2	33.6	4.3

Annex table A.3. Performance indicators of Royal Insurance Corporation of Bhutan

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Leverage and liquidity												
Loans and investment/capital ratio	6.0	9.0	8.4	6.0	5.3	4.5	4.3	3.7	3.6	3.6	5.4	1.9
Loans and investment/total assets (%)	41.2	79.1	83.2	87.1	84.7	95.1	97.1	94.0	95.3	87.1	84.4	16.3
Assets/capital	14.7	11.4	10.1	6.9	6.3	4.7	4.4	3.9	3.8	4.1	7.0	3.8
Profitability/earning/operation												
Return on assets (ROA) (%)	1.0	1.6	2.3	3.1	2.9	5.0	4.4	5.3	5.3	4.5	3.5	1.6
Return on loans and investment (ROL) (%)	2.4	2.1	2.7	3.6	3.5	5.3	4.5	5.6	5.5	5.1	4.0	1.4
Revenue to assets (%)	1.7	3.6	5.2	5.3	5.2	8.4	7.8	8.2	8.4	7.2	6.1	2.3
Productivity/efficiency												
Loans and investment per employees	5.0	6.1	8.3	7.4	8.0	8.3	10.0	9.7	11.3	12.3	8.6	2.2
Net profit per employee	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.4	0.2
Income and sources of fund diversification												
Capital adequacy												
Capital funds/tot assets	6.8	8.8	9.9	14.5	15.9	21.1	22.6	25.4	26.3	24.2	17.5	7.3
Capital funds/net loans and investment	16.5	11.1	11.9	16.7	18.7	22.2	23.2	27.0	27.6	27.7	20.3	6.2
Growth and aggressiveness												
Growth of assets	..	-45.5	14.5	-12.8	12.1	-2.8	13.7	6.0	15.5	32.1	3.6	22.3
Growth of loans and investment	..	4.7	20.4	-8.7	9.1	9.1	16.1	2.5	17.1	20.8	10.1	9.7
Growth of profit	..	-9.8	59.1	19.9	5.3	67.0	-1.0	27.2	15.2	12.2	21.7	26.0
Growth in revenue	..	16.7	67.4	-10.7	10.6	55.1	5.4	12.6	17.4	12.9	20.8	24.6
Growth reserve and capital	..	-29.7	29.2	27.4	22.7	29.0	21.7	19.3	19.4	21.5	17.9	18.2

Annex table A.3. (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Market shares												
Share to total assets	18.4	9.3	9.6	7.0	7.4	6.3	6.5	5.7	5.9	6.2	8.3	3.8
Share to total loans	21.8	23.6	21.9	18.5	17.8	13.8	15.7	12.8	11.6	10.1	16.7	4.7
Share to total loans and investment	22.6	23.0	22.1	15.3	15.5	12.1	13.9	12.0	10.9	10.1	15.7	5.0

Source: Author's calculations.

Annex table A.4. Performance indicators of Bhutan Development Finance Corporation

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Leverage and liquidity												
Loans and investment/capital ratio	1.7	1.6	1.9	2.3	2.6	2.3	2.3	2.0	2.4	2.7	2.2	0.4
Loans and investment/total assets (%)	73.5	69.8	79.6	93.2	90.3	91.0	94.1	85.3	93.3	87.3	85.7	8.7
Assets/capital	3.7	3.5	3.3	3.3	3.7	3.2	3.0	2.8	3.0	3.4	3.3	0.3
Profitability/earning/operation												
Return on assets (ROA) (%)	1.4	2.9	3.0	3.2	3.3	4.9	5.5	5.5	3.6	3.7	3.7	1.3
Return on loans and investment (ROL) (%)	1.9	4.1	3.8	3.4	3.6	5.4	5.9	6.4	3.9	4.2	4.3	1.3
Revenue to assets (%)	10.0	10.8	9.7	10.3	10.6	12.1	11.8	11.9	11.6	11.5	11.0	0.9
Interest income/assets (%)	8.8	9.2	8.6	10.0	10.3	11.8	11.6	11.3	11.2	11.0	10.4	1.2
Net interest margin (%) = net interest/assets	6.8	7.1	6.5	8.1	7.9	9.3	9.3	8.4	8.4	7.5	7.9	1.0
Productivity/efficiency												
Loans and investment per employees	3.5	3.8	5.2	6.8	8.4	8.7	8.7	8.1	9.7	10.6	7.4	2.4
Net profit per employee	0.1	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.4	0.4	0.3	0.2
Income and sources of fund diversification												
Share of interest income (%)	88.4	85.4	89.0	96.9	97.3	97.2	97.8	95.3	95.9	95.2	93.8	4.5
Capital adequacy												
Capital funds/total assets	27.2	28.5	30.4	30.3	27.1	31.2	33.6	35.6	33.5	29.0	30.6	2.9
Capital funds/net loans and investment	37.0	40.8	38.2	32.5	30.0	34.3	35.7	41.7	35.9	33.2	35.9	3.7

Annex table A.4. (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Avg.	SD
Growth and aggressiveness												
Growth of assets	..	16.9	12.6	20.6	26.5	2.6	11.3	14.5	19.0	32.5	17.4	8.7
Growth of loans and investment	..	11.0	28.4	41.2	22.6	3.3	15.1	3.8	30.2	24.0	20.0	12.7
Growth of profit	..	26.9	0.5	29.1	30.1	16.9	8.8	15.0	16.6	31.3	19.5	10.7
Growth in revenue	..	135.6	17.7	28.1	29.1	53.2	25.7	13.7	21.1	33.8	35.1	42.6
Growth reserve and capital	..	22.3	20.4	20.1	13.1	18.0	20.1	21.2	12.0	14.8	18.0	3.8
Market shares												
Share to total assets	4.6	5.0	5.1	5.1	6.1	5.5	5.5	5.3	5.6	5.9	5.4	0.4
Share to total loans	14.7	14.5	14.8	15.1	16.4	11.9	13.4	11.1	11.1	10.2	13.3	2.1
Share to total loans and investment	10.1	10.9	11.2	12.0	13.7	10.1	11.5	10.0	10.1	9.7	10.9	1.2

Annex table A.5. Growth and size of financial institution

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bank of Bhutan Ltd.										
Assets	7 417.7	8 449.8	9 467.3	11 598.9	11 935.5	13 303.8	14 585.2	17 141.3	19 630.2	21 069.3
Loans and investment	2 167.1	2 081.4	2 626.2	3 501.2	2 806.2	4 284.1	3 924.8	5 041.6	6 103.5	8 686.8
Deposits	6 323.3	7 025.8	8 025.2	9 901.5	10 019.5	11 184.3	12 486.4	15 174.5	17 330.2	18 436.8
Revenue	488.7	536.5	713.5	660.0	699.6	667.1	616.6	792.2	813.4	951.7
Net profit	70.6	86.1	170.8	136.1	164.2	164.2	137.5	198.6	183.3	167.6
Operating expenses	86.5	75.9	89.8	77.0	85.4	104.0	122.5	164.0	196.1	197.5
Bhutan National Bank Ltd.										
Assets	2 816.1	3 831.5	4 124.2	5 062.7	5 559.3	6 921.6	7 799.4	10 051.8	10 481.1	16 734.0
Loans and investment	834.0	964.7	1 226.5	2 026.4	2 969.5	4 593.8	4 685.4	5 679.5	7 850.2	9 740.0
Deposits	2 489.9	3 376.1	3 610.2	4 522.2	4 587.1	5 761.6	6 424.6	8 622.9	8 614.8	14 601.4
Revenue	199.2	345.4	366.8	343.8	384.9	467.7	594.5	678.7	808.1	1 149.6
Net profit	47.9	102.9	78.1	40.1	56.9	81.9	151.6	191.8	249.5	310.4
Operating expenses	37.6	49.8	50.2	60.1	71.6	85.8	96.2	140.5	162.2	217.2
Capital, reserve and retained earnings (RE)	181.8	254.9	303.3	328.5	668.0	689.5	757.9	824.6	1 021.7	1 288.7
Royal Insurance Corporation of Bhutan Ltd.										
Assets	2 452.6	1 336.8	1 530.1	1 334.0	1 495.3	1 454.0	1 652.9	1 751.3	2 023.0	2 672.8
Loans and investment	1 009.9	1 057.1	1 272.8	1 161.7	1 267.2	1 382.3	1 605.1	1 645.5	1 927.3	2 329.1
Deposits	-	-	-	-	-	-	-	-	-	-
Revenue	40.7	47.5	79.5	71.0	78.5	121.8	128.3	144.4	169.5	191.4
Net profit	24.2	21.9	34.8	41.7	43.9	73.3	72.6	92.3	106.3	119.3
Operating expenses	6.0	12.9	29.8	11.4	15.8	16.8	14.7	12.5	17.6	21.0
Capital, reserve and retained earnings (RE)	167.1	117.6	151.9	193.6	237.5	306.4	373.0	445.1	531.5	646.0

Annex table A.5. (continued)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bhutan Development Finance Corporation Ltd.										
Assets	614.7	718.6	809.3	976.3	1 234.8	1 266.6	1 410.3	1 614.8	1 921.5	2 546.2
Loans and investment	451.7	501.5	643.9	909.5	1 115.4	1 152.5	1 327.1	1 377.0	1 792.8	2 222.3
Deposits	-	-	-	-	-	-	-	-	-	-
Revenue	61.2	77.7	78.1	100.8	131.2	153.3	166.9	191.8	223.7	293.8
Profit	8.8	20.7	24.4	31.3	40.4	61.8	77.7	86.3	69.6	93.2
Operating expenses	27.7	25.6	25.9	31.8	35.9	37.3	48.9	51.7	69.7	75.0
Capital and reserves	167.2	204.5	246.2	295.8	334.7	394.9	474.4	574.8	643.5	738.6

Source: Author's estimates based on data from Royal Monetary Authority of Bhutan, Selected Economic Indicator.

Annex table A.6. Key indicators

Item	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11 (p)
GDP growth and prices													
(per cent change)													
GDP at constant (2000) price ^{a,b}	6.1	7.9	7.9	6.8	10.9	7.2	6.8	6.5	6.3	17.9	4.7	6.7	11.8
Consumer prices ^c	9.2	3.6	3.6	2.7	1.8	4.6	5.5	6.2	5.9	8.8	3.0	6.1	8.3
Wholesale prices (India) ^d	2.5	5.3	6.6	1.7	5.7	5.6	5.2	4.6	5.4	9.6	0.5	10.6	9.9
Government budget													
(in millions of Nu) ^e													
Total revenue and grants	6 919.5	7 859.5	8 686.7	8 826.7	7 054.3	11 113.9	10 501.1	13 452.2	16 082.1	18 316.9	23 443.0	30 990.7	30 549.7
Of which: foreign grants	3 262.6	3 274.1	3 711.0	3 748.5	2 269.1	5 367.4	4 373.1	6 424.7	6 000.0	5 935.4	6 575.1	11 118.9	13 314.0
Total expenditure and net lending	7 224.4	8 624.1	11 177.6	10 052.1	9 945.3	10 534.1	12 883.7	13 770.9	15 795.0	17 913.4	22 350.5	29 888.9	34 196.6
Money and credit													
(per cent change, end of period)													
Broad money, M2	21.4	20.3	6.4	17.6	43.6	4.4	10.7	26.3	8.6	2.3	24.6	30.1	21.2
Credit to private sector	5.2	4.1	57.1	27.7	23.4	32.8	26.3	32.2	35.5	37.4	31.1	38.6	31.6
Interest rates (end of period)													
One year deposits	10.0	9-10	9-10	9.0	7.0	6.0	4.5	4.5	4.5	4.8	4.8	4.8	4.8
Lending rate	13-16	12-16	12-16	12-16	12-16	10-16	10-16	10-16	10-16	10-16	10-16	10-16	10-16
91-day RMA bills	7.5	7.3	6.9	4.7	3.5	3.5	3.5	3.5	3.5	6.0	6.0	2.0	2.0
External indicators (end of period)													
Gross official reserves in millions of US\$	258.3	291.1	292.6	315.3	373.3	383.3	366.5	478.8	600.4	589.1	704.4	791.6	906.0
(in months of merchandise imports)	19.3	19.3	19.0	18.9	21.2	17.6	9.3	13.6	13.3	12.8	13.9	11.2	9.1
External debt (per cent of GDP)	39.8	44.6	54.8	61.6	73.6	81.8	82.2	84.6	79.2	66.9	69.5	66.6	80.9
Debt-service ratio ^f	12.1	4.9	4.7	4.9	6.8	6.8	11.9	7.6	3.6	18.3	30.5	29.7	51.7
Trade balance	-2 453.7	-3 087.3	-4 059.1	-4 795.5	-4 481.0	-4 766.0	-11 099.0	-5 496.7	2 061.8	-2 921.6	-4 322.4	-13 938.2	-23 544.9
With India	-738.3	-1 354.5	-2 654.3	-3 088.3	-3 911.3	-3 820.7	-3 601.2	-3 170.7	4 447.6	-27.8	-278.6	-4 933.6	-15 160.0

Annex table A.6. Key indicators

Item	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11 (p)
Current account balance	384.2	1 049.6	-2 024.6	-3 127.4	-4 011.9	-3 318.0	-10 487.4	-1 695.7	6 417.2	-1 134.3	-664.3	-6 634.9	-16 088.9
(In per cent of GDP)	2.4	5.7	-10.1	-13.7	-15.3	-11.3	-32.4	-4.6	15.9	-2.3	-1.2	-10.8	-22.2
With India	-921.4	1 537.5	-1 918.3	-2 327.1	-4 479.3	-3 420.8	-5 253.9	-2 344.6	5 882.1	-157.3	-798.8	-3 493.7	-13 193.9
(In per cent of GDP)	-5.8	8.4	-9.6	-10.2	-17.1	-11.7	-16.3	-6.4	14.5	-0.3	-1.5	-5.7	-18.2
Memorandum items:													
Nominal GDP (in millions of Nu) ^b	15 813.7	18 326.5	20 111.7	22 895.0	26 422.2	29 385.6	32 320.0	36 462.6	40 448.1	49 456.5	54 713.0	61 222.6	72 477.6
Money supply, M2 (end of period)	7 359.2	8 851.6	9 419.8	11 076.9	15 904.7	16 597.7	18 376.9	23 208.7	25 208.7	25 781.5	32 114.8	41 778.7	50 639.8
Money supply, M1 (end of period)	2 888.4	3 612.7	4 477.9	5 019.5	7 502.5	8 524.7	9 331.9	10 678.1	13 542.3	14 393.2	18 375.0	22 537.7	30 270.3
Reserve money, M0, of which	4 464.0	4 872.0	4 631.9	5 937.6	8 008.0	9 370.3	9 340.1	13 474.7	13 319.6	12 871.0	14 697.9	20 574.7	19 727.6
Money multiplier (M2/M0)	1.6	1.8	2.0	1.9	2.0	1.8	2.0	1.7	1.9	2.0	2.2	2.0	2.6
Income velocity (GDP/M2)	2.1	2.1	2.1	2.1	1.7	1.8	1.8	1.6	1.6	1.9	1.7	1.5	1.4
Population growth rate ^{a, g, h}	-	-	-	-	3.1	2.4	1.3	2.5	1.3	1.3	1.3	1.3	1.8
Unemployment rate ^{a, g, h}	-	-	-	-	1.9	-	1.8	2.5	3.1	3.2	3.7	n/a	4.0

Source: Adapted from Royal Monetary Authority, *Annual Report*.

Notes: ^a On a calendar year basis, e.g. the entry under 2010/11 is for 2010.

^b Source: National Accounts Statistics 2010, NSB.

^c The CPI reflected in this table is for the last quarter of the fiscal year.

^d Source: Reserve Bank of India. Wholesale Price Index of All Commodities, base = 2004/05, effective August 2010, the RBI revised base year from 1993-2004 to 2004-2005, creating a break in the continuity and comparison of data. The newly recalculated WPI commences from April 2004; reference period same as for Bhutan CPI.

^e Data for 2010/11 are revised estimates.

^f Debt service payments in per cent of exports of goods and services.

^g Data on CY basis; sourced from NSB.

^h Updates sourced from Labour Market Information System, MOLHR.