THE PRIVATISATION OF THE ELECTRICITY SECTOR IN MALAYSIA

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Thesis submitted to the University of Surrey in fulfilment of the requirement for the degree of Doctor of Philosophy

July 1995
TO MY FATHER
"These are exciting times for Malaysia, a time of tremendous opportunities and tremendous challenges; a time when billions can earned and lost; a time when the frontiers of economic development are being pushed back faster than the eye can see and the mind can comprehend; a time when new paths are opened up destinations unknown.

It is at times such as these, when stakes are high and temptations are so great, that the traditional values are put to test. It is at times such as these that honesty may be cast to the wind, and trustworthiness thrown to the dogs. We have already seen blatant examples. We have seen clear examples of the new morality. We have seen clear example of corruption of every kind, the buying and selling of favours, and the buying and selling of men. There will be many more examples, to warn us, to shock us and to educate us......We owe it to the future generations to continue to be honest, efficient and trustworthy"

Tun Hussien Onn, The Third Prime Minister of Malaysia (1984)
ACKNOWLEDGEMENT

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Despite guidance and assistance, I am solely responsible for the conclusions of this research.
ABSTRACT

This thesis examines the desirability and the feasibility of the privatisation programme of the electricity sector in Malaysia, and its progress and achievements to date. Using the Data Envelopment Analysis (DEA) Method the efficiency of the National Electricity Board (NEB) is assessed in comparison to the Electricity Generating Authority, Thailand (EGAT) and the Central Electricity Generating Board (CEGB), United Kingdom. It is found that its efficiency lags behind that of EGAT and the CEGB. However, the financial performance of NEB is better than that of the EGAT where it has been able to achieve its financial targets set by two of its major lenders, the World Bank and the Asian Development thus enabling it to undertake capacity expansion programme. With rapidly increasing demand of electricity due to an expanding economy, privatisation is seen to be a strategy to increase the efficiency of the electricity sector.

The Theory of Bureaucracy, Property rights theory and X-Inefficiency theory provide the theoretical framework in which assessment of the privatisation programme is made. They highlight the problems faced by the bureaucrats in the electricity sector; government and political intervention, patronism, rent-seeking activities and corruption, self-maximisation interest of the politicians and the bureaucrats, the lack of competitive environment, which have contributed to the inefficiency of the sector in Malaysia.

Although the privatisation programme has been accompanied by electricity reform such as industry restructuring and the creation of a regulatory body to regulate the industry, TNB still exhibits its pre-privatisation period characteristics such as lack of competition and positive regulation, government and political intervention. Recommendations on how to increase efficiency include
further restructuring of the industry such as the vertical separation between generation and transmission activities and the horizontal break up of TNB, promotion of competition, full privatisation of TNB, positive regulation and less government and political intervention.
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<td>Combine Cycle Gas Turbine</td>
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1  INTRODUCTION

1.2 Objectives and Methodology
1.3 Plan of Study
CHAPTER 1 : INTRODUCTION

1.2 OBJECTIVES AND METHODOLOGY

The objective of this thesis is to examine the desirability and the feasibility of the privatisation programme of the electricity sector in Malaysia. It also assesses the progress and the achievement of the privatisation programme to date, in achieving its intended objectives.

The study adopts both Data Envelopment Analysis (DEA) approach and qualitative approach in assessing the desirability and feasibility of the electricity privatisation programme in Malaysia. It looks at the objectives and rationale of the privatisation programme in Malaysia in relation to its economic development. The debate on the theoretical perspective of private versus public enterprises and the empirical evidence to support both prepositions are discussed. Proponents of the Public Choice Theory have put the behavioural aspects of bureaucrats as a source of inefficiency in public production. It is argued that bureaucrats are primarily concerned with the maximisation of their own interest and use more labour and capital inconsistent with the optimal management practices. As a result of these technical inefficiencies production in public sectors takes place below the production possibility curve. The property right theory focuses on ownership at the centre of their rationale for the inefficiency in public enterprises. The nature of the principal-agent relationship does not provide incentive for managers to be efficient as public enterprises are not profit motivated. In addition the principle are not efficient in monitoring, supervising and forcing the public managers to be optimal in their production. The X-efficiency theory argues that performance is primarily explained by economic and institutional environment. They argue public enterprises operate in an
environment that is not conducive to efficiency. Most of them are protected from competition which leads to complacency and little innovation. The threat of bankruptcy as the ultimate sanction of bad results does not exist as subsidies are available to finance deficit. The empirical evidence on the performance of the public sector versus private sector based on previous studies done in the United Kingdom, United States, Europe and Malaysia is presented. The study then focuses on the underlying factors which contribute to the inefficiency of the public sector in Malaysia in relation to the Theory of bureaucracy, property rights theory and the Ex-efficiency theory. Institutional evidence is used to support the relevance of the theories in the public sector in Malaysia as a justification for government privatisation programme.

The DEA method is used to compare the efficiency of the energy sector in Malaysia, Thailand and United Kingdom. In addition financial performance of National Electricity Board was evaluated in comparison to utility in Thailand and United Kingdom.

The feasibility of introducing competition in the electricity sector is examined as a necessary prerequisite to achieving efficiency. Practical problems in relation to the implementation of competition and regulatory policies are also discussed.

1.3 PLAN / STRUCTURE OF STUDY

Chapter 1 explains the objectives, methodology of the research and plan of the study.

Chapter 2 provides an overview of the Malaysian economy, the New Economic Policy (NEP) which was introduced in 1970, its objectives, problems and achievements. The chapter also discusses the objectives and rationale of the privatisation
programme in Malaysia, the views and criticisms on the policies and its implementation so far. The status of the privatisation programme and the evaluation of its achievement are also discussed.

Chapter 3 focuses on the debate in relation to the theoretical perspective of private versus public enterprises. The Theory of bureaucracy, Property rights theory and the X-Efficiency theory are discussed. Studies in the United Kingdom, United States and Malaysia based on empirical evidence which support both propositions are highlighted. The institutional evidence on the relevance of the public choice theory, property rights theory and X efficiency theory which contribute to the inefficiency of the public sector is critically examined.

Chapter 4 looks at the energy policy in Malaysia. It provides an overview of the electricity sector and the role of the utility in the development of the country.

Chapter 5 establishes method and criteria for assessing the performance of the electricity sector in Malaysia. Using a software developed by David Hawdon of University of Surrey, the DEA efficiency of the electricity sector in Malaysia is measured in comparison to that in Thailand and United Kingdom.

Chapter 6 looks at the financial performance of the NEB using the financial ratios as required by major lenders of the NEB such as the World Bank and the Asian Development Bank. Its performance is then compared with the Electricity Generating Authority, Thailand (EGAT) and the Central Electricity Generating Board (CEGB) in United Kingdom.

Chapter 7 looks at the privatisation programme of the electricity sector which was implemented in 1992, its problems and achievements in meeting its intended
objectives. It also assesses the Government policies towards achieving efficiency objective of the sector.

Chapter 8 evaluates the present industry structure and provides an alternative model where efficiency of the electricity sector could be enhanced. It examines the role of the regulatory body and its effectiveness in ensuring fair competition and the proper development of the electricity sector in Malaysia.

Chapter 9 provides the conclusion of the study.
CHAPTER 2 : THE SIGNIFICANCE OF PRIVATISATION PROGRAMME IN MALAYSIA

Since 1983, the Malaysian Government has embarked on an ambitious privatisation programme. As at July 1993, it has privatised 37 public enterprises and 73 projects and is poised for massive privatisation programme in the Sixth Malaysia Plan (1991 - 1995) and the Seventh Malaysia Plan (1996-2000). The Privatisation Masterplan released in 1991, identifies 37 public enterprises and government projects to be privatised during 1990-1992 period. In addition another 56 public enterprises are to be structured and prepared for privatisation during the same period.

This chapter provides an overview of the privatisation programme in Malaysia and will be divided into the following sections: Section 2 provides the background of the country and the economy before 1970, when the Government introduced the New Economic Policy (NEP). It also looks at the NEP which covers a 20 year period from 1970 -1990. It discusses the impact of the policy on the public and the private sectors in the Malaysian economy and analyses the problems and achievements of the policy towards achieving its objectives. Section 3 examines the privatisation policy in Malaysia, its objectives and rationale, and views and criticisms from different groups of the community. Finally Section 4 summarises the privatisation programme so far, its problems and achievements in meeting its objectives.

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1 Seventh Malaysia Plan is in the process of preparation. The Director General of Economic Planning Unit, Prime Minister Department confirmed that privatisation programme will be pursued more vigorously during this period as reported in The New Straits Times 30.7.1994.

2 It is not known whether this target has been achieved or not.
## THE SIGNIFICANCE OF THE PRIVATISATION PROGRAMME IN MALAYSIA

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2.2 BACKGROUND AND THE ECONOMY

2.2.1 The Economic System (Pre NEP Period)

The Country

Malaysia is a federation of 13 states comprising 11 from the Malay Peninsular and 2 from Borneo Island i.e Sabah and Sarawak. Peninsular Malaysia was a British colony until Independence was granted in 1957, then known as Malaya. Sabah and Sarawak joined the peninsular components states to form the Malaysian federation in 1963.\(^3\)

Malaysia is a multiracial country with an estimated population of 18.6 million\(^4\). For political purposes, the population is categorised into Bumiputra, the indigenous people, and the non Bumiputra i.e the non-indigenous people of migrant stock (Arief, 1991). The Malays and other indigenous groups\(^5\) constitute about 54 per cent of the population, Chinese 35 per cent and Indians 10 percent.

Most of the Bumiputras are in the rural areas and engaged in traditional agricultural activities such as farming, fishing and padi planting\(^6\). By contrast the non-Bumiputras, particularly the Chinese are mainly concentrated in urban centres, focusing on modern sector including manufacturing, commerce and finance\(^7\). As a result of this division of

\(^3\) Singapore was a member of the federation for 2 years from July 1963 to August 1965 before it became an independent republic.


\(^5\) Malays is the largest of the indigenous group. Other indigenous groups include the Iban, Murut, Sakai and Kadazan.

\(^6\) 73 percent of the total 1.4 million employment in this sector in 1980 was Bumiputra. See 5th Malaysia Plan, p 102.

\(^7\) The Chinese constitutes 53.4 percent of the employment in the construction, 50.4 percent in manufacturing and 53.3 percent in finance, insurance, real estates and business service in 1980. Fifth Malaysia Plan, p 102.
economic activities by ethnic groups the Bumiputras are economically backward, while the non-Bumiputras economically far more better off. The ratio of the Bumiputra household income to that of the non-Bumiputra in 1987 was 1 : 1.6 (Malaysia, 1989). The incidence of poverty among the Bumiputras in 1987 was 23.8 per cent in Peninsular, 35.5 per cent in Sabah and 24.7 percent in Sarawak while 7.1 per cent and 9.7 percent among the Chinese and the Indians in Peninsular respectively (Malaysia, 1989)

The Economy

Malaysia adopted a basically laissez-faire approach to economic development during the colonial period and continued the strategy in the post-Independence period (Gale, 1985; Jomo, 1990). For most of this period government intervention was minimal and the government confined its role in providing infrastructure, health, education and social services. The main economic activity of Malaysia before independence was the production of primary commodities such as rubber, palm oil and tin for export market.

However, since 1957 the Malaysian economy has undergone significant structural transformation and rapid growth. In the 1960’s the country experienced considerable diversification of economic activities. The private sector played a leading role in the development of the economy during the sixties where private investment, domestic and foreign, played a crucial role in attaining high economic growth. Gross National Product (GNP) in constant prices rose on average by 6 per cent per annum while per capita income also increased by 30 per cent against the population.

* For 1987, the poverty line is about $350 per month for a household of 5.14 persons in Peninsular Malaysia, $429 per month for a household of 5.24 persons in Sarawak and $533 per month for a household of 5.36 in Sabah. Mid Term Review of 5th Malaysia Plan, p 45.
growth of 3 per cent per year. Private investment also grew, at an average annual rate of 9.6 per cent as compared to 1.9 per cent of the annual growth rate of the public sector during the same period (Malaysia, 1970).

Private investment in the fifties and sixties was largely focused on investment in perennial crops such as rubber and oil palm and tin mining. However, during the later part of the 60's, private investment shifted away from these traditional activities into the manufacturing sector. This shift in private investment was associated with the industrialisation strategy that began to make noticeable impact in the later part of the 1960s (Arif, 1991). Private and foreign investments grew rapidly in the manufacturing industries. Average annual growth of the manufacturing output from 1960 - 1970 was 10.4 per cent in terms of value added and 12.8 per cent in terms of gross value of manufactured goods (Malaysia, 1970). The trend towards more private investment in manufacturing, trade, and commerce and away from agriculture and mining has resulted a higher growth rate of GNP than projected in the 1960-1970 period. During this period, GNP in constant prices rose on the average of 6 per cent per annum which exceeded the target rate of 4.9 per cent in the First Malaysia Plan.

Besides depending on the primary commodity products of rubber, oil palm and tin of which Malaysia is the world largest producer, it ventures into the manufacturing sector producing and exporting such goods as electronics products (Price, 1988). Since 1980, Malaysia adopts a heavy industrialisation programme (Ariff, 1991; Jomo, 1990). The

---

9 Mainly tin and iron ore.

10 In 1969, 62.1 percent of total share capital of $4.678 billion in limited companies is foreign owned.

11 Industrial sector is now the largest sector in Malaysian economy with manufacturing output such as electronics, rubber products, textiles, air conditioners being exported to world market. See J. Faaland, p 17.
diversification of the economy has led to rapid economic growth and GDP in constant price grew from an annual average of 5.0 percent during 1961-1965 to 5.4 percent in 1966-1970 (First Malaysia Plan). The economy grew further by 7.3 percent during 1971-1975 period (Second Malaysia Plan), and 8.6 percent during 1976-1980 (Third Malaysia Plan). However, the performance of the economy declined during 1981-1985 period (Fourth Malaysia Plan) due to the recessions. During this period GDP grew by 5.1 percent. Since 1988 the economy grew very rapidly in real terms by 8.9 per cent, in 1989 by 8.8 per cent and in 1990 by 9.4 per cent (Muhamad, 1991).

Despite the structural transformation and diversification in the economy, the peasant activities in the agricultural sector are still important. This activities include rice farming, small holder cultivation of rubber, coconut and inshore fishing.

2.2.2 Problems of the economic system

Although the laissez-faire economic system was a successful formula in achieving high rates of growth, it has however clearly failed in meeting the socio-economic goals of reducing income inequality and raising the income levels of the poor especially the rural areas (Arif, 1991). The incidence of poverty remained high at 49.3 per cent in 1970 (Faaland, et al, 1990). The free enterprise economic policy has allowed the various communities to continue their separate but unequal development thus exacerbating the economic disparities between the Bumiputras and the non-Bumiputras, the rural and the urban sectors (Gale, 1985). The glaring economic disparities (Faaland, et al, 1990) and

---

12 The peasant activities still contribute significantly to the Malaysian economy. For example smallholder sector contributed 68 percent of the total production of rubber. In the oil palm industry smallholder accounted for 53 percent of total hectarage while padi planting in which Malaysia is 73 percent self sufficiency level is 100 percent through peasant farmers. See 5th Malaysia Plan pp 134-135.
the excessive communal politicking (Jomo, 1990; Arif, 1991) triggered the racial riots in May 1969. As a result of the disturbances the government formulated the New Economic Policy to redress the problems of ethnic inequalities. The promulgation of the NEP is contained in the Second Malaysia Plan for 1971 - 1975 and the Outline Perspective Plan (OPP) spread over a twenty-year period from 1970 to 1990.

2.2.3 The New Economic Policy (NEP) (1970 - 1990)

Objectives

The NEP had two broad objectives namely the restructuring of the society and the eradication of poverty. The Second Malaysia Plan outlining the NEP states that:

"The Plan incorporated a two-pronged New Economic Policy for development. The first prong is to reduce and eventually eradicate poverty by raising income levels and increasing employment opportunities for all Malaysians, irrespective of race. The second prong aims at accelerating the process of restructuring Malaysian society to correct economic imbalance, to reduce and eventually eliminate the identification of race with economic function. This process involves the modernisation of rural life, rapid and balance growth of urban activities and the creation of a Malay commercial and industrial community in all categories and at all level of operations, so that Malays and other indigenous people will become full partners in all aspects of economic life of the nation."

(Malaysia, 1970 p.1)

The launching of the NEP in 1970, marked the turning point in the development of the Malaysian economy and had extensive effects on the position of private investment. Development strategy was focused on two central distributional objectives. Firstly, the eradication of poverty irrespective of race and secondly, the restructuring of society to correct the identification of race with economic function. The Government felt that in
order to achieve these objectives it had to participate directly in the economy. The Second Malaysia Plan announced that the Government would:

"Participate more directly in the establishment of a wide range of productive enterprises...through wholly-owned enterprises and joint ventures with private sector...in a new selected growth areas...and for creating a Malay commercial and industrial community". (Malaysia, 1970 p.7)

The Government, including State Economic Development Corporations, statutory bodies and other government agencies, would assist and create opportunities for the Malay community to participate in commercial and industrial activities. In terms of employment and ownership the NEP targeted that within a period of 20 years the Malay and other indigenous people would manage and own at least 30 percent of the total commercial and industrial activities in all categories and scale of operations (Faaland, et al, 1990). The Plan outlining the strategy by saying:

"The programmes in the field of commerce and industry provide for new enterprises to be set up through such institutions as PERNAS, UDA, MRD and SEEDCs. These enterprises........to help train Malays and other indigenous people to participate more actively in commerce and industry and to promote the establishment of a Malay commercial and industrial community........". (Malaysia, 1970 p.72)

In line with these objectives and the strategies the Government increased its development expenditure in industry and commerce during the Second Malaysia Plan (1971-1975). The allocation for commerce and industry increased five fold from $137.0 million in the First Malaysia Plan (1966-1970) to $583.6 million in the Second Malaysia Plan (1971-1974). At the same time, development expenditure for economic activities doubled from $2.2 billion to $4.87 billion during the same period.
Government participation in industry and commerce through the establishment of public enterprises and trust agencies was substantial. Since the implementation of the NEP it has made its presence felt in the economy through commercial and industrial activities in manufacturing, mining, banking and finance, construction, trading, transport and communications, agriculture, fishing and forestry.

**Impact of the NEP on the public sector**

There were three major impacts of the NEP on the public sector. Firstly, there was a tremendous growth in size of the public sector through the creation of the public enterprises. Secondly, there was a huge increase in employment in the public sector and thirdly a high increase in public sector expenditure.

a) Growth of the public sector

The increasing involvement of the public sector in national economic activities has led to an expansion in the number of public authorities engaged in commercial as well as socio-economic activities.

Initially, the public sector comprised the Federal Government, 13 State Governments and 4 public authorities (Malaysia, 1986). At the time of independence in 1957 there were only 23 public enterprises in Malaysia (Salleh and Hui, 1990). However, this grew to 30 in 1960, 154 in 1969 and 1,144 by the end of the NEP period in 1990. In terms of their roles and functions, the public authorities were divided into 3 categories, namely socio-economic, commercial and industrial and public authorities as explained in the figure 1 (Malaysia, 1986).

The public sector in Malaysia can be broadly classified into 4 categories; the Federal Government, State
Figure 1 Public sector in Malaysia.
Government, Local Government and the Public Authorities which is also known as the Non Financial Public Enterprises (NFPEs). As shown in Figure 1, all the 13 state governments and the NFPEs are directly involved in commercial and industrial activities to implement the NEP and achieve its targets. Public enterprises were set with a clear objectives which falls under three types; commercial and socio economic objectives, commercial and industrial objectives and providing essential services (public utilities). All public enterprises undertaking commercial and industrial objectives are supposed to make profit and compete with the private enterprises in the private sector (Puthuchery, 1987).

Table 2.1: Growth of the public enterprises in Malaysia
1969 - 1992

<table>
<thead>
<tr>
<th>Year</th>
<th>Number (a)</th>
<th>Growth Index (1969 = 100) (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>154</td>
<td>100.0</td>
</tr>
<tr>
<td>1974</td>
<td>460</td>
<td>298.7</td>
</tr>
<tr>
<td>1979</td>
<td>874</td>
<td>567.5</td>
</tr>
<tr>
<td>1983</td>
<td>1,050</td>
<td>681.8</td>
</tr>
<tr>
<td>1984</td>
<td>1,133</td>
<td>735.7</td>
</tr>
<tr>
<td>1985</td>
<td>1,187</td>
<td>770.8</td>
</tr>
<tr>
<td>1986</td>
<td>1,212</td>
<td>787.0</td>
</tr>
<tr>
<td>1987</td>
<td>1,203</td>
<td>681.2</td>
</tr>
<tr>
<td>1988</td>
<td>1,181</td>
<td>666.9</td>
</tr>
<tr>
<td>1989</td>
<td>1,185</td>
<td>669.5</td>
</tr>
<tr>
<td>1990</td>
<td>1,143</td>
<td>617.2</td>
</tr>
<tr>
<td>1991</td>
<td>1,144</td>
<td>617.8</td>
</tr>
<tr>
<td>1992</td>
<td>1,189</td>
<td>642.1</td>
</tr>
</tbody>
</table>

Table 2.
1983 - 1990 statistics from ICU Ministry of Finance (1993), Table 1, p.20.
Table 2.1 shows the expansion of the public enterprises in Malaysia from 1969 to 1992. It is evident that rapid growth took place within the first ten year period after the implementation of the NEP from 1969 to 1979. During this period the number of public enterprises grew by five and the half times from 154 in 1969 to 874 by 1979. The exceptionally high growth was due to the vigorous implementation of the NEP with the formation of State Economic Development Corporations (SEDCs) and their subsidiaries and other public enterprises to participate in the commercial and industrial activities.

Despite the recessions which hit the economy in the early eighties and the implementation of the privatisation programme in 1983, the number of public enterprises were still increasing from 1983 to 1986 period. This was because of two reasons. Firstly, the implementation of the privatisation programme was slow at its initial stages due to legal, administrative and expertise constraints. Secondly, despite the implementation of the privatisation programme by the Federal Government, there was an increase involvement in commercial and industrial activities by the State Economic Development Corporation Boards (SEDCs) of various states through the creation of new public enterprises. This trend could be interpreted as lack of direction and approach towards implementing the overall

---

13 Analysing in detail shows that 720 public enterprises were created during the ten year period. This means that almost 2 public enterprises were being created every week during this period.

14 In 1983, the government started to get concern with performance of the public enterprises. The Land Minister directed that those public enterprises under his Ministry which have been making losses up to five years must be closed down. Malaysian Business, June 1983.

In the same year fifty public enterprises ceased operations, 34 sold to Bumiputra and 11 transferred to National Equity Corporation (NEC). Malaysian Business, Jan 1-15, 1990.

In 1986 the Minister of Public Enterprises said that loss making public enterprises should be wound up or privatised since they are a burden on public funds and would ultimately affect poverty alleviation programme. Malaysian Business, May 15, 1987.
privatisation policy which were based on adhoc and piecemeal basis. In 1984 IMF cautioned Malaysia on the rapid growth of the public enterprises which was affecting Malaysia's balance of payments and investment pattern.16

It was only in 1985 when the Government introduced the Privatisation Guideline for private sector's used. Since 1987 the number of public enterprises started to decline as a result of (a) the privatisation programme being implemented more vigorously, (b) the closing down or merger of losing public enterprises16 and (c) the reduction of development expenditure of the government due to the recession which put a stop on the expansion of new public enterprises. In 1987 public development expenditure was revised from M$7.6 billion to M$4.7 billion.

b) Growth of public sector employment

Table 2.2 shows the growth of the public sector employment from 1970 to 1992.

The NEP gave regard to the creation of employment as an important objective. The Second Malaysia Plan outline this strategy as:

"in implementing development projects particularly in the public sector, deliberate efforts will be made to use more labour intensive techniques....These and other measures....aim for higher rates of labour absorbtion...." (Malaysia,1970 p.5).

Table 2.2 reveals that there was a high increase in the level of employment in two time period ; the first was between 1975 and 1976 and the second between 1980 and 1982 (Column d). The increase in employment level in 1975 and

---


1976, by 5.5 percent and 11.0 percent respectively, is associated with the high increase in the number of public enterprises being created in the Third Malaysia Plan (1975-1979). During this period the number of public enterprises grew from 460 to 874 (Table 2.1, column a). However the

Table 2.2: Malaysia - Public Sector Employment (‘000) (1970-1990)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total employment (a)</th>
<th>Public sector employment (b)</th>
<th>% of Public sector employment (c)</th>
<th>Annual % growth of public sector emp (d)</th>
<th>Index (1970 = 100) Public sector (e)</th>
<th>Total employment (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>3340</td>
<td>398</td>
<td>11.9</td>
<td>-</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1975</td>
<td>4020</td>
<td>520</td>
<td>12.9</td>
<td>5.5</td>
<td>130.7</td>
<td>120.4</td>
</tr>
<tr>
<td>1976</td>
<td>4376</td>
<td>577</td>
<td>13.2</td>
<td>11.0</td>
<td>145.0</td>
<td>131.0</td>
</tr>
<tr>
<td>1977</td>
<td>4476</td>
<td>582</td>
<td>13.0</td>
<td>0.9</td>
<td>146.2</td>
<td>134.0</td>
</tr>
<tr>
<td>1978</td>
<td>4542</td>
<td>597</td>
<td>13.1</td>
<td>2.6</td>
<td>149.8</td>
<td>136.0</td>
</tr>
<tr>
<td>1979</td>
<td>4700</td>
<td>622</td>
<td>13.2</td>
<td>4.2</td>
<td>156.3</td>
<td>140.7</td>
</tr>
<tr>
<td>1980</td>
<td>4817</td>
<td>693</td>
<td>14.4</td>
<td>11.4</td>
<td>174.1</td>
<td>144.2</td>
</tr>
<tr>
<td>1981</td>
<td>5011</td>
<td>757</td>
<td>15.1</td>
<td>9.2</td>
<td>182.7</td>
<td>150.6</td>
</tr>
<tr>
<td>1982</td>
<td>5123</td>
<td>807</td>
<td>15.8</td>
<td>6.6</td>
<td>192.2</td>
<td>154.6</td>
</tr>
<tr>
<td>1983</td>
<td>5429</td>
<td>805</td>
<td>14.8</td>
<td>-0.2</td>
<td>202.0</td>
<td>162.5</td>
</tr>
<tr>
<td>1984</td>
<td>5565</td>
<td>811</td>
<td>14.8</td>
<td>0.7</td>
<td>203.8</td>
<td>166.7</td>
</tr>
<tr>
<td>1985</td>
<td>5625</td>
<td>815</td>
<td>14.5</td>
<td>0.7</td>
<td>206.0</td>
<td>168.4</td>
</tr>
<tr>
<td>1986</td>
<td>5707</td>
<td>829</td>
<td>14.5</td>
<td>1.7</td>
<td>208.3</td>
<td>170.9</td>
</tr>
<tr>
<td>1987</td>
<td>5851</td>
<td>836</td>
<td>14.3</td>
<td>0.8</td>
<td>210.1</td>
<td>176.1</td>
</tr>
<tr>
<td>1988</td>
<td>6088</td>
<td>844</td>
<td>13.7</td>
<td>1.0</td>
<td>212.1</td>
<td>182.3</td>
</tr>
<tr>
<td>1989</td>
<td>6351</td>
<td>847</td>
<td>13.3</td>
<td>0.4</td>
<td>212.8</td>
<td>190.1</td>
</tr>
<tr>
<td>1990</td>
<td>6621</td>
<td>850</td>
<td>12.8</td>
<td>0.4</td>
<td>213.6</td>
<td>198.2</td>
</tr>
<tr>
<td>1991</td>
<td>6849</td>
<td>854</td>
<td>12.5</td>
<td>0.5</td>
<td>214.6</td>
<td>205.1</td>
</tr>
<tr>
<td>1992</td>
<td>7060</td>
<td>859</td>
<td>12.2</td>
<td>0.6</td>
<td>215.8</td>
<td>211.4</td>
</tr>
</tbody>
</table>


high increase in level of employment in the 1980-1983 period, between 6.6 percent to 11.4 percent is associated with a special recruitment exercise known as "Operasi Penuh" to fill in the 80,000 job vacancies in various
government departments. This was a special recruitment exercise to facilitate the development programme as stipulated in the Fourth Malaysia Plan. However, there was a drop in the level of employment in 1983 due to (a) closing down of some loss making public enterprises, (b) selling of some public enterprises to the Bumiputras in line with the NEP and (c) the transfer of a large number of public enterprises to the Permodalan Nasional Berhad (PNB), a trust unit set up by the Government in 1979 to mobilise Bumiputra savings and investment. Since then the level of employment in the public sector marginally increased.

c) Growth in public sector expenditure

Table 2.3 shows the growth of the public sector expenditure from period 1970 to 1987.

The growth of the public sector expenditure during the NEP period corresponds to the growth of the number of public enterprises and employment level as discussed above. Following the same trend, public sector expenditure grew rapidly during 1970-1980 period (Table 2.3, column a). Public sector expenditure per capita has also increased in nominal term from about M$328 to over M$1796 per head during the same period. The Government cut its public sector expenditure from M$33.2 billion in 1983 to M$31.9 billion in 1986 due to recession. With declining international trade, prolonged and deep recession, commodity price collapse and a sharp cut in development expenditure by M$1.5 billion the GDP growth was negative.

37 "Operasi Penuh" is a crash recruitment exercise to fill massive number of vacancies arising from resignations and retirements and the creation of new posts. This exercise is distinct from the centralised recruitment by the Public Service Commission. Far Eastern Economic Review, October 1981, p. 16.

38 This exercise was undertaken before the implementation of the privatisation policy but in line with the NEP to create Bumiputra entrepreneurs. This was later incorporated in the privatisation policy.
### Table 2.3: Total Government Expenditures 1970 - 1987

<table>
<thead>
<tr>
<th>Year</th>
<th>Public sector expenditure ($ million) (a)</th>
<th>GNP at market prices (b)</th>
<th>Public sector expenditure as % of GNP (c)</th>
<th>GNP expenditure per capita ($ million) (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>3568</td>
<td>12155</td>
<td>29.3</td>
<td>328</td>
</tr>
<tr>
<td>1975</td>
<td>8652</td>
<td>21606</td>
<td>40.0</td>
<td>725</td>
</tr>
<tr>
<td>1980</td>
<td>24340</td>
<td>51390</td>
<td>47.4</td>
<td>1796</td>
</tr>
<tr>
<td>1981</td>
<td>31275</td>
<td>55602</td>
<td>56.2</td>
<td>2222</td>
</tr>
<tr>
<td>1982</td>
<td>32511</td>
<td>56690</td>
<td>54.5</td>
<td>2241</td>
</tr>
<tr>
<td>1983</td>
<td>33216</td>
<td>65154</td>
<td>50.7</td>
<td>2231</td>
</tr>
<tr>
<td>1984</td>
<td>33033</td>
<td>74182</td>
<td>44.5</td>
<td>2163</td>
</tr>
<tr>
<td>1985</td>
<td>31482</td>
<td>71838</td>
<td>43.8</td>
<td>2008</td>
</tr>
<tr>
<td>1986</td>
<td>31926</td>
<td>66543</td>
<td>48.5</td>
<td>1981</td>
</tr>
<tr>
<td>1987</td>
<td>33296</td>
<td>69757</td>
<td>47.7</td>
<td>2067</td>
</tr>
</tbody>
</table>

Source: Chee (1990), Table 1 p.15

For the first time in 1985. Since 1986 the public sector expenditure has been increasing at a declining rate as the government discarded its counter-cycle budgetary strategy.\(^{19}\)

Although some\(^{20}\) believe that the public sector is much too large the issue of what is the right size of public sectors employment is debatable. The World Bank tends to make comparisons on the basis of government employees per 1000 inhabitants.\(^{21}\) Using this criteria Malaysia has the highest

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\(^{19}\) However, the rapid increase in employment in public sector has increased financial commitment of the government in the long run in terms of pension benefit of the civil servants. For example since 1982 allocation for pension has been increasing rapidly as follows: M$0.59 billion in 1982 to M$0.85 billion in 1985. Investors Digest, KLSE Dec, 1986.

\(^{20}\) For example Noordin Sophie (1987).

\(^{21}\) Malaysian Business, 1.5.1985 p 17.
ratio of 46 as compared to average of Asia 30, Africa 20, Latin America 38 and developing nation 29 in 1985.\textsuperscript{22} However, one has to be careful when using this criteria. Higher ratio is not necessarily bad for the economy. One has got to look at the underlying causes for the growth and its economic and financial implications on the government and the economy. A small public sector employment could be attributable to the inaffordability of the government to provide infrastructure and basic needs of the population. However, in the case of Malaysia the tremendous expansion of the public sector in terms of the large number of public enterprises being created, the high level of employment and the increase in level of public sector spending has created financial difficulties to the Government.

**Impact of the NEP on the Government finance**

Although the NEP had successful policies in 1970's in redressing the economic disparities between the Bumiputras and the non-Bumiputras, problems were created for the government and the economy in the 1980's. The policy had two significant implications on government finance. Firstly it increased public expenditure and secondly it increased the government debt.

a) Increase in Government expenditure

The direct participation of the Government in the economy and the increase in the size of the public sector has increased operating and development expenditure creating a huge budgetary deficit as shown in Table 2. 4.

\textsuperscript{22} ibid
<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
<th>Operating Expenditure</th>
<th>Current Surplus/Deficit</th>
<th>Development Expenditure</th>
<th>Total Expenditure</th>
<th>Overall Surplus/Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>2,400</td>
<td>2,161</td>
<td>239</td>
<td>715</td>
<td>2,876</td>
<td>-476</td>
</tr>
<tr>
<td>1975</td>
<td>5,117</td>
<td>4,900</td>
<td>217</td>
<td>2,151</td>
<td>7,051</td>
<td>-1,934</td>
</tr>
<tr>
<td>1980</td>
<td>13,927</td>
<td>13,692</td>
<td>235</td>
<td>7,463</td>
<td>21,155</td>
<td>-7,228</td>
</tr>
<tr>
<td>1981</td>
<td>15,806</td>
<td>15,686</td>
<td>120</td>
<td>11,358</td>
<td>27,044</td>
<td>-11,238</td>
</tr>
<tr>
<td>1982</td>
<td>16,689</td>
<td>16,684</td>
<td>5</td>
<td>11,485</td>
<td>28,169</td>
<td>-11,480</td>
</tr>
<tr>
<td>1983</td>
<td>18,608</td>
<td>18,374</td>
<td>234</td>
<td>9,669</td>
<td>28,043</td>
<td>-9,435</td>
</tr>
<tr>
<td>1984</td>
<td>20,805</td>
<td>19,791</td>
<td>1,014</td>
<td>8,407</td>
<td>28,198</td>
<td>-7,393</td>
</tr>
<tr>
<td>1985</td>
<td>21,114</td>
<td>20,066</td>
<td>1,048</td>
<td>7,142</td>
<td>27,208</td>
<td>-6,094</td>
</tr>
<tr>
<td>1986</td>
<td>19,518</td>
<td>20,075</td>
<td>-557</td>
<td>7,559</td>
<td>27,634</td>
<td>-8116</td>
</tr>
<tr>
<td>1987</td>
<td>18,143</td>
<td>20,185</td>
<td>-2,034</td>
<td>4,741</td>
<td>24,926</td>
<td>-6783</td>
</tr>
<tr>
<td>1988</td>
<td>21,967</td>
<td>21,812</td>
<td>155</td>
<td>5,231</td>
<td>27,043</td>
<td>-5,076</td>
</tr>
<tr>
<td>1989</td>
<td>25,273</td>
<td>24,832</td>
<td>441</td>
<td>7,696</td>
<td>32,528</td>
<td>-7,225</td>
</tr>
<tr>
<td>1990</td>
<td>29,521</td>
<td>27,105</td>
<td>2,416</td>
<td>10,689</td>
<td>37,794</td>
<td>-8,273</td>
</tr>
<tr>
<td>1991</td>
<td>34,053</td>
<td>31,296</td>
<td>2,757</td>
<td>9,565</td>
<td>40,861</td>
<td>-6,808</td>
</tr>
<tr>
<td>1992*</td>
<td>39,250</td>
<td>37,075</td>
<td>2,175</td>
<td>9,688</td>
<td>46,763</td>
<td>-7513</td>
</tr>
</tbody>
</table>

Note: * estimate


Development expenditure was at its highest during the vigorous implementation of the NEP in the Third Malaysia Plan (1980-1985). In 1981 and 1982 development expenditure reached M$11 billion but declined to M$8 billion towards the end of the period in 1984 (Table 2.4, column d). During the 1981 and 1982 period the deficit was at its highest both at about M$11 billion (column f) implying that all development expenditure was funded through borrowing. However, development expenditure was trimmed down from 1985 and 1987 in line with the government budgetary deficit (column f). In 1987 the Government revised its development expenditure by 62 percent from M$7.5 billion in 1986 to M$4.7 billion (column d) in 1987. The development expenditure in the Fifth Malaysia Plan (1986-1990) was also
revised and reduced by 28 percent from M$69 billion to M$49.3 billion.

b) Increase in government debt

The high development expenditure during the first decade of the NEP and the counter-cyclical budgetary strategy during 1980-1982 contributed to the high external debt position of the country.

The development expenditure of the Non Financial Public Enterprises (NFPEs) constituted a high proportion of the public sector expenditure. Twenty seven per cent of the Federal Government development expenditure was allocated for the NFPEs in the Fifth Malaysia Plan, 1986-1990 (Malaysia, 1986). In order to finance their expenditure the NEPEs relied on loans in both the domestic and international markets which often required a Government Guarantee.

Table 2.5 shows the Federal Government outstanding debt from 1975 to 1990.

The dependency of the government on external market loans increased with an increase in development expenditure. External market loans which constituted 12 percent of total loan in 1975 increased to 16 percent in 1981. As public development expenditure increased in the Fourth Malaysia Plan (1980-1984) and the Fifth Malaysia Plan (1985-1989), foreign loans also increase correspondingly. This has resulted financial problems to the government as the Malaysian currencies depreciated against other major currencies such as the Yen, the US dollar and the Sterling (Chapter 6). However, the high economic growth of an average of 9 percent per annum from 1988 to 1990 (Mahathir, 1991) has improved the financial performance of the government and since 1987 has reduced the dependency
Table 2.5: Federal Government Outstanding Debt (1970 - 1992)

<table>
<thead>
<tr>
<th>Year</th>
<th>External Market Loans (a)</th>
<th>External Project Loans (b)</th>
<th>Supplier Credit (c)</th>
<th>Total External Debt (d)</th>
<th>Domestic Loans (e)</th>
<th>Grand Total (f)</th>
<th>Growth Index 1975=100 (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>1,348</td>
<td>1,077</td>
<td>-</td>
<td>2,425</td>
<td>8,755</td>
<td>11,180</td>
<td>100</td>
</tr>
<tr>
<td>1980</td>
<td>2,190</td>
<td>2,663</td>
<td>-</td>
<td>4,853</td>
<td>16,286</td>
<td>23,139</td>
<td>207</td>
</tr>
<tr>
<td>1981</td>
<td>4,796</td>
<td>2,973</td>
<td>-</td>
<td>7,769</td>
<td>22,376</td>
<td>30,145</td>
<td>270</td>
</tr>
<tr>
<td>1982</td>
<td>9,036</td>
<td>3,494</td>
<td>-</td>
<td>12,530</td>
<td>28,460</td>
<td>40,990</td>
<td>367</td>
</tr>
<tr>
<td>1983</td>
<td>12,271</td>
<td>3,875</td>
<td>-</td>
<td>16,146</td>
<td>32,927</td>
<td>49,073</td>
<td>439</td>
</tr>
<tr>
<td>1984</td>
<td>14,652</td>
<td>4,672</td>
<td>-</td>
<td>19,324</td>
<td>36,080</td>
<td>55,404</td>
<td>496</td>
</tr>
<tr>
<td>1985</td>
<td>17,826</td>
<td>6,164</td>
<td>-</td>
<td>23,990</td>
<td>44,169</td>
<td>68,159</td>
<td>610</td>
</tr>
<tr>
<td>1986</td>
<td>20,310</td>
<td>8,000</td>
<td>-</td>
<td>28,310</td>
<td>45,698</td>
<td>74,008</td>
<td>662</td>
</tr>
<tr>
<td>1987</td>
<td>18,940</td>
<td>8,689</td>
<td>-</td>
<td>27,629</td>
<td>54,796</td>
<td>82,425</td>
<td>737</td>
</tr>
<tr>
<td>1988</td>
<td>17,265</td>
<td>7,925</td>
<td>732</td>
<td>25,222</td>
<td>63,121</td>
<td>89,043</td>
<td>796</td>
</tr>
<tr>
<td>1989</td>
<td>16,375</td>
<td>7,253</td>
<td>554</td>
<td>24,182</td>
<td>65,763</td>
<td>89,945</td>
<td>805</td>
</tr>
<tr>
<td>1990</td>
<td>16,182</td>
<td>8,125</td>
<td>419</td>
<td>24,726</td>
<td>69,988</td>
<td>94,714</td>
<td>847</td>
</tr>
<tr>
<td>1991</td>
<td>16,639</td>
<td>8,468</td>
<td>257</td>
<td>25,364</td>
<td>73,708</td>
<td>99,072</td>
<td>886</td>
</tr>
<tr>
<td>1992</td>
<td>14,695</td>
<td>7,885</td>
<td>119</td>
<td>22,712</td>
<td>76,070</td>
<td>98,782</td>
<td>884</td>
</tr>
</tbody>
</table>

Source: Calculated from Annual Statistical Bulletin - 1970 to 1992 issues

external market loans. By 1992 external market loan constituted only 15 percent of the government total loan. One of the reasons for this reduction is the prepayment of external loans by the government from the privatisation proceedings since the implementation of the privatisation programme.

Besides the increased in development expenditure, the dependency of the state governments and the public authorities has also contributed to the financial problems of the government. Table 2.6 shows the extent of this dependency from 1966 to 1986.
Table 2.6: Outstanding Loans Due to the Federal Government from Public Authorities, State Governments and Others ($ Mil): 1966-1986

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Authorities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FELDA</td>
<td>96</td>
<td>266</td>
<td>716</td>
<td>1,532</td>
<td>2,554</td>
<td>3,469</td>
</tr>
<tr>
<td>NEB</td>
<td>91</td>
<td>86</td>
<td>110</td>
<td>380</td>
<td>845</td>
<td>1,363</td>
</tr>
<tr>
<td>Malayan Railway</td>
<td>59</td>
<td>75</td>
<td>105</td>
<td>143</td>
<td>380</td>
<td>847</td>
</tr>
<tr>
<td>PKA</td>
<td>52</td>
<td>61</td>
<td>131</td>
<td>247</td>
<td>282</td>
<td>279</td>
</tr>
<tr>
<td>MARA</td>
<td>-</td>
<td>30</td>
<td>122</td>
<td>273</td>
<td>306</td>
<td>299</td>
</tr>
<tr>
<td>UDA</td>
<td>-</td>
<td>-</td>
<td>103</td>
<td>351</td>
<td>799</td>
<td>1,210</td>
</tr>
<tr>
<td>LPN</td>
<td>73</td>
<td>-</td>
<td>102</td>
<td>66</td>
<td>68</td>
<td>143</td>
</tr>
<tr>
<td>Others</td>
<td>-</td>
<td>169</td>
<td>302</td>
<td>127</td>
<td>1,826</td>
<td>4,389</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>371</td>
<td>687</td>
<td>1,691</td>
<td>3,119</td>
<td>7,060</td>
<td>11,999</td>
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<td><strong>Public Companies</strong></td>
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<tr>
<td>Syarikat Telekom</td>
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<td>-</td>
<td>-</td>
<td>547</td>
<td>1,708</td>
<td>4,686</td>
</tr>
<tr>
<td>PERNAS</td>
<td>-</td>
<td>5</td>
<td>130</td>
<td>274</td>
<td>563</td>
<td>593</td>
</tr>
<tr>
<td>MIDF</td>
<td>37</td>
<td>38</td>
<td>130</td>
<td>120</td>
<td>65</td>
<td>22</td>
</tr>
<tr>
<td>MISC</td>
<td>-</td>
<td>72</td>
<td>94</td>
<td>280</td>
<td>446</td>
<td>306</td>
</tr>
<tr>
<td>MSE Sdn Bhd</td>
<td>-</td>
<td>-</td>
<td>39</td>
<td>117</td>
<td>128</td>
<td>122</td>
</tr>
<tr>
<td>Bumi Investment Trust</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>11</td>
<td>123</td>
<td>310</td>
<td>685</td>
<td>1,337</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>39</td>
<td>66</td>
<td>516</td>
<td>1,648</td>
<td>3,595</td>
<td>7,066</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Governments</td>
<td>172</td>
<td>302</td>
<td>815</td>
<td>1,808</td>
<td>3,769</td>
<td>6,480</td>
</tr>
<tr>
<td>Others</td>
<td>114</td>
<td>126</td>
<td>114</td>
<td>624</td>
<td>642</td>
<td>9,133</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>286</td>
<td>428</td>
<td>929</td>
<td>2,422</td>
<td>4,411</td>
<td>15,613</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>695</td>
<td>1,181</td>
<td>3,136</td>
<td>7,189</td>
<td>17,919</td>
<td>40,651</td>
</tr>
</tbody>
</table>

Source: Calculated from Salleh and Rani (1991), Table 4.3, p. 72.

The level of borrowing of Public Authorities has increased by 17.5 times from just $687 million in 1970 to $12 billion in 1986. Three public authorities were highly dependent on Government loans - Federal Land Development Authority (FELDA), National Electricity Board (NEB) and Urban
Development Authority (UDA). NEB has increased its level of borrowing by 11 times from just 86 million in 1970 to 1.4 billion in 1986 in order to finance its development programmes. FELDA, a land relocation scheme to alleviate poverty has also increased its dependency on the Federal Government loans by 29 times. UDA has also relied heavily on government loans to undertake development projects in the urban areas for Bumiputra participation in commercial activities. Public companies and State Government have also increased their reliance on Federal Government loans for their expansion and growth. Forty percent of the loans in 1986 went to public companies and state government which under the NEP are entrusted to increase the Bumiputra participation in commerce and industry. The reliance of the public authorities, public companies and state Government had imposed financial burden on the Federal Government.

The financial difficulties of the government are exacerbated by the involvement of the Government in the commercial and industrial projects. Such projects include the M$1.2 billion Perwaja Steel Mill, M$850 million Penang Bridge, M$0.3 billion Daya Bumi Complex, M$1.2 billion Komtar Complex, the national Proton car project and other heavy industrial projects. These projects, which were funded largely by foreign loans, have taken their toll on government budgets because of (a) the depreciation of Malaysian currencies against the Yen\(^2\) and (b) these projects did not yield sufficient returns to service the loans (Jomo, ed, 1988).

The financial difficulties faced by the public sector and the economy have created pressures for change. One of the alternatives for the Government was to call for privatisation policy.

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\(^2\) Most of the loans were from Japan especially the Perwaja Steel Mill Mill, Daya Bumi Complex and the Proton car projects.
Impact of the NEP on the private sector

The implementation of the NEP has various impacts on the private sector. Firstly, the Government has introduced several legislative measures which constrain business activities (Arif, 1991). The most controversial among them is the Industrial Coordination Act (ICA) of 1975 which empowers the Minister of Trade and Industry to impose conditions, including the compliance of the 30 per cent Bumiputra share in line with the NEP, before a licence is issued or renewed. Secondly, investors find it difficult to conform to the 30 percent equity compliance. This was because (a) most investors were not receptive to the idea of outside equity participation in their companies and (b) in many cases there were not enough individual Bumiputras to take up the equity allocated to them due to shortage of capital and lack of experience in business activity. This has affected the investment growth in the country. To overcome the problem of shortage of capital within the Bumiputra community the Government hold the shares in trust for the Bumiputras and later transferred them to Permodalan Nasional Berhad (PNB), a unit trust set up to mobilise Bumiputra savings in the capital market.

The Government claimed that the regulations associated with the implementation of the NEP were not designed to stifle private sector activities (Muhamad, 1991). Policy-makers argued that the NEP has never been a negative factor. The fact that the Malaysian economy continued to grow at credible rates during the 1970s and 1980s is cited as evidence. Critics, however, claimed that the Malaysian economy could have grown at a faster pace, had it not been for the NEP. While the critics could have been right one

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24 Basically there was quite a resentment on the part of the Chinese community on ICA and has been politicised by certain parties those within the ruling party and the opponent party. As described by the Prime Minister, "Even hawkers associations complained about the ICA when they were in no way affected by it. People have been asked to protest against it when it does not involve them at all". Malaysian Business, Oct 1980.
could argue that this is the price the government is willing to pay in order to achieve better distribution of wealth, incomes and political stability.\(^{25}\)

There were two main concerns of the business community on the regulatory aspects of the implementation of the NEP. Firstly, many believe that some of these regulations have little relation to the realities of regulatory requirement (Arif, 1991). Secondly, it creates incentives for corruption for the government officials with substantial discretionary powers.

However, the recessionary period which started in the early eighties have contributed to a shift in Government policy on the implementation of NEP. According to a senior Government official interviewed by the Far Eastern Economic Review in 1983,\(^{26}\) the Government favours no more than minimal participation in business in the future. By June 1986 the Government made a decision to relax the 30 percent Bumiputra equity and employment NEP requirements in order to stimulate private investment.\(^{27}\)

### 2.2.4 Achievement of the NEP

**Employment and poverty level**

The growth and expansion of the private sector activities have facilitated the increase of Bumiputra participation in the economy. Investments in the new and existing industries provided additional opportunities for employment.

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\(^{25}\) The Prime Minister said it is better that Malaysia have a slower development with political stability than high economic growth with no political stability (Far Eastern Economic Review, Oct 30, 1981). This statement probably intended to remind the critics of the rationals of the NEP policy and the consequence of growth without equality policy before 1970 which led to racial disharmony in 1969.


restructuring and equity participation. The Bumiputra labour force in the manufacturing sector in 1985 rose to 46.2 per cent while in finance, insurance, real estates and business services increased to 38.2 per cent (Malaysia, 1986). The Bumiputra membership of registered professionals also increased to 14.9 per cent in 1980 and further rose to 21.0 per cent in 1984 (Malaysia, 1986). In the corporate sector many Bumiputras were involved in management role and continued to build up the capacity of managerial skills. This was facilitated by efforts of trust agencies in particular the PNB through the acquisition and expansion of companies. This resulted in the increase in the number of trained Bumiputra managers who continued to advance further in the industrial sector.

Most of the employment opportunities were in the urban and established growth areas, thus contributing to the reduction in urban poverty. The incidence of poverty in 1987 was reduced dramatically from 49.3 percent in 1970 to 17 percent in 1987 (Salleh and Yusof, 1989 p.31)

Ownership Structure of Investment

With regard to achieving 30 percent corporate ownership by the Bumiputras, in January 1981 the Government introduced a scheme designed to transfer millions of dollars of government-owned shares, worth M$1.5 billion at market value, to Bumiputras which were held by the National

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28 Definition of professional includes architects, accountants, dentists, surveyors, lawyers and veterinary surgeons.

29 There measuring of poverty level could be done by the "absolute" and "relative" approach. The "absolute" poverty approach is measured by taking a poverty line income and then estimating the proportion of household or individuals below the poverty line income. The "relative" approach is measured by taking the average in some of, say 40 percent of households or individuals that are found to be below the relative poverty line. In 1987 the poverty level income was M$350 for a family of 5.12 in Peninsula, M$429 for a household of 5.24 in Sarawak and M$533 for a household of 5.36 in Sabah. (K. Salleh and A.Yusof, 1990)
<table>
<thead>
<tr>
<th>Ownership Group</th>
<th>1971</th>
<th>1980</th>
<th>1985</th>
<th>1990</th>
<th>Average Annual growthrate(%)</th>
<th>Average Annual growthrate(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
<td>(f)</td>
</tr>
<tr>
<td>Malaysian residents</td>
<td>2,512.80</td>
<td>18,493.40</td>
<td>57,666.60</td>
<td>84,920.70</td>
<td>20.90</td>
<td>8.00</td>
</tr>
<tr>
<td>Bumiputra individuals and trust agencies</td>
<td>279.60</td>
<td>4,050.50</td>
<td>14,883.40</td>
<td>21,796.20</td>
<td>31.40</td>
<td>7.90</td>
</tr>
<tr>
<td>Bumiputra individuals</td>
<td>168.70</td>
<td>1,880.10</td>
<td>9,103.40</td>
<td>15,084.20</td>
<td>23.50</td>
<td>10.60</td>
</tr>
<tr>
<td>Trust agencies</td>
<td>110.90</td>
<td>2,170.40</td>
<td>5,780.00</td>
<td>6,712.00</td>
<td>39.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Other Malaysians residents</td>
<td>2,233.20</td>
<td>14,442.90</td>
<td>42,783.20</td>
<td>63,124.50</td>
<td>18.80</td>
<td>6.10</td>
</tr>
<tr>
<td>Chinese</td>
<td>26,033.30</td>
<td>36,116.00</td>
<td>68,804.80</td>
<td>127,325.80</td>
<td>13.30</td>
<td>5.40</td>
</tr>
<tr>
<td>Indian</td>
<td>927.90</td>
<td>1,297.10</td>
<td>2,183.00</td>
<td>3,068.00</td>
<td>14.20</td>
<td>6.40</td>
</tr>
<tr>
<td>Others</td>
<td>987.20</td>
<td>1,044.80</td>
<td>2,072.00</td>
<td>2,928.00</td>
<td>19.00</td>
<td>7.60</td>
</tr>
<tr>
<td>Nominee companies</td>
<td>5,585.10</td>
<td>9,517.90</td>
<td>15,890.00</td>
<td>22,208.00</td>
<td>22.50</td>
<td>8.50</td>
</tr>
<tr>
<td>Locally controlled companies</td>
<td>9,249.70</td>
<td>15,148.70</td>
<td>24,998.00</td>
<td>35,840.00</td>
<td>23.40</td>
<td>8.50</td>
</tr>
<tr>
<td>Foreign residents</td>
<td>4,051.30</td>
<td>13,927.00</td>
<td>20,297.80</td>
<td>26,325.80</td>
<td>13.30</td>
<td>5.40</td>
</tr>
<tr>
<td>Share in Malaysian companies</td>
<td>2,159.30</td>
<td>7,791.20</td>
<td>12,672.80</td>
<td>17,284.80</td>
<td>14.20</td>
<td>6.40</td>
</tr>
<tr>
<td>Net assets of local branches</td>
<td>1,892.00</td>
<td>6,135.80</td>
<td>7,625.00</td>
<td>9,068.00</td>
<td>12.30</td>
<td>3.50</td>
</tr>
<tr>
<td>Total</td>
<td>6,564.10</td>
<td>32,420.40</td>
<td>77,964.40</td>
<td>111,273.50</td>
<td>16.70</td>
<td>7.90</td>
</tr>
</tbody>
</table>

Source: Salih and Yusof (1989) Table 12, p.38.

Mid Term Review, 5th Malaysia Plan 1986-1990 p.70.
Equity Trust (ASN)\textsuperscript{30} on behalf of the Bumiputras. Any Bumiputra individual above the age of 21 was allowed to invest in the shares indirectly by purchasing up to 50,000 trust units at a transaction price of M$1 a unit. However, this was reviewed in 1990 whereby the age limit was reduced to 18 years of age to allow more Bumiputras to participate in the investment scheme. The maximum amount of shares that could be bought was also increased to 100,000 units. Return from the shares came in the form of dividends and capital appreciation in bonus issues.\textsuperscript{31}

Table 2.7 shows that Bumiputra individuals and trust

\begin{tabular}{|c|c|c|c|c|}
\hline
\multicolumn{2}{|c|}{PNB} & \multicolumn{2}{|c|}{ASN} \\
\hline
Investment & No of & Investment & No of \\
(M$millions) & companies & (M$millions) & companies \\
\hline
1981 & 2,916 & 97 & 536 & 59 \\
1982 & 3,693 & 127 & 809 & 77 \\
1983 & 4,779 & 135 & 1129 & 97 \\
1984 & 5,515 & 153 & 1793 & 103 \\
1985 & 6163 & 159 & 2496 & 111 \\
1986 & 6338 & 160 & 3223 & 111 \\
(July) & & & & \\
\hline
\end{tabular}


\begin{tabular}{|c|c|c|}
\hline
Pre-tax profit & Dividend (%) & Bonus (%) \\
(M$ million) & & \\
\hline
1981 & 75.4 & 10 \\
1982 & 96.9 & 10 \\
1983 & 159.8 & 10 \\
1984 & 254.0 & 10 \\
\hline

\textsuperscript{30} Investment of both National Equity Corporation (PNB) and its subsidiary, National Unit Trust (ASN) grew rapidly arising from the transfer of the government shares in private companies as shown below:

\textsuperscript{31} Returns from investing in the National Unit Trust was high as shown below:
agencies have increased their share of ownership and control of the corporate sector from 1.5 percent in 1970 to 19.5 percent in 1990, which is short of the 30 percent target under the NEP. There were various reasons for the failure to achieve this target. Firstly, there was insufficient capital among the Bumiputras to take up the entire 30 percent equity stake. Many shares reserved for the Bumiputras were not taken up. There were also many cases where the non-Bumiputras benefiting from this policy through using of the Bumiputras names to buy the shares specially allocated for them. Secondly, the Bumiputras community by and large were not exposed to business environment and therefore were slow to take advantage of the investment opportunity created by the government. Thirdly, there were Bumiputras who sell their shares for quick short-term gain. Fourthly, the recession which hit the economy in the mid-eighties slowed down economic growth affecting both public and private sectors investment programmes in the country.

However, the ownership of capital owned by the Bumiputras in 1990 could be higher than the 19.5 percent official figure achieved. This is because Bumiputra shares in the nominee companies were not taken into account. Nominee companies were holding shares worth M$9.5 billion in 1990 (Table 2.7, column d). However, the lack of available data from the nominee companies on the breakdown of ownership among ethnic group makes it impossible to resolve this issue.

**Poor financial performance of the public enterprises**

Despite the achievement of setting up of the public enterprises to create Bumiputra commercial society,
financial performance of the public enterprises was not satisfactory until 1990. As shown in Table 2.8 below, government involvement in the commercial activity was tremendous.

Table 2.8: Public enterprise in terms of ownership as at June 1993

<table>
<thead>
<tr>
<th>Type of Ownership</th>
<th>Total %</th>
<th>Federal Government</th>
<th>State Government</th>
<th>Regional Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHOLLY OWNED (100%)</td>
<td>8,393.5</td>
<td>34.8</td>
<td>5,438.6</td>
<td>2,798.2</td>
</tr>
<tr>
<td>Equity (MR Mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of PEs</td>
<td>413</td>
<td>34.7</td>
<td>124</td>
<td>264</td>
</tr>
<tr>
<td>SUBSIDIARY (51% - 99%)</td>
<td>12,965.8</td>
<td>53.8</td>
<td>11,547.0</td>
<td>1,356.3</td>
</tr>
<tr>
<td>Equity (MR Mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of PEs</td>
<td>405</td>
<td>34.1</td>
<td>233</td>
<td>158</td>
</tr>
<tr>
<td>SHARE HOLDING (20%-50%)</td>
<td>2,489.3</td>
<td>10.3</td>
<td>1,968.9</td>
<td>498</td>
</tr>
<tr>
<td>Equity (MR Mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of PEs</td>
<td>285</td>
<td>24.0</td>
<td>152</td>
<td>127</td>
</tr>
<tr>
<td>INVESTMENT COMPANY (&lt;20%)</td>
<td>256.7</td>
<td>1.1</td>
<td>159.6</td>
<td>96.9</td>
</tr>
<tr>
<td>Equity (MR Mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of PEs</td>
<td>86</td>
<td>7.2</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24,105.3</td>
<td>100</td>
<td>19,114.3</td>
<td>4,749.5</td>
</tr>
<tr>
<td>Equity (MR Mil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of PEs</td>
<td>1,189</td>
<td>100</td>
<td>549</td>
<td>595</td>
</tr>
</tbody>
</table>

Source: ICU Ministry of Finance (1993), Table 13 p.32.

By June 1993, its equity in public enterprises committed was M$24 billion. Table 2.9 reveals that public enterprises losses were between M$1.6 billion to M$2.5 billion between 1985 to 1989. However net profit has improved tremendously in 1990 and 1992 to M$8.47 billion and M$9.66 billion respectively. Although the Table does not provide the average rate of return for the public enterprises which will indicate return on investment, it nevertheless shows that the number of profit making enterprises were on the
increasing trend. There are various plausible reasons for this which will be discussed in Chapter 3.

Table 2.9: Profitability of public enterprises 1980 - 1992 (M$ Mil)

<table>
<thead>
<tr>
<th>Year</th>
<th>No of PEs</th>
<th>PROFIT Amount</th>
<th>No of PEs</th>
<th>LOSSES Amount</th>
<th>NET PROFIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>257</td>
<td>2.758</td>
<td>161</td>
<td>(100)</td>
<td>2.658</td>
</tr>
<tr>
<td>1981</td>
<td>335</td>
<td>3.210</td>
<td>223</td>
<td>(201)</td>
<td>3.009</td>
</tr>
<tr>
<td>1982</td>
<td>366</td>
<td>3.453</td>
<td>299</td>
<td>(606)</td>
<td>2.847</td>
</tr>
<tr>
<td>1983</td>
<td>445</td>
<td>4.168</td>
<td>318</td>
<td>(1,448)</td>
<td>2.720</td>
</tr>
<tr>
<td>1984</td>
<td>495</td>
<td>5.557</td>
<td>357</td>
<td>(546)</td>
<td>5.011</td>
</tr>
<tr>
<td>1985</td>
<td>493</td>
<td>5.972</td>
<td>462</td>
<td>(1,631)</td>
<td>4.341</td>
</tr>
<tr>
<td>1986</td>
<td>492</td>
<td>5.629</td>
<td>501</td>
<td>(2,420)</td>
<td>3.209</td>
</tr>
<tr>
<td>1987</td>
<td>528</td>
<td>4.656</td>
<td>474</td>
<td>(2,041)</td>
<td>2.615</td>
</tr>
<tr>
<td>1988</td>
<td>587</td>
<td>5.804</td>
<td>412</td>
<td>(1,844)</td>
<td>3.960</td>
</tr>
<tr>
<td>1989</td>
<td>639</td>
<td>5.446</td>
<td>349</td>
<td>(2,502)</td>
<td>2.944</td>
</tr>
<tr>
<td>1990</td>
<td>675</td>
<td>9.379</td>
<td>288</td>
<td>(908)</td>
<td>8.471</td>
</tr>
<tr>
<td>1991</td>
<td>635</td>
<td>10.504</td>
<td>268</td>
<td>(841)</td>
<td>9.663</td>
</tr>
<tr>
<td>1992</td>
<td>120</td>
<td>7.004</td>
<td>36</td>
<td>(153)</td>
<td>6.851</td>
</tr>
</tbody>
</table>

Note: 1992 figure as at 30/6/93
Source: ICU Ministry of Finance (1993) Table 8, p.27.

2.3 MALAYSIAN PRIVATISATION PROGRAMME

2.3.1 Objectives and Rationale

Based on the above, one could therefore conclude that the underlying rationale for the privatisation programme in Malaysia is one of economic pragmatism rather than one of ideological motives. The objectives of the Malaysia's privatisation programme can be summed up as follows:

"Privatisation programme has a number of objectives. First, it is aimed at relieving the financial and administrative burden of the Government undertaking and maintaining a vast and expending network of
services and investment in infrastructure. Second, privatisation is expected to promote competition, improve efficiency and increase the productivity of the services. Third, privatisation by stimulating private entrepreneurship and investment, is expected to accelerate the rate of growth of the economy. Fourth, privatisation is expected to assist in reducing the size and presence of the public sector with the monopolistic tendencies and bureaucratic support in the economy. Fifth, privatisation is also expected to contribute to meeting the objectives of the NEP especially as Bumiputra entrepreneurship and presence have improved greatly since the early days of the NEP and they are therefore capable of taking up their share of privatised services” (EPU, 1985 p.1).

The Prime Minister in his speech stresses the importance of the privatisation programme to the Malaysian economy and says,

"The fact has to be faced was that development will not be possible at the desired pace unless the shortages of the Government fund can be made up through private sector investment and participation" (Muhamad, 1984, p.5).

The Prime Minister further stresses the significance of the privatisation programme by saying:

"The alternative to privatisation may be to stop improving or providing the needed facilities. This will result increasingly poor services and will stifle growth. Development will be retarded and the second prong of the NEP poverty eradication will not be accomplished". (Muhamad, 1984, p.5)

The Government argues that the size of funds required for investing in utilities has increased by leaps and bounds. Thus, private sector participation will lessen the burden of the government concerning funds. Privatisation is expected to provide impetus towards raising competition, efficiency and productivity. The Government also claimed that the performance of many public enterprises in industry and commerce is unsatisfactory as they make losses despite enjoying monopolistic positions and various
supporting measures from the Government (Muhamad, 1984). Furthermore, it is argued that protection of several public enterprises from market forces has bred complacency, inefficiency, low productivity in the public enterprises (Omar, 1990). In addition public enterprises require subsidies and copious injections of capital by the Government. The Government believes that Government-owned corporations transferred to the private sector would be more profitable. The Government also argued that publicly owned enterprises have been less successful or have run at a lost because the government’s management methods and culture differ greatly from those the public sector (Muhamad, 1984; Sallehudin 1984).

The Government expected privatisation to stimulate growth through the private sector investment in the economy. Since the early 1980s the Government has stressed the country’s reliance on the private sector as the primary engine of economic growth. The Fourth Malaysia Plan (1981 - 1985) called for the private sector to play a leading role in providing stimulus to growth and spear-heading further industrialisation (Malaysia 1986).

Privatisation policy also aims to reduce the size of the public sector through the withdrawal by Government from active and direct participation in the economy. From 1970 to 1982 public sector employment constituted 12 per cent to 15.8 percent of the total labour force in the economy. The Government claimed that the public sector is already oversize and in view of this the Government will continue

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Hanafiah Omar is the head of task force on privatisation programme in the Economic Planning Unit of the Prime Minister Department.

This could be interpreted similar to view put forward by Hanafiah Omar (1990). The complacency attitude of the public enterprises due to lack of competition or complacency attitude due to government commitment to bailing companies. The complacency attitude is similar to the "quite life" described by the Niskanen's theory of bureaucracy and the complacency due to lack of competition put less pressure on the public enterprises to perform as described by Leibenstein X-Efficiency theory.
to downsize its role in the economic production and business as "the government cannot afford forever run institutions in order to sustain or create employment". (Muhamad, 1984 p.5)

The last Government objective of the privatisation programme is to contribute to meeting the objectives of the NEP. To some this is a logical extension of the country's 13-year-old NEP which is intended to transfer a 30 per cent share of corporate ownership to bumiputras.

2.3.2 The debate of the privatisation policy - Views and criticism

Business community

The business community welcomes the Government initiative to adopt the privatisation policy (Tan, S.S 1984; Tan, K.S, 1984; Ibrahim, 1984; Kushairi, 1984) - for two reasons. Firstly, privatisation will open up more scope for private sector to participate in the development of the economy in areas normally monopolised by the public sector. Better investment opportunity will attract more investment from domestic and foreign investors which will then create job opportunities for the population. Secondly, privatisation will liberalise the economy from government rules and regulations associated with the implementation of the NEP which is characterised by inefficiencies, malpractice and corruption in the public sector.

Many potential investors were enthusiastic about the policy but remain cautious as to its practical success. Many industrialists have pointed out that it was vital for the government to balance its social and economic objectives and provide specific guidelines on the privatisation policy.

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before it is implemented. It is argued that in the absence of specific guidelines it is difficult for the government to implement the programme due to the massive state sector. In addition some observers believed that many of the enterprises which the government is keen to divest are perennial losers.

**Trade unionist**

There were mixed reactions among the trade unionist; private sector unions applauded the privatisation policy (Narayanan, 1984), while the public sector trade unions (CUEPECS) expressed their concern and sceptism (Ahmad, 1984).

The private sector unionists advocate that privatisation will increase the efficiency, productivity and performance of privatised enterprise. It is claimed that only the fittest can survive the competition in the business world.

Nevertheless, the public sector unionists who opposed the privatisation policy (Ahmad, 1984) regard privatisation as being against the interest of public sector workers for three reasons. Firstly, privatisation will ultimately weaken the power base of trade union in the public sector. Ahmad Nor argues that since government departments constitute the majority of trade union members, privatisation will hit at the very foundation of the labour movement. Secondly, the government goals for higher productivity and efficiency may not be achieved as the public employee is used to an environment that has evolved to meet social objectives and the needs of the public as opposed to profitability objectives of the private sector. Thirdly, the security of the lower income group which forms the largest portion of employees in the public sector will be threatened. He argues that these employees with their lower level of education and little specialised skills will
be easy targets for exploitation by unscrupulous employers in the private sector.

The above views and sceptisms were shared by some of the public (Muzaffar, 1984). He argues that privatisation will further weaken an already weak labour movement. Workers in the same industry will not have the collective strength since they will be organised on the basis of in-house union. Since union leaders in-house unions will have to negotiate wages on their own with their respective managements, they will become more dependent upon the goodwill of their bosses. This will enable the employer to manipulate the workers. However, an industrial relation legal expert argued that private sector unionisation would better guarantee workers' rights than the public sector workers' collective agreements under the National Joint Councils (NJCs). This, according to the view, will allow former public sector workers to pursue collective bargaining, take industrial action and exploit full union participation in the private sector. He therefore anticipated that with the implementation of the privatisation programme there will be an increase in cases arising from trade union disputes in the long run.

The Malaysian Trade Union Congress (MTUC) (Zainal, 1988) also opposed the privatisation policy - on two grounds. Firstly, privatisation would increase cost of goods and services made available to the public by virtue of its profit oriented operations. Secondly, as agreed by others (Tan, 1984; Muzaffar, 1988), privatisation will deprive the lower income group and the poor of certain essential services.

Some labour leaders also believe that Malaysia is not ready

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for the privatisation of basic welfare services as the incidence of poverty is still considered high at around 30 per cent. CUEPECS (Ahmad, 1984) reminded the government of its moral obligation and responsibility to provide certain basic social services to the public. It says the Government should continue to maintain and provide social services such as education, telecommunication, electricity, sanitation and transportation at a cost affordable by the people. The MTUC has cautioned the Government to be cautious in its privatisation programme as failure in its implementation which would result in reversing towards state control would not only incur heavy financial constraints but would also jeopardise employer-employee relationship by virtue of changed working environment.

Academics

Some members of the academics expressed pessimistic views about the Government privatisation objectives of achieving better performance, efficiency and productivity in the public sector, (Tan, 1984; Puthucheary, 1985; Muzaffar, 1986; Jomo 1990). They raised the issue of whether the inefficiencies of the public sector are the characteristic of public sector and therefore can only be overcome through privatisation. The arguments against the policy were various. Firstly, improvements in the performance could be brought about by; (a) examining the public sector critically in order to overcome its shortcomings and be reformed, (b) better supervision at managerial level and providing better incentives which would increase motivation for the worker to work harder and increase productivity (c) greater accountability and more effective control over the public sector and (d) clearly defining the objectives and roles of the public enterprises with specific criteria for

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30 Far Eastern Economic Review (FEER), September 1983. The figure quoted by FEER is in contradict with official figure. By 1984 level of poverty was reduced to 18.4 percent (Fifth Malaysia Plan, Table 3-1, p.86). By 1987 level of poverty had further reduced to 17 percent (see page 28).
measuring their performance, achievement or shortfalls in order to improve productivity and efficiency. They argue that the public sector can be more efficiently run as demonstrated by some public enterprises without resorting to privatisation. Secondly, there is no guarantee that the public sector expenditure will be reduced considerably as private sector activities are also supported by the government through subsidies, loans and protective legislation. Thirdly, privatisation will not resolve the government’s fiscal problem because the Government would only be able to privatise profitable or potentially profitable enterprises and activities because the private sector would only be interested in these enterprises. Thus, Government would lose income from the more profitable public sector activities and would be stuck with financing the unprofitable enterprises. This would undermine the potential for cross-subsidization within the public sector. Fourthly, privatisation exercises may not achieve their alleged advantages and benefits by invoking NEP restructuring considerations, supposedly to increase Bumiputera wealth ownership and business opportunities. It is claimed that with increase Bumiputera competition where collusion cannot be arranged, political influence and connections will become increasingly decisive. Thus, privatisation will primarily enrich the few with strong political connections to secure profitable opportunities. Fifthly, some argued that retrenchment is almost inevitable consequence of privatisation (Putucheary, 1987). Thus privatisation may therefore exacerbate the unemployment problem not only because workers in the public sector are retrenched but also because fewer new recruits are employed in the public sector. However, some felt that privatisation may not reduced private sector employment, as given the choice many of those in the public sector would remain in the public sector. It is argued that redeployment of these staff to other Government department will not reduce public sector employment.
2.3.3 The Status of the Privatisation Programme

Since the implementation of the privatisation programme the Government has set up an Inter-Departmental Committee on privatisation under the chairmanship of the Director General of the Planning Unit in the Prime Minister Department. In line with the programme, privatisation units have also been set up in some government departments to examine the feasibilities of privatising their departmental operations. The Government has encouraged the private sector to submit their proposals for the consideration of the Committee on Privatisation.

However, initially there was a lack of proper planning and coordination among the various agencies involved in the implementation of the privatisation programme. It was only in 1985 that the Economic Planning Unit published guidelines on the privatisation policy supposedly for the use of the private sector. However, the ten-page guidelines are more of a document explaining the general policy of the privatisation than providing a specific guide as to what and how privatisation should be approached. This could be interpreted as a signal that the government was flexible in its approach to implementing the privatisation programme. This is reflected in the guidelines as,

"Government will have to give careful consideration before selecting services and interests that will be privatised. The private sector on its part should also assess, from its point of view, those interests of the Government that it feels can be taken over and managed successfully by private interests...." (EPU, 1985 p.4)

The Guidelines further acknowledge its shortcomings by saying,

"Government is currently examining the various services and interest that can be privatised....The Guidelines do not provide a complete list of the areas that can be privatised....The private sector is welcomed to put up proposals...." (p 6)
The flexibility of the policy has given broad power to the decision makers involved in the programme. In addition, it has created an element of uncertainty in the implementation of the programme. This is reflected in the Guidelines as,

"Whether a privatisation proposal is accepted or not rests entirely with the Government. Government is not obliged to privatise irrespective of the merits or demerits of the privatisation scheme." (p.8)

This to some extent has discouraged entrepreneurs to participate in the programme at the initial stage of the implementation of the policy and contribute to the slow progressed of the programme.

The lack of clear approach has caused (a) duplication of responsibilities between certain ministries and privatised companies which at times caused friction among them\(^3\) and (b) problems of accountability between ministries especially between the Ministry of Energy, Post and Telecommunication and the Ministry of Finance on the privatised companies.\(^4\) This is largely the result conflicting roles and interests between the two ministries.\(^5\)

In 1991 the Economic Planing Unit published the Privatisation Masterplan (PMP). In his foreword message the Prime Minister acknowledges the implementation problem by saying,

"Indeed the Malaysian is still apprehensive of this

\(^3\) As revealed by the Deputy Minister of Finance. He confirmed that the Finance Ministry will come up with a guideline defining more clearly the power of ministries in controlling the privatised companies. The Star, 16.3.91.

\(^4\) As pointed out by the Minister of Energy, Telecommunication and Post.

\(^5\) The Ministry of Energy through the Electricity Supply Department acts a regulator while the Ministry of Finance as the majority shareholder of the privatised companies such as Syarikat Telekom Malaysia (STM) and Tenaga Nasional Berhad (TNE).
policy and do not fully understand the Government’s views of methods. It is therefore important that the Government make public its Privatisation Masterplan so that the public can not only participate but also understand the approach adopted by the Government" (EPU, 1991 p.iii)

Part of the problem in understanding the policy, as discussed above, was the lack of clear approach by the Government itself. This is being rectified as the Prime Minister acknowledges,

"We have identified some of the privatisation bottlenecks and taken the necessary remedial actions.....the Government has devised very clear principles and taken steps to streamline the administrative machinery and procedures...." (p.iii)

The PMP provides better guidelines, if not a complete one, than the previous Guidelines. 42

The privatisation programme as laid out in the PMP is broadly based. It has identified a total of 246 entities and activities to be privatised ; 69 projects to be privatised within 2 years, 107 within 3 to 5 years and the rest beyond five years. The programme covers various activities of the economy including telecommunications, energy, water supply, airline, airports, shipping, roads and highways, broadcasting, postal services, railways and government owned industries such as cement factories and steel mills. The Government has drawn an Action Plan reviewed annually to monitor the progress of the privatisation programme.

The Government by 1992 has listed thirteen public enterprises on the Kuala Lumpur Stock Exchange as below:

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42 The PMP is a more complete guidelines as it explains the implementation policy, the conceptual framework, related privatisation issues, the Government action plan, the approach to project implementation and the government administrative machinery involved.
1) Sports Toto Malaysia Berhad 1985
2) Malaysia Airline System 1985
3) Malaysian International Shipping Corporation (MISC) 1986
4) Tradewinds Berhad 1988
5) Syarikat Gula Padang Terap Sdn Bhd 1989
6) Cement Manufacturers Serawak Berhad 1989
7) Lori Malaysia Berhad 1990
8) Edaran Otomobil Nasional Berhad 1990
9) Holiday Villages Sdn Berhad 1990
10) Cement Industries Malaysia Berhad (CIMA) 1990
11) Pernas International Hotels and Properties Berhad 1990
12) Syarikat Telekom Malaysia 1990
13) Tenaga Nasional Berhad 1992

2.3.4 Achievement of the privatisation programme

Relieving the financial and administration burden of the Government

The privatisation programme, as at June 1993, had saved the Government M$16.8 billion\textsuperscript{42} in the form of $13 billion capital expenditure and $3.8 billion in operating expenditure besides raising M$6.7 billion\textsuperscript{44} as revenue proceeds from the sale. The 73 projects involve the construction of infrastructure and utility schemes such as roads, water supply, electricity, communication services and postal services, and the taking over of government

\textsuperscript{42} As revealed by the Director General of EPU in New Straits Times 11.6.1993.

\textsuperscript{44} Deputy Prime Minister / Minister of Finance in opening a seminar on "National Conference on Privatisation: The Challenges Ahead". New Straits Times, 8.10.1993.
functions by the private sector.

Some of the biggest infrastructure projects under the privatisation programme include the $6.6 billion North South Highway, the $9.9 billion Kuala Lumpur Airport Rail Plan, $1.0 billion Light Rail Transit Project and the M$9 billion electricity power projects. The Government’s expenditure on transport infrastructure has been reduced by 50 percent from $12.9 billion in the Fourth Malaysia Plan (1981-1985) to $6.8 billion in the Fifth Malaysia Plan (1986-1990). Similarly public sector expenditure for telecommunications infrastructure contracted from $779 million in the Fifth Plan to $41 million in the Sixth Plan (1991-1995).

The financial implications of the privatisation on the Government finance are of two magnitude. One, the one-off proceeds received from the privatisation programme have improved Government financial position. For example the Government made a prepayment\(^5\) of M$1.47 billion of external market loan in 1987 to reduce external debt to M$18.94 billion (Table 2.5, col a). This saved the Government on interest payment and overcoming future losses due to the depreciation of the Malaysian currency. Second the proceed and the savings has enabled the Government to allocate more funds to achieve NEP objectives. The financial gains has led the Government to pursue more ambitious privatisation programme in the future. The Cabinet in 1993 has decided to privatisate and sell most of the 1,189 federal and state-owned companies with a total paid up capital of $35.78 billion\(^7\).

\(^5\) Director General of Electricity Supply Department. New Straits Times, 03.09.1994, p.8.


\(^7\) Statement by Deputy Prime Minister in New Straits Times, 30.6.1993.
Based on the financial benefits discussed above it could be concluded that the privatisation policy has significantly reduced the financial burden of the government in providing infrastructural development to the country. Similarly the policy has greatly reduced the administrative responsibility of many government departments in terms of recruitment, planning, monitoring and supervision of the privatised projects.

Although the programme has generated $6.7 billion there was an issue of underpricing. A new issue is said to be underpriced when the initial returns are positive or negative. Some argued that the Government could have earned more if the shares were correctly priced during the listings. However, although this is true, the issue of underpricing in new listing is a long standing issue and is not specific to the privatised companies. In fact, one could argue that the so called underpricing premiums is what makes the capital market alive. The investor’s expectations of high capital appreciation from the listing by the investors provide the capital market with the funding it needs from companies. Studies in the United States, United Kingdom, Canada and Hong Kong give an average premium of 10 to 15 percent, Australia 20 to 30 percent and Singapore 35 to 45 percent and 40 percent in Malaysia.

In the case of the privatised enterprises, the Government has not really lost in any way. This is because the privatisation (listings) has only been partial. In fact the government stand to benefit more adopting this approach as it still holds majority shares. A case in point is when the Malaysian Airline System (MAS) was listed in 1985 only 30 percent of its shares were listed. The Government gradually

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49 Investors Digest KLSE, April 1993.
49 ibid, p6.
decreases its shares making profits from capital appreciation in the process and finally divested all its shares to the private investors by 1994.\footnote{By 1993, when the Government divested its shares in the Malaysian Airline System, its share price had gone up by almost triple.} The Government still owns about 70 percent of Syarikat Telekom Malaysia (STM) and could reap similar benefits in the event of divesting its interests further. TNB’s\footnote{TNB is the privatised electricity utility firm.} share price increased from M$4.50 a share to M$14 a share in 1994 with Government still holding 70 percent of the total shares.

Increase efficiency and productivity through competition

There are very few studies done to assess the performance of the privatised firms in terms of increased efficiency and productivity. Some studies using the partial productivity indicators have shown reasonable success in increasing productivity.\footnote{A study by Ismail Md Salleh (1990) shows that the privatisation of Port Klang has increased performance in terms of number of vessels calling at KCT and KPA, monthly handling, turn around time and rate of crane-handling.} However privatisation has sometimes led to the tendency of increased price of the services rendered. It is claimed that Telekom Malaysia’s has invested in $18 billion since its privatisation proposal to abolish the free 100 three-minute calls was rejected by the Government.

Stimulating private ownership and investment

The privatisation programme has led to the expansion of the capital market and has increased the participation of the private sector in the economic development of the country. The 13 privatised companies listed on the Kuala Lumpur Stock Exchange (KLSE) were valued at a total of $29.35 billion at offer price. As at June 1992 their combined
market value increased by 122 percent to $60.09 billion\textsuperscript{53}. They constituted about 33.4 percent of KLSE market capitalisation of $195 billion. By end of 1993, the 15 privatised firms listed on the KLSE has increased their market value to $84.3 billion\textsuperscript{54}. There was no evidence of insufficient liquidity fund in the capital market with the implementation of the privatisation programme. Since 1983, 111 companies were listed on the Main Board and Second Board of the Kuala Lumpur Stock Exchange\textsuperscript{55} at an average of 12 listings per annum.

However, it is interesting to note that allocation by the financial institutions to fund the purchase of shares by individuals has been an increasing trend. As at end of July 1994, $9.876 billion has been loaned for this purpose\textsuperscript{56}. This suggests that funds obtained by the newly listed companies through the KLSE were not only derived from private savings but also of borrowing from financial institutions. One could therefore argue that the allocation of funds by financial institutions for the individual to buy shares has given opportunity for more people to participate in the creation of a share holding society and distribution of wealth in the society.

\textbf{Reducing the size and presence of the public sector in the economy}

Privatisation has transferred about 82,550 government employees to the private sector in the privatised companies. However, there are no indications that Government involvement and participation in business has

\textsuperscript{53} Business Times 1.7.92.
\textsuperscript{54} New Straits Times, 8.10.1993.
\textsuperscript{55} New Straits Times, 12.6.1993.
\textsuperscript{56} Utusan Malaysia, 1.10.1994.
been reduced. At the federal level Khazanah Holdings Bhd\textsuperscript{57} a Government owned holding company was formed in September 1993\textsuperscript{58} to take over from Ministry of Finance Corporation the equity investments in 37 companies, six of which are listed on the KLSE.\textsuperscript{59} Listed companies on the KLSE owned by Khazanah Holdings are Tenaga Nasional Berhad (TNB), Telekom Malaysia Berhad (STM), Hicom Holdings Berhad, Perusahaan Otomobil Nasional Berhad (Proton) Edaran Otomobil Nasional Berhad (EDON), and Petronas Dagangan Berhad. Other companies owned by Khazanah Holdings include the National Oil Corporation, PERWAJA Steel Sdn Bhd and Bank Bumiputra Malaysia Berhad. The total investment is estimated to be worth \$7 billion at par value or \$72 billion at market value.\textsuperscript{60} As Khazanah Holdings is expected to spearhead Malaysia's investment in mega and strategic projects locally and abroad, it is hard to see how government participation in business is going to be reduced.

In addition there were plans by the Public Enterprises Ministries to turn various public enterprises (agencies) into business conglomerates to compete with local and international private companies.\textsuperscript{61} Although the Government has decided to privatise and sell most of the 1,189 Federal and State owned companies which have a total paid up

\textsuperscript{57} The company's Board of Directors comprises of The Prime Minister as the chairman, the Deputy Prime Minister as the deputy chairman and three directors each from the public and private sectors. The company has a paid up capital of \$100 million and an authorised capital of \$500 million. New Straits Times 9.8.1994.

\textsuperscript{59} As reported in the newspaper (33), Ministry of Finance Inc in separate notices dated 13.9.1994. announced that the changes in its interests as substantial shareholder in Tenaga Nasional Berhad (TNB), Telekom Malaysia Berhad (STM), Perusahaan Otomobil Nasional Berhad (Proton) Edaran Otomobil Nasional Berhad (EDON) and Hicom Holdings Berhad. It announced that the exercise involved the "sale of interest in voting shares" to Khazanah Holding.

\textsuperscript{60} The Minister of the Public Enterprises Ministry said that studying is being conducted by the Ministry, Economic Planning Unit, the respective State Economic Development Corporations (SEDCs) and MARA to find ways to convert its agencies into conglomerates in order to enhance the competitiveness of the Bumiputra entrepreneurs. New Straits Times, 10.2.1994.
capital of $35.78 billion, it will retain some percentage of equity to ensure the Government benefited from future profits in the privatised firms.\(^2\)

**Meeting the objective of the New Economic Policy**

**Social objectives**

The savings and the proceeds obtained from the privatisation programme have improved the financial position of the Government. This has two economic implications for the NEP. Firstly, as has been pointed out earlier it has enabled the Government to channel its funds to other projects aimed at eradicating poverty and improving social services which slowed down during the early 80's. Secondly, the improved financial position of the government has enabled it to set up the Entrepreneurs Rehabilitation Fund in 1990 with the objective of providing financial assistance to Bumiputra companies and entrepreneurs which were facing financial difficulties during the economic slow down in the late 1980s. Under the scheme the Treasury received 497 applicants from entrepreneurs for a total of $1.87 billion loan. However only 386 applications with a loan of $646.6 million were approved.\(^3\)

**Redistribution of wealth**

Trust Agencies\(^4\) were allocated substantial shares in

\(^2\) As revealed by the Deputy Prime Minister and Minister of Finance. The Star, 30.6.1993.

\(^3\) Figures revealed by the Finance Minister in New Straits Times 23.4.1992.

\(^4\) Such as the Amanah Saham Bumiputra, Amanah Saham Johor, Amanah Saham Pahang etc.
privatised companies as a means of distributing the equity derived from privatisation to the Bumiputras. The Government has allocated funds interest free for the poor Bumiputras to buy shares in the Trust Agencies. In 1992 PNB launched a nationwide exercise to select poor Bumiputras to be given an interest free loans to invest in National Equity Trust and Bumiputra Equity Trust (AMS). Each candidate is entitled for a maximum of $5000 each. As at June 1993, 92,868 poor families have benefited from the scheme.

The Johor, Selangor and Pahang State Governments have similar schemes for the poor to invest in the State Trust Agencies. The PNB has identified between 150,000 and 170,000 of poor families. The states of Johor, Pahang and Selangor state governments has also identified 5,165 and 3,707 poor families respectively. However what

It is the policy of the Ministry of Finance to give priority in allocating shares to trust agencies in privatised companies. Bumiputras companies (100 percent owned) with a paid up capital of $25,000 registered with the Ministry of Finance are also eligible to apply for the shares allocated to the Bumiputra community.

For example, the Ministry of Finance allocated 300 million shares of Proton Holdings Berhad which owned by the Ministry of Finance to the Government to buy shares in the Trust Agencies. In 1992, PNB launched a national exercise to select poor Bumiputras to be given an interest free loans to invest in National Equity Trust and Bumiputra Equity Trust (AMS). Each candidate is entitled for a maximum of $5000 each. As at June 1993, 92,868 poor families have benefited from the scheme.

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is not clear is whether those poor families identified by the various state governments by virtue of different institution and criteria used will also be entitled for the interest free loan provided by the ASN at the national level.\[^25\]

The role of the Trust Agencies in wealth distribution will be significant in the future. Six states, Pahang, Johore, Selangor, Sabah and Sarawak have each established unit trust with Perak, Trengganu, Penang and Negeri Sembilan in the process of creating their own.\[^26\] The role of the unit trust could be seen in two perspectives. Firstly, it could create an investment opportunity for the Bumiputra society through holding shares in companies not listed on Kuala Lumpur stock Exchange. This would help to alleviate the problems of getting Bumiputra fund to take up the 30 percent quota reserved for them in companies. The trust schemes also provide a better opportunity for more Bumiputras to invest in those companies through the purchase of unit trust shares. This avoids the common problems of individual Bumiputra shareholders, given the opportunity to buy the shares at premium rates, selling their shares for short term gains which has partly hampered the achievement of the 30 percent Bumiputra equity participation set by the NEP.\[^27\] Secondly, the unit trusts could be allocated shares in the privatised companies. The unit trusts could secure long term benefits to its holders


\[^26\] If there is no coordination or policy on this matter there is a possibility of a large proportion of the poor families identified by the states will be entitled to another interest free loan of $5000 by PNB. If this happens then one could argue that this facility will increase the income of the selected poor family by about $100 a month on the basis of 10 percent return per annum. For example ASB/ASN and A&J has given a consistent return of not less than 13 percent per annum in terms of dividend and bonus.


\[^28\] The Prime Minister revealed that many Bumiputras bought shares for quick gains and for purchase of luxurious items. Some Bumiputras also lent their names to non Bumiputras to purchase units allocated for Bumiputras and acted as sleeping partners only. New Straits Times 16.8.1994.
since they normally hold shares for long term investment.

Allocation of shares of the privatised firms were made to the Bumiputra and the Indian community. The Government\textsuperscript{79} clarified that the Chinese were not allocated shares because their level of equity participation in the stock market was already high.\textsuperscript{80} Shares were allocated to Bumiputra and Indian companies, state governments and cooperatives. Bumiputra companies with a paid up capital of $25,000 registered with the Ministry of Finance and Ministry of Trade are eligible to apply for the shares.\textsuperscript{81} MOCCIS a Bumiputra cooperative with 5,000 members was allocated 3 million TNB,s share.\textsuperscript{82} Four companies belonging to the Malaysian Indian Congress (MIC), a component party in the Barisan Nasional ruling party, received a total of 10 million Telekom shares when it was floated in the KLSE in 1987.\textsuperscript{83} The state government of Perak received allotment of 3 million Telekom shares and 4 million TNB share\textsuperscript{84} while Penang received 2 million TNB share\textsuperscript{85}.

2.4 CONCLUSIONS

The Government rationale for privatisation policy is based more on economic pragmatism than ideology. The perceived oversize, low productivity and inefficiencies of the public


\textsuperscript{80} When the NEP was formulated in 1970, the ownership target was by 1990 the Bumiputras would control 30 percent of the corporate equity, non Bumiputras 40 percent and the foreigner 40 percent. However by 1990 the Chinese community controls about 60 percent of the equity in the corporate sector. Calculated from Table 2.7

\textsuperscript{81} New Straits Times, 2.3.1994.


\textsuperscript{83} The four companies are Maika Holdings which received 1 million shares and SB Management Services Sdn Bhd, Advance Personal Computers Sdn Bhd and Clear Way Sdn Bhd which received 3 million shares each. The Star, 7.5.1992.

\textsuperscript{84} The Star, 13.10.1992.

sector which drain public funds are clearly among its fundamental concerns in seeking to reduce its direct involvement in the economic activities of the country. The NEP policy associated with high development expenditure of the Non Financial Public Enterprises had extensive impact on the financial position of the Federal Government. Many of the public enterprises were loss making and had been a financial burden to the Government. The privatisation policy announced in 1983 is therefore a new approach to national development strategy. It has placed the private sector to play a leading role in the economic development of the country.

Specifically, privatisation aims at relieving financial and administration burden of the government, increase efficiency, accelerate growth, reduce the size and role of the government in the economy and contribute to the achievement of the NEP. However, some of the objectives of the privatisation policy are in conflict with each other a trade off between social and economic objectives, a trade off between equity and efficiency.

The Government is adopting a cautious approach in implementing the privatisation programme. It still holds a majority shares in those companies privatised and listed on the Kuala Lumpur Stock Exchange. Evidence also suggests State Governments were intensifying the setting up of joint-venture activities with the private sectors and thus the number of public enterprises has not been reduced.

Financially, the privatisation programme has raised the much needed revenue for the Government to pursue with its NEP objectives. Distribution of wealth among the public especially the poor was done through the trust agencies. Since the privatisation programme public enterprises had improved their financial performance and the number of loss making public enterprises was on the decline. With the
Strong financial benefits gained from the privatisation programme, and with a strong Government of Barisan Nasional which has been in power since independence one can expect that the privatisation policy to be implemented at a vigourous pace.
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CHAPTER 3 : ASSESSING THE COMPARATIVE PERFORMANCE OF THE 
PUBLIC AND PRIVATE ENTERPRISES - THE CASE OF MALAYSIA

Many policy makers have frequently expressed their 
dissatisfaction with the performance of public enterprises. 
It is claimed that a large number of public enterprises in 
many countries are loss making, draining public funds in 
order to finance losing public enterprises (Hemming and 
Mansoor, 1988; Ramanadham, 1989). As a result of the 
perceived non performance of the public enterprises, both 
the efficiency and effectiveness of the public sector 
activities have been seriously questioned. As discussed in 
Chapter 2, the perceived non performance of the public 
enterprises in Malaysia has among other things led to the 
government in redefining the roles of the public and 
private sectors providing more opportunity for the 
participation of private sector in the economy and by 
privatising the public enterprises.

The object of this chapter is two folds. One is to look 
into the issue of comparative performance of the public and 
private enterprises and the other to examine the 
performance and problems of the public enterprises in 
Malaysia. This chapter will be divided as follows: Section 
2 focuses on an overview of the theoretical perspective of 
public versus private enterprises. Section 3 looks at 
briefly issues on performance evaluation and its problems. 
Section 4 highlights the empirical evidence on the 
comparative performance of public and private enterprises 
in the United Kingdom and United States and some European 
countries. It also discusses the performance of public 
enterprise in Malaysia in comparison with the private 
sectors. Section 5 examines the problems of the public 
sector in Malaysia and followed by Section 6 on the 
Government’s action to remedy the situation. Section 7 
summarises issues raised in previous sections in the 
chapter.
3.2 OVERVIEW OF THEORETICAL PERSPECTIVES

Case for government intervention

The main justifications for government intervention in the economy are to correct market failure. There are two aspects of market failure. Firstly, the failure of the market system to achieve Pareto optimality efficiency in the allocation of society’s scarce resources and secondly, the failure to serve social goals other than efficiency such as distribution of income. Theory suggests that market failure within the category of efficiency tends to occur in the presence of monopoly and oligopoly market structure, or in the existence of significant externalities and public goods.

The main sets of tool available to governments to deal with market failure are rules, public ownership, taxation and expenditure. Thus, one way of correcting market failure is through public ownership by setting up public enterprises to supply goods or services in the economy. Rees (1984) offers a listing of public enterprise’s objectives which could be divided into four categories. The first includes allocative objectives consisting of technical efficiency and economic efficiency; the second distributional objectives; the third financial objectives and the fourth macroeconomic objectives. The last objective involve the effects of public enterprises policies on the employment level, inflation rate, balance of payment and the growth rate of the economy.

However, there are several theoretical arguments which suggest that public enterprises would not be able to achieve pareto optimality.
Theoretical case for public enterprise inefficiency

3.2.1 Theory of Bureaucracy (Public Choice Theory)

The proponents of the Public Choice Theory have put the behaviour of the bureaucrats and public managers at the centre of their argument for the inefficiency of the public sector. The theory concentrates on political coalitions and their effect on input usage, rewards and product characteristic. These are largely directed by the theory of bureaucracy (Niskanen, 1971). Since then, others (Breton and Wintrobe, 1982; Jackson, 1982; Mueller, 1989) have extended the Niskanen model.

In his book, Bureaucracy and Representative Government (1971) Niskanen provides an explanation of how the behaviour of bureaucrats increases public sector spending. Niskanen’s theory suggests that the bureaucrat, like all other individuals has self interest and therefore utility maximisers. The bureaucrat’s utility function include his "salary, perquisites of the office, public reputation, power, patronage, output of the bureau, ease of making changes, and ease in managing the bureau." (Niskanen, 1971 p.38). Since many of the items in the bureaucrat’s utility function are directly related to the size of the budget his department, it follows that bureaucrats will also be budget maximisers. Therefore since bureaucrats may be primarily concerned with the maximisation of their own interest and use more labour or capital than is consistent with optimal production, this will lead to technical inefficiencies where production takes place below the production possibility curve (Orzechowski, 1977).

Mueller (1989) provides a model in explaining Niskanen’s theory. In this model it is assumed that the sponsor provides a budget to produce output or services. The potential budget available to the bureau during a given
period is shown by the budget-output function:

\[ B = B(Q), \quad B' > 0, \quad B'' < 0 \quad (1) \]

The budget of the bureau is a function of the perceived output of the bureau service. This function may be thought of as public benefit or utility function which is assumed to increase, at a diminishing rate with increasing output.

The cost-output function is given as:

\[ C = C(Q), \quad C' > 0, \quad C'' > 0 \quad (2) \]

The cost function for producing the bureau's output increases at an increasing rate such as a competitive firm's cost schedule.

Given the scenario, the sponsor is faced with the problem of monitoring the bureau's output. This arises because, (a) the cost schedule is known only to the bureau's members (b) the sponsor knows only the total benefit schedule in equation (1) but cannot determine whether output is being supplied Pareto Optimum. In other words the sponsor can only observe the total output of the bureau and its total budget. This provides the opportunity for the bureaucrats, as a self-maximising agent to maximise its budget subject to the constraint that the bureau's budget cover the cost of production.

If the bureau does not refund the money to the sponsor the bureau's objective function is shown as:

\[ OB = B(Q) + \lambda [ B(Q) - C(Q) ] \quad (3) \]

whose first-order conditions yield:
Optimality from the sponsor point of view is achieved when
\[ B'(Q) = C'(Q) \]  \hspace{1cm} (5)

that is when the marginal benefit of an extra unit of output to the sponsor equals its marginal cost to the bureau.

The Lagrangian multiplier represents the marginal utility of an expansion of the budget constraint to the bureau and is positive, therefore equation (4) implies that \( B' < C' \). This means that the budget of the bureau is expanded beyond the point where marginal public benefits equal marginal costs.

If \( B \) and \( C \) are quadratic, \( B' \) and \( C' \) become straight lines we have a situation where expansion of the bureau budget as shown in Figure 3.1.

The diagram shows that instead of requesting a budget at output \( Q_0 \) where \( B' = C' \) which maximises the benefit of the sponsor, the bureau will request for a larger budget at \( Q^* \). At output \( Q^* \) triangle \( E \) equals triangle \( F \). This implies that all the consumer surplus gains at output \( Q \) are offset by the excess of marginal costs over marginal benefits on units between \( Q_0 \) and \( Q^* \). In the event that the sponsor's demand schedule shifts to \( B' \)'s or is inelastic, the marginal benefit of \( Q \) to the sponsor would fall to zero. When this happens the constraint where total budget equals total cost would not hold. At output \( Q_s \) there will be no incentive for the bureau to be efficient. At this point it will attempt to expand its expenditure to exhaust its approved budget.
Figure 3.1 The oversupply of a bureau's output

Source: Mueller (1989), Figure 14.1, p.254
Breton (1974) explains some of the techniques bureaucrats may employ to maximise the budget. This includes overestimating benefits and underestimating costs of projects; favouring a rate of discount which will make large projects appear more profitable than they really are when estimating the present value of benefits and costs of projects, and favouring the correction of "wrong" policies rather than abolishing them.

Criticisms

The criticisms on the Niskanen model lie in its two crucial assumptions - (a) that bureaucrats seek to maximise the size of their budgets and (b) they are monopolists who are able to impose their objectives on the politicians. Breton and Wintrobe (1974) criticise Niskanen's model on three grounds. Firstly, they argue that politicians are unlikely to be passive. They suggest that the bargaining power of a department with respect to the politicians is greater because of its ability to distort and conceal information from the politicians rather than because of it is a monopolist. In respect to this, the politicians are likely to introduce controlling mechanisms which will exert some kind of control over the activities of the department. If the cost of the controlling mechanism is prohibitive, where the marginal cost of employing the control mechanism is greater than the marginal benefit from its use, then the outcome is consistent with Niskanen's model and the department could influence the budget for its benefit. Secondly, Breton and Wintrobe (1974) argued that bureaucrats are not a simple monopolist. There are other considerations which come into the utility function of the bureaucrat one of which is the career advancement prospects which depend on the evaluation of their performance by politicians. Thirdly, Breton and Wintrobe (1982) also argue that the competition which exists between bureaucrats within an organisation is likely to prevent the oversupply
of bureaucratic output.

Jackson (1982) sharing Breton and Wintrobe’s argument, argued that the Bureaucrat’s utility functions are much more complex than those proposed by Niskanen. Bureaucrats are also motivated by serving the public interest or fulfilling a public duty rather than just maximising their own utility through budget maximisation. Peacock (1979) contested Niskanen’s model for two reasons. Firstly, a politician such as a Minister will trade off political ambition with the perceived benefits to him of party loyalty. He argues that in all probability a Minister will regard maximising his budget certainly as a sufficient, but not a necessary, condition for achieving his aims. In addition, there are alternative uses of budget for party aims which put a check on the pursuit of budget maximisation. Increases in departmental budget could produce a backlash effect which might weaken the long run support for the party. Secondly, he argues that bureaucrats cannot act as discriminating monopolists even if they wanted to. This is because Chancellor of the Exchequer through his Treasury officials will probe into their programmes.

However any attempt by the politicians to probe into the programmes of the bureaucrats is made difficult by the asymmetric information between the politicians and the bureaucrats. Mueller (1989) argues that middle-level bureaucrats do have a financial incentive to encourage the rapid expansion of their departments because it increases the likelihood of their promotion to higher ranks. As a result, middle level bureaucrats have a tendency to deceive their superiors within the department about the true magnitude of the quantities of bureau output supplied and their unit costs, for their self interest. This leads to further difficulty in monitoring of public sector’s programmes by the politicians.
Niskanen's model draws attention to the potential allocative inefficiency of public bureaucracy. Critics of the model suggest that it might be overstated. However, this is not to deny the relevance of the theory of bureaucracy in explaining the behaviour of the bureaucrats in the budget decision making process. The extent to which the bureaucrat is able to trade off public output for economic rents in his budget depends on two issues. One, the degree of knowledge that the politician has with respect to the production function and two, the cost of production. While such knowledge is necessary, it is not by itself sufficient for the control of the department. One of the solutions is to institute check and balances as controlling mechanism but this leads to the issue of who is to regulate or monitor the regulators.

3.2.2 Property rights theory

The property right theory puts ownership as the focus of their rationale for the inefficiency of the public enterprises. The property rights or ownership rights are human rights to the use of economic goods (Davies and Brucato, 1987). The individual rights to the use of resources are exclusive and voluntarily transferable and consist of a set of rights to acquire, dispose of and, whilst owning, and benefit from resources (Alessi, 1982; Parker, 1985). The theory suggests that ownership matters in determining how costs and rewards will be allocated among the parties in an organisation (Alchian 1965; Demesetz 1967; and Pejovich 1969). DeAlessi (1982,) suggests that the more carefully rights are defined, allocated and enforced the closer the correlation between welfare of the individuals and the benefits they receive. The property right theorists argue that public enterprises are less efficient than privately owned firms.

The difference in the property rights between private firms
and public enterprises gives rise to differences in constraints, rewards, costs and incentives. One major difference in property rights between private and public firms is that ownership of public enterprises is not normally transferable.

The effects of the nontransferability of property rights are various; Firstly, when rights are transferable, the owners as residual claimant bear the risks and therefore goes for the profit maximising technique, reduce costs and use inputs to its highest value. Because rights cannot be transferred in public enterprises, public managers have no incentive to use inputs to their highest value. Secondly, nontransferability of rights does not allow public managers to reap full rewards in the future arising from outstanding current decision. In other words there is no way to express the present value of future benefits that result from current actions. This implies that public managers are insulated from consequences of future losses resulting from current unsound decisions. The theory argues that public enterprises do not operate in capital market where shares are traded and ownership transferred. Therefore public managers have less incentive to perform because they could neither be rewarded or punished as their counterparts in the private sector. Thirdly, nontransferability of ownership attenuates the property rights of taxpayer-owners. This makes rights more tenuous and weaker in public enterprises than in private enterprises. There is also less incentive for the taxpayers to monitor public managerial behaviour and enforce contracts because of (a) the high transaction costs\(^1\) and (b) little individual rewards for the taxpayers to engage in such monitoring activity. The high transaction costs provide the public managers with more discretionary and opportunistic behaviour because it is less costly for them to engage in such behaviour.

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\(^1\) For example vote in new politician who promise to change the way public enterprises is run or leave the country.
Fourthly, the nontransferability of ownership has protected public managers from outside pressure to perform more effectively. Public enterprises do not meet the competition of a market place. Competition with respects to product quality and price provides managers with incentive to perform better and encourages the setting up of internal control mechanism. Ultimately competition eliminates high costs producers. Competition inhibit shirking-information\(^2\) problem of team production.

Many of the problems associated with the property rights theory can be viewed from the perspective of principal agent or agency relationship. The agency relationship exists when one party (the agent) agrees to act in the interest of another party (the principal). In a firm the shareholders act as the principal while the managers appointed by the principal to run the firm as agents. In firms where there is a divorce between ownership and control, the principal agent relationship poses the problems of monitoring the agents behaviour and performance arising from asymmetric information and conflict of interest between the principle and the agents. The principal agent theory is therefore concern with the problem of information and incentives. It addresses the central question of what optimal incentive scheme would be required in order for the agent to act in the interest of the principal.

**Criticisms**

Parker (1985) highlighted three weaknesses in the Property right’s argument. Firstly the theory is based on an over simplistic view of human motivation. While the utility

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\(^2\) Shirking activity occurs when, in a team production, the output or marginal product attributable to each member of the team is costly to measure, each team member has the incentive to shirk. This is because each individual can enjoy the full benefit his own shirking while bearing only a pro-rata share of the resulting costs.
maximisation assumption is valid, the motivation factor which involve the public managers may well be much more complex than what the theory suggest. He argues that both public and private management may be motivated by the same professional pride to do a job well.

Secondly, Parker argues that the concept of attenuation of property rights has its weaknesses. This is because (a) the argument in which managers have direct incentive to be efficient is only applicable in an owner-manager situation for slacking behaviour will affect his income and (b) the attenuation of property rights is applicable to the private sector as well, where there exists a separation between ownership and control. Although managerial behaviour not conducive to maximum profit will be severely restricted by the shareholders who seek to maximise their return, with dispersed share ownership the effectiveness of share holding monitoring as a whole is limited. The activity of specifying and enforcing managerial contracts become difficult. This provides private managers with the discretion to pursue their own objectives.

Thirdly, Parker argues that efficiency needs to be related to achievement of specific goal and needs to be clearly defined. Profitability is a poor measure to use in comparing private and public enterprise because; firstly, public enterprises perform differently and have different objectives from private enterprises. Secondly, methods of accounting and financing policies could differ between public and private enterprises thus affecting profitability.

3.2.3 X-Efficiency theory

The X-efficiency theory, introduced by Harvey Leibenstein in 1966, provides insight into psychological ideas underlying the notion that economic agents may not achieve
maximum efficiency in their productive decisions and behaviour. The theory explains how protection from competitive pressure produces not only allocative-market-inefficiency but another type of inefficiency which manifest as excess unit costs of production among firms sheltered from competition. Leibenstein termed this type of efficiency as X-inefficiency.

The concept of X-efficiency (or X-inefficiency) could be explained by figure 3.2. In a perfectly competitive environment a firm would produce output $Q_c$ at price $P_c$. The long run average cost and the long run marginal cost curves are identical because the firms are cost minimisers, that is $LRATC_c = LRMC_c$. If a firm is a cost minimiser then product market competition will put pressure on the firm to lower his costs in order to stay competitive. However, a firm operating in a monopoly environment would produce output $Q_m$ at price $P_m$. Area ABC represents the deadweight welfare loss resulting from the firm producing less than the socially optimum output $Q_c$. With market power the monopolists cost curves are shown in Figure 3.2 as $LRATC_m = LRMC_m$. This means that the monopolist will have a higher cost than a competitive firm for any rate of output. It also means that area $P_m ABPC$ represents higher cost of production due to monopolisation of industry rather than monopoly profits (Frantz, 1988). The higher cost of production is seen as a cost of monopoly power, a form of inefficiency which Leibenstein called it X-efficiency. This type of efficiency does not involve the rate of output or priced charged by a monopolist but rather it involves a relative cost of production of a monopolist as compared to a competitive firm.

Leibenstein (1966, 1978) suggested that there are four reasons for X-inefficiency. These are: (a) contracts for labour are incomplete, (b) the production function is not completely specified or known, (c) not all inputs are
Figure 3.2: X- and Allocative inefficiency

Source: Frantz (1988), Figure 13, p.54
marketed or, if marketed, are not available on equal terms to the buyers and (d) a non maximising behaviour due to lack of competitive pressure.

Leibenstein (1978) identifies that non maximising behaviour to be the key to the concept of X-inefficiency. This behaviour is a consequence of little pressure from the external environment on individual decision makers. Frantz (1988) defines pressure as a condition whereby an individual feels relatively "driven" to realise some potential. The lower the environmental pressure on a decision maker the less is his concern with the constraints operating on the organisation and consequently the lower is the effort expanded. This reduced effort leads to higher cost.

The effect of pressure on costs could be illustrated by Figure 3.3. In this model it is assumed that the unit costs of an individual firm are influenced by the average costs for the industry. Therefore, when industry unit costs increase, any individual firm can allow its cost to rise while remaining competitive. Similarly, when industry unit costs fall, each individual firm has to lower its own unit costs so as to remain competitive. The model also assumes that industry costs in the previous period (t-1) will serve to formulate the expectation of the individual firm in the current period. The 45 line is the locus of all points where industry unit costs in period (t-1) are equal to the unit cost of individual firm.

The diagram explains the behaviour of two types of firms in relation to their reaction to market pressure. R1 is a "reaction curve" for firm X who is a cost minimiser, thus it does not react to pressure - since it is at lowest end on the industry unit costs. R2 is a "reaction curve" for firm X' whose costs react to pressure. For example if X' expects industry unit costs to be C1 then its costs will be
Figure 3.3: Pressure, Technological change, and Costs

Source: Frantz (1988), Figure 15, p. 57
c1. Reduction in costs could be attributable to (i) increases in X-efficiency and (ii) improvement in technology. Reduction in costs due to these two factors is shown by the reaction curve R3.

Assuming that firm X' is at operating at point (a) where the industry unit cost is at $C_2$ and its unit cost at $c_2$. If industry costs falls to $C_3$ then X' costs would fall accordingly to $c_3$ by moving along R2 to point (b). If we assume there is an improvement in technology, then the entire curve R2 would move downward to R3. Then X cost would fall to $c_4$ as it moves from point (b) to point (d). Similarly, if industry costs fell further, the X'’s costs would fall moving along R3 to point (e). These movements of costs are due to motivations for cost reduction and improvement in technology.

The individual effects of X-inefficiency and technological change is shown in Figure 3.4. ACT1 denotes costs curve within which any level of output could produced which varies according to pressure and motivations. Output level $Q_1$ could be produced within the cost range of $C_1C_2$, the exact unit cost is determined by the pressure or motivation to reduce cost. $C_1C_2$ range is similar to point (a) and (b) in Figure 3.3. Improvement in technology will shift ACT1 downward to ACT2. Output is now produced within range of unit costs $C_3C_4$, again depending upon pressure for cost reduction. The movement of ATC1 to ATC2 is similar to movement of R2 to R3 in Figure 3.3.

The X-efficiency theory suggests that performance strongly is affected by economic and institutional environment. Sources of X-inefficiency are many such as the degree of competitiveness in a firm’s market, the principal-agent relationship, the nature of regulatory regime under which a firm operated and nature of the bureaucracy. It suggests that public enterprises are operating in an environment
Figure 3.4: The effects of X-inefficiency and technological change on costs

Source: Frantz (1988), Table 16, p.59
which is little conducive to efficiency. Most of them are shielded from competition and operate with a settled routine which leaves them little inclination to innovate in production. The threat of bankruptcy as the ultimate sanction of bad results does not exist as public managers know that they can expect government subsidies to finance deficit. The takeover threat arising from management and financial failures is absence within public enterprises thus contributing to strong X-inefficiency.

Criticisms

Stigler (1976) challenges the theory on two central issues of the theory. Firstly, he argues that the interpretation on output differences partly lies in the choice technology by firms. According to Stigler, the choice of technology is fundamentally a matter of investment in knowledge where the costs and returns of acquiring technological information depended on the size of the firm, the age of its capital assets, the experience of its managers and the prospects of the trade. Thus given the chosen technology all firms operate on the production frontier curve. Secondly, he argues that motivation is not an output and therefore denies motivation as a significance factor in decision making process that could affect efficiency. Leibenstein (1978) in defense to Stigler's criticisms centred on two issues. Firstly, Leibenstein argues if firms are operating at different level of production frontier, then those firms operating inside the outer most frontier exhibits inefficiency called X-inefficiency. As a result of this differences in cost between firms exist. These cost differences are due to different discretionary effort choices which are influenced by the motivational environment within the firms and between firms. Secondly, while acknowledging the limitation of motivation as an input in the neoclassical model, it does not imply that motivation is not a significant variable in real life
situation. He pointed literature in industrial psychology and business organisation supports the view that motivation is an important factor in determining productivity.

3.3 ISSUES ON PERFORMANCE EVALUATION

Criteria and performance indicators.

Studies on assessing the performance of the public and private enterprise have used different efficiency criteria such as cost efficiency and productivity and profitability and technical efficiency.

The concept of efficiency in economics fundamentally distinguishes two different aspects of efficiency namely the productive efficiency (cost efficiency) and allocative efficiency. In order to achieve efficiency in the allocation of resources (Pareto optimality), two conditions needs to be fulfilled. That is the enterprise should, (a) choose the input combination that minimises its production costs which reflects the productive efficiency and (b) price its output at their marginal cost of production reflecting the attainment of allocative efficiency. If price is above marginal cost then there would be an efficiency loss and pareto optimality will not be achieved.

Using unit cost efficiency criteria as a means of comparing performance between enterprises is a better approach than using partial productivity and profitability criteria due to various reasons. Firstly, partial productivity analysis does not allow for changes in other inputs other than the measured variable and therefore could be misleading. For example a reduction in labour force while producing the same output, and at the same time using more of other inputs such as plant and equipment is not a fair reflection of improved labour productivity. Secondly, profitability provides a broad measure of management’s operating ability
and financial success if the enterprise is geared towards maximisation of profit. Differences in financial policy and accounting method used, such as the current cost accounting method or the historical cost accounting approach, provide different profitability outcome.

There is also a shortcoming in using technical efficiency criteria in relation to its technological frontier. Firstly, efficiency on the technological frontier curve is also determined by other factors such as economic, financial, environmental and other criteria. In addition differences in technological choices, vintage of capital stocks and maintenance standards adopted affect the technical efficiency which have significant impact on productive efficiency.

Problems of comparing public and private enterprises

There are two main problems in comparing performance of public and private enterprises. Firstly, they have different objectives. Therefore comparing performance using the performance criteria will not reflect a true comparison as performance varies with the objectives of the enterprise. Secondly, public enterprises usually operate in a different environment under different operating condition where public enterprises are subjected to government rules, regulation and procedures.

However, despite the differences in the objectives and operating conditions of the two enterprises, comparison could still be meaningful. That is any comparison should be made on the basis of explaining the underlying causes which contribute to different performance.

3.4 EMPIRICAL EVIDENCE

The empirical evidence on the performance of the public
versus private enterprise is inconclusive. While most of the studies done in the US used cost efficiency criteria as the performance indicator, studies done in the UK has incorporated a wider performance criteria which include profitability, productivity and technical efficiency.

3.4.1 International empirical evidence

American studies

There are two major studies which are frequently referred in the literature on the empirical evidence of public versus private enterprises performance. Both studies indicate inconclusive evidence on the superiority of one over the other. R. Milward (1982) surveying the North American literature on studies in the area of electricity, water utility and airline concluded that "there is no evidence that management in private firms is more efficient, rather the cost studies seem to be pointing the other way" (p.ii). However, in their widely quoted studies, Borcherding et.al (1982) concluded that "the findings in most studies ....are consistent with the notion that the public firms have higher unit costs structures" (p.134).

Surveys done by Milward suggest that public firms have lower cost of electricity generation and a lower tariff structures than their private firms competitors in the electricity industry. In contrast, result in studies in the garbage collection industry indicate that private firms have a lower cost of production. Millward argues that this could be due to two reasons. One is because public firms are under municipality control is subjected to local pressure therefore performed better. This proposition could imply that the validity of the principal agent theory comes into play. The municipality has better access pertaining to operational information matters and on the activity of the firms under their control. Being small as
compared to a ministry, they are less bureaucratic and have better supervision, control and monitoring system. Second, the cost effectiveness of the public firms highly probable due to the existence of competition from their competitors. However, it is interesting to note that few questions are left unanswered in the study on two issues. One is whether the regulatory constraints on the private firms operating in the electricity sector in the study done has any bearing on their performance as compared to their public firms rival which operate free from regulatory limitations. Second whether the "self financing" feature of the electricity sector in the study provides the exposure to market discipline and better accessibility to capital market contribute to the better performance by the public firms.

Borcheding et al (1982) in their survey on the differential efficiency between the public and the private firms in the US, Germany and a few other selected countries concluded that most of the literature in their studies are consistent with the notion that public firms have higher unit costs. Out of more than 50 studies only 3 (that is by Pier, Vernon and Wicas (1974) on garbage collection, Mayer (1975) on electricity utilities and Lindsay (1975,1976) on veteran’s hospitals) indicate that public firms are less costly than private firms. Borcheding et al suggest that given sufficient competition between public and private firms the unit cost could turn out to be insignificant. In summarising their findings they further concluded that it is the lack of competition and not differences in ownership which led to cost inefficiency in the public firms. Mueller (1989) compares numerous studies on cost differences between publicly and privately provided services. His

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3 Studies in diverse areas include airlines, banks, electric utilities, cleaning services, debt collection, fire protection, forestry, hospitals, housing, railroads, refuse collection and water utilities.
survey shows that out of 50 studies, over 40 public firms were found to be less efficient than private firms supplying the same service.

One similarity in both studies done by Millward and Borcheding is that they point to the same conclusion that competition is important in achieving cost or productive efficiency of public and private firms.

UK studies

Studies done in the UK by Pryke (1982) and Hutchinson (1991) and Whitfield (1992) used a more wider concept of performance indicators which included productivity, profitability and technical efficiency. These studies concur with the notion that privately-owned firms generally perform better than comparable government-owned firms.

Richard Pryke in his study examined the efficiency of the private and public enterprises in the same industry in the Civil Aviation, Short Seaship and hovercraft services, and the sale of gas and electric appliances. In the civil aviation industry he compares the British Airways and British Caledonian (B Cal), Sealink UK (SLUK) and ER Hovercraft (BRH) on short sea ship and hovercraft services and British Gas Corp (BGC) and Electricity Board (EBs) with Comet and Curry. Pryke uses performance criteria such as competitive position, use of labour and capital and profitability indicators / criteria to compare the two sectors. His results support the notion that private enterprises perform better than the public enterprises.

In another study, Hutchinson (1991) compares the performance of the public and private firms in five selected industries namely aerospace, electronics and electrical, auto making, civil aviation and ground freights. He uses performance indicators of profitability,
productivity and technology mix to compare the performance between the firms. The evidence suggests that privately-owned firms generally perform better than comparable government-owned firms. In addition, government-owned firms which underwent privatisation have not always outperformed their competitors in their respective industries.

Whitfield (1992) using profitability criteria assessed the performance of the privatised firms, British Airways, British Gas, British Telecommunications, and Rolls-Roys, before and after privatisation. He noted that there was an increased in profitability in the privatised firms as a result of reduction in items which are charge directly against the cost of the firms. However, he pointed out the significant increased in the profitability was due to the reduction in research and development, and capital expenditures, business tax and interest charges. He observed four other changes which had contributed to the increase in profitability of the privatised firms. Firstly, the advantage of lower taxation on profit because companies have used tax losses accumulated under public ownership. Secondly, rationalisation and restructuring costs concentrated under public ownership with financial benefits accruing after privatisation. Thirdly, capital restructuring and debt write off leading to lower interest charges. Fourthly, there was a surpluses from reduced pension fund contribution which contributed directly to increase in profits. He also pointed out these privatised companies are in the high growth sector such as the telecommunication and air industries.

3.4.2 Malaysian empirical evidence

There are few studies in comparing the efficiency of the public versus private enterprises in Malaysia. Salleh (1991) did a study using cost efficiency, profitability and productivity of labour and capital in few selected
industries. Results of the studies are as shown in Tables 3.1, 3.2 and 3.3.

Cost efficiency - Milling industries

In this study a comparison was between public enterprises consisting of Malaysian Rubber Development Authority (MARDEC), Federal Land Development Authority (FELDA), National Rice Board (LPN) and the private enterprises in the milling sectors for rubber, palm oil and rice sectors.

Table 3.1 reveals the following observations:

a) With the exception of rice milling, output per establishment is higher in the private sector. One plausible reason for this is that the public enterprises were smaller than the private enterprises as reflected by the means and the standard deviation of the sample size. Most MARDEC mills are located in the rural areas with the purpose of serving widely dispersed concentration areas of the rural smallholder. In contrast, unlike MARDEC many private millers have their own rubber estates. These belong to big corporations such as Harrison and Crossfield Ltd, Dunlop Estates Ltd, Guthrie Berhad, and Highland and Lowland Ltd. Private millers without rubber estates on the other hand depended their supply of rubber latex from smaller private estates. Similarly, output of FELDA was lower than the private palm oil millers because FELDA millers cater only for FELDA settlers and therefore have a smaller milling capacity.

However, the output of LPN is higher than the private millers for the following reasons. Firstly, LPN mills were larger than that of the private mills. Rice cultivation is concentrated in the small state of Kedah and hence LPN was able to reap the economies of scale through larger milling
Table 3.1 Some characteristics of public and private enterprises in Palm oil, rubber milling and rice milling in Malaysia (1982)

<table>
<thead>
<tr>
<th></th>
<th>Rubber Milling</th>
<th>Palm Oil</th>
<th>Rice Milling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MARDEC</td>
<td>Private</td>
<td>FELDA</td>
</tr>
<tr>
<td>Sample size</td>
<td>15</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Output/establishment ($'000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>11,439</td>
<td>22,255</td>
<td>28,259</td>
</tr>
<tr>
<td>Std dev</td>
<td>3,115</td>
<td>15,138</td>
<td>27,794</td>
</tr>
<tr>
<td>Value added/worker ($)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>9,885</td>
<td>24,979</td>
<td>26,179</td>
</tr>
<tr>
<td>Std dev</td>
<td>5,102</td>
<td>19,964</td>
<td>8,827</td>
</tr>
<tr>
<td>Fixed asset/worker ($)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>26,300</td>
<td>16,809</td>
<td>47,298</td>
</tr>
<tr>
<td>Std dev</td>
<td>748</td>
<td>1,900</td>
<td>636</td>
</tr>
<tr>
<td>Wage/worker ($)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4,631</td>
<td>5,412</td>
<td>6,086</td>
</tr>
<tr>
<td>Std dev</td>
<td>748</td>
<td>1,906</td>
<td>636</td>
</tr>
<tr>
<td>Gross profit/output (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.7</td>
<td>11.4</td>
<td>11.7</td>
</tr>
<tr>
<td>Std dev</td>
<td>4.5</td>
<td>10.1</td>
<td>3.1</td>
</tr>
</tbody>
</table>


capacity. Secondly, the Government commitment to increase the standard of living of the rural poor and eradicate poverty as spelt out in the New Economic Policy has led to the establishment of bigger mills to cater for the output of the padi farmers. One of the objectives of the setting
up of the LPN was to break the oligopoly structure of the rice industry which led to low padi price for the farmers. The bigger capacity of LPN is reflected in its capital intensity as shown by the higher fixed asset per worker.

b) The public enterprises have a lower productivity of labour in terms of value added per worker in all the sectors under study. The public enterprises wages were also lower than that of the private enterprises wages.

c) The public mills, with the exception of the palm oil mills, tend to show a lower performance results in terms of gross profit per unit of output in all sectors. Salleh noted that in both palm oil and rubber production there has been no indication of the public enterprises selling their products at prices lower than the market price. He concluded that since both productions were geared mainly for international market, the difference in profitability could be explained by the difference on their cost effectiveness. That is public enterprise millers have higher production costs despite enjoying the financial grant from the Federal Government.

However, FELDA has a higher gross profit could be attributable to; firstly, it has a security of supply of oil palm (fruits) from its settlers (estates) which enables it to run at operating maximum capacity most times. Secondly, many private millers have to depend their supply from smallholder in a highly competitive market environment. One could therefore expect the oil palm price is higher for the private millers which contributes a high percentage of production costs to the private millers. A shortage of supply due to seasonal variation could lead to private millers operating at minimal or below operating capacity. Thirdly, FELDA receives a financial grant from Federal Government which provides lower cost of capital to FELDA. Fourth, FELDA is operates in a competitive
environment where it has the characteristics of monopoly power over its supplier. Although the land does not belong to FELDA mills under the agreement of the scheme the settlers are obliged to sell to FELDA millers.

The differences in the performance of the public and private enterprises could be attributable to the following factors: Firstly, MARDEC, FELDA and LPN were set up to achieve the conflicting socio-economic objectives in line with the NEP. Secondly, there were fewer incentives where for example wage is lower, for the public enterprises to perform. Thirdly, the centralised nature of bureaucratic process provides monitoring problems by the headquarters office. One would expect performance within MARDEC, FELDA and LPN themselves to vary to great extent. Fourthly, although MARDEC and LPN operate in a competitive environment, they have a better security of job as they come under Public service employment contract and therefore less pressure to perform.

Cost efficiency: Cement and steel industries

Table 3.2 shows the result of the cost efficiency comparison between the public enterprises and the private enterprises in the cement and steel industries.

It shows that public enterprises were less cost efficient than the private enterprises in both industries. The main reason for this difference is that public enterprise firms have a bigger capacity than most private firms in the cement and steel sectors. One of the characteristics of these industries is that they have a high degree of uncertainty about the demand by the construction sector. With bigger capacity, the public enterprise firms have higher overhead costs and during low demand for cement and steel they have high overcapacity costs. Likewise, during
Table 3.2: Cost per unit metric ton of cement (in M$ current prices)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>121</td>
<td>134</td>
<td>136</td>
<td>132</td>
<td>196</td>
<td>192</td>
</tr>
<tr>
<td>Private</td>
<td>135</td>
<td>131</td>
<td>129</td>
<td>124</td>
<td>136</td>
<td>157</td>
</tr>
<tr>
<td>Public/Private</td>
<td>0.90</td>
<td>1.02</td>
<td>1.05</td>
<td>1.06</td>
<td>1.44</td>
<td>1.22</td>
</tr>
<tr>
<td>Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>1,020</td>
<td>861</td>
<td>784</td>
<td>785</td>
<td>989</td>
<td>1,012</td>
</tr>
<tr>
<td>Private</td>
<td>916</td>
<td>804</td>
<td>708</td>
<td>784</td>
<td>964</td>
<td>912</td>
</tr>
<tr>
<td>Public/Private</td>
<td>1.11</td>
<td>1.07</td>
<td>1.11</td>
<td>1.11</td>
<td>1.03</td>
<td>1.11</td>
</tr>
</tbody>
</table>

Source: Salleh and Rani (1991), Table 4.15, p.84.

increase in demand for cement and steel it has to operate at under-capacity level of production. The shortage of raw materials is more acute in the public enterprise than in the private enterprises which have a stronger union and affiliation to the supplier of the raw materials.

Profitability comparison: Mining, Manufacturing, Construction and Finance Industries.

In terms of profitability, with the exception of the construction sector, the public sector has been lower than that of the private sector as shown in Table 3.3. The comparison is made during the recessionary period in
Table 3.3: Profitability between public and private enterprises by sector 1981-1985

<table>
<thead>
<tr>
<th>Sector</th>
<th>1981</th>
<th>1983</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extractive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>0.19</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>Private</td>
<td>0.29</td>
<td>0.28</td>
<td>0.23</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>0.01</td>
<td>&lt; 0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Private</td>
<td>0.09</td>
<td>0.07</td>
<td>0.05</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>0.05</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Private</td>
<td>0.02</td>
<td>0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>Finance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Private</td>
<td>0.04</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Source: Salleh and Rani (1991), Table 4.15, p.84.

especially in 1983 and 1985. This is reflected in the declining trend of profitability both in the public and

---

Despite the recession, extractive and construction sectors retained its high profitability trend. The study did not provide detail information on the types of extractive activity involves. However it could be safely assume that the high profitability trend was partly due to the highly profitable petroleum activities.

Profitability in the finance sector was very low during the three years. This was partly due to three reasons. One, there were lots of bad debts from house buyers as a result of increase interest rates in Malaysia. Secondly, end financing (finance for construction of houses) given by the banks to the housing developers were difficult to recover because high increase in housing prices have resulted developers holding unsold units. Thirdly, some big financial institutions public and private (such as Bank Bumiputra Bhd, Perwira Habib Bank Bhd, Koperasi Serbaguna) were incurring huge losses of about M$3 billion due to mismanagement by their Board of Directors and Management team (FEER 4/87; INSAN, 1989; Salleh, 1992). This has affected the profitability of the financial sector as a whole.
private sectors in all the four sectors. The higher profitability trend of the public sector in the construction sector could be attributable three factors. Firstly, public enterprises have significant cost advantage over the private enterprises. Being state owned companies, public enterprises obtain their land through a process of delineation of state land to the state-owned companies with a premium rate of M$1.00 a square foot. The private enterprises pay a much higher premium rate for the purchase of their land for development. Land cost constitutes a high proportion of total costs. Secondly, there is a flexibility for the public enterprises to pay the premium on a staggering basis for payment of premium thus providing some capital costs (interest) saving to the public enterprises. Thirdly, planning and development approvals are normally shorter for the public enterprises. This is because most public enterprises in the construction sector are subsidiary of SEDCs the Chairman of which is the Chief Minister. The early approvals from the relevant authorities provides substantial saving in capital cost (interest).

3.5 PROBLEMS OF THE PUBLIC SECTOR IN MALAYSIA

Utility maximising behaviour and the coalition between politician and bureaucrats

One of the main features of Malaysian politics is that there has never been a clear distinction between the political and administrative spheres (Bruce, 1985). Civil servants tend to form affiliations with particular leaders

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5 An example is the SAP, state-owned company which gets its land bank of about 1500 acres in the early eighties at a premium rate of M$0.99 a square foot. SAP has been privatised in 1993.

6 The cost advantage of the public enterprises can be seen through the following example. A development of 300 acres of land (which could be considered the smallest size of a development project) provide a cost advantage of about M$13 million in land cost. This is on the assumption that the private enterprises cost of land at M$2.00 a square foot which is a very conservative estimates by any standard in Malaysia. Based on the 300 acres, land cost incurred by the public enterprises would be M$13.2 million. The same land would cost the private enterprise M$26.4 million.
which provides them considerable influence within the public sector (Putucheary, 1978). There was a high dependency of politicians on the bureaucrats to run the country after independence (Tilman, 1964). This dependency had a variety of reasons. Firstly, as claimed by some, the system of appointing the Cabinet Minister as a reward for loyalty to party chiefs has led to the appointment of incapable leaders (Mohamad, 1970). Secondly, most politicians were inexperienced and therefore had to rely heavily on the civil service. Thirdly, most of the politicians and the bureaucrats shared a common political ideology having come from the same background and attended the same school (Tilman, 1964). The close relationship between the politicians and the bureaucrats endangers not only the political process but also affects the efficiency and effectiveness of the public administration (Kothari, 1969).

The dependency of the politicians on the bureaucrats had given the civil servants a special place in the running the public sector and they command high respect and are treated with the greatest politeness. This relationship developed into an interdependency between both parties with the implementation of the New Economic Policy in 1970. The situation has led to the coalition of mutual interest to both parties. The interdependency between the politicians and the bureaucrats has created an opportunity for the maximisation of self-interest utility function by both parties which has two serious implications for the public enterprises. Firstly, it has resulted in the public enterprises being used as political tools by the

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2. Most of the politicians and senior bureaucrats especially in the pre-independence period and early years of post-independence period came from Malay College, a school for the elite group. The first three Prime Minister of Malaysia attended the college.

politicians to achieve their political aims (Gale, 1985). The politician's interest partly lies in the expansion of his power and authority through expansion of his Ministry and public enterprises under him. This enables him to use public enterprises to reach the public, gain more support and ensure his popularity to be re-elected. This self-maximisation utility interest could be used to explain the growth of the public sector with duplications of responsibilities among some of the public enterprises as reflected in the activities of PERNAS, UDA, SEDCs, MARA, FELDA and FELCRA. Sometimes this has also led to the setting up of enterprises undertaking uneconomic and political activities. For example, during the run up of the UMNO\textsuperscript{10} party general party election in 1993 it was alleged that KEMAS and RISDA participated in a political activities where meetings with the Deputy Prime Minister\textsuperscript{11} were held and issues related to UMNO elections were discussed.\textsuperscript{12} It was claimed that RISDA spent more than M$100,000 for 3 meetings with the Deputy Prime Minister.\textsuperscript{13}

The second implication of the political-bureaucratic coalition is that it provides an opportunity for the bureaucrats to maximise their self interest utility function. This has resulted in increased operational budgets for the public sector which was not consistent with optimal management practices. According to an estimates by one of the Secretary-Generals of a Ministry in 1985,\textsuperscript{14} there was 30 percent over-staffing in most Federal

\textsuperscript{10} UMNO is the dominant party in the coalition ruling party of Barisan Nasional. It consists of Bumiputra party members.

\textsuperscript{11} New Straits Times, 09.09.1993

\textsuperscript{12} New Straits Times, 19.08.1994.

\textsuperscript{13} Utusan Malaysia, 19.08.1993.

\textsuperscript{14} Although this is a personal estimate, it is done by one of the highest authorities in public service. Secretary General of a Ministry is the highest public service office in a Ministry and is answerable to the Chief Secretary to the Government, the highest ranking public service.
Ministries and 40 percent of under-utilisation of office equipment in 1985.\textsuperscript{15} Similar observations on inefficient practices were also highlighted by the Auditor General in 1992 reporting that many Government Departments were wasting money buying sophisticated and expensive equipment but not using it.\textsuperscript{16} Shleifer and Vishny (1993) argue that the preference for advanced technology and the purchasing of equipment way beyond the needs in the Third World provides over-invoicing opportunities or corruption which benefits certain people in the society. The self maximisation interest of the bureaucrats is also reflected in some government agencies which were using fund to renovate or decorate their offices with expensive items or buying official cars for their own used.\textsuperscript{17} The Auditor General in 1991 highlighted that Kuala Lumpur City Hall spent about M$600,000\textsuperscript{18} on expensive crockery and M$2.5\textsuperscript{19} million on 23 Volvos GLTs for its officers although some were not entitled to car privileges under their scheme of service.\textsuperscript{20} In another case, a Chairman of a public agency which owned a hotel chain has the privilege of enjoying luxury suites reserved for him at each of the groups hotels even though he was not using them.\textsuperscript{21}

Although the dependency of the politicians on the bureaucrats has declined to some extent this has not provide much positive effect on the efficiency of the Government. Some claimed that now Ministers tend to make decisions without consulting civil servants resulting in

\begin{itemize}
\item \textsuperscript{15} Malaysian Business, May 1985 p.19.
\item \textsuperscript{16} New Straits Times, 30.05.1992.
\item \textsuperscript{17} Revealed by the Minister of Finance in New Straits Times, 09.05.1994.
\item \textsuperscript{18} Equivalent to £150,000 with current exchange rate of M$4.00 = £1.
\item \textsuperscript{19} Equivalent to about £600,000 based on current exchange rates.
\item \textsuperscript{20} New Straits Times, 29.04.1994.
\item \textsuperscript{21} Revealed by the Minister of Finance in New Straits Times, 29.4.1994.
\end{itemize}
wastage because plans were conceived and implemented hurriedly.\textsuperscript{22}

**Political patronism and interference**

Political interference in the public enterprises came through the appointment by the government of those running the public enterprises. Many of the public enterprises are created by the states through the setting up of the SEDCs and their subsidiaries. Thus, the responsibility of overseeing the implementation of the NEP rest with the respective Chief Minister of the respective states. To facilitate this, the Chairmanship of the SEDCs is reserved for the Chief Minister. Similarly, the Chairmanship of the Statutory Bodies\textsuperscript{23} is normally either given to political figures or retired top government officials\textsuperscript{24} Further down the hierarchy, the appointment of the Board and the Chief Executives of public enterprises was also based on political connections. In some special cases, where subsidiary companies are big and deal in activities considered strategic or sensitive by the Government, the choice of the Chief Executives needs to be referred to top political leaders of the Government.

\textsuperscript{22} The view of the Auditor General during an interview with the Far eastern Economic Review in 1985. (Far Eastern Economic Review, May 1 1985). An example of this new trend is when the Finance Minister in 1985 cautioned the civil service that their role is to provide advice and not to resist Government decision to implement changes in policies. This came in the wake of resistance from civil servants on the Government's proposal to pension off the inefficient Government servant and introduced lateral position through the appointment of senior positions on contract basis. Malaysian Business, Jan 1 1985.

There are two plausible reasons to explain the changing relationship between the politicians and the bureaucrats. Firstly, the implementation of the NEP has provided the politicians with the opportunity to maximise their self interest. Bureaucrats could therefore be regarded as an obstacle towards the exploitation of the opportunity. Secondly, the performance of the public sector does not command due respect from the politicians. In a nationwide survey conducted by the Government in 1985 only 46 percent of the civil servants came on time to office. Malaysian Business, Jan 1 1985.

\textsuperscript{23} Member of Parliament or State Assemblyman.

\textsuperscript{24} Some of the examples are Chairman of Petronas in 1985 was the former Secretary to the Government, the Chairman Kompleks Kewangan Berhad at one time was a former Minister and the Chairman of the Malaysian Industrial Finance Ltd was the former Governor of the Central Bank.
The appointment of the Chief Minister as the Chairman of the SEDC has three implications for the public enterprises. Firstly, it provides the Chief Minister with direct access to additional sources of patronage (Gale, 1985) for his political aims and therefore subject public enterprises to political manipulation. Public enterprises were used as a vehicle for politicians to popularise themselves within the Malay community, the majority of which were living in the rural areas. The importance of political connections in the rural community could be summed up by Zawawi Ibrahim as,

"In the rural communities the NEP has provided new basis of legitimacy in strengthening the patronage system. Support is given to those who can deliver the new economic goods. They are not necessarily men of knowledge or ideals, but they have the right bureaucratic and political connections which link them from the periphery to the centre".²⁵

The second implication is that, the system of political appointment and patronism has breed inefficiency and mismanagement in the running of the public enterprises as action would unlikely be taken against those appointed by the politicians. The seriousness of this issue has given concern to the Prime Minister in 1994 when he acknowledges the problem by saying:

"... There are those who are lazy to act against indiscipline and this perpetuates the problem."²⁶ This happens most of the time. When the Government takes action against these people, there will be others who want to protect them".²⁷

Thirdly, the system of political appointment described above led to the multiple directorship in public

²⁵ Zawawi Ibrahim as quoted in New Straits Times 03.07.1994, p.12.
²⁶ Problem of inefficiency.
enterprises, lack of professionalism and business oriented managers. Cost efficiency was not given top consideration and projects were awarded on the basis of political connection. These symptoms can be accurately described by a prominent banker as,

"There is a feeling.....that many tenders, awards, licences and approvals for share allocations are made on the basis of connection rather than the lowest, most efficient or on some other merit-related basis."

The Minister of Finance in 1988 revealed that there were cases where a minister approved projects freely without giving any consideration for financial criteria in order to gain popularity. He reveals:

"Upon request......he used to approve......no questions asked. He became popular using public money but not through his service of his efforts in safeguarding a good economic system."

The phenomena of using political connections for maximisation of self interest among politicians is widespread. This is clearly evident from the statement made by the Minister of Finance in 1988.

"There were those who asked me to award contracts to their friends. When I refused, they started to go for me. What do people want? Bank licence, finance company licence, discount house licence....(Eventually) there is nothing left to give away any more. In fact, given

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28 This presumably because of, (a) it is safer for the politicians to depend on a limited number of associates or (b) the politicians has limited number of those could be trusted and loyal to them in running the public enterprises. One could argue that the resulting multiple directorship in public enterprises (that is Directors who sit on numerous Boards) raised higher possibility of conflict of interest.

29 This problem has been acknowledged by the Government. Malaysian Business, October 1982.


31 New Straits Times, 30.05.1994, p.2. Reference made on his predecessor.
half a chance - and it can’t be done - I would revoke some of the licences given.”

The use of political connection for the self-maximisation interest of both the politicians and the bureaucrats has also led to the formation of what Olson (1982) described as "distributional coalition". In the Malaysian context, these are individuals with political connection having cartel-like networks seeking rewards through coalition, transaction cost and other privileged bargains. A distributional coalition also exists among the bureaucrats and public managers who are involved in the exchange of vital information about contracts or investment opportunities which are confidential and closely guarded secrets monopolised by the bureaucrats. In some instances this has resulted in mismanagement and fraud as demonstrated by the Bank Bumiputra Finance and the Bank Rakyat financial scandals. In 1975 Bank Rakyat incurred accumulated losses of M$65.3 million where "millions of dollars had also been lost through disbursement of loans and other transactions in ways which clearly benefited politicians, senior officers of the bank and their relatives" (Gale, 1985).

Politics, rent seeking and corruptions

The heavy government intervention and involvement in the economy due to the NEP has given rise to a mercantilist economic order (Kasper, 1987) characterised by three main

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33 These individuals could be party members of someone who are not party members.

34 Gale quoting a report of the investigation by Price Waterhouse.

35 Kasper defines merchantilist economic order is an economic system where the ruler grants licences to selected merchants which in turn creates monopolies and facilitate rent seeking behaviour, a search for productivity and innovation. This system is inward looking and bureaucratic.
features (Salleh and Salim 1989) a), increasing rent-seeking activities among the society b), the suppressing of private entrepreneurs initiative to undertake risk and c), politicising of economic and business decision-making process and the commercialisation of the political and governing process. Politicising of economic decision and rent seeking lead to bribery and corruption. Corruption is detrimental to achieving low cost production as the money paid involving corruption is built into the cost of production.

The phenomena described above has led to an increase in bribery and corruption cases. Between 1981 and 1987 there were 47,000 allegations of corruption received by the ACA. Three thousands investigations were conducted where 1,500 were convicted. The majority of those convicted were government servants. The seriousness of corruptions is reflected by the statistic Table 3.4.

Mahmet (1990, p.160) noted that the NEP has institutionalised a post-colonial upper class living off quasi-rents, speculation and corruption.

"These quasi-rents are derived as unearned bonuses for multiple company directorship, "consultation fee" and numerous kinds of personal gains through influence-peddling by privileged persons with access to confidential information about government contracts and spending plans."

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36 Murphy, Shleifer and Vishny (1993) describes rent-seeking as redistributive activity between private parties that takes up resources which is costly to growth. In the context of the discussion here, the redistribution involve in the rent-seeking activity from the private sector to the politicians or the bureaucrats. It takes the form of lobbying or corruption.


38 That is a monthly average of 21 convictions.
Table 3.4: Arrests and convictions of civil servants by group Members of the public and politicians from 1984 to February 1987

<table>
<thead>
<tr>
<th></th>
<th>1984</th>
<th>1985</th>
<th>1986</th>
<th>1987 (Feb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil servants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td>36</td>
<td>13</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>Group B</td>
<td>24</td>
<td>20</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Group C</td>
<td>66</td>
<td>52</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>Group D</td>
<td>81</td>
<td>97</td>
<td>94</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>207</td>
<td>182</td>
<td>174</td>
<td>28</td>
</tr>
<tr>
<td>Public (including politicians)</td>
<td>91</td>
<td>79</td>
<td>96</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil servants</td>
<td>64</td>
<td>63</td>
<td>62</td>
<td>10</td>
</tr>
<tr>
<td>General public</td>
<td>43</td>
<td>44</td>
<td>39</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>107</td>
<td>107</td>
<td>101</td>
<td>19</td>
</tr>
</tbody>
</table>


A former Director of ACA revealed that from 1967 to 1972 it was estimated that less than 0.1 percent of the civil service was corrupt. This figure decline to 0.04 percent in 1994. Although the trend is declining, however in absolute terms it is increasingly alarming. In real figures the number of people involved in corruption has increased from 7,000 to 36,000 in 1994.

The reason as to why politicians struggle for power could

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37 Malaysian Business, May 16 1987. It is not revealed how the estimates were reached.

38 Revealed by the Parliamentary Secretary to the Prime Ministers Department during Parliamentary session. New Straits Times, 26.10. 1994.
be summed up by a politician\footnote{Mahathir Mohamad (1970), the present Malaysian Prime Minister.}:  

"Merdeka brought power and wealth to the new Malay elite....Politics was found to be the panacea. It provided the short cut to everything...."

The NEP provided opportunity for accumulation of wealth through political power and patronage system. The money involve to run a party election could be exorbitant.\footnote{Money politics was so widespread in UMNO, a major ruling party in the Cabinet, that it warrant an extraordinary party convention in 1993 to curb money politics among its members.} Some claimed that a minor posts at branch level could cost a candidate a few thousand ringgit while the key positions could cost a few million ringgit.\footnote{The Star, 15.08.1993.} Charges of vote buying, sponsored overseas trips, use of government machinery and the issue of pink forms\footnote{Shares control by the Ministry of Finance and Ministry of Trade for allocation to the Bumiputra investors during listings of firms on the Kuala Lumpur Stock Exchange.} for shares were not uncommon in the run up to UMNO party election.\footnote{The Star, 15.08.1993.} The issue of pink forms for shares was confirmed by an ex-Minister saying "There is an unhealthy pink form culture" which is spreading very fast in UMNO...."\footnote{Ex Minister of Federal Territory. The Star, 15.08.1993.}

The extent of the use of political power to buy votes by politicians to gain popularity could be demonstrated by the Prime Minister statement who in 1994 said,

"There were lot of debts....he even promise to give Selangor UMNO RM 3,000 million and a licence to the state Government to operate a bank before and UMNO
election. Why was he doing that?"\textsuperscript{48}

The seriousness of the corruption in the political system is highlighted in 1993 when the Deputy Prime Minister in the run up of the UMNO party general election claimed that there were politicians in the UMNO who were involved in corrupt practices.\textsuperscript{49} The same concern was echoed by his predecessor when in it was reported in 1986 that the Deputy Prime Minister wanted to retire because he was tired of "money politics" and the abuse of power among politicians.\textsuperscript{50}

Conflicting objectives of politicians

The Cabinet wants Government agencies to give priority to national interest in planning and making decisions. The Government cautioned that priority should be given to national interest even though the move would affect the performances of agencies and corporation in the short term.\textsuperscript{51} However, the Government had cautioned Statutory bodies not to use social responsibility as an excuse for being extravagant, wasteful, and inefficient in running their organisations.\textsuperscript{52}

When Perwaja was not performing well financially the General Manager argued that it is common for Governments to heavily subsidise steel-making and pointed that it would be

\textsuperscript{48} New Straits Times, 07.11.1994. The Prime Minister was referring to Tengku Razali Hanzah the ex Finance Minister when the later was commenting on money politics in the UMNO party of which he was once among one of the three Vice President for a couple of terms. The alleged promise was made when Tengku Razali was contending for the seat of Deputy President of UMNO which in the past came along with the Deputy Prime Minister of Malaysia. Tengku Razali, however lost the election.

\textsuperscript{49} Utusan Malaysia, 08.09.1993.

\textsuperscript{50} Far Eastern Economic Review, 13 March 1986.


\textsuperscript{52} Finance Minister. New Straits Times, 06.10.1993.
This is unfair to compare Perwaja to any private firms. This is because profitability is not the single most important criteria for the company as it also has the task of spearheading the country's industrialisation programme. The Government showed its displeasure over the excuses by NFPEs management for their poor performance by replacing some top management of some public companies. The Finance Minister said that,

"A good management team is able to adapt the company to changes in the economy and look for alternatives, and not make excuses one after another...If you fail, you must have the courage to resign. If you don't you may be sacked." 

The special committee set up to look into the overall performance of the SEDECs concluded that:

"WE cannot give the excuse that the poor profits of some SEDECs is largely due to the need to meet a certain degree of social obligations....There are many SEDECs which enjoy good profits, notably in Johor and Sarawak".

Monitoring problems

The problems of monitoring are reflected in the failure of the monitoring agencies to check the expansion of the organisation and subsidiaries to undertake investment activities. The findings of a special committee which looks into the overall performance of SEDECs was "Some SEDECs just get carried away and move into all sort of areas....".

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54 Included in this action was the General Manager of Perwaja, Deputy Chairman of Hicom and Protons executive director. Far Eastern Economic Review, September 1, 1988.
57 Statement by Deputy Minister of Public Enterprise who was the head of the Committee. New Straits Times, 13.08.1994.
This is not a new thing. In 1985, the Minister of Public Enterprises suggested that SEDCs to concentrate on activities in selected areas they are best suited for.\textsuperscript{58} The difficulty in monitoring government agencies was highlighted as early as in 1974 when the Deputy Prime Minister says,

"Some SEDCs have unconsciously gone into conflict with their objectives and their projects have taken away opportunities from the Bumiputras. Some are more ambitious. They want to build their own empires and fortunes and seem to forget teamwork."\textsuperscript{59} (Gale, 1985, p 183)

The Government has acknowledged that part of the problem of poor performance by the public enterprise lies in the failure to monitor their progress. The Finance Minister says:

"We just provided the money and didn’t care what happened afterwards. So year in year out, these companies posted losses, yet they paid themselves bonuses and increased their salaries yearly without fail. They expanded became big and powerful and nobody dared to touch them for fear of becoming unpopular".\textsuperscript{60}

Government effort to improve monitoring the problem still inhibits the public sector. In 1983, the Government set up a monitoring unit at the Land Ministry to monitor the performance of companies under Dara and Kejora.\textsuperscript{61} This includes the minimisation of red tape, open and fast

\textsuperscript{58} Malaysian Business, August 1, 1985.

\textsuperscript{59} The problem of public enterprises deviating from its original objectives due to weak monitoring still continues. For example it was revealed in 1994, Felda has been developing 11,000 ha of land without the involvement of the settlers. The Chief Minister of Johor claimed that the land was approved for the cultivation of eight schemes for oil palm cultivation by the Felda settlers. Instead Felda has developed the land for its own benefit.

\textsuperscript{60} Malaysian Business, August 1-15, 1990, p.18.

\textsuperscript{61} Dara and Kejora had 28 companies at that time.
decision making.®®The Minister believed that the bureaucracy was so steeped in that Ministry and there were some of the agencies which were not receptive to Federal Government control.®®

One of the factors which contributed to the massive losses suffered by the BMF due to financial scandal was the ineffectiveness of monitoring by the central Bank. The Committee pointed out that loans were given without security or documentation, without supervision from the Central Bank and with "inconceivable" disregard for Carrian's deteriorating capacity to make repayments.®® The report went on to say that, "....We are of the view that some who were directly involved in approving and disbursing the loans acted dishonestly and accepted bribes at the expense of BBMB®® and the public....".®®

Monitoring has been one of the major problems in managing public sector. Despite the launching of the National Project Monitoring system (Setia) in 1984 which is to detect, plan and monitor all government development programme the system was under-used.®® In 1985 the Finance Ministry set up the Central Information Collection Unit (CICU) to collect data and monitor public enterprises. However, it is not revealed how the Government is using this data and how the process of monitoring of all the

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63 He directed that those companies that have been in the red for up to 5 years and more must face closure unless they were profitable.

64 Far Eastern Economic Review, 131/12.

65 Bank Bumiputra Malaysia Berhad.


67 In 1993, the Chief Secretary to the Government expressed his concern the usage of the system was unsatisfactory. Setia which is launched in 1984 is an integrated project monitoring and detecting system which collects information particularly on financial data from all central government agencies to develop a complete information system. The information is to help various ministries in monitoring and planning their development projects. New Straits Times, 28.07.1993.
public enterprises could be successful given the huge size
of the public enterprises and the limited strength of the
department.\(^{68}\)

The problems of monitoring were reflected for example in
1992 when the Auditor General highlighted that there were
Government Agencies which failed to submit their financial
statements on time.\(^{69}\) In 1993, the Chief Secretary to the
Government expressed his dissatisfaction over the delay of
ministries in submitting their report and again cautioned
heads of department to monitoring their departments and
increase efficiency.\(^{70}\) Similar problems have been
highlighted by the Deputy Prime Minister who said that
hundreds of Government agencies, corporations and companies
failed to submit their annual report since 1990 resulting
difficulties in taking remedial actions.\(^{71}\) To overcome the
problem, some had suggested that the assessment of agencies
set up in the 60s and 70s be given to independent body on
a year to year basis\(^{72}\).

The Official Secrets Act and the Sedition Act limit the
power of the Auditor General to investigate or report upon
controversial matters. The Official Secrets Acts provide
power to Ministers and Chief Ministers to classify any
official document, information or material as "Top Secret",
"Confidential" or "Restricted". Similarly, the Sedition Act
are laws can restrict classified information from being
used other than for the reason directed by the Minister or

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\(^{68}\) One of the distinct feature of the CICU data is that it is highly
confidential. It could only be released with the written permission from the

\(^{69}\) New Straits Times, 05.03.1992.


\(^{71}\) New Straits Times, 01.08.1993.

\(^{72}\) As suggested by Engku Aziz former Vice Chancellor, University of Malaya
during the Third Bumiputra Congress in Kuala Lumpur. New Straits Times,
3.6 GOVERNMENT REMEDY

Less political intervention

The efforts by the Ministry of Public Enterprise to limit the involvement of the Chief Minister in the running of the SEDCs could be construed as step to disentangle business and politics in the system by the Government. In 1992 the Minister of public enterprises made a statement that the Chairmanship of the SEDCs would not go automatically to the Chief Ministers. This has met strong resistance from Chief Ministers where the Ministry later announced that "As the restructuring is a question of "fundamental" policy, the decision should ultimately be made by the Cabinet".73

In some cases the power of the Chief Minister has increased. The replacement of the State Secretary Incorporation Act with the Selangor Chief Minister (Incorporation) Enactment Bill 1994 can be seen in this light. The Bill transfers the powers pertaining to the administration of the State's finances and investment from the State Secretary to the Chief Minister.

In explaining the rationale of such move, the Chief Minister clarified that:

"The Menteri Besar is answerable to everything that goes on in the State especially when it involved huge sum of money and I want to make sure that every move

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73 It is regarded as "fundamental policy" because SEDCs come under the jurisdiction of the State. In terms of property right approach, the State (Chief Minister) has every right chose its Chairman as the residual claimant.

74 The Minister of Public Enterprise in 1992, had said that the SEDCs would not be automatically chaired by the Chief Minister under a restructuring exercise by the Ministry. New Straits Times, 31.07.1993.
Better accountability by politicians

In 1994, the Prime Minister directed that all Ministers, Assistant Ministers and government officers in the state of Sabah to declare their properties to him and all licences issued and business activities of the state to be audited. The rationale and motive for such a move is clearly demonstrated by his statement:

"We do not want events like those before to recur where those who are in government take it as an opportunity to become rich. Past governments, be they from Alliance, Barisan Nasional or the opposition all acted the same. They did not understand the concept of government too well. Many regarded it as an opportunity to become rich and neglect the people."

The issue of mixing politics, business and self interest is not a new development. Although restrictions are placed on Ministers, Deputy Ministers, Parliamentary and Political Secretaries from getting involve into business to avoid abuse of power, politicians at state level could still engaged in part-time business activities. However, one could argue that there is still a potential abuse of power by the State Assemblymen who participate in the financial decision making process of the state. In addition they are

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75 As reported in the press, the power given to the Menteri Besar under the Bill was to enter into contracts, acquire, purchase, take, hold and enjoy movable and immovable property. It also allows him to convey, assign, surrender and yield up, charge, mortgage, reassign, transfer or dispose of, or deal with, any movable or immovable property vested with the corporation which would be established under the Bill. The Menteri Besar will head a holding company for all the 72 State Government subsidiary companies and agencies, which would study all proposed projects and programmes submitted to the subsidiary companies and agencies and decide whether projects are viable. New Straits Times, 02.08.1994.

76 New Straits Times, 03.04.1994.

77 New Straits Times, 03.04.1994, p.1. He also claimed there were cases of government officers who became millionaires on retirement.

78 The Prime Minister said that the State Assemblymen can engage in business because do not get "handsome" pay. New Straits Times, 06.11.1994.
also involved in the running of the SEDCs and its subsidiaries through various capacity such as Chairmanship and Directorship appointees. The accountability of politicians is also not adequately addressed by the laws in cases of offenses committed by politicians. Section 2(1) of the Emergency (Essential Powers) Ordinance 1970 provides a maximum jail term of 14 years or a fine of MR20,000 or both. Federal and State Constitutions provide that anyone fined MR2,000 or imprisonment a year automatically losses his eligibility to hold both elected positions. In 1994, a Chief Minister was convicted of corruption charges with a fine of M$1,800 and continued to stay in office.

**Better accountability on performance**

The Government has changed its attitude towards accommodating substandard performance by public managers as reflected in the statement made by the Finance Minister,

"...We have to replace people who don't perform because it is public money that's being spent. But we find it difficult to sack people because of their service agreements. These people are highly paid.....Those who fail to perform should have the decency to resign. Once appointed they think they are God's gift. They stay and die or the companies die while they move on. That's the height of irresponsibility"

The special committee set up to look into the overall performance of the SEDCs concluded that:

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81 After the case, the Public Prosecutor was considering recommending to the Government to amend the law to provide for mandatory minimum sentences for corruption and related offenses. According to the spokesman, this is necessary for a review because some judges were reluctant to impose appropriate deterrent sentences. He said that the Attorney General's office considered the sentence imposed in this particular case as grossly inadequate and did not reflect the seriousness of the offence. New Straits Times 25.02.1994.
"We cannot give the excuse that the poor profits of some SEDCs is largely due to the need to meet a certain degree of social obligations... There are many SEDCs which enjoy good profits, notably in Johor and Sarawak".

The Cabinet Committee on Malpractice

The committee is headed by the Deputy Prime Minister was set up in 1988 with six Cabinet Ministers and two senior officers in the civil service. The Committee deals with issues affecting the abuse of procedure, financial management and public administration in government agencies. However, given the huge number of public enterprises one could not expect very much from the Committee.

Intensifying Anti Corruption Agency (ACA) campaign

The ACA has intensifying its activities to curb corruption. However, the opposition question the integrity, and effectiveness of ACA's in discharging its responsibilities since ACA is placed under the Prime Minister Department. The Government has rejected a call by the opposition party to place ACA under the jurisdiction of the Parliament to improve its effectiveness and image. The Opposition also claimed that the Government was not serious in its campaign against corruption and that the ACA was just the Barisan Nasional's tool, following the withdrawal of case against a politician from an opposition

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84 The Ministers consist of Minister of Works, Primary Industries, Human Resources, Ministers in the Prime Minister Department and the civil service represented by the Chief Secretary to the Government and the Director General of the Public Service Department. New Straits Times, 11.11.1994.

85 The word is used by the ACA could be regarded as an agent or a spy.

86 The opposition MP claimed that corruption is rampant in the country and that ACA was weak in handling corruption cases. New Straits Times, 26.10.1994.
party after he joined Barisan Nasional, the ruling party. The Government explained that the case was withdrawn because ACA failed to procure key witnesses and the original documents from Hong Kong. Later, the politician was made a Deputy Minister in the Prime Minister’s department.

Problems of corruption in the public sector is aggravated by the fact that Heads of Department are often unwilling to take disciplinary action. The ACA has warned Head of Departments to take disciplinary action against their staff who were found to have abused their power. Boards chaired by Department Heads were either very slow or reluctant to take disciplinary action. The Chief Secretary to the Government stated that Heads of Departments must take disciplinary action against their subordinates who were suspected of being involved in corrupt practices.

Sometimes the punishments were not commensurate with the offenses committed. Some judges were reluctant to impose appropriate sentences. Sometimes, the punishment for corruption decided by the court was deemed too soft by the public especially with the involvement of high ranking politicians. The Public Prosecutor was considering recommending to the Government to amend the law and to provide for mandatory minimum sentences for corruption and related offenses instead of court discretion.

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87 New Straits Times, 05.07.1994.
88 Parliamentary Secretary to the Prime Minister’s Department. New Straits Times, 05.07.1994.
90 As clarified by the Chief Secretary to the State in New Strait Times, 05.02.1994.
3.7 PRIVATISATION AND PUBLIC SECTOR REFORM

Privatisation

As discussed in Section 2.2, one of the objectives of the privatisation programme in Malaysia is to increase the efficiency and productivity of the public enterprises through the promotion of competition and entrepreneurship in the public sector. Privatisation, the transfer of ownership from the public sector to the private sector (Jackson and Price, 1994; Hanke, 1987; Ramanadham, 1989; Cook and Kirkpatrick, 1988; Gromley, 1991), is associated with the issue of ownership as advocated by the Property right theorists. Beesley and Littlechild (1983) define privatisation as the formation of a company under the U.K Companies Act and the subsequent sale of at least 50 percent of the shares to private shareholders. As pointed out by Beesley and Littlechild (1983), the underlying idea of privatisation is to improve industry performance by increasing the role of market forces through freeing entry to an industry, encouraging competition, and restructuring of nationalised industry (Chapter 7 and 8). There are three strands of policy by which these objectives could be achieved with; denationalisation - the sale of public sector assets to the private sector; deregulation - the opening of the market to private sector competition; and tendering - the contracting-out of public provision to private firms (Kay, Mayer and Thompson, 1986).

Privatisation and public sector reform will benefit the consumers in the form of lower prices of currently available goods and services, better quality of goods and services and an increase in rate of innovation. To improve industry performance and benefit consumers the whole set of measures above need to be implemented for each industry where privatisation is a key element.
Corporatisation

The means of transferring the ownership of a public enterprise to the private sector depends largely on the type of public enterprise involved. In cases where public enterprises are incorporated under the Companies Act, the transfer can be easily done by way of the sale of the shares to the new shareholders. However, the question of the mode of transfer to be adopted in the privatisation exercise becomes more complicated when the transfer is involving a public enterprise, such as a statutory body or a government department, which is not incorporated under the Companies Act. The transfer of the ownership of such enterprise cannot be effected by means of transfer of shares, as there are no shares to be transferred. Privatisation of such enterprises would normally have to be effected by way of corporatisation—converting them into a normal company under the Companies Act\(^2\). Corporatisation could be followed by privatisation with sale of its shares to a new shareholders from the private sector.

However, it should be noted that since corporatisation of public enterprises does not involve the transfer of ownership to the private sector, and seen in the light of the Theory of bureaucracy, Property rights theory and the X-inefficiency theory discussed in Section 3.2, a corporatised public enterprise would still exhibit the inefficiency characteristics of a public enterprise. As pointed out earlier, privatisation and competition are two essential criteria to be met to improve efficiency and performance of the public enterprises.

\(^2\) In the case of Malaysia, it is the Companies Act 1965.
Competition

Competition is the most important mechanism for increasing industry performance and efficiency, maximising consumer benefits and limiting monopoly power. Underlying the principle is that competition provides rivalry and freedom for firms to enter a market providing competitive threats from potential as well as existing competitors. As discussed in Section 3.2, these external pressures provide motivation for firms to adopt lowest cost production techniques to stay in business.

The role of competition in improving industry performance has been discussed by Stigler (1975) and Baumol et al (1982). Stigler (1975) argues that unregulated natural monopolies will not be harmful to consumers in the long run because competitors will enter the industry. Similarly, contestable market theory (Baumol et al. 1982) suggests that potential competition could act as a threat for an incumbent firm to be efficient. If the incumbent is not operating with maximum efficiency or if it is abusing its monopoly power by overcharging customers new entrants will be attracted to come into the industry. New entrants which will be more efficient and charge a lower price will then take the incumbent business away. The main problems with Stigler’s view is that it relies on the efficiency of market mechanisms in solving almost all problems. As we have discussed in Chapter 3, the basic problem of achieving pareto optimal efficiency is asymmetric information between all the relevant parties - the producers, the consumers and the policy makers. In a decreasing industry i.e natural monopoly, the largest firm has the greater advantage over its competitors in terms of information and costs. The incumbent firm can practice predatory pricing to drive out a competitor or an entrant, or set low prices to mislead entrants about its efficiency where the predator has access to either internal or external funds to finance its
activities. By setting prices below the competitors costs, the dominant firm stands to win its competitors’ customers and push them out of industry. On the other hand contestable market theory cannot be taken seriously in the case of natural monopoly or an industry with very high sunk costs. Vickers and Yarrow (1988) define a contestable market as one in which existing firms are vulnerable to hit-and-run entry. It is assumed that the cost functions are identical for all firms – actual and potential because they have access to the same methods of production. Vickers and Yarrow (1988) point out that it is perfectly possible to have a contestable market with high fixed costs as long as there are no sunk costs. They argue that a natural monopoly market can in principle be contestable and vulnerable to hit-and-run entry. If equilibrium exists in a contestable market then there is no inefficiency in production and output is produced at minimum cost. However, they further argue that equilibrium need not exist in the contestable market. Stiglitz (1985) argues that the assumption of zero sunk cost in the contestable market theory is nonrobust and unrealistic. In capital intensive industries such as the utilities sunk costs constitutes a high proportion of total costs.

Therefore, in order for privatisation to achieve its efficiency objectives and benefit the consumers, two central issues to be addressed. One is how to introduce effective competition into the utility industries and two, how privatised utilities should be regulated so as to protect customers without at the same time creating offsetting inefficiencies and distortions. Some of the policy measures to introduce competition in the nationalised industries include the liberalisation and deregulation of the industry whereby market forces replace

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3 The larger the firm the greater is its advantage over its competitors. Even if the firms can survive the competition in the market consumers will be worst off because cost per unit for many firms would be higher than for one.
government regulation. Another policy measure for greater efficiency is through the de-integration of the industry.

De-integration.

In certain exceptional cases, monopoly power may be desirable in industries which exhibits natural monopoly characteristics (Price, 1994). Consumers could benefit from natural monopoly industries where reduced costs of producing products or a variety of products are achieved by economies of scale and economies of scope. In other words monopoly, such as in the transmission activity in the electricity industry, may be desirable so long as it produces output more cheaply than duplicating the network.

Most utilities exhibit natural monopoly characteristics where the provision of services is through a fixed network. For these activities competition is neither feasible or desirable. However, competitive supply could coexist with such monopoly. The co-existence between potentially competitive activities and monopolised services is reflected in the electricity industry where national transmission and local distribution system exhibits natural monopoly characteristics while the electricity generation is a potentially competitive activities. Given this form of relationship, the restructuring of the industry through vertical and horizontal de-integration of the activities, provides a scope for improving industry performance and efficiency. In the case of the generation activity in the electricity sector, its liberalisation can be carried out firstly, by vertical separation between generation and transmission activities and secondly, by the horizontal breakup of the utility with the liberalisation of the generating activity.

However there are two arguments against the adoption of vertical separation between generation and transmission
activities. One is that separation raises problem of externalities. These arise because there is a strong interdependence between electricity generation and transmission activities. Thus there is a need for a very close coordination between generation and transmission in order to have a balance between supply and demand maintained throughout the system, the failure of which will result in power outages (Armstrong, Cowan and Vickers, 1994). Secondly, the interdependency between the two has strong implications for each branch’s revenue and investment plan (Bishop, Kay and Mayer, 1994). An integrated generation and transmission company would operate those of its power stations that met demand at minimum cost at each point in time taking into account transmission constraints and losses. In the long run the vertically integrated firm ensures that generation and transmission investment is planned to give optimal mix and capacity to meet potential demand with security of supply. Therefore, in the event of disintegration there is potentially a significant economic externality created as a consequence of the separation of the two. It is then argued that the separation of generation and distribution rests on the view that there must be some source of substantial offsetting benefits to be reaped from the separation. However, since the market power in the electricity supply system lies in transmission and distribution, the reduction in benefit by separation will be relatively minimal.

The answer to the market power is to regulate transmission so that it does not use its monopoly power to overcharge customers. In an unregulated electricity supply system the vertical separation would be highly damaging - for two reasons. One the monopolistic transmission entity would have as much market power as an integrated utility and two, the inefficiencies from loss of coordination could be significant. Therefore, there is a strong argument in
favour of regulating both the generation and the transmission activities.

**Independent regulation**

Regulation is necessary in the presence of a market power (monopoly power) where a profit maximising monopolist has the tendency to raise price above its most efficient level and restricts output. This relates to another central issue, as discussed above, on how the privatised utilities should be regulated so as to protect the consumers without at the same time creating offsetting inefficiencies and distortion. The problems of market power exist when a market suffers from ineffective competition thus creating a monopoly market condition. Intervention in the form of regulation is therefore required to ensure that the pursuit of profit does not conflict with social welfare and efficiency (Train, 1991) and this provide rationale for various kinds of economic regulations. However, Littlechild (1983) argues that competitive markets by themselves are the best regulators. They serve the interest of consumers through the operation of market forces. He argues that competition is indisputably the most effective means – perhaps ultimately the only effective means – of protecting consumers against monopoly power. Regulation is therefore essentially a means of preventing the worst excesses of monopoly; it is not a substitute for competition. This view places consumer interest as a primary concern and the reliance on competition to achieve efficiency which will benefit the consumers. To achieve the desired efficiency results appropriate regulation is necessary. Appropriate regulation means maximising the benefits from removing market failures in relation to the costs of government intervention (Jones, 1993). The costs of regulation include the opportunity cost of the private and public resources devoted to the regulatory process. Vickers and Yarrow point out that there is a need for regulatory policy to influence
the behaviour of the regulated firms by establishing an appropriate incentive system to guide or constrain economic decisions.

However, the effectiveness of the regulation and the regulators is a function of the freedom or the autonomy in which they can exercise their power to regulate the industry. One of the problems is the capture of the regulator by the industry and the politicians. The probability of the industry not providing the true information as requested by the regulator, to protect their own interest, could be detrimental for the regulator to regulate effectively. The second problem is, regulators could have their own agendas which include career advancement, self-aggrandizement, political support (Train, 1991). The capture theory suggests that over time regulated firms gain control over the process by which they are regulated (Posner, 1974). Stigler (1975) on the same issue comments that "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit" (p.115). Willig (1993) argues that government proved to be incapable of abiding by its own rules where political reality is inevitably injected into regulation. He pointed out that regulators are often political actors themselves or serve at the pleasure of those in political power. He further argues that regulators of private enterprises are less able to act contrary to public interest than high-ranking officials in public enterprises. When the individual agenda or political agendas of public officials are important the regulated private firms may be better insulated from these pressures. Thus an independent regulator is a prerequisite for effective implementation of competition policy and regulating the behaviour of the firms in the industry.
Public sector industry efficiency model

The Theory of Bureaucracy, Property Right Theory and the X-Efficiency Theory all attempt to explain why inefficiency exists in the public sector. Based on the above theories a model could be developed as to how to improve the efficiency of the public enterprises, which is associated with public sector reform: (1) privatisation of the public enterprises which will address the issue of ownership, incentive and principle agent problems (Property right theory) and the maximising behaviour of the politicians and the bureaucrats (Theory of Bureaucracy); (2) the introduction of competition to eliminate the non maximising behaviour of the public enterprises due to (a) lack of competitive pressure (b), the absence of take over threat and market discipline in the public sector (X-Inefficiency Theory); (3) less government (ministerial) and political intervention in the running of the public enterprises which will minimise the coalition between the politicians and the public managers (Theory of Bureaucracy); (4) An independent regulator to implement positive regulation in the industry.

3.8 CONCLUSIONS

This chapter discusses the theoretical perspective of public versus private sector performance. The theory of bureaucracy, Property rights theory and the X-inefficiency theory attempt to explain why public sector is not as efficient as the private sector. Although these theories are built on different approaches, they arrived at the same conclusion - that inefficiency exists in public enterprises. From these theories it could be concluded that the inefficiency of the public enterprises is directly or indirectly attributable to ownership. Based on these theories it is possible to postulate the characteristics and behaviour of public enterprises (managers): Firstly, direct government and political intervention in the running
of the public enterprise is an on going phenomena. Politicians as self maximising agents, given the opportunity, will use public enterprises as a tool to achieve political and personal aims. Secondly, bureaucrats will try to maximise their utility functions which could lead to decisions in consistent with optimal management practices. Thus monitoring of public enterprises would be a difficult task given the asymmetric information between the politicians, bureaucrats and the public. Thirdly, public enterprises will not strive for maximum possible efficiency and therefore has to depend on government budget. The lack of financial incentives and the lack of stockholders, and the immunity from competition and from takeover stimulate inefficiency in public enterprises.

Empirical evidence from studies done internationally have not provided any conclusive evidence of superiority of one over the other. However, the Malaysian experience shows that the behaviour of the public enterprises was consistent with those described by the above theories resulting inefficiencies in the running of the public enterprises. The study shows that public enterprises in Malaysia were less efficient than the private enterprises in terms of cost efficiency and profitability.

As pointed out, there were evidence which is detrimental to the efficient running of the public enterprises in Malaysia; public enterprises being used as a political tool to achieve political aims by politicians; political patronism which led to financial and investment decision inconsistent with financial criteria; the existence of rent seeking activities and corruption among politicians and bureaucrats; the maximising of bureaucrat’s utility function through the expansion of departmental budgets; and the increase dependency of public enterprises on government budget to service.
Based on the above constraints and limitations faced by the public enterprises, one can therefore argue that in order to improve their performance, there is a need to undertake three remedial actions: (a) to adopt privatisation policy, (b) introducing competition in the marketplace, and (c) less government and political interference in the industry and (d) independent regulator to regulate the industry. These criteria will be used to assess the achievement of the electricity privatisation programme and the electricity sector reform which will be examined in Chapter Seven and Chapter Eight.

Chapter Four provides an overview of the electricity industry in Malaysia and the energy policy which shapes the future development of the electricity sector in the future. Attempt is made in the remaining chapters to evaluate the efficiency of the National Electricity Board (NEB) and examine whether it inhibits the inefficiency characteristics of the public character. We will also look at the issue whether privatisation could improve existing performance and efficiency of the electricity sector and examine its feasibility and practical problems in implementing the policy.
4.2 The National Electricity Board 119
4.3 Malaysia’s Energy Policy 121
4.4 Electricity Generation 125
4.5 Transmission and Distribution 130
4.6 Rural Electrification Programme 132
4.7 Conclusions 133
The object of this chapter is twofold; firstly to look at the energy policy in Malaysia and how it affects the electricity sector and secondly to give an overview of the electricity sector until its corporatisation in 1990. This Chapter consists of 7 Sections. Section 2 looks at the functions of the National Electricity Board. Section 3 explains the Malaysian Energy Policy in terms of the institutional set up, policy objectives and its implications on the electricity sector. Section 4 focuses on the development of the electricity sector in terms of generation activity and Section 5 focusses on the transmission and distribution systems in line with the growth of the electricity demand. Sector 6 looks at the social objectives of the National Electricity in providing electricity to the rural areas in the rural electrification programme. Section 7 summarises the discussion in the previous section.

4.2 THE NATIONAL ELECTRICITY BOARD (NEB)

Electricity was introduced in Malaysia in 1894 in a tin mine. In 1895 the Railways Department was installed with generator.1 The first power station in Peninsular Malaysia was operated in 1900 by the Sempam Hydro Power Station in the state of Pahang by a private company2 while the residents of Kuala Lumpur received their electricity supply in 1905.3

Initially electricity development was placed under the Electricity Department, a section of the Public Works Department. It became a separate department on 1.1.1927

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1 TNB (1992)
2 Raub-Australian Gold Mining Co Ltd
3 Salleh M.Z (1990)
with the formation of Federal Electricity Department with the responsibility of controlling electricity supply in the Federated Malay States. However, due to the rapid demand for electricity there was a need for a central body to build an integrated electricity scheme. The Central Electricity Board (CEB), was established on 1 September 1949 under the Electricity Ordinance 1949 to replace the Electricity Development with the responsibility of generating and distributing electricity to the public. In June 1965 CEB was renamed National Electricity Board of the States of Malaya (NEB). By 1982 NEB became the sole supplier of generation, transmission and distribution of electricity in Peninsular Malaysia when it took over private electricity companies.

The NEB was established with the following functions:

1) To promote the generation of electrical energy for the economic development of Malaya (later known as Malaysia);
2) To secure the supply of such energy at a reasonable price;
3) To advise the Minister responsible for electricity on all matters relating to its generation and use;
4) To manage and operate electrical installations transferred to, acquired, or established by it;
5) To construct and operate supply lines and stations to generate and sell energy; and

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4 A Federation of states under British rule before Malaya became independent in 1957.
5 The 40MW Connaught Bridge Power Station was the first power station commissioned by CEB.
6 Some of the private companies taken over by NEB was the Perak River Hydro Electric Power Co Ltd and Kinta Electric Distribution Co Ltd. State-owned entities taken over by NEB includes the Electricity Supply Department of Penang Municipal Council.
7 National Electricity Board of the States of Malaya, p 10.
6) To acquire electrical plant and property.

4.3 MALAYSIA’S ENERGY POLICY

Institutions

Prior to the formation of the Cabinet Committee (CCE) on Energy in 1975 there was no department or agency dealing solely with energy matters. The energy decision was widely dispersed in the Government. Decisions pertaining to energy issues, policies and guidelines are now made by the Committee chairs by the Prime Minister. The Committee (see Figure 4.1) is supported by the Implementation and Coordination Committee (ICCE) on Energy comprising of the heads of various departments and institutions. The ICCE is entrusted with the evaluation and recommendations of energy plans besides coordinating and monitoring the implementation of plans and projects approved by the CCE.

Three important units come directly under the purview of the Prime Minister’s Department - the Economic Planning Unit (EPU), the Petroleum Development Unit (PDU), and the Nuclear Energy Unit (NEU). The EPU is responsible for the coordination of all national economic planning, the PDU for monitoring the functions and activities of Petronas and other agencies in the petroleum and gas industry and the NEU monitoring the functions and activities of the nuclear sub-sector. At the Ministry level, energy policies are under the portfolio of five ministries - the Ministry of Energy, Telecommunications and Posts, Ministry of Trade and Industry, Ministry of Science Technology and Environment, Ministry of Primary Industry and the Ministry of National and Rural Development. Under the structure all the Electricity Boards come under the jurisdiction of the Ministry of Energy, Telecommunications and Posts.

* In Figure 1, the National Electricity Board (NEB) is designated as LLN under the heading of "Electricity Board".
Figure 4.1: Structure of Malaysia Energy Planning and Development

Prime Minister

Cabinet Committee on Energy

Prime Minister Department

Ministry
Economic Planning Unit
Petroleum Development Unit
Nuclear Energy Unit

Petronas

National & Rural Development

Energy Telecommunications and Posts
Trade and Industry
Science Technology & Environment
Primary Industries

Electricity Boards (LLN, SBB, SESCO)

MIDA
SIRIM

Geological Survey Dept
Dept of Mines
Forestry Dept
Institute of Forest Research
PORIM

LLN - National Electricity Board
MIDA - Malaysian Industrial Development Authority
PORIM - Palm Oil Research Institute of Malaysia

SBB - Sabah Electricity Board
SESCO - Sarawak Electricity Supply Corporation
SIRIM - Standards and Industrial Institute of Malaysia

Policy Objectives

The objective of the Malaysia's energy supply was to ensure both reliability and security of supply. The Government defines reliability of supply as the continuity and absence of supply disruptions or shortages whereas security of supplies implies self-reliance, independence and accessibility to and control over supplies. To achieve this the Government adopted a strategy called the "Four fuel energy strategies" based on oil, hydro, gas and coal, with the aim to reduce dependence on a single fuel and establish an active program to developing indigenous resources where available. The availability of adequate energy is considered as one of the most important factors required to achieve the aspirations of Vision 2020.\(^9\)

The goals of the energy policy are:\(^11\)

1) To achieve energy self-sufficiency by maximising development and utilisation of the indigenous energy resources
2) To reduce over dependence on oil
3) To increase diversity in the energy supply system
4) To ensure that energy is used efficiently through the reduction of waste and by using appropriate energy types.
5) To ensure that energy resource development and


\(^10\) Vision 2020 is the government mission towards achieving the status of a developed country by the year 2020. The interpretation of a fully developed country in the Malaysian context as defined by the Government encompasses various complex dimensions: economically, politically, socially, spiritually, psychologically and culturally. In terms of economic the Government has set a target of doubling the GDP of Malaysia every ten years between 1990 and 2020. If this is achieved, the Government argue that the GDP of Malaysia would be eight times larger by the year 2020 than in 1990. Based on the GDP of M$115 billion in 1990, the Malaysian GDP should therefore M$920 billion in real term in 2020. Detail of the Vision 2020 is elaborated in a paper presented by the Prime Minister at the inaugural meeting of the Malaysian Business Council on 28.02.1991.

\(^11\) The energy policy instruments consists of the National Petroleum Policy, National Depletion Policy and Energy Conservation Policy.
utilisation in the country is accompanied with as minimal ill effect as possible on the environment.

The implementation of the "four fuel energy strategies" has various implications on the operations of NEB and the electricity sector. Firstly, with the use of more natural gas, which Malaysia has abundance supply, more CCGT technology will be used. Use of CCGT technology will reduce production costs of electricity achieved through better efficiency\textsuperscript{12} and cheaper cost of natural gas. If saving in costs is passed on to the consumers public would be able to enjoy lower electricity rates. Secondly, the usage of more natural gas is a threat to the electricity market for NEB because natural gas is a substitute product for electricity. Natural gas and gas products are expected to replace substantially petroleum products in power, commercial, industrial and transport sectors. By 1995, gas is expected to account for about 39 per cent of primary commercial energy supply compared with 27 per cent in 1990.\textsuperscript{13} Centrally piped LPG is now being incorporated into new apartments construction allowing for future conversion to natural gas. Thirdly, the prospect of using hydro-power for generating electricity is tremendous. Malaysia has abundant hydro-power resources assessed at some 29,000 MW, with potential energy of 123,000 million kWh per annum.\textsuperscript{14} It is anticipated that Malaysia will have to invest more

\begin{itemize}
\item \textsuperscript{12} Gas turbine technology has a higher thermal efficiency (i.e. ratio of energy available for useful work to input energy) than the thermal plant (steam) technology. According to Cassidy and Grossman (1990, p 45/46) combined-cycle operation yields thermal efficiencies approaching 50 percent as compared to 35 percent that of thermal plant (steam). However, plant efficiencies may be increased up to 40 percent through energy conservation and technical efficiency improvements, such as regeneration, reheating, and preheating.
\item \textsuperscript{13} The Peninsular Gas Utilisation II (PGU II) is a crucial instrument in achieving this target. The PGU II gas transmission network provides gas to meet gas requirements of electric power plants while the gas reticulation network will serve the industrial, commercial and residential sectors. The PGU project, completed in 1991, comprises of 730 km of natural gas pipeline cost PETRONAS M$2.4 billion. A preliminary study has also been made on the construction of PGU III which will supply natural gas to the northern peninsular states and Southern Thailand.
\item \textsuperscript{14} Fifth Malaysia Plan, 1990
\end{itemize}
than $100 billion to generate the 25,000 megawatts of electricity required by year 2020.\textsuperscript{15} Although hydro is a cheaper source of energy option, the electricity sector is faced with several problems pertaining to its usage in Malaysia. One, the hydropower potential exists in Sarawak and is unevenly distributed with bulk of the potential hydropower supply far away from the major load centres. This will require inter-regional transmission facilities which is very costly. Second, while large-scale hydroelectric power development promises economies of scale, its development with long gestation period faces critical issues of timing, finance and environmental impact. Since development of such resources is characterised by high capital and major load requirements, it can only be justified with considerable electricity demand which at the moment exists only in Peninsular Malaysia. The Bakun electricity project in Sarawak, which was being shelved in the mid 1980’s due to economic recession in the Malaysian economy and worldwide, is now being constructed. The project involves the sending of electricity to Peninsular Malaysia through HVDC transmission and is estimated to cost $8.2 billion in 1983 prices and M$17 billion current prices (1995).\textsuperscript{16}

### 4.4 Electricity Generation

Most of Malaysia’s electricity is generated by public utilities namely the National Electricity Board (NEB) in Peninsular Malaysia, the Sarawak Electricity Supply Corporation (SESCO) in Sarawak, and the Sabah Electricity Board (SEB). Among other things, these authorities are entrusted with a task of promoting the development of electricity generation with the view of facilitating the

\textsuperscript{15} Statement made by the Deputy Minister of Energy in New Straits Times, 5.8.1992.

\textsuperscript{16} In terms of energy the Bakun hydro project has the potential to displace about 85,000 barrels of oil per day representing a savings of M$33 million a year at 1983 prices after taking into account the amortisation of the project.
economic development of the country. However, some private companies were licensed to generate and sell electricity at the local level especially in those areas not covered by the three public electric supply authorities.

Approximately 97 percent of total electricity supply in Peninsular Malaysia comes from TNB. The balance is supplied by private generators in certain isolated areas, factories and estates with their own facilities. There are five types of electricity generation stations operated by NEB namely thermal, hydro, turbine gas, combined cycle and diesel. The turbine gas and combine-cycle stations were introduced in 1979 and 1985 respectively. The thermal stations burn fuel oil, coal and gas, the open cycle gas turbine operate on gas, dieseline and medium fuel oil and combine cycle plant uses natural gas. Constraints on government public expenditure.

Table 4.1 shows the installed generating capacity of NEB and the types of from 1970 to 1990.

Table 4.1  NEB : Installed Generating Capacity (in Megawatts)

<table>
<thead>
<tr>
<th>Year</th>
<th>Steam Turbines</th>
<th>Hydro</th>
<th>Diesel</th>
<th>Gas Turbines</th>
<th>Combined Cycles</th>
<th>Coal</th>
<th>Rural 12-hour supply</th>
<th>Total</th>
<th>Growth Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>360</td>
<td>265</td>
<td>38</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>663</td>
<td>100</td>
</tr>
<tr>
<td>1975</td>
<td>540</td>
<td>265</td>
<td>51</td>
<td>260</td>
<td>600</td>
<td>-</td>
<td>18</td>
<td>855</td>
<td>1.29</td>
</tr>
<tr>
<td>1980</td>
<td>1218</td>
<td>613</td>
<td>118</td>
<td>180</td>
<td>6</td>
<td>6</td>
<td>2135</td>
<td>322</td>
<td>322</td>
</tr>
<tr>
<td>1985</td>
<td>1570</td>
<td>1147</td>
<td>284</td>
<td>260</td>
<td>600</td>
<td>-</td>
<td>18</td>
<td>3879</td>
<td>585</td>
</tr>
<tr>
<td>1986</td>
<td>2090</td>
<td>1250</td>
<td>190</td>
<td>280</td>
<td>900</td>
<td>-</td>
<td>18</td>
<td>4721</td>
<td>712</td>
</tr>
<tr>
<td>1987</td>
<td>1930</td>
<td>1250</td>
<td>169</td>
<td>280</td>
<td>900</td>
<td>300</td>
<td>11</td>
<td>4540</td>
<td>685</td>
</tr>
<tr>
<td>1988</td>
<td>1930</td>
<td>1250</td>
<td>169</td>
<td>280</td>
<td>900</td>
<td>300</td>
<td>11</td>
<td>4840</td>
<td>730</td>
</tr>
<tr>
<td>1989</td>
<td>1960</td>
<td>1990</td>
<td>169</td>
<td>280</td>
<td>900</td>
<td>300</td>
<td>11</td>
<td>4870</td>
<td>734</td>
</tr>
<tr>
<td>1990</td>
<td>1960</td>
<td>1250</td>
<td>169</td>
<td>280</td>
<td>900</td>
<td>300</td>
<td>11</td>
<td>4870</td>
<td>734</td>
</tr>
</tbody>
</table>


Electricity generation in Malaysia showed a rapid growth
during the Second Malaysia Plan (1975-1979) and the Third Malaysia Plan (1980-1984) paralleling the expansion in the Malaysian economy. The Second Malaysia Plan recorded the highest average annual growth in electricity generation at 30 per cent followed by 15 percent during the Third Malaysia Plan. The underlying factors which contributed to the high growth of electricity generation during the Second and Third Malaysia Plan were (a), the high growth in the demand of the industrial sector especially in the manufacturing outputs as the government implemented its Industrial Development Master Plan and (b) as pointed out in Chapter two there was high growth rates in the Malaysian economy due to expansionary budget policies of the Government which increase demand for electricity among the public. However the average annual growth in electricity generation started to drop to 6 percent from 1986 to 1988. As can be seen from the Table 4.1 there was virtually no capacity expansion in the electricity sector from 1988 to 1990. There were various explanation for this. Firstly, there was a delay in project completion of various hydro electricity projects undertaken by the NEB (Chapter 6). Secondly, the Government and political intervention on investment and financial decisions such as the award of tenders to the contractors had delayed decision making process and project implementation (Chapter 7).
Electricity Demand (Consumption)

Table 4.2 shows the demand pattern of electricity by consumer type from 1975 to 1990.

Table 4.2  NEB: Consumption pattern by consumer type : 1975-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Industrial</th>
<th>Commercial</th>
<th>Domestic</th>
<th>Mining</th>
<th>Public Lighting</th>
<th>Total</th>
<th>Growth Index (1975=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>2,640.60</td>
<td>1,212.80</td>
<td>580.00</td>
<td>218.50</td>
<td>-</td>
<td>4,651.90</td>
<td>100.0</td>
</tr>
<tr>
<td>1976</td>
<td>3,065.30</td>
<td>1,413.50</td>
<td>702.40</td>
<td>210.20</td>
<td>-</td>
<td>5,391.40</td>
<td>115.9</td>
</tr>
<tr>
<td>1977</td>
<td>2,991.80</td>
<td>1,657.40</td>
<td>847.60</td>
<td>294.40</td>
<td>-</td>
<td>5,791.20</td>
<td>124.5</td>
</tr>
<tr>
<td>1978</td>
<td>3,221.10</td>
<td>1,979.10</td>
<td>986.70</td>
<td>284.80</td>
<td>59.10</td>
<td>6,530.80</td>
<td>140.4</td>
</tr>
<tr>
<td>1979</td>
<td>3,606.80</td>
<td>2,151.30</td>
<td>1,147.90</td>
<td>285.26</td>
<td>65.10</td>
<td>7,256.36</td>
<td>156.0</td>
</tr>
<tr>
<td>1980</td>
<td>3,814.50</td>
<td>2,333.10</td>
<td>1,301.60</td>
<td>212.39</td>
<td>68.80</td>
<td>7,730.39</td>
<td>166.2</td>
</tr>
<tr>
<td>1981</td>
<td>4,033.09</td>
<td>2,517.64</td>
<td>1,457.01</td>
<td>183.23</td>
<td>74.95</td>
<td>8,265.92</td>
<td>177.7</td>
</tr>
<tr>
<td>1982</td>
<td>3,472.25</td>
<td>2,819.86</td>
<td>1,721.57</td>
<td>420.16</td>
<td>82.16</td>
<td>8,516.00</td>
<td>183.1</td>
</tr>
<tr>
<td>1983</td>
<td>3,797.24</td>
<td>3,094.91</td>
<td>1,897.24</td>
<td>329.15</td>
<td>90.45</td>
<td>9,208.99</td>
<td>198.0</td>
</tr>
<tr>
<td>1984</td>
<td>4,419.33</td>
<td>3,590.72</td>
<td>2,249.17</td>
<td>343.57</td>
<td>100.91</td>
<td>10,703.70</td>
<td>230.1</td>
</tr>
<tr>
<td>1985</td>
<td>4,608.09</td>
<td>3,890.97</td>
<td>2,480.35</td>
<td>357.28</td>
<td>112.27</td>
<td>11,448.96</td>
<td>246.1</td>
</tr>
<tr>
<td>1986</td>
<td>5,196.29</td>
<td>4,108.96</td>
<td>2,673.70</td>
<td>401.69</td>
<td>115.50</td>
<td>12,496.14</td>
<td>268.6</td>
</tr>
<tr>
<td>1987</td>
<td>5,865.23</td>
<td>4,417.26</td>
<td>2,876.57</td>
<td>388.00</td>
<td>121.41</td>
<td>13,668.47</td>
<td>293.2</td>
</tr>
<tr>
<td>1988</td>
<td>7,015.29</td>
<td>4,481.65</td>
<td>3,020.78</td>
<td>301.00</td>
<td>134.02</td>
<td>14,952.72</td>
<td>321.4</td>
</tr>
<tr>
<td>1989</td>
<td>8,357.00</td>
<td>5,153.00</td>
<td>3,350.00</td>
<td>388.00</td>
<td>146.00</td>
<td>17,394.00</td>
<td>373.9</td>
</tr>
<tr>
<td>1990</td>
<td>9,825.00</td>
<td>5,592.00</td>
<td>3,662.00</td>
<td>301.00</td>
<td>158.00</td>
<td>19,538.00</td>
<td>420.0</td>
</tr>
</tbody>
</table>

Source: NEB Annual Reports various 1975-1990 issues

Table 4.2 shows that the demand for electricity has increased 4 folds from 1975 to 1990. With the exception of mining and public lighting, domestic, commercial and industrial demand was increasing very rapidly. Industrial demand constituted about 50 percent of the total demand by 1990 reflecting the growth of the economy in the manufacturing and industrial sector.
Electricity consumers

Table 4.3 shows the number of electricity consumer by region from 1975 to 1990. Between 1978 and 1988, the number of electricity consumers more than doubled from 1.0 million to 2.6 million. Domestic users account for as much as three-quarters of the total number, followed by commercial consumers. The mining sector is the least user of electricity.

Table 4.3: Number of electricity consumer by region 1975-1988

<table>
<thead>
<tr>
<th>Year</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Southern</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>273,456</td>
<td>117,602</td>
<td>266,982</td>
<td>221,469</td>
<td>838,909</td>
</tr>
<tr>
<td>1980</td>
<td>427,594</td>
<td>240,744</td>
<td>370,709</td>
<td>351,081</td>
<td>1,390,128</td>
</tr>
<tr>
<td>1981</td>
<td>460,419</td>
<td>278,223</td>
<td>414,364</td>
<td>384,641</td>
<td>1,537,647</td>
</tr>
<tr>
<td>1982</td>
<td>494,105</td>
<td>318,415</td>
<td>457,196</td>
<td>425,232</td>
<td>1,694,948</td>
</tr>
<tr>
<td>1983</td>
<td>519,780</td>
<td>356,532</td>
<td>496,302</td>
<td>459,344</td>
<td>1,831,958</td>
</tr>
<tr>
<td>1984</td>
<td>557,660</td>
<td>390,783</td>
<td>539,667</td>
<td>492,315</td>
<td>1,980,425</td>
</tr>
<tr>
<td>1985</td>
<td>754,841</td>
<td>419,092</td>
<td>594,438</td>
<td>531,003</td>
<td>2,289,374</td>
</tr>
<tr>
<td>1986</td>
<td>792,095</td>
<td>447,492</td>
<td>623,522</td>
<td>561,023</td>
<td>2,424,132</td>
</tr>
<tr>
<td>1987</td>
<td>832,332</td>
<td>484,293</td>
<td>664,522</td>
<td>595,667</td>
<td>2,576,814</td>
</tr>
<tr>
<td>1988</td>
<td>885,895</td>
<td>486,225</td>
<td>701,188</td>
<td>632,263</td>
<td>2,704,571</td>
</tr>
</tbody>
</table>

Source: NEB's Annual Reports, 1975-1988

Concentration of consumers was in the northern, central and southern due to rapid economic development in these region. Demand from the northern region constituted about 30 percent of the total demand due to the highest population growth through urban migration and rapid economic development especially in the capital city.
4.5 TRANSMISSION AND DISTRIBUTION SYSTEM

Transmission

Table 4.4 shows the growth of NEB’s transmission system from 1975 to 1990.

The NEB’s transmission system operates voltages of 275kV, 132kV and 66kV. The National Grid consists of the 275kV and 132kV systems and connects the major load centres to the power station throughout Peninsular Malaysia. It is interconnected with Electricity Generating Authority of Thailand in the north via 132kV Single Circuit Line with a 117 MVA rating. In the south it is interconnected with the Public Utilities Board of Singapore through two 230kV submarine cables each with a rating of 240 MVA. The 66kV system located mainly in the south is being phase out. As at 31 August 1992, the transmission lines (in circuit km) as follows:

275 kV - 3,747 km
132 kV - 6,849 km
66 kV - 894 km
Table 4.4: Transmission Lines O/H and U/G (Circuit Km)

<table>
<thead>
<tr>
<th>Year</th>
<th>275kV</th>
<th>132kV</th>
<th>66kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>98.00</td>
<td>693.53</td>
<td>333.47</td>
</tr>
<tr>
<td>1976</td>
<td>137.00</td>
<td>894.65</td>
<td>338.97</td>
</tr>
<tr>
<td>1977</td>
<td>371.76</td>
<td>1578.38</td>
<td>545.52</td>
</tr>
<tr>
<td>1978</td>
<td>371.76</td>
<td>1595.44</td>
<td>539.84</td>
</tr>
<tr>
<td>1979</td>
<td>371.76</td>
<td>1878.59</td>
<td>572.41</td>
</tr>
<tr>
<td>1980</td>
<td>487.75</td>
<td>1922.25</td>
<td>580.61</td>
</tr>
<tr>
<td>1981</td>
<td>733.17</td>
<td>2120.30</td>
<td>618.11</td>
</tr>
<tr>
<td>1982</td>
<td>813.17</td>
<td>2176.30</td>
<td>618.11</td>
</tr>
<tr>
<td>1983</td>
<td>813.17</td>
<td>2342.67</td>
<td>618.11</td>
</tr>
<tr>
<td>1984</td>
<td>2321.65</td>
<td>3891.06</td>
<td>990.06</td>
</tr>
<tr>
<td>1985</td>
<td>2788.15</td>
<td>4173.06</td>
<td>1012.10</td>
</tr>
<tr>
<td>1986</td>
<td>3100.15</td>
<td>4514.76</td>
<td>1012.10</td>
</tr>
<tr>
<td>1987</td>
<td>3100.15</td>
<td>4864.00</td>
<td>913.40</td>
</tr>
<tr>
<td>1988</td>
<td>3526.00</td>
<td>5310.00</td>
<td>871.80</td>
</tr>
<tr>
<td>1989</td>
<td>3596.00</td>
<td>6106.90</td>
<td>891.40</td>
</tr>
<tr>
<td>1990</td>
<td>3596.00</td>
<td>6176.90</td>
<td>891.40</td>
</tr>
</tbody>
</table>

Note: In circuit mile for year 1975 and 1976
Source: NEB's Annual Reports 1975-1990 issues

Distribution

The distribution system covers voltages of 33kV and below. These voltages 33kV, 22kV and 11kV are stepped down from the transmission voltages. Low voltage consumers are supplied at 240V single phase or 415V three phase. Major customers are supplied directly by the higher voltages of 33kV, 22kV or 11kV. The distribution lines as at 1994 totalled 33, 129 circuit kilometres.
The distribution network is divided into six regions namely North, Perak, Federal Territory, South and East. Each region is responsible for the operation and planning of its distribution system. According to TNB this is to ensure the smooth operation of existing distribution network as well as connection of new customers. The current practise of TNB calls for a maximum voltage drop of 5 percent regulation on low voltage to ensure that even the remote customers receive supply within the declared voltage. The distribution network is protected against overload and short circuit. TNB installed fuses at the overhead mains while relays are installed at substations for protection against short-circuit, earth fault and over-current.

4.6 RURAL ELECTRIFICATION PROGRAMME

Rural electrification is part of the Government socio-economic objectives of providing basic amenities to the rural areas. It is a component of rural development to raise the living standard of the rural poor. Rural electrification programme is fully funded by the federal and the various state governments with the NEB as the implementing agency.

The number of rural households receiving electricity increased is as shown in Table 4.5. During the last decade, 3621 rural electricity projects costing about $280 million were implemented in Peninsular Malaysia, thus increasing the number of households provided with electricity from 345,000 in 1970 to 790,000 in 1986 an increased of 128.6 per cent. By the end of 1995 all rural areas is expected to be supplied with electricity.
Table 4.5 Development of the Rural Electrification

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Households</th>
<th>No. of Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>114,672</td>
<td>1,223</td>
</tr>
<tr>
<td>1975</td>
<td>205,123</td>
<td>2,451</td>
</tr>
<tr>
<td>1976</td>
<td>223,686</td>
<td>2,667</td>
</tr>
<tr>
<td>1977</td>
<td>246,178</td>
<td>2,938</td>
</tr>
<tr>
<td>1978</td>
<td>292,644</td>
<td>3,583</td>
</tr>
<tr>
<td>1979</td>
<td>351,181</td>
<td>4,344</td>
</tr>
<tr>
<td>1980</td>
<td>410,453</td>
<td>5,088</td>
</tr>
<tr>
<td>1981</td>
<td>423,147</td>
<td>5,330</td>
</tr>
<tr>
<td>1982</td>
<td>475,842</td>
<td>6,157</td>
</tr>
<tr>
<td>1983</td>
<td>549,250</td>
<td>7,395</td>
</tr>
<tr>
<td>1984</td>
<td>601,475</td>
<td>8,181</td>
</tr>
<tr>
<td>1985</td>
<td>649,679</td>
<td>8,865</td>
</tr>
<tr>
<td>1986</td>
<td>697,825</td>
<td>9,649</td>
</tr>
</tbody>
</table>

Source: NEB's Annual Reports, 1975-1988 issues

4.7 CONCLUSIONS

There was a rapid increase in demand growth for electricity from 1975 to 1990. In line with the energy policy NEB has diversified its generating capacity by using gas turbines and combined cycles plants besides thermal and hydroelectric plants. There was pressure for NEB to expand in order to meet the rapid increase in demand which will be discussed in Chapter 7 and Chapter 8. The next chapter will look into the technical performance of NEB from 1975 to 1990 period.
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>Methodology: Data Envelopment Analysis</td>
<td>136</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Theoretical Perspective</td>
<td>137</td>
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CHAPTER 5: EFFICIENCY OF THE NATIONAL ELECTRICITY BOARD IN MALAYSIA-INTERCOUNTRY COMPARISON

The previous chapter looks at the theoretical perspectives and empirical evidence of the relative performance of public enterprises and private enterprises. We have noted that American, U.K. and European studies suggest that there is no conclusive evidence to support the clear-cut superiority of private ownership in respect of productivity and cost efficiency. Similarly in Malaysia, studies done on this subject point to the same conclusion. Private enterprises in cement and steel industries have lower unit cost during 1982-1986 period while the reverse takes place in the palm oil milling industry.

As discussed in Chapter Two one of the arguments for privatisation programme in Malaysia is that public enterprises were not efficient. Accordingly, the Government stipulates that one of the objectives of the privatisation is to increase the efficiency and productivity of the public enterprises in order to enhance economic development of the country.

Significance of Productivity

Productivity advancement has been a major contributing factor to economic growth. The measurement and analysis of productivity aggregate growth has been a major topic since World War 2 (Cowing and Stevenson, 1981). In contrast, the measurement of productivity level advancement at the firm level is a relatively new area of interest, especially in the case of public enterprises and regulated industries. Following the privatisation programmes in many countries productivity measurement has become essential requirement for the privatised firms. Privatised firms have to calculate and publish measures of efficiency and productivity development as required by the regulator. The
RPI-X+Y regulation places efficiency and productivity growth at the core of operational concern.

**Efficiency Measurement (Technical / Productive Efficiency)**

The objective of this chapter is to evaluate the performance of the electricity sector in Malaysia using the intercountry comparison of productivity growth. It focuses on the performance comparison of the public utility firm (NEB) in Malaysia with that in Thailand (EGAT) and United Kingdom (CEGB) using the total productivity factor based on the Data Envelopment Analysis method. This method looks into efficiency measurement of the electricity sector in Malaysia employing the non parametric method known as Data Envelopment Analysis (DEA) developed by Charnes, Cooper and Rhodes (1978, 1981) which builds on the efficiency evaluation of individual firm used by Farell (1957) using the frontier estimation model.

The measurement of efficiency is related to the performance of the technical efficiency also known as productive efficiency of the firm. It is concerned with the estimation of the efficient frontier or production function in a production process of a firm. The concept of production function forms the basis for the description of input-output relationships in a firm. It shows the maximum amount of outputs that can be achieved by combining various quantities of inputs. Considering from an input orientation, it describes the minimum amount of input required to achieve the given output levels. Using the approach of Fare et.al (1990, 1994), the DEA could be used to decompose productivity growth over time into two components namely technical change and efficiency change by using the Malmquist productivity index. Technical change is associated with the shifts in technology or innovation while efficiency change is related to the catching up of the frontier over time.
This chapter is divided into six sections. Section 2 discusses the Data Envelopment Analysis model based on Farell’s technical and allocative efficiency concept. Section 3 discusses the Malmquist productivity index using Linear programming approach. Section 4 examines the technical or productive efficiency of NEB relative to 27 other electricity utilities in other countries employing DEA method using cross section data. It also examines NEB’s efficiency in relation to EGAT and CEGB using time series data from 1975 to 1990. Section 5 measures the productivity growth of NEB over time using the Malmquist Productivity Index approach. Section 6 concludes the result of the findings.

5.2 DATA ENVELOPMENT ANALYSIS

DEA model uses mathematical programming technique as compared to the parametric model which employs econometric technique in efficient frontier estimation. The DEA approach has many advantages over the conventional econometric method. As noted by Seiford and Thrall (1990) the econometric approach has a number of weaknesses. It only gives residuals and it does not readily yield a summary judgement on efficiency. The ability of the econometric model to identify sources of inefficiency is weak and is influenced by outlier. In addition it fits a function on the basis of average behaviour and it requires the functional form to be pre-specified. In contrast DEA is an extremal process, analyses each firm separately and measures its relative efficiency with respect to the entire set being evaluated. It does not require a priori assumption on the analytic form of production function. A DEA-based production model can also accommodate a variable that is neither an economic resource nor a product such as attributable of the environment or the production process (Charnes et.al, 1985). DEA provides solutions using
standards techniques of linear programming thus providing the benefits of computation, dual variables and clear interpretations. The empirical orientation and absence of a priori assumptions has made it possible to measure efficiency involving efficient frontier estimation in the nonprofit sector, in the regulated sector and in the private sector.¹

5.2.1 Theoretical perspective - Farell's technical and allocative efficiency concept

The Farell methodology dichotomises overall efficiency into two multiplicative components namely technical efficiency and allocative efficiency and provides definitions and a computational framework for both. The technical efficiency and allocative efficiency are defined in terms of a production frontier as the ratio of potential and actual performance. Figure 5.1 illustrates the concept introduced by Farell. Suppose a firm produces an output of, , using two inputs and with production function of \( Y = f(X_1, X_2) \). It is assumed that the production function exhibits constant returns to scale. This means that only one locus, the unit isoquant for \( Y = 1 \) needs be drawn. Thus the production function may be written \( Y = f(X_1/Y, X_2/Y) = 1 \) so that the frontier technology can be characterised by the unit isoquant \( UU \) in figure 5.1.

As shown in the diagram point A represents \((X_1/Y, X_2/Y)\). The ratio \( OB/OA \) measures technical inefficiency of the firm. \( OB/OA \) is the ratio of inputs required to produce \( Y \) to the inputs actually consumed to produce \( Y \), given the input mix used. The firm would be technically efficient if it produces one unit of output \( Y \), using input mix represented by \( B \) on the isoquant. That is the technical or productive efficiency of the firm is given by the ratio \( OB/OA < 1 \). If \( PP \) represents the ratio of input prices i.e the isocost line then the ratio \( OD/OB \) measures allocative efficiency. The firm would be allocatively or price efficient if it
Figure 5.1: Technical and Allocative Efficiency
uses input mix represented by C. The firm's allocative efficiency is OD/OB < 1. By operating at C, the firm would be on the isocost line that represents a fraction OD/OB, of total cost represented by isocost line through B. The overall efficiency of the firm which is the product of its price and technical efficiency ratios is measured by OD/OA = (OD/OB) x (OB/OA).

Farell extended the concept of the technical efficiency in evaluating the relative performance of firms based on efficiency frontier estimation. Farell suggested that the comparison of efficiency performance is made with the best actually achieved in the industry i.e the observed industry standard. Using the methodology the efficiency frontier which is the best practise linear approximation to the isoquant is constructed from empirically observed input-output combinations of the firms in the industry. In other words the efficiency frontier is made of those firms which are efficient relative to other firms under evaluation. Efficiency computations are made relative to this frontier.

The frontier is convex to the origin and has a negative slope. The construction of the efficient frontier approximation using the Farell methodology is illustrated in Figure 5.2 for the case of two inputs and one output. The efficient frontier is formed by connecting points relating to efficient firms in the industry. A firm is efficient if no other firm or convex combination of firms lies on a ray between it and the origin. Firms on the frontier have an efficiency rating of unity while firms off the frontier which are inefficient have an efficiency rating of less than one. In terms of figure 5.2, firms at P1, P2 and P3 are efficient while firms at P4 and P7 are inefficient. Using Farell methodology technical efficiency is measured by weighting of two adjacent points P1 and P2 which give $P4 = \lambda_1P1 + \lambda_2P2$, $\lambda_1 + \lambda_2 = 0$. Thus P4 is inefficient in Figure 2 since $\lambda_1 + \lambda_2 > 1$ and its efficiency rating is
Figure 5.2: Isoquant Frontier
(\lambda_1 + \lambda_2)^{-1}.

5.2.2 Data Envelopment Analysis Model

Farell's approach of computing the efficient frontier as a convex hull in the input coefficient space was generalised to multiple outputs by Charnes et al. (1978). It was reformulated into calculating the individual input-saving efficiency measures by solving an LP problem for each unit under constant to scale assumptions and known as Data Envelopment analysis. Fare et al. (1983), Banker et al. (1984), Brynes et al. (1984) and Bjurek, Hjalmarsson and Forsund (1990) extended this approach to the case of variable returns to scale and developed corresponding efficiency measures.

DEA evaluates and identifies technical inefficiencies of firms or decision making units (DMUs) and provide targets for improvement for inefficient DMUs and therefore serves as a planning aid to management. Technical inefficiencies are identified with failures to achieve best possible output levels and or usage of excessive amounts of inputs. Technical inefficiency of a DMU is determined relative to other similar units and can focus on either resource conservation or output augmentation. In the context of resource conservation where the objective is to minimise the usage of resources, given a particular output level a firm is not efficient if it is possible to augment any output without increasing any input and without decreasing any other output. From an input orientation a firm is not efficient if it is possible to decrease any input without decreasing any output (Charnes, Cooper and Rhodes, 1981).

The DEA approach in a multi-inputs and multi-outputs model assumes that there are n firms and each firm (j = 1, ..., n) consumes varying amounts of m inputs (X_i^j, i = 1, ..., m) to produce s different outputs (Y_r^j, r = 1, ..., s). The model
also assumes that $X_{ji}>0$ and $Y_{ij}>0$. Charnes et al. (1978) use the ratio of weighted outputs to inputs, with output weights $U_r$ and input weights $V_i$ as a measure of efficiency where the ratio for the particular firm being evaluated is maximised. This is subject to constraints that the corresponding ratio for each unit including the one under evaluation does not exceed than 1. This ratio forms the objective function for the $j$th unit being evaluated. Technical efficiency can be calculated by solving a fractional programming problem and symbolically can be expressed as:

$$\max h_o(U,V) = \frac{\sum_{i=1}^s u_r y_{r,j_0}}{\sum_{i=1}^m v_i x_{i,j_0}}$$

subject to

$$\sum_{r=1}^s u_r y_{r,j} \leq 1 \quad (j=1, \ldots, j_0, \ldots, n)$$

$$u_r > 0 \quad (r=1, \ldots, s)$$

$$v_i > 0 \quad (i=1, \ldots, m)$$

The above fractional linear program is both non-linear and non-convex and therefore is not used for actual computation of the DEA efficiency score (Charnes, Coopers and Rhodes, 1978). However CCR showed that it can be solved by two linear programming methods. The first method is the output augmentation approach which constraints the weighted sum of inputs to be unity and maximises the outputs that can then be produced. The second is the input conservation method that constraints the sum of the weighted output at unity and minimises the inputs required.

The output maximisation approach can be determined as follows:

$$\max \{\sum_{r=1}^s u_r y_{r,j_0}\}$$

(2)
subject to
\[ 0 = \sum_{r=1}^{s} U_r x_{rj} + \sum_{i=1}^{m} v_i x_{ij} \quad (j=1, \ldots, j_0, \ldots, n) \]
\[ 1 = \sum_{i=1}^{m} v_i x_{i,j_0} \]
\[ v_i, u_r > 0 \quad (i=1, \ldots, m) \]
\[ (r=1, \ldots, s) \]

The input conservation approach where the objective is to produce the observed outputs with a minimum resource level be presented as follows:

\[ \text{Min} \sum_{i=1}^{m} v_i x_{i,j_0} \quad (3) \]

subject to
\[ 0 = \sum_{r=1}^{s} U_r x_{rj} + \sum_{i=1}^{m} v_i x_{ij} \quad (j=1, \ldots, j_0, \ldots, n) \]
\[ 1 = \sum_{r=1}^{s} u_r y_{r,j_0} \]
\[ v_i \geq 0 \quad (i=1, \ldots, m) \]
\[ u_r \geq 0 \quad (r=1, \ldots, s) \]

Each of the linear programs (2) and (3) has two components namely the primal and the dual. Computation of the DEA efficiency is based on the dual (Charnes and Cooper, 1984) of (2) and (3). This is because the interpretation of the dual is simpler than the primal (Ganley and Cubin, 1992).

The linear programming problem in model (2) can be presented as a dual problem as follows:

\[ \text{Min} \ h_o = \theta \]
Subject to
\[ \sum_{j=1}^{n} x_{1j} \lambda_j \leq \theta, \quad \lambda \geq 0 \]  
\[ \sum_{j=1}^{n} y_{rj} \lambda_j \geq y_{ro} \]  
\[ \lambda \geq 0 \]
that is,
\[
\begin{align*}
\min & \quad \theta \\
\text{s.t.} & \quad \theta, \lambda \geq 0
\end{align*}
\]
The dual problem of linear programming (3) can be presented as follows:
\[
\begin{align*}
\max \{ & \sum_{r=1}^{s} u_{r} y_{r, jo} \} \\
\text{s.t.} & \quad y_{o} \leq y_{o} \\
& \quad \theta x_{o} - x_{o} \geq 0
\end{align*}
\]
The linear programming dual problems to be solved is
\[
\begin{align*}
\max & \quad \theta, \lambda \\
\text{s.t.} & \quad x_{o} \leq x_{o}
\end{align*}
\]
Bjurek and Hjalmarsson and Forsund, (1990) showed that depending on the assumption about the scale properties of the production set three different input-saving measures may be derived. The first measure DEAC, is calculated under the assumption of constant return to scale. As shown in
Figure 5.3 DEA-LP Model

Source: Bjurek, Hjalmarsson and Forsund (1990)
Figure 5.3, A, B, C and D are different units in the industry. The frontier technology is represented by the ray 001 from the origin. Using Farell methodology only B is efficient since it is on the frontier where \( X_{m}/X_{a} = 1 \). Correspondingly the efficiency of firm A is calculated as \( X_{m}/X_{a} < 1 \). The adjacent LP problem which must be solved for different units under constant return to scale is

\[
\text{max } E_c = \sum_{r=1}^{S} U_r Y_{ro}, \quad (6)
\]

subject to

\[
\sum_{i=1}^{s} V_i X_{i0} = 1,
\]

\[
\sum_{r=1}^{S} U_r Y_{rj} - \sum_{i=1}^{m} V_i X_i \leq 0, \quad (j=1, \ldots, n)
\]

\[
U_r \geq 0, \quad (r=1, \ldots, s)
\]

\[
V_i \geq 0, \quad (i=1, \ldots, m)
\]

where \( Y_r \) represents output \( X_i \) represents input, and \( U_r \) and \( V_i \) are weights obtained in the LP solution. For each micro unit an LP problem is solved by maximisation of the weighted sum of outputs for micro unit \( k \). This is done with regard to the restriction that the weighted sum of inputs equal 1 for this micro unit and the restriction that for all micro units \( (j = 1, \ldots, k, \ldots, n) \) the weighted sum of outputs minus the weighted sum of inputs are less than or equal to 0. The last restrictions \( U_r \geq 0 \) and \( V_i \geq 0 \) mean that all micro units are on or below the frontier.

The second efficiency measure, DEAV, is calculated under the assumption of variable returns to scale. As shown in Figure 5.3 it is derived from reference technology \( X_{ABC} \). In this case units A, B and C are all fully efficient as they all lie on the reference technology. However efficiency of D is measured by \( X_{m}/X_{a} < 1 \) and accordingly below the frontier. The corresponding LP problem is
\[
\max E = \sum_{i=1}^{s} u_i y_{i0} + u_o \quad (7)
\]
\[
s.t. \quad \sum_{i=1}^{m} v_i x_{i0} = 1,
\]
\[
\sum_{i=1}^{s} u_i y_{ij} - \sum_{i=1}^{m} v_i x_{ij} + u_o \leq 0 \quad (j = 1, \ldots, n)
\]
\[
\quad u_i, v_i \geq 0,
\]
\[
\quad u_o \leq 0,
\]

In comparison with (5) a new variable \(u_o\) is introduced corresponding to an intercept.

On the basis of these LP problems in (5) and (6) Bjurek and Hjalmarsson (1990) showed that it is possible to derive a measure of scale efficiency. For unit B both \(E_c\) (5) and \(E_v\) (6) coincides and equal 1, i.e B is on the frontier \(X_{ABC}\) and off the optimal scale \(OO1\). In the case of units A and C, \(E_c\) (5) < 1 but \(E_v\) (6) = 1. This means that the size of these units deviates from optimal scale \(OO1\), and a measure of scale efficiency is obtained as \(E_c/E_v\). For unit D where \(E_c < 1\) and \(E_v < 1\), the measure of scale efficiency is also obtained as \(E_c/E_v\).

The third measure, DEAN is obtained under the assumption of non-increasing return to scale. It is calculated by a slight reformulation of LP problem in (6) where the only difference is that the variable \(u_o\) is limited to non-positive values. The limitation of \(u_o\) to a non-positive values implies that the reference technology only permits constant or decreasing returns to scale. As shown in Figure 5.3 the reference technology is represented by \(OBC\) and the horizontal line to the right of \(C\). In this case if the value of the objective function \(E_n\) and if \(E_n = E_v = E_c\) then
the unit under evaluation operates at decreasing return to scale. If \( E_v = E_c \) production takes place at constant return to scale as \( B \), while if \( E_v \neq E_y \) production takes place at increasing return to scale as in the case of \( A \) and \( D \).

5.3 MALMQUIST INDEX AND THE PRODUCTIVITY GROWTH ANALYSIS

The DEA method can be used to compute a Malmquist index for measuring total productivity growth. A Malmquist index allows for the decomposition of productivity growth into two components namely technical change and efficiency change. This provides evidence concerning patterns of total productivity growth and indicates whether productivity growth is due to the catching up of the frontier or due to technical change (shifts in the frontier) over time. Hjalmarsson and Veiderpass (1992) define the Malmquist index as the ratio between Farell measures for a production unit which for technical efficiency at two different points in time is measured relative to two different frontiers. Fare et. al (1994) use the Malmquist index to measure total productivity change which is calculated as the geometric mean of two Malmquist indexes and decompose it into its two components the technical change and efficiency change.

Figure 5.4 illustrates the construction and the decomposition of the Malmquist index based on Fare et. al (1994) and Hjalmarsson and Veiderpass (1992). The objective is to measure the productivity growth between two time periods \( t \) and \( t+1 \) and to decompose it into its two components, efficiency change and technical change. The production function is characterised by constant return to scale and input-saving technical efficiency coincides with the output increasing technical efficiency.

As shown in the diagram \( P \) is a production unit operating at year \( t \) and year \( t+1 \) producing \( Y_t \) and \( Y_{t+1} \) outputs respectively. Between time period \( t \) and \( t+1 \) the production
Figure 5.4 Construction of Malmquist Index

Source: Hjalmarsson and Veiderpass (1992)
frontier has shifted from $F_t$ to $F_{t+1}$. Using the Farell efficiency approach the technical efficiency of $P$ in year $t$ measured against $F_t$ is $OC/OD$. When efficiency of unit $P$ at time $t$ is measured against $F_{t+1}$ its technical efficiency becomes $OA/OD$. Correspondingly in year $t+1$ the technical efficiency of $P$ relative to $F_{t+1}$ is $OB/OE$ and when measured against $F_t$ its technical efficiency is $OF/OE$.

The Malmquist index at time $t$, $M_t$, with frontier $F_t$ as a reference base is defined as

$$M_t = \frac{E_{t,t+1}}{E_{t,t}}$$

$$= \frac{OF/OE}{OC/OD}$$

where

$E_{t,t+1}$ is the technical efficiency of $P$ at time $t$ relative to $F_t$

$E_{t,t}$ is the technical efficiency of $P$ at time $t$ relative to frontier $F_t$

The Malmquist index at time $t+1$, $M_{t+1}$, with frontier $F_{t+1}$ as a reference base is defined as

$$M_{t+1} = \frac{E_{t+1,t+1}}{E_{t+1,t}}$$

$$= \frac{OB/OE}{OF/OE}$$

where

$E_{t+1,t+1}$ is the technical efficiency of $P$ in year $t+1$ relative to $F_{t+1}$

$E_{t+1,t}$ is the technical efficiency of $P$ in year $t+1$ measured against $F_t$

The Malmquist productivity change index defined as the geometric mean of two Malmquist indexes can be expressed as
\[ MG = \{M_t \times M_{t+1}\}^k \]

\[ = \left\{ \{E_t,e_{t+1}/E_{t,t}\}\{E_{t+1,t+1}/E_{t+1,t}\}\right\}^k \]

Following Fare et al. (1989, 1992) and Hjalmarsson and Veiderpass (1992) an equivalent way of writing this index is:

\[ MG = \{E_{t+1,t}/E_{t,t}\} \times \left\{ \{E_{t,t+1}/E_{t+1,t+1}\}\{E_{t,t}/E_{t+1,t}\}\right\}^k \]

where the ratio \( E_{t,t+1}/E_{t,t} \) measures the change in relative efficiency between year \( t \) and year \( t+1 \). The \[ \left\{ \{E_{t,t+1}/E_{t+1,t+1}\}\{E_{t,t}/E_{t+1,t}\}\right\}^k \] represents the shift in technology due to technical change or innovation.

In terms of Figure 5.4, the Malmquist productivity index can be measured as:

\[ MG = \left\{ \{OF/OE\}/\{OC/OD\}\right\} \times \left\{ \{OF/OE\}/\{OB/OE\}\right\}\left\{\{OC/OD\}/\{OA/OD\}\right\} \times \left\{ \{OF/OE\}/\{OC/OA\}\right\}^k \]

The ratios \( OF/OE \) and \( OD/OC \) in the first bracket measures the relative technical efficiency of \( P \) at time \( t \) and \( t+1 \) reflecting changes in relative efficiency over time. The ratios in the second bracket \( OF/OB \) and \( OC/OA \) measures shifts in frontier technology at output levels \( Y_t \) and \( Y_{t+1} \) respectively. Malmquist index greater than one indicates improvement in productivity while Malmquist index less than one is associated with declining performance over time. Although the product of the of the efficiency change and technical change is equal to the Malmquist productivity index, the two components may be moving in the opposite directions.
5.3.1 Estimation of Malmquist Productivity Index using linear programming approach

The above Malmquist productivity indexes can be developed by using mathematical programming model of the frontier production function using the Seiford and Thrall (1990) and Price and Weyman-Jones (1993).

The model can be described as follows: Each of the firms \((j=1,\ldots,n)\) uses \(m\) inputs \((x_{ij}, i=1,\ldots,m)\) to make \(s\) outputs \((y_{ij}=1,\ldots,s)\). The observations on all the firms together make up the matrices \(X\) and \(Y\). The observations for one firm, taking each in turn, are represented by the vectors \(x\) and \(y\) with subscript suppressed. The columns \(X\) and \(Y\) are combined into a reference technology for the industry using the weights \(\lambda_j\)

\[
X = \begin{bmatrix}
  x_{11} & \cdots & x_{1m} \\
  \vdots & \ddots & \vdots \\
  x_{n1} & \cdots & x_{nm}
\end{bmatrix} \quad x = \begin{bmatrix}
  x_1 \\
  \vdots \\
  x_n
\end{bmatrix}
\]

\[
Y = \begin{bmatrix}
  y_{11} & \cdots & y_{1m} \\
  \vdots & \ddots & \vdots \\
  y_{n1} & \cdots & y_{nm}
\end{bmatrix} \quad y = \begin{bmatrix}
  y_1 \\
  \vdots \\
  y_n
\end{bmatrix}
\]

\[
\lambda = \begin{bmatrix}
  \lambda_1 \\
  \vdots \\
  \lambda_n
\end{bmatrix}
\]

The observations are split into 2 periods, \(t\) and \(t+1\). A third observation represents comparison of an \(t+1\) reference technology. Using the DEA method the Farell
efficiency indices to be computed are as follows:

\[ \theta_t \] the relative efficiency of a firm in period \( F_t \) frontier

\[ \theta_{t+i} \] the relative efficiency of a firm in period \( F_{t+i} \) compared to period \( F^*_{t+i} \) frontier

\[ \theta_{t,t+i} \] the relative efficiency of a firm in period \( F_t \) compared to period \( F_{t+i} \) frontier

To compute the above efficiency indices the following linear programming problems are solved (for the choice of variables \( \theta, \lambda_1, \ldots, \lambda_n \)) for each firm taken in turn:

The relative efficiency of the firm at time \( t \) is:

\[
\begin{align*}
\text{Min} & \quad \theta_t \\
\text{s.t} & \quad X_t \lambda_t - \theta_t X_t \leq 0 \\
& \quad Y_t \lambda_t \geq Y_t \\
& \quad \lambda_t \geq 0
\end{align*}
\]

The relative efficiency of a firm in period \( F_{t+i} \) compared to period \( F^*_{t+i} \) frontier,

\[
\begin{align*}
\text{Min} & \quad \theta_{t+i} \\
\text{s.t} & \quad X_{t+i} \lambda_{t+i} - \theta_{t+i} X_{t+i} \leq 0 \\
& \quad Y_{t+i} \lambda_{t+i} \geq Y_{t+i} \\
& \quad \lambda_{t+i} \geq 0
\end{align*}
\]

The relative efficiency of a firm in period \( F_t \) compared to period \( F_{t+i} \) frontier is:

\[
\begin{align*}
\text{Min} & \quad \theta_{t,t+i} \\
\text{s.t} & \quad X_{t+i} \lambda_{t,t+i} - \theta_{t,t+i} X_t \leq 0 \\
& \quad Y_{t+i} \lambda_{t,t+i} \geq Y_t \\
& \quad \lambda_{t,t+i} \geq 0
\end{align*}
\]
The Malmquist index of productivity change after year $t$ can then be decomposed into the catching up effect, $MC$ and a frontier shift effect $MF$,

$$MG = \frac{\theta_{t,t+1}}{\theta_{t+1}}$$

$$= \frac{\theta_{t}}{\theta_{t+1}} \times \frac{\theta_{t+1}}{\theta_{t}}$$

where $\theta_{t}/\theta_{t+1}$ is the productivity growth due to catching up effect and $\theta/\theta_{t}$ is the productive growth due to technological change or frontier change.

Many authors (Charnes and Coopers 1985, Nunamaker 1985, Johnson and Lewin 1984, Charnes, Cooper and Rhodes, 1981) have regarded a DMU efficient as Pareto efficient. As pointed out by Ganley and Cubin (1992) this is not the case. The "best practice" DMUs may themselves be expected to be capable of improvement relative to a maximal production boundary. This view is valid for two obvious reasons. One as pointed out by Leibenstien (1966) inputs especially labour services may yield a variable performance and thus technical inefficiency is both possible and widespread. Second estimated efficient function is not a production frontier. DEA model uses Farell methodology in estimating efficient frontier estimation which is based on empirical function of the best results observed in practice. Farell pointed out that a theoretical engineering production function specified by engineers represents the best measure of efficiency. However Farell also argued that theoretical efficient function is very difficult to estimate in a very complex production process. Thus by using empirically designed efficient frontier one can argue that the best practice frontier can still shift closer to the origin. All the DMUs which lie on the frontier are capable of improving efficiency unless the efficient frontier estimation coincides with the theoretical production function specified by engineers which is most
unlikely due to the labour factor argument. As pointed out by Danilen et al (1985) that enterprises may still be inefficient to some unknown degree because the best practice standard use to measure the production frontier may understate true engineering production.3

Accordingly, DEA efficiency should be interpreted with caution. It should be interpreted along with the categorical variables associated with the production process. One also needs to look at the underlying differences between the firms in evaluation. For example as pointed out by Ganley and Cubbin (1992) the best practise frontier is constructed on the basis that the cross section is of a homogenous set of DMUs using (presumably the latest) vintage of technology. DEA efficiency is ambiguous in this case where a relatively inefficient DMU could be utilising a technology with maximal result but be constrained by the possibilities inherent in this technology such that it cannot perform as efficiently as some other DMU or linear combination of DMUs which are using a later improved technology.

Measures of technical efficiency derived in DEA should therefore be thought of as approximate guide to performance. It can be regarded as pareto improvement vis-a-vis technically inefficient production within an estimated boundary.

5.4 EMPIRICAL EVIDENCE

This section employs the DEA methodology based on the input maximisation approach to calculate the technical or productive efficiencies of the National Electricity Board by using two approaches. One, using cross section data NEB’s efficiency is calculated in comparison to the relative efficiency of 27 other electricity producers in different countries in 1987. This approach is adopted due
to the difficulties in getting time series data for variables selected from the different countries. Data used are from World Bank Report (1990). The second approach is using a time series data from 1975 to 1990 comparing the relative technical efficiency of the NEB with that of EGAT in Thailand and CEGB in United Kingdom. Data for NEB and CEGB are gathered from annual financial reports and statistical bulletin while data for EGAT are provided by COPED discussion paper series (1990 and 1991).

5.4.1 Efficiency comparisons using cross-sectional data 1987

The data used comprises information on 27 electricity utilities of developing countries. These countries are selected based on GDP per capita in the region of US$1500-$2800. The model adopted the input minimisation approach and assumes four input (X) variables and one output variable as below:

Inputs :

\[ X_1 = \text{Installed capacity (MW)} \]
\[ X_2 = \text{Labour} \]
\[ X_3 = \text{Total system losses (\%)} \]
\[ X_4 = \text{Generation capacity factor (\%)} \]

Output :

\[ Y_1 = \text{Gross electricity produced (GWh)} \]

As pointed by Weyman-Jones (1991) the advantage of keeping the number of inputs (X) and outputs (Y) small relative to the number of firms (N) is that as the ratio of \( Y + S / N \) rises the ability of the DEA to discriminate amongst firm falls significantly, since it becomes more likely that any given firm will find some set of output and input weights which will make it appear efficient.
Using the data as provided from Appendix 1, the matrices $X$ and $Y$ are shown as:

$$
X = \begin{bmatrix}
X_{11} & \cdots & X_{127} \\
X_{21} & \cdots & X_{227} \\
X_{31} & \cdots & X_{327} \\
X_{41} & \cdots & X_{427}
\end{bmatrix} \quad \quad Y = \begin{bmatrix}
Y_{11} \\
\vdots \\
Y_{27}
\end{bmatrix}
$$

$$
\lambda = \begin{bmatrix}
\lambda_1 \\
\vdots \\
\lambda_{27}
\end{bmatrix}
$$

where

$$
X_{11} \ldots X_{127} = \text{Installed capacity of Country 1 (C1: Algeria) \ldots \ldots \ldots \ldots \cdot \text{installed capacity}} \\
X_{21} \ldots X_{227} = \text{Labour of C1 \ldots C27} \\
X_{31} \ldots X_{327} = \text{Total system losses of C1 \ldots C27} \\
X_{41} \ldots X_{427} = \text{Generation capacity factor C1 \ldots C27} \\
Y_{11} \ldots Y_{127} = \text{Gross electricity produced by C1 \ldots C27}
$$

Using the DEA approach, the LP problems to be solved are as below:

Min:

$$
1 \times 28 \\
2,797X_{13} + 16,513X_{12} + \ldots + 2,071X_{127} - 2,797X_{128} < 0 \\
18,800X_{21} + 34,480X_{22} + \ldots + 4,325X_{227} - 18,800X_{228} < 0
$$
15X_{31} + 17X_{32} + \ldots + 10X_{327} - 15X_{328} < 0 \\
40X_{41} + 37X_{42} + \ldots + 39X_{427} - 40X_{428} < 0 \\
13,400Y_{11} + 52,165Y_{12} + \ldots + 7,008Y_{127} > 13,400 \\

Table 5.1 sets out the efficiency measures computed from the LP solution.

<table>
<thead>
<tr>
<th>Country (DMUs)</th>
<th>Objective Function (C9) (C11) (C13) (C14) (C15) (C16) (C17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chile (C14)</td>
<td>1.0000 - - 1.0000 - - - -</td>
</tr>
<tr>
<td>2. Columbia (C16)</td>
<td>1.0000 - - - - 1.0000</td>
</tr>
<tr>
<td>3. Egypt (C17)</td>
<td>1.0000 - - - - 1.0000</td>
</tr>
<tr>
<td>4. Korea (C11)</td>
<td>1.0000 - 1.0000 - - -</td>
</tr>
<tr>
<td>5. China (C15)</td>
<td>1.0000 - - - - -</td>
</tr>
<tr>
<td>6. Brazil (C13)</td>
<td>1.0000 - - 1.0000 - -</td>
</tr>
<tr>
<td>7. Yugoslavia (C9)</td>
<td>0.9951 0.9951 - - - -</td>
</tr>
<tr>
<td>8. Mexico (C19)</td>
<td>0.9212 0.3651 0.1193 0.3446 - - -</td>
</tr>
<tr>
<td>9. Hungary (C3)</td>
<td>0.8797 0.0911 - - - -</td>
</tr>
<tr>
<td>10. Venezuela (C25)</td>
<td>0.8244 - 0.5786 0.0185</td>
</tr>
<tr>
<td>11. Ghana (C18)</td>
<td>0.7926 0.0391 - - 0.0438 -</td>
</tr>
<tr>
<td>12. Peru (C21)</td>
<td>0.7681 0.1662 - - - -</td>
</tr>
<tr>
<td>13. Romania (C23)</td>
<td>0.7654 0.4553 - 0.1065 0.0297</td>
</tr>
<tr>
<td>14. Thailand (C7)</td>
<td>0.7600 0.2090 - - - -</td>
</tr>
<tr>
<td>15. Argentina (C2)</td>
<td>0.7515 0.1798 0.3414 0.0507</td>
</tr>
<tr>
<td>16. Zimbabwe (C27)</td>
<td>0.7451 - - - - - 0.1815</td>
</tr>
<tr>
<td>17. Turkey (C24)</td>
<td>0.7165 0.5857 - 0.0059 0.0047</td>
</tr>
<tr>
<td>18. Malaysia (C4)</td>
<td>0.7042 0.0531 - - - -</td>
</tr>
<tr>
<td>19. Algeria (C1)</td>
<td>0.6777 0.0289 - - -</td>
</tr>
<tr>
<td>20. Indonesia (C16)</td>
<td>0.6720 0.0933 - - - -</td>
</tr>
<tr>
<td>21. Panama (C5)</td>
<td>0.6246 - - - - - 0.0493</td>
</tr>
<tr>
<td>22. Portugal (C22)</td>
<td>0.6237 0.0989 0.0461 - - 0.2376</td>
</tr>
<tr>
<td>23. Uruguay (C6)</td>
<td>0.6231 - - - - -</td>
</tr>
<tr>
<td>24. Bangladesh (C12)</td>
<td>0.6019 - - - - -</td>
</tr>
<tr>
<td>25. Nigeria (C20)</td>
<td>0.4863 0.0486 - - - -</td>
</tr>
<tr>
<td>26. Zaire (C26)</td>
<td>0.4850 - 0.0094 0.0991 - 0.0846</td>
</tr>
<tr>
<td>27. Syria (C6)</td>
<td>0.4813 - - - - - 0.0846</td>
</tr>
</tbody>
</table>

It can be seen that the technical efficiency of the
electricity sector in different countries differs significantly with relative ratings running from 48 percent to 100 percent. Electricity sector in Chile, Columbia, Egypt, Korea, China and Brazil were 100 percent efficient and form as the reference frontier or the reference technology. Malaysia ranked 18th operating at about 70 percent efficiency. Technologically, Malaysia is closer to Yugoslavia and Egypt. Theoretically, in order for Malaysia to move onto the efficiency frontier, that is 100 percent efficient, it has to consume 5 percent of inputs used in Yugoslavia and 37 percent that of Egypt. In comparison to Thailand, Malaysia is relatively less efficient than Thailand which was operating at 76 percent efficient.

Diagrammatically, the efficiency of the Malaysian electricity sector relative to efficiency of some of the other electricity utilities can be illustrated in a two dimension graph as shown in Figure 5.5. There are two characteristics common among the utilities which form the reference frontier. One, all the six utilities have a high capacity factor ranging from 44 percent to 59 percent. The capacity factor of Yugoslavia and Mexico which were operating at 99.5 percent and 92.1 percent respectively were also within the same region of those on the reference frontier. Second, all utilities which formed the reference frontier, with the exception of Korea and China, have a high percentage of hydro power capacity which is in the region of 42.6 percent to 84.9 percent. In the case of Korea, although it has a low hydro power capacity this is compensated by the usage of nuclear power which constituted 27 percent of the installed capacity.
Figure 5.5: DEA Reference Frontier

C14: Chile
C16: Columbia
C17: Egypt
C11: Korea
C15: China
C13: Brazil
C18: Malaysia
C7: Thailand
C9: Yugoslavia
The input minimisation model assumes 4 input variables (X) and 1 output (Y) as follows:

Inputs:
- \( X_1 = \text{Installed capacity (MW) / Capital} \)
- \( X_2 = \text{Labour} \)
- \( X_3 = \text{Electricity losses (%)} \)
- \( X_4 = \text{Thermal efficiency (%)} \)

Output
- \( Y_1 = \text{Electricity generated (GWh)} \)

Based on data on the capital, labour, electricity losses, thermal efficiency and electricity generated as provided in Appendix 2-4, similar approach was adopted to solve the LP problems by using DEA method. The efficiency measures are given as below;

**Tab 5.2: Results of efficiency comparisons using DEA method 1975-1990**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>( Cl )</th>
<th>NEB (C1)</th>
<th>C2</th>
<th>C3</th>
<th>EGAT (C2)</th>
<th>C1</th>
<th>C3</th>
<th>CEGB (C3)</th>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>0.8918</td>
<td>0.7567</td>
<td>0.0218</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>0.9338</td>
<td>0.9146</td>
<td>0.0216</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
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<tr>
<td>1977</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>0.9331</td>
<td>0.7324</td>
<td>0.0265</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>0.9254</td>
<td>0.4626</td>
<td>0.0083</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
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</tr>
<tr>
<td>1979</td>
<td>0.9731</td>
<td>0.4350</td>
<td>0.0106</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
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<tr>
<td>1980</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>0.9548</td>
<td>0.9388</td>
<td>0.0267</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>0.9895</td>
<td>0.8949</td>
<td>0.0430</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1984</td>
<td>0.9176</td>
<td>0.0607</td>
<td>-</td>
<td>0.9214</td>
<td>-</td>
<td>0.0981</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>0.7630</td>
<td>0.0614</td>
<td>-</td>
<td>0.8793</td>
<td>-</td>
<td>0.1009</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>0.8596</td>
<td>0.0658</td>
<td>-</td>
<td>0.9481</td>
<td>-</td>
<td>0.1097</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>0.8488</td>
<td>0.2457</td>
<td>0.0378</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>0.8552</td>
<td>0.2560</td>
<td>0.0431</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td>1.0000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

The results confirm the assumption used in the introduction of this thesis that EGAT is more efficient than NEB and
EGAT. Throughout the 1975-1990 CEGB was relatively efficient operating at 100 percent efficiency forming the reference frontier curve.

The following observations can be made on the efficiency trend of NEB and EGAT.

1) With the exception of 1978 and 1979, NEB was relatively more efficient than EGAT in the early years from 1975 until 1983. During these years NEB was on operating at 100 percent efficiency and therefore was on the reference frontier curve. Its efficiency dropped in 1978 and 1979 to 93 percent and 97 percent respectively during which EGAT improved its efficiency reaching the frontier. This could be attributable to three factors. Firstly, there was rapid expansion of the installed capacity as compared to lower growth of demand. Installed capacity grew by 24.3 percent and 14.0 percent in 1978 and 1979 respectively, against 8.1 percent and 11.0 percent of demand growth (Appendix 2). This has resulted in NEB’s high excess capacity as reflected by the high reserve capacity during this period. Secondly, the thermal efficiency of EGAT has increase to 34.1 in 1978 from 33.8 the previous year while thermal efficiency of NEB remained unchanged at 29.6 percent (Appendix 4a). The thermal efficiency of NEB decline the following year by 2.7 percent to 28.8 as compared to a decline by 1.5 percent to 33.6 percent of EGAT.

2) EGAT was more efficient than NEB, but did not lie on the reference frontier curve, from 1984 to 1986. There was a high excess capacity during this period due to NEB’s high reserved capacity (Appendix 2), between 42 to 52 percent. In 1985 installed capacity grew by about 24 percent increasing reserved capacity to 52 percent. This was due to the completion of combined cycle plants in Paka Trengganu which contributed to about 25 percent of the total installed capacity. During the same period EGAT has
improved its thermal efficiency from 37.5 percent in 1984 to 38.3 percent by 38.3 percent. As noted by Dang (1991), the increase in thermal plant efficiency since 1981 was due to use of lignite in generation of electricity and the introduction of more efficient combined-cycle plants. As pointed out by Dang, the use of lignite for the generation of electricity has significantly improved thermal efficiency from 34 percent in 1978 to about 40 percent in 1989 while the efficiency of fuel oil and natural gas plants has remained between 35 percent to 38 percent.

3) NEB managed to improve its efficiency by 1989 and both NEB and EGAT were on the reference frontier in 1989 and 1990. This is attributable to few factors. Firstly, there was less reserve capacity for NEB as a result of very little growth in capacity expansion. Secondly, NEB has diversified its energy mix plant type that came into stream with the completion of the gas pipe line and the completion of combined cycle plant since 1987. Its thermal efficiency reached its highest level to 36.4 percent in 1990. By 1990/1991 financial year, generation capacity comprised 43 percent of steam, 22.2 percent of hydro, 15.5 percent of combined cycle, 18.6 percent of open cycle gas turbine and 0.7 percent diesel engine. In addition most of the oil fired stations have been converted to dual firing capability of gas and oil.¹

On the average, during the 1975-1990 period, NEB was less efficient than EGAT operating at an average efficiency of 88.9 percent (Coefficient of 0.8886) as compared to 96.7 percent (Coefficient of 0.9696) achieved by EGAT. EGAT was operating at a higher thermal plant efficiency of an average level of 36 percent as compared to 31.3 percent that of NEB. In addition EGAT has a lower system losses during the period understudy. On the average, NEB’s system

losses amounting to 15.3 percent compared to EGAT's 13.9 percent. The main problem with NEB was that it has higher losses due to auxiliary use at plant level while. Its average auxiliary use was 4.7 percent of total system losses, which is 21 percent higher than that of EGAT (Appendix 3). In terms of transmission and distribution losses on the average NEB was also slightly less efficient operating at an average transmission loss of 10.5 percent as compared to 10.0 percent that of EGAT.

5.5 NEB's PRODUCTIVITY GROWTH (MALMQUIST PRODUCTIVITY INDEX)

Table 5.3 shows the Malmquist productivity index of NEB from 1976-1990. The objective of this measurement is to trace NEB's productivity growth over a time period. To recall, if the value of the Malmquist index or any of its components is less than 1, it denotes regress or regression in performance. Values greater than 1 denote improvements in relevance performance. On average, the productivity due to catching up (1.0208) is higher than productivity due to technological shift (0.9826). However the productivity growth due technological shift is not accompanied by catching up effect productivity growth. Thus on average there is no overall productivity growth as shown by the value of the mean which is 1. This shows that in order for NEB to achieve productivity growth, besides investing in new technology, it must improve its operational efficiency. This includes increase productivity of labour which is a central issue on the privatisation programme of the NEB.
Table 5.3: NEB's Malmquist Productivity Index (1975-1990)

<table>
<thead>
<tr>
<th>Year</th>
<th>MF</th>
<th>MC</th>
<th>MPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>0.9469</td>
<td>1.0561</td>
<td>1.0000</td>
</tr>
<tr>
<td>1977</td>
<td>0.9999</td>
<td>1.0001</td>
<td>0.9999</td>
</tr>
<tr>
<td>1978</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>1979</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>1980</td>
<td>1.0001</td>
<td>0.9999</td>
<td>0.9999</td>
</tr>
<tr>
<td>1981</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>1982</td>
<td>0.9999</td>
<td>1.0001</td>
<td>1.0000</td>
</tr>
<tr>
<td>1983</td>
<td>1.0001</td>
<td>1.0000</td>
<td>1.0001</td>
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<tr>
<td>1984</td>
<td>1.0001</td>
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<tr>
<td>1985</td>
<td>0.9297</td>
<td>1.0758</td>
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</tr>
<tr>
<td>1986</td>
<td>0.9999</td>
<td>1.0001</td>
<td>1.0000</td>
</tr>
<tr>
<td>1987</td>
<td>0.9669</td>
<td>1.0343</td>
<td>1.0003</td>
</tr>
<tr>
<td>1988</td>
<td>0.9669</td>
<td>1.0343</td>
<td>1.0001</td>
</tr>
<tr>
<td>1989</td>
<td>0.8987</td>
<td>1.1128</td>
<td>1.0001</td>
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<tr>
<td>1990</td>
<td>0.9999</td>
<td>0.9992</td>
<td>0.9991</td>
</tr>
</tbody>
</table>

Mean 0.9826 1.0208 1.0000

Note: MPI - Malmquist Productivity Index
MF - Frontier shift effect
MC - Catching up effect

5.5 CONCLUSIONS

This Chapter looks at the efficiency of NEB relative to 27 other electricity utilities in other countries in 1987 using the DEA approach. Results show that NEB's rating was 18, operating at a relative efficiency of 70 percent.
Comparisons based on time series data from 1975-1990 between NEB, EGAT and CEGB also confirm that on the average NEB was relatively less efficient to EGAT and CEGB. As was discussed above, the reasons for the relatively less efficient of NEB was due to high excess capacity and low thermal efficiency as compared to EGAT. Changes in capacity at various time during certain period understudy was due to inability of NEB to complete power projects as planned (Chapter 6 and 7). However, the high growth in demand for electricity and the increase in thermal efficiency both in 1989 and 1990 have increase NEB’s efficiency catching up with EGAT on the frontier curve. At firm level, using the Malmquist Productivity Index, it shows that there was no overall productivity growth from 1975 to 1990.

Two important conclusions can be drawn from the result of the above study. Firstly, it shows that there is always a scope for further improvement in the efficiency of NEB looking in a dynamic setting point of view. NEB was less efficient than most countries used as comparisons and the Malmquist Productivity Index indicates the existence of operational inefficiencies in NEB. Secondly, in order to improve its efficiency, there is a need to address the issue of what went wrong in order to achieve lower cost of production. This issue will be examined in Chapter and Chapter 8 where factors that limit and constrain NEB’s efficiency will be identified. The next chapter attempts to evaluate NEB’s financial performance in terms of achieving its financial goals and targets in order to undertake future capacity expansion programme.
<table>
<thead>
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<th>Section</th>
<th>Title</th>
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<td>171</td>
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<td>6.7</td>
<td>Self Financing ratio</td>
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<td>6.8</td>
<td>Debt Equity Ratio</td>
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<td>Billing Effectiveness</td>
<td>207</td>
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<td>Conclusions</td>
<td>210</td>
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</table>
CHAPTER 6 : FINANCIAL PERFORMANCE OF NEB

In the previous chapter we have examined the performance of the NEB in terms of relative productive efficiency using the DEA method. As discussed in Chapter 2, part of the rationale of the privatisation programme in Malaysia as claimed by the Government is that public enterprises have been generally loss making and were highly dependent on government subsidy to support their operation. This view is in line with the X-efficiency theory as discussed in Chapter 3, which suggests that one of the reasons for public enterprises inefficiency is that they are shielded from competition resulting in technical inefficiencies and increased costs in production. Increased cost in production will lead to an eroding of revenue surplus thus causing losses to the enterprises. As a result public enterprises expect government subsidies to finance deficits in order to continue operation. In addition most government in developing countries put more stress on poverty and equity objectives relative to economic efficiency (Pearson and Stevens, 1992). Price are not set to maintain financial viability (Hill, 1992) and this results in a deterioration in financial performance. Consequently not only has the dependency of utilities on government subsidies and allocations of budgets increased but also the expansion programme of the utilities to meet the expanding demand for the services has been hampered.

This chapter looks at the financial performance of NEB, its financial problems, the extent of government interference and its ability to achieve its power development plan in the context of the high rate of demand growth of the electricity in a rapidly expanding economy. It is divided into five sections. Section 2 briefly explains the significance of using financial ratios in evaluating financial performance of an enterprise. Section 3 looks at the financial objectives of NEB in relation to its role in
the economy and its tariffs policy in meeting the financial objectives. Section 3 examines NEB’s tariff structure in relation to the Government’s industrialisation programme. Section 4 looks at the rate of return on investment of NEB using the Return on Capital Employed (ROCE) criteria and this is followed by Section 6 on assessing NEB’s strategy to undertake capacity expansion programme by looking its self financing ratio trend. Section 7 examines NEB’s capacity to borrow in order to undertake development plan by assessing its debt equity ratio which is of paramount importance to lenders. Section 8 evaluates NEB’s billing effectiveness which is important for its cashflows operation. Finally, section 9 concludes the discussions of various sections of the chapter.

A comparison is made of the profitability ratio of Return on Capital Employed (ROCE) and operating ratios such as the self-financing ratio, the debt equity ratio and the debt service ratio between NEB, BGAT and CEGB. These ratios are used by the lenders such as the World Bank and the Asian Development to monitor financial performance of NEB. As in the previous Chapter, comparison with CEGB is used as a yard stick on the assumption that CEGB is a more efficient utility operating in a developed world.

6.2 THE SIGNIFICANCE OF FINANCIAL RATIOS

The financial performance of National Electricity Board (NEB) is examined through the analysis of financial statements based on time series data 1975 to 1990. The analysis will provide an important basis for appraising managerial performance of the NEB in meeting financial objectives over a period of time. In addition, it will also assesses the soundness of the financial position of the company based on profitability and operating financial ratios. The advantage of using a financial ratio, as pointed by Eilon (1992), is that it provides managers with
an analytical framework for making judgements about progress by tracking the changes of the ratio over time or by comparing ratios between inter-company or inter-industry studies. This could be used for determining the underlying factors which have led to changes in performance in order to assist the task of company planning.

However, although financial ratios have been used to assess financial performance there is no unanimous view among accountants and business analyst on the issue of which ratios should be used in monitoring and analyzing financial performance. The selection of ratios, as discussed by Eilon and Laitenen (1992), depends on the purpose of the ratio usage. Nevertheless, managers and analyst tend to concentrate on a relatively small number of criteria. Some of the prominent ratios found in the literature are Return on Capital Employed (ROCE), Net Profit Margin (NPM) and Asset Turnover.

Absolute measures to describe corporate performance such as profit, volume, or revenue costs have to be treated carefully. A comparison of the performance of a given company over different time periods, or different companies for the same period has to be assessed against the background of the economy as a whole. A small profit in a good year for the economy does not reflect better managerial efficiency as much as a small loss in a bad year for the economy in general. Further, in light of the comparison between the performances of public enterprises and private enterprises, the accounting system used has to be also taken into account as it has a significant impact on the financial indicators used.
6.3 FINANCIAL POLICY

6.3.1 Financial Objectives

Under the Electricity Act 1949, NEB is under a statutory duty to promote the generation of electricity with the objectives of enhancing economic development of Peninsular Malaysia and of securing a supply of electricity at reasonable prices. In discharging these responsibilities, NEB was empowered to secure sufficient revenue to meet its total expenses properly chargeable to revenue accounts including interest and depreciation. To achieve this objective, NEB initially formulated its general policy, the first two based on the covenants agreed with the World Bank in the course of raising its funds from the Bank as follows:

i) NEB will fix its tariffs so that rate of return is not less than 8 percent per annum on the average value of its net fixed assets in operation in any financial year after meeting all operating expenses including depreciation based on historical costs.

ii) The net revenue (profit) will be used to meet interest charges on ordinary stocks (dividend) and to make contributions to Capital Development Account (CDA) and General Reserves (GR). The CDA and GR, together with depreciation provision and other internally generated funds will finance between 40 to 50 percent of capital expenditure expenses.

iii) An amount, approximately equal to 10 percent of

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1 Guan, L.T., TNB Internal seminar paper.
2 This policy is stated in all NEB's Annual Reports.
annual income from sales of electricity, will be allocated to the GR from the net profit and the balance goes to CDA.

However, the above covenants have been revised and expanded since 1985. This is to accommodate the requirements of the World Bank as the Bank changes its policy on lending procedure. The covenants stipulated that NEB is obligated to:

i) Generate sufficient revenue to achieve a rate of return of not less than 8 percent per annum on the average of the net revalued fixed assets in any financial year after meeting all operating expenses including taxation and depreciation based on revalued cost but before interest charges.

ii) Secure internally generated fund of not less than 30 percent of its capital expenditure calculated on the basis of a three year moving average of capital expenditure of previous, current and the following year.

iii) Maintain debt not more than 60 percent of its equity plus its total debt i.e debt-equity ratio of not exceeding 60 percent.

iv) Ensure that the net revenue for each financial year is at least 1.3 times the debt service requirement, i.e debt-service ratio of minimum 1.3.

The above covenants reflect the World Bank lending policy of not only concern with the viability of the project but also with the viability of the utility as a whole in providing a loan (Barnett, 1993) for the project. The Asian
Development Bank has also imposed similar covenants for its fund.

6.3.2 Tariff Formulation

Throughout its existence NEB has undertaken four major revisions on its tariff structure. From 1949-1958 NEB's tariff structure comprised of four rates consisting of lighting rate, power rate, public lighting rate and mining rate. It was then reviewed in 1958 and a completely new tariff structure consisting of fourteen tariffs was adopted until 1980. In 1980 a third revision was implemented to bring tariff the structure in line with the increase in oil price due to the global oil crisis in 1974 and 1979. Finally a comprehensive review of the tariff was undertaken in-house with the assistance of World Bank consultants advisers and approved by the Cabinet in 1985. The last revision came into effect on 1st September, 1985 where the long run marginal cost basis method was adopted for the first time in NEB's tariff setting. Prior to 1985, tariffs were determined on the basis of the sunk cost method.

Financial or Sunk Cost Pricing Method

Traditionally, electricity tariffs have been set well in advance of usage (Berrie, 1992; Munashinghe, 1990; Turvey and Anderson 1977). Electricity prices are based on the averaged historic accounting utility cost using the financial accounting basis, known as the sunk cost method. Electricity tariffs consisted of two components, the kWh energy charges i.e actual kilowatt-hour (kWh) consumed and the kilowatt (kW) capacity charges. All cost components are classified into variable costs representing kWh supplied; and fixed costs representing the kW ability to supply electricity at any point of time. These costs such as

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salaries and wages, repair and maintenance, depreciation, interest etc are apportioned at the Generation, Transmission and Distribution levels. Figure 6.1 explains the two-part costing approach. Fixed capacity costs are represented by F while variable costs are represented by V which are directly proportional to kWh supplied. Accordingly, total costs are represented by AB and are not directly proportional to kWh supplied. Average cost per kWh = \( \frac{C}{U} = \tan \theta \) and variable cost per kWh is given by = \( \frac{V}{U} = \tan \alpha \). It is necessary to find the demand and units at various HV, MV and LV voltage levels by using the demand and energy balance approach after taking into consideration the station use and losses. Fixed cost in terms of $/kW/month and energy cost in terms of sen/kWh is calculated at each voltage levels. The average cost of supply by tariff category is obtained by taking into consideration the diversity factor and load factor of each voltage levels. A margin is added on the average price to provide the financial return based on the financial policy of the utility.

One of the shortcomings of the sunk cost approach is that price is structured in a static setting. It does not take account of the future investment requirements of the utility. Using historical costs of assets and embedded costs implies that future economic resources will be as cheap or as expensive as in the past. As a result it does not enable the utility to raise sufficient revenue from electricity sales to replace old capital and finance power sector development.
Figure 6.1: *Two part costing*

Source: Berrie (1992), Figure 6.1, p.153
Marginal Cost Pricing

From a theoretical point of view, the utility should price at social marginal cost. Social efficiency will be maximised where for an activity the marginal benefit to the society (MSB) is equal to the marginal (opportunity) cost to the society (MSC) and when MSB = MSC, Pareto optimality is achieved. Marginal cost pricing could also be used in determining wheeling rates by transmission network company (Li and David, 1994; Kovacs and Leverett, 1994). Wheeling is the transmission of electricity from a seller to a buyer through a transmission network owned by a third party. The wheeling rates are the prices the wheeling company gets for the use of its network by the buyer and seller of the electricity to compensate for the transmission and network costs incurred.

Peak load pricing system

A problem with using the marginal cost pricing in electricity tariff setting is that charging a single price for all users at all times will lead to inefficient allocation of resources as marginal cost varies at different times and different parts of the industry. That is, electricity users impose very different marginal costs on society. The supplier faces high production cost during peak period which requires extra capacity to meet demand while remain idle during off peak period when demand is low. However this problem could be remedied through the peak load pricing system where peak time users pay more than off peak consumers. The peak load pricing system using a price discrimination strategy is designed to charge peak users according to the higher marginal costs they impose. Charging different prices to customers whose demand curves are effectively distinct would provide higher profit to the producer. Although problems could arise where low price consumers resell the product to higher-price customers thus
tending to equalise the prices customers actually pay, this does not arise in the case of electricity as it is consumed as soon as it is purchased. The peak load pricing system has important consequences. One, peak users are paying for the high marginal cost they impose on the system. Second, as an incentive is created for users to switch to consuming at off-peak times, daily consumption is spread more evenly. This reduces peak demand and less resources are needed for building more power stations.

Long-run marginal cost pricing

However, there is a controversy as to whether efficiency pricing should be based on the short run marginal cost (SRMC) or the long run marginal cost (LRMC) (Sembitzky, 1990). LRMC can be defined as the incremental cost of optimal adjustments in the system expansion plan and in system operations attributable to a small increment of demand which is sustained in the future (Munashinge, 1992 p 109). Obviously, in a static scenario, first-best optimality calls for prices that are in line with SRMC pricing. However, in a long run equilibrium in an inter-temporal setting the anuitisation of capital costs, will lead to SRMC = LRMC and short run average cost equals long run average cost (SRAC = LRAC). Nevertheless, the LRMC = LRAC will not hold unless there are constant return to scale. If P = LRMC, there is a likelihood that there will be a financial surplus. This is because marginal costs tend to be higher than average costs when units of supply are increasing. On the other hand if there are increasing returns to scale where LRMC < LRAC, as a result of economies of scale i.e decreasing average costs, LRMC pricing will result in financial deficit.

The LRMC approach can be adapted to allow the flexibility of incorporating various objectives of the utility which could include an efficient allocation of resources, a fair
allocation of costs among users according to the burdens they impose on the system, raising sufficient revenues to meet the financial requirements of the utility and other economic and political objectives without affecting the marginal costs pricing principle (Munasinghe, 1990). The LRMC method allows the structuring of prices so that they vary according to the marginal costs of meeting the demands by different consumer categories, different seasons, different hours of the day, by different voltage levels etc. LRMC approach deals with future costs over a long period of time: resulting in prices in constant terms which tend to be quite stable over time. It provides the possibility of tariff revision on a consistent and ongoing basis thereby approaching the optimal price over a period of several years. As such it can absorb large abrupt price changes without subjecting users to the experience of a price shock.

**NEB's tariff formulation**

NEB's formulation of pricing is based on the LRMC pricing approach. The LRMC approach categorised marginal costs into three broad categories namely capacity costs, energy costs and consumer costs. Marginal capacity costs are basically the investment costs of generation, transmission and distribution facilities associated with supplying additional kilowatts. Marginal energy costs are the fuel and operating costs of providing additional kilowatt-hours. Marginal customer costs are the incremental costs directly attributable to consumers including metering and billing. Relevant operation and maintenance costs as well as administrative and general costs are also allocated to these basic cost categories. Using this method, the marginal capacity cost for the generation is given by (Munashighe 1990):

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*N*EB is using a software developed by Munashinghe specifically for N*EB.*
LRMC_{gen} = \frac{(\text{Annuitised cost/KW})(1 + RM \%) + O&M}{(1 - L_{SU} \%)} \ldots (1)

where,

RM = Reserved margin
O&M = Operations and maintenance
L_{SU} = Loss due to station use

The marginal capacity cost for transmission and distribution is given by:

HV^{hv,av} component LRMC_{hv,c} = \frac{\text{(Annuitised cost/KW)}_{hv} + O&M}{\ldots (2)}

A simple way to calculate the cost/KW is to use the Annual Incremental Cost (AIC) method which for HV is given by:

\[
AIC_{hv} = \sum_{i=0}^{T} \frac{I_i}{(1+r)^i} / \sum_{i=L}^{T+L} \frac{MW_i}{(1+r)^i} \ldots (3)
\]

where

r = the discount rate
I = Investment in year i
T = Planning horizon in years
L = Time lag between investment and commissioning of facilities
MW_i = Incremental demand in year i

Thus, substituting equation (3) into (2),

HV component LRMC_{hv,c} = \text{Annuitised AIC}_{hv} + O&M \ldots (4)

MV component LRMC_{av,c} = \text{Annuitised AIC}_{av} + O&M \ldots (5)

LV component LRMC_{lv,c} = \text{Annuitised AIC}_{lv} + O&M \ldots (6)

The LRMC at various voltage levels are given by:

\[
LRMC_{hv} = \frac{LRMC_{gen}}{(1 - L_{hv} \%)} + LRMC_{hv,c} \ldots (7)
\]

\[
LRMC_{av} = \frac{LRMC_{hv}}{(1 - L_{av} \%)} + LRMC_{av,c} \ldots (8)
\]
\[ LRMC_{1v} = \frac{LRMC_{nv}}{1 - L_{1v}^u} + LRMC_{1vc} \quad \ldots \ldots (9) \]

where
\begin{align*}
L_{vc} & = \text{VC voltage losses} \\
L_{nv} & = \text{MV voltage losses} \\
L_{1v} & = \text{LV voltage losses}
\end{align*}

As discussed earlier, the marginal energy costs (MEC) are different for the two discrete periods, on peak and off peak. During the peak period, marginal energy cost constitutes the running cost of the machines to be used last in the merit order to meet the incremental kWh while the MEC during the off peak is represented by the running cost of the least efficient base load plant. These are adjusted for various voltage levels as follows:

**Peak period**

\begin{align*}
\text{MEC}_{nv} &= \frac{\text{MCE}_p}{\text{SCF}} (1 - L_{su}^u) (1 - L_{nv}) \\
\text{MEC}_{nv} &= \frac{\text{MEC}_{nv}}{(1 - L_{nv})} \quad \ldots \ldots (11) \\
\text{MEC}_{1v} &= \frac{\text{MEC}_{nv}}{(1 - L_{1v})} \quad \ldots \ldots (12)
\end{align*}

where
\begin{align*}
\text{MCE}_p & = \text{Marginal energy costs at peak period} \\
\text{SCF} & = \text{Standard conversion factor} \\
L_{su} & = \text{Station use losses} \\
L_{nv} & = \text{MV losses} \\
L_{1v} & = \text{LV losses}
\end{align*}

Similar treatment of equation is applicable in determining costs of the off peak period.

In allocating the cost to a particular consumer group, NEB obtained detailed information on characteristics such as diversity factor (DF), load factor (LF) and peak to total
consumption ratio (TNB, 1989). Using the above data the NEB’s average cost (AC) of supply is given by:

\[
AC = \frac{FC \times 100}{DF} \times \frac{1}{730 \times LF} + \text{Energy cost} \quad \text{(Sun Cost)}
\]

where

- \(FC\) = Fixed cost
- \(DF\) = Diversity Factor
- \(LF\) = Load Factor

\[
AC = \left[ \frac{(MCC \times 100)}{DF} \times \frac{1}{730 \times LF} \right] + (PR \times \text{Peak Energy Cost}) + \left[ (1 - PR) \times \text{Off peak Energy Cost} \right] \quad \text{(Marginal Cost basis)}
\]

where

- \(MCC\) = Marginal capacity cost
- \(DF\) = Diversity factor
- \(LF\) = Load factor
- \(PR\) = Peak ratio

As discussed above, using the LRMC approach could result in a return higher than the financial cost basis leading to financial surplus. In the financial cost basis the element of surplus is not included to meet financial requirements and therefore average cost has to be marked up a margin \(p\). The average price of a particular tariff is thus given by:

\[
\begin{align*}
\text{AP} & = \text{Cost} + \text{margin } p \quad \text{(Sunk Cost Basis)} \\
\text{AP} & = \text{Cost} \times \text{SDF} \quad \text{(Marginal Cost Basis)}
\end{align*}
\]

where \(SDF\) is a constant factor which scale down average price to the same level as determined by the sunk cost method. From the \(AP\), NEB structured its tariffs into three categories:

1) Flat rate

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5 "Electricity Tariff", a seminar paper by NEB.
2) 2 part rate (MD charge $/kW/month) and energy charge in sen/kWh) using

\[ \text{MD} \times 100 / (730 \times LF) + \text{Energy rate} \]

3) a peak and off peak rate (MD charge in $/kW/Month, peak and off peak energy charge in sen/kWh) using

\[ (\text{MD} \times 100 / (730 \times LF) + (\text{PR} \times \text{PER}) + (1 - \text{PR}) \times \text{OPER} \]

where

- MD = Maximum demand
- PR = Peak ratio
- PER = Peak energy rate
- OPER = Off peak energy rate

NEB's tariffs since its revision in 1985 is tabulated in Appendix 5.

Problems in estimating LRMC

However, although LRMC pricing is the most efficient pricing system, estimating LRMC and electricity demand remains a difficult exercise. Costs estimates of power stations could be higher than estimated due to delays in construction time, unanticipated increase in construction materials or labour and unforseen expenditures. Demand for electricity fluctuates and depends on the rate of growth of the economy and is difficult to forecast in the long run. Similarly, the relative price of fuels used which has to be incorporated in the LRMC equation is also difficult to predict. Difficulties in demand forecasting and power sector planning led NEB to maintain high reserved capacity of between 42 percent to 52 percent and a high reserved margin between 72 percent to 108 percent during the 1984 to 1987 period. However, such high levels could not be
sustained and renewal capacity and reserved margin fell to almost 19 percent and 37 percent respectively. By 1992 the situation was so acute that a black out on the national scale occurred.

6.4 TARIFF STRUCTURE AND GOVERNMENT INDUSTRIALISATION PROGRAMME

NEB's tariffs structure remained largely unchanged from 1958 to 1980. The Government adopted a low tariffs structure to promote economic development in the country. A study by TNB (NEB)* published in 1992 shows that its electricity tariff rates were among the lowest in eight Asian countries (Appendix 6). To support its industrialisation programme the Government designed a low tariff structure in favour of the industrial users. The Government commitment to keep low electricity rates is reflected in its decision not to increase electricity prices inspite of the increased in oil prices during the first and the second oil shocks in 1973 and 1979 respectively. Instead of revising the electricity tariff to alleviate the financial problems faced by NEB the Government announced in 1976 that it will help NEB by increasing its equity in the company. In addition it undertook to act as a guarantor for any loan obtained by NEB in the future. Similarly, after the second oil shock in 1979 the Government approved a request by the industrial users to reduce its tariffs. Tariffs for industrial users were temporarily reduced; 10 percent to hotel consumers, 20 percent industrial users and 25 percent mining consumers. The discount was then withdrawn in 1993 after the privatisation of the NEB.

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* NEB changed its name to Tenaga Nasional Berhad (TNB) upon its corporatisation in 1991. The name TNB will be used whenever reference is made to NEB from year 1991 onwards.

7 Tate (1991), p 217.
The discount given to industrial consumers reflects the roles required of NEB in the socio-economic development context of the country. Since 1985 to 1991 this policy had cost NEB (TNB) in forgone revenue M$2.8 billion or on average M$400 million annually. Between 1991 and 1993 the discount had cost TNB another M$1.5 billion with an average of M$500 annually. Hoare Govett estimated that with the withdrawal of the discount TNB’s revenue will be increased by M$537 million in the 1993/94 financial year.®

During the 1975-1990 period, industrial customers have been subsidised by other users (Table 6.1). The commercial rates were the highest among the four groups of electricity consumers. There are a few plausible explanations for this policy. Firstly, it could be intended to charge consumers based on their affordability to pay on consumption of goods and services. Secondly, it could be seen as a way to promote efficient use of electricity by the commercial consumers. Thirdly, this policy is politically desirable. As noted by Tate (1991, p 318),

"The question of the Boards tariffs structure has always been the most sensitive issue for the Government, both politically from the vote-catching angle, and also economically, from the point of view of encouraging industrial development."

Charging a higher rate of electricity for domestic users would be politically unpopular as the issue could be used against the ruling party by the opposition. Fourthly, a lower domestic rate will benefit the rural population who are the lowest income group in the country. While this reflects the fulfilment of NEB’s social objectives of providing electricity to the rural areas, one could argue that it is the urban domestic consumers who benefited more from this policy. This is because most of the rural

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® Hoare Govett is an international security company operating in Malaysia. Estimated figures as quoted in its article of 16.03.1992.
population are low income group and therefore have less access to electrical appliances.

Price trends

Three trends can be observed on the major changes in average electricity prices from the period of 1975 to 1990. The first is from 1975 to 1978, second from 1980 to 1984 and the third period from 1985 to 1990.

As seen from Figure 6.2, the average price started to increase from 1977 to 1981, as a result of increase in oil price. During this period cost of fuel per unit

Table 6.1: NEB's Tariffs per kWh (M sen) 1975-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Public Lighting</th>
<th>Armed Forces</th>
<th>Average</th>
<th>Cost of Production</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
<td>(f)</td>
<td>(g)</td>
<td>(h)</td>
</tr>
<tr>
<td>1975</td>
<td>14.25</td>
<td>13.33</td>
<td>8.61</td>
<td>17.28</td>
<td>13.12</td>
<td>13.31</td>
<td>8.28</td>
<td>5.03</td>
</tr>
<tr>
<td>1979</td>
<td>16.08</td>
<td>17.76</td>
<td>13.08</td>
<td>21.00</td>
<td>-</td>
<td>16.98</td>
<td>14.63</td>
<td>2.35</td>
</tr>
<tr>
<td>1980</td>
<td>19.88</td>
<td>22.98</td>
<td>18.70</td>
<td>27.01</td>
<td>-</td>
<td>22.14</td>
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<td>29.04</td>
<td>-</td>
<td>23.93</td>
<td>19.09</td>
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</tr>
<tr>
<td>1985</td>
<td>21.42</td>
<td>24.47</td>
<td>17.00</td>
<td>27.54</td>
<td>-</td>
<td>22.36</td>
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<td>-</td>
<td>20.03</td>
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<td>6.94</td>
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<td>1988</td>
<td>21.24</td>
<td>23.05</td>
<td>14.08</td>
<td>16.41</td>
<td>-</td>
<td>18.72</td>
<td>13.06</td>
<td>5.66</td>
</tr>
</tbody>
</table>

Note: Armed Forces comes under the same as Public Lighting since 1979.
Source: Calculated from NEB Annual and Statistical Reports 1975-1990
Figure 6.2: NEB's Tariffs per kWh (M sen) 1975-1990

Source: Table 6.1
of electricity produced increase from 4.7 sen to 13.8 sen (Appendix 12) Electricity price stabilised from 1981-85 and then declined from 1986 to 1990. There are various reasons for this trend during this period. Firstly, due to the 17 percent special discount given to industrial users described above. Secondly, there was a decline in oil prices. Fuel cost declined from 11.0 sen a unit in 1984 to 4.7 sen a unit in 1988 (Appendix 12). Thirdly, the diversification policy of shifting to gas from oil has resulted in fuel efficiency gain (or saving) and lower operating costs. Fourthly, the rehabilitation programme of old plants has increased thermal efficiency and thus reducing costs on fuel. In real terms electricity prices have been on a declining trend as compared inflation rate shown by the Consumer Price Index and the GDP deflator which have been on an increasing trend (Appendix 12).

6.5 RATE OF RETURN

As pointed out, one of the financial objectives set by the Board is to achieve a financial return of Return on Capital Employed (ROCE) of not less than 8 percent per annum. Table 6.2 shows the ROCE of NEB in comparison to EGAT and CEGB from 1975 to 1990.

With the exception of 1978, 1979 and 1980 NEB has managed to achieve and exceeded its target. Since 1981 ROCE has been more than 10 percent. NEB was also registering a better rate of return than EGAT. The average ROCE by NEB of 9 percent is within the average ROCE of 9.2% percent achieved by utilities in most developing countries, while EGAT achieved a slightly lower average rate of return of 6 percent per annum. However, it can be seen that the average ROCE of NEB and EGAT was about the same from 1981 to 1989, with an average of 12 percent per annum. This is

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Beasant Jones (1993)
much higher than the average ROCE for most utilities in developing countries which only achieved an average return of 5.8 percent between 1980-1984 and 6.4 percent between 1985-1989. NEB's rate of return could not be compared to CEGB after 1980 because the later changed its accounting approach from historic cost accounting to current cost accounting. However, prior to that both NEB and CEGB had comparable average rate of return, from 1975-1978, of 9.4 percent and 9.1 percent respectively.

The high average rate of return achieved by NEB was due to high profits made from 1981 to 1988 (Appendix 9). Operating profit were increasing at a higher rate than increase in operating costs (Figure 6.4). At per unit level operating cost has been declining from 19.09 sen a unit to 11.68 a unit (Appendix 12). In addition there was also a high demand growth of electricity during the period.

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11 The changing of historic cost accounting to current cost accounting increase the value of the assets of CEGB.
<table>
<thead>
<tr>
<th>Year</th>
<th>NEB</th>
<th>EGAT</th>
<th>CEGB</th>
</tr>
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<td>11.1</td>
<td>4.9</td>
<td>9.4</td>
</tr>
<tr>
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<td>4.2</td>
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<td>7.8</td>
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<td>7.7</td>
<td>NA</td>
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</tr>
</tbody>
</table>

Note: ROCE is calculated as a percentage of Net Profit/Capital Employed

Source: Calculated from NEB Annual Reports 1975-1990
Figure 6.3: Rate of Return (ROCE): NEB, EGAT, CEBG

Source: Table 6.2
Figure 6.4: NEB: Operating Profit (M$'000) 1975-1990

Source: Appendix 7
6.6 TRANSFER TO CURRENT DEVELOPMENT ACCOUNT AND GENERAL RESERVE

As the general financial policy discussed in Section 1, NEB has to channel profits to (a) General Reserve Account equivalent to 10 percent on sales, and (b) to Current Development Account after paying dividend. Table 6.3 shows the appropriations of Profit after tax (PAT) from 1975-1990.

Table 6.3: NEB - Appropriations of Profit After Tax (M$'000) 1975-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit After Tax</th>
<th>Dividend Paid</th>
<th>Transfer to General Reserve</th>
<th>Transfer to Current Development Account</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>84,112</td>
<td>5,032</td>
<td>13,600</td>
<td>65,480</td>
</tr>
<tr>
<td>1976</td>
<td>67,260</td>
<td>6,377</td>
<td>7,800</td>
<td>53,083</td>
</tr>
<tr>
<td>1977</td>
<td>99,989</td>
<td>7,102</td>
<td>7,700</td>
<td>85,187</td>
</tr>
<tr>
<td>1978</td>
<td>89,593</td>
<td>8,700</td>
<td>17,800</td>
<td>63,093</td>
</tr>
<tr>
<td>1979</td>
<td>(7,822)</td>
<td>-</td>
<td>(7,822)</td>
<td>-</td>
</tr>
<tr>
<td>1980</td>
<td>125,755</td>
<td>-</td>
<td>83,522</td>
<td>142,233</td>
</tr>
<tr>
<td>1981</td>
<td>255,146</td>
<td>-</td>
<td>26,200</td>
<td>228,946</td>
</tr>
<tr>
<td>1982</td>
<td>390,438</td>
<td>44,921</td>
<td>1,800</td>
<td>343,717</td>
</tr>
<tr>
<td>1983</td>
<td>661,287</td>
<td>39,921</td>
<td>16,700</td>
<td>604,666</td>
</tr>
<tr>
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<td>19,500</td>
<td>534,858</td>
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<td>44,539</td>
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<td>32,497</td>
<td>-</td>
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<td>35,205</td>
<td>12,529</td>
<td>678,098</td>
</tr>
<tr>
<td>1988</td>
<td>791,802</td>
<td>35,205</td>
<td>25,533</td>
<td>731,064</td>
</tr>
<tr>
<td>1989</td>
<td>597,950</td>
<td>35,205</td>
<td>34,300</td>
<td>528,445</td>
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<tr>
<td>1990</td>
<td>495,897</td>
<td>35,205</td>
<td>-</td>
<td>460,692</td>
</tr>
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</table>

Source: NEB Annual Reports 1975-1990
Figure 6.5: NEB: Appropriations of Profit After Tax (M$'000)

Source: Table 6.3
With the exception of 1978-1981 when NEB was facing financial difficulty due to increase in oil prices, it has managed to declare a dividend of an average 7 percent per annum. However, NEB was unable to transfer an amount equivalent to 10 percent on sales of electricity to its General Reserves as required. Although a high percentage of PAT was allocated to General Reserve in 1978, 1980 and 1981 it was below the 10 percent on sales target. The high allocation was to raise cash for cashflow purposes as NEB needed more cash to cope with the increase in oil prices. The high allocation of PAT to Current Development Account reflects NEB’s commitment in undertaking capacity expansion programme to meet rapid demand growth.

6.7 SELF FINANCING RATE

Table 6.4 shows that NEB has been able to achieve its self financing rate above the minimum target of 30 percent set by its major lenders, the World Bank and the Asian Development Bank. Increase profits due to higher tariff and high demand growth provided NEB with higher profit to be channelled to Current Development Account. This enables NEB to obtain external loans and grants with a high self financing rate to finance its power sector expansion programme which was enormous.

Comparatively, NEB has a higher self-financing ratio than EGAT reflecting the heavy reliance of EGAT on borrowing to finance its power development project. The self financing ratios of both NEB and EGAT, were well above those attained by most utilities in developing countries. The average self financing rate of utilities in developing countries was 18.6 percent, 19.4 percent and 22.1 percent in 1975-1979, 1980-1984 and 1985-1989 respectively (Besant-Jones, 1993). It is evident that CEGB relied on very little borrowing to finance its power development project. This is because a)
Table 6.4: Self Financing Rate

<table>
<thead>
<tr>
<th></th>
<th>NEB (a)</th>
<th>EGAT (b)</th>
<th>CEGB (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
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<td>29.2</td>
<td>58.9</td>
</tr>
<tr>
<td>1976</td>
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<td>NA</td>
</tr>
<tr>
<td>1990</td>
<td>42.0</td>
<td>N.A</td>
<td>NA</td>
</tr>
</tbody>
</table>

Notes: Self financing ratio is calculated as Internally generated funds / Capital requirements x 100.

Figure 6.6: Self Financing Rate - NEB, EGAT, CEGB 1975-1990

Source: Table 6.4
its retained earnings after tax was sufficient to cater for its capacity expansion programme\textsuperscript{12} and b) UK electricity industry is a mature industry and therefore capacity expansion is not as rapid as in Malaysia and Thailand.

NEB achieved a high self financing ratio because most of the profit after tax was transferred to Current Development Account at the expense of the General Reserve (Figure 6.5). This has resulted in, a) NEB dependent on overdraft facilities provided by the local financial institutions as shown by the high charges on overdraft facilities (Appendix 9) and (b) the injection of capital from the Government to bail NEB out in financial difficulties (Appendix 13). The central question is, why did NEB transfer more than 90 percent of its profit after tax to Current Development Account and rely on overdraft facility and Government equity injection to finance its operating expenses? There are three plausible answer to this question. Firstly, providing a higher self financing ratio of more than 30 percent will save NEB from paying a high interest rates for long term loan. In terms of profitability, a higher self financing ratio would result in higher profit due to lower interest charges for long term loan. This would place NEB in a better position to obtain borrowing for future capacity the expansion. However, interest charges for long term loan has been on the increasing trend despite the high self financing ratio (Appendix 9). This is due to (a) the continuing capacity expansion undertaken by NEB has increased long term borrowing and (b) the depreciation of the Malaysian currency especially against Yen and US dollar had increased interest payment due to increase principal amount borrowed. The second reason for high self financing rate policy is related to the issue of the depreciation of the Malaysian currency in (b). A higher self financing

\textsuperscript{12} Although the rate of return between NEB and CEGB was comparable as discussed earlier, in absolute term its profit was very much higher as it had a larger turnover.
ratio would reduce dependency on foreign funds thus protecting NEB from foreign exchange fluctuations which has been to the disadvantage to NEB (Appendix 10). Thirdly, the government had shown its commitment to provide financial assistance in the form of equity injection whenever NEB needed fund for its operations. The six occasions of government equity injection for cashflow needs during the 15 year period under study, reflect the government commitment to assist NEB in transferring high percentage of its profit to Current Development Account ensuring NEB to undertake capacity expansion of the electricity sector.

**Domestic and External Borrowing**

NEB has generally benefited from privileged access to public credit and Government guaranteed, extensive credit facilities provided either as grants or at subsidised rates to fund its expansion plan.

NEB’s Borrowing is characterised by two types, domestic borrowing and foreign borrowing.

Initially, NEB relied heavily on foreign loan for its expansion programme (Figure 6.7). However, since 1986 NEB’s reliance on Government loan has increased from 51 percent of total loan in 1985 to 65 percent by 1990 (Appendix 8). By 1990 NEB had reduced its foreign loan by 37 percent from M$2.047 billion to M$1.286 billion in 1990. The decreased came about as a result of swaps, prepayments and refinancing of foreign loans.\(^\text{13}\)

The high NEB borrowing in foreign currency has made it vulnerable to foreign exchange fluctuation risk. In addition to foreign loan, NEB’s loan from Government was also obtained from foreign sources. About 75 percent of

\(^\text{13}\) NEB’s Annual Reports 1988 and 1989.
NEB's debt has been in foreign currencies mainly yen and US dollar. The appreciation of Yen against the Malaysian Ringgit had caused concern for NEB. Since 1983 the Yen has appreciated by 106 percent from M$0.9776 per ¥100 to M$2.0451 per ¥100. Likewise the US dollar, Pound Sterling, Singapore dollar and Deutsch Mark has all increased against the Malaysian Ringgit by 18 percent, 38 percent, 45 percent and 83 percent respectively (Appendix 10). As a result Yen loan has become more expensive in terms of paying the principal loan which was double in amount and the interest rates on the increased principal amount. The high appreciation of Yen, which constituted a high percentage of Government foreign loan, has imposed financial burden to NEB and the Malaysian Government. This has led Government to request for renegotiation with the Japanese Government and firms on the possibility of reducing interest rates but was turn down by the Japanese. Consequently, the Government has decided that no more loans are to be obtained from Japan.\(^\text{14}\)

\(^{14}\) The Prime Minister in his visit to Japan in October 1994 said that Malaysia has decided not to borrow any more Yen. New Straits Times, 1994.
Figure 6.7: NEB Borrowing (M$'000) 1975-1990

Source: Appendix 8
A major issue in NEB’s capital development expenditure is its ability to finance capacity expansion programme to meet increasing demand for electricity. It is estimated that 30,000 MW of electricity is required by year 2020 which at current prices is estimated to be in the region of M$100 billion or about US$40 billion.¹⁵ Within the next ten years, NEB requires M$38 billion for its capital spending.¹⁶ In the short term, by year 2000 it needs M$3.1 billion to expand its 500kV transmission lines of which M$2.7 billion to be spend in 1997.¹⁷ In addition NEB needs another M$3.6 billion by 1999 to maintain existing plants and upgrade electricity cables some of which are thirty years old bringing its capital requirement to M$7 billion.¹⁸

Based on the estimated capital requirement of M$100 billion in 25 years time, average annual capital requirement of M$4 billion is required to meet the ever growing demand for electricity. It is unlikely that NEB could meet the capital required for meeting the self financing ratio financial covenant imposed by lenders without having to depend on the Government increase equity participation. The minimum internally generated fund required based on 30 percent equity, will be in the region of M$1.2 billion annually. As seen above NEB’s profit was just about M$500 million in 1990. It is therefore highly unlikely that NEB can achieve the minimum self-financing ratio of 30 percent in order to get financing to undertake development plan without Government assistance.

¹⁵ As revealed by Minister of Energy in Utusan Malaysia, 25.05.1994.
¹⁶ Interview source.
¹⁷ Disclosed by TNB’s Chairman in Utusan Malaysia, 24.09.1994.
¹⁸ TNB’s Chairman as quoted in Utusan Malaysia, 21.06.1994.
The dependency on Government loan in the future could pose a few problems for NEB. Firstly, it exposes NEB to Government budgetary constraints which could limit its capacity expansion program. Secondly, higher government allocations for the electricity sector would affect public investment and spending in other sectors for achieving social objectives.

6.8 DEBT EQUITY RATIO

Table 6.5 shows the comparison of the debt-equity ratio between NEB, EGAT and CEGB. With the exception of 1985, 1986 and 1987, NEB has been able to meet its debt-equity ratio covenant of not more than 60 percent. In contrast, EGAT debt-equity ratio has been consistently high reaching 75 percent in 1986. CEGB had a low debt-equity ratio reflecting the less dependence of CEGB on borrowing to finance its expansion programme.

The maintaining of acceptable debt equity ratio is important as it has implications for future development of the utility. A heavily indebted position will pose problems for the utility to obtain new loans or negotiate better terms and conditions for a new loan. A problem of obtaining loans for capital development expansion programme is it will stifle the growth of the economy as an increase in demand for electricity could not be met. In addition, utility will undertake power projects which provides highest financial returns while neglecting moderate financial returns but which have greater social impacts.

NEB has also been able to achieve its Debt Coverage Ratio of minimum of 1.3 as shown in Table 6.6 throughout the 1975-1990 period. EGAT Debt Coverage Ratio was below 1.3 from 1978 to 1980 and 1984 and 1985. However since 1986-1989, both NEB and EGAT recorded about the same ratio.
### Table 6.5
**NEB, EGAT and CEGB: Debt Equity Ratio (1975-1990)**

<table>
<thead>
<tr>
<th></th>
<th>NEB (a)</th>
<th>EGAT (b)</th>
<th>CEGB (c)</th>
</tr>
</thead>
<tbody>
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<td>59</td>
<td>56</td>
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<td>56</td>
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</tr>
<tr>
<td>1990</td>
<td>59</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Notes:** Debt Equity Ratio is calculated as Total Debt / Total Assets.  
Figure 6.8: Debt Equity Ratio 1975-1990

Source: Table 6.5
Table 6.6
NEB, EGAT and CEGB : Debt Coverage Ratio (1975-1990)

<table>
<thead>
<tr>
<th></th>
<th>NEB (a)</th>
<th>EGAT (b)</th>
<th>CEGB (c)</th>
</tr>
</thead>
<tbody>
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<td>1.3</td>
</tr>
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<td>1990</td>
<td>1.4</td>
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</tr>
</tbody>
</table>

Notes:
1. Starting 1980 CEGB system of accounting changed from historical cost basis to current cost basis.
2. Debt Coverage Ratio is calculated by Total Assets / Total Debt

Figure 6.9 NEB, EGAT and CEGB: Debt Coverage Ratio
(1975-1990)

Source: Table 6.6
6.9 BILLING EFFECTIVENESS

The billing effectiveness of NEB as compared to EGAT, MEA, PEA and CEGB is shown in Table 6.7. Comparison includes MEA and PEA because they supply electricity to the consumers while EGAT only supplies electricity to MEA and PEA. It is therefore, in terms of billing that MEA and PEA has similar activities and functions as NEB. It is evident that NEB has a poor billing effectiveness as compared to the rest. The normal period given for customers to pay their electricity bill is 14 days for NEB and 30 days for EGAT, MEA and PEA. Table 6.7 reveals that the average number of days between billing and payment was rather high for NEB. Average collection period was extremely high during 1975 to 1986. The high average collection period coincides with the period of recession and the increased revision of the tariff structure. There is a common trend between the utilities where all were reducing collection period reflecting better billing policies.

NEB’s poor collection period means that a lot of money was tied up with customers. One way to redress this problem was to seek the use of overdraft facilities which carried high interest rates. This problem was highlighted in 1981 by the Treasury Department representative who the suggested that NEB should take immediate steps to recover a huge debt amounting to M$155 million owed to it by sundry customers in order to pay interest charges and improve cash flow of the company.\(^{19}\)

\(^{19}\) Tate (1991), p229
Table 6.7  Billing Effectiveness of NEB, EGAT, MEA, PEA and CEGB  
(Number of days)\textsuperscript{25}

<table>
<thead>
<tr>
<th></th>
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<th>MEA</th>
<th>PEA</th>
<th>CEGB</th>
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<tr>
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<td>73</td>
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<td>1987</td>
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<td>1988</td>
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<td>1989</td>
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<td>49</td>
<td>34</td>
<td>NA</td>
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<tr>
<td>1990</td>
<td>65</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Notes: Billing Effectiveness or Collection period is calculated by Receivables / Sales x 365 days.


\textsuperscript{25} MEA stands for Metropolitan Electricity Authority and PEA for Province Electricity Authority.
Figure 6.10: Billing Effectiveness of NEB, EGAT, MEA, PEA and CEGB

Source: Table 6.7
6.10 CONCLUSIONS

In this chapter we have analysed the financial performance of NEB from 1975 to 1990 concentrating on a), rate of return criteria and b), operating ratios in terms of self-financing ratio, debt equity ratio and debt service ratio. These ratios have been part of covenants imposed by major lenders such as the World Bank and the Asian Development Bank. We have also looked at the financial problems of NEB and their underlying causes. Finally we have examined issues pertaining to capital development expenditure of NEB to meet the increase in demand for electricity by building more power plants.

From the evidence presented, NEB was able to achieve its profitability and operating targets. In fact NEB was commended by the World Bank in 1987 for its efficient financial management and stable financial record. NEB was able to achieve an average rate of return of ROCE of 10.5 percent higher than its 8 percent target. This is better than 8.7 percent achieved by EGAT. NEB has also been able to provide dividend its shareholder i.e the Government on an average of 6.0 percent per annum. On the operating side, prior to 1980, its target of achieving 40-50 percent internally generated fund to finance its power development project was not achieved due to electricity tariff structure which was lagging behind the increase of oil prices. However, after the tariffs revision based on the long run marginal price concept was introduced in 1980, NEB was able to improve its internally generated fund between 40 to 65 percent which is well above the minimum requirement of 30 percent set by the World Bank.

However, although NEB was achieving its financial targets, we noted that it was also facing financial, operational and

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managerial problems which limit and constraint its operations. These problems, limitations and constraints originated from two sources. Firstly, government and political interference on financial and investment decisions. Secondly, managerial and operational problems arising from within NEB due lack of proper implementation of financial policies.

On the operational level, NEB has a poor credit policy on customers billing. Its collection periods were exceeding 60 days which is far too long as compared to MEA, PEA and CEGB. Substantial monies have been tied up in debtors which created cashflow problems between 1975-1980. It has to resort to Government equity injections and the use of overdraft facilities from banks which carried high interest rates. Although usage of overdraft facilities has been declining since 1983 due to improved profitability, monies tied up in debtors were still high. This was still a loss to NEB as monies tied up in debtors deprived NEB from interest income. Due to the high demand growth for electricity as a result of the industrialisation programme in the country, NEB has had to channel a greater proportion of its net profit to the Capital Development Account. As has been pointed out, NEB was unable to achieve its target rate of apportioning 10 percent of sales value to the General Reserves Account. As a result NEB has got to rely on government equity injection at one time or another to solve its cashflow problems in order to keep operating ratios consistent with lenders covenants.

Reliance on foreign loans has exposed NEB to the volatile foreign exchange rates. NEB was paying very high interest charges for loans obtained abroad due to the appreciation of foreign currencies against the Malaysian Ringgit. Although the dependency on foreign loans has decreased to 25 percent in 1990, interest charges remained high constituting 27 percent of profit before interest. The
appreciation of foreign currencies make it more expensive for NEB to repay existing loan and to borrow new ones. Besides, borrowing from the traditional source of cheap loan from the World Bank and Asian Development Bank was more competitive and more difficult to obtain as more developing countries compete for the limited funds.

In order to improve the financial performance of NEB one has to redress the underlying causes for the financial, operational and managerial problems faced by NEB. First, less government and political interference is desired (Chapter 7 and 8). Given the Malaysian context, this can only be achieved through privatisation means as the government has not got the political will to exercise an arm-length approach to running public enterprises. As pointed out in Chapter 2, since the implementation of the New Economic Policy in 1970 government involvement and interference in running public enterprises had been heavy handed. Second, exposing NEB to capital market discipline provides a better means of achieving better financial performance. The capital market discipline would put pressure on NEB to improve its billing policies and stick to plant construction schedule in order to minimise costs. As minimising costs is crucial for the survival of NEB this will provide incentive for the managers (NEB) to commit and design a better and more effective form of internal monitoring system. Better monitoring would provides less opportunity for its managers (and staff alike) to undertake wasteful practices for self benefit or engage in shirking activities (discussed in Chapter 7). Third, more use of domestic capital market to fund capacity expansion programme would improve profitability and financial performance as NEB is less subjected to foreign exchange rate fluctuation which has been to the disadvantage to NEB due to the depreciation of the Malaysian currency. Looking ahead, huge requirements for investment capital are needed to meet capacity expansion of 30,000 MW in the next 25
years leading to the year 2020. Besides, NEB required huge funds to improve, upgrade and install new transmission lines for industrial users and reduce electricity losses. It has been argued that it is highly unlikely that NEB could achieve the minimum internally generated fund of 30 percent without having to depend on increased Government equity participation in NEB which increases the financial burden and commitment in the power sector. Capital market would provide NEB with the necessary fund to undertake such a massive capacity expansion to meet increasing demand.

Fourth, introduction of competition would improve the financial performance of NEB. This is achieved through better costs efficiency by reducing cost of production which is a crucial factor in determining the survival of a firm in a competitive market environment. The tariff structure ensures NEB of sufficient return to meet its expenses and at the same time provide surplus to meet its capital expenditure programme in meeting increase in demand could provide the managers with a complacent attitude. Without competition, increased operating costs due to operating and technical inefficiencies resulting from poor management and maintenance could be easily passed on to the consumers.

Privatisation is therefore forms a central issue in improving financial performance of NEB. The preceding chapter examines further issues pertaining to the desirability and implementation of the privatisation programme in the electricity sector and looks at problems of policy implications. Electricity sector reform in terms of introducing competition in the electricity sector is discussed in chapter 8.
7 PRIVATISING THE ELECTRICITY SECTOR IN MALAYSIA

7.2 Problems of the Electricity Sector

7.3 The Privatisation of the Electricity Sector and Its Achievements
   7.3.1 Reducing Financial Burden of the Government
   7.3.2 New Economic Policy
   7.3.3 Efficiency and Quality of service

7.4 International Investors Participation in Power Projects

7.5 Conclusions
CHAPTER 7: PRIVATISING ELECTRICITY IN MALAYSIA

To recapitulate, the objective of this research is to look into the desirability and the feasibility of the electricity privatisation programme in Malaysia. We have so far examined the underlying economic principles of the privatisation debate and its empirical evidence, and the rationale and objectives of the privatisation programme in Malaysia. We have also examined the technical performance of NEB using the inter-country comparison approach adopting the Data Envelopment Analysis Method. In the previous chapter, we have looked at the financial performance of NEB, its problems and its capacity expansion programme to meet the high growth in electricity demand.

This chapter is intended to serve two purposes: Firstly, it is an attempt to evaluate the desirability of the electricity privatisation programme by focusing on operational and managerial aspects of NEB which could only be improved by change of ownership. Secondly, it is an attempt to evaluate the achievements of the electricity privatisation programme in achieving its intended objectives. This chapter consists of five sections. Section 7.2 discusses problems and issues pertaining to the desirability of the electricity privatisation programme and looks at the issue of whether ownership matters in achieving efficiency of NEB. To achieve this objective, it focuses on the institutional evidence and the relevance of the Theory of bureaucracy, property rights theory and X-efficiency theory in explaining problems faced by NEB which subsequently led to operational and technical inefficiencies. Section 7.3, assesses the achievement of the electricity privatisation programme in relation to the overall objectives of the privatisation programme. Section 7.4 looks at the international participation in the power projects in Malaysia and finally, the Chapter is summarised in a brief conclusions in Section 7.5.
7.2. THE PROBLEMS OF THE ELECTRICITY SECTOR

Poor reliability of supply

Power disruptions in the form of power failures, blackouts, delayed supplies and load shedding have been a major problem in the electricity sector in Malaysia (Tate, 1991). These problems reached their climax in 1992 after its privatisation programme when a major blackout took place which affected the whole country.

Major power supply disruptions in recent years can be traced way back to 1981 when a total collapse of the Central and Southern system was caused by insufficient generation of electricity due to plant breakdown. Between 1981 and 1982, NEB faced a series of high voltage problems and the system experienced another three major disruptions. Two of these disruptions were caused by tripping resulting in the isolation of Kuala Lumpur (South) substation from Tuanku Jafar Power Station in Port Dickson, Negeri Sembilan. The other disruption was caused by a bush fire under the Temenggur-Papan 275 kV line resulting in the loss of hundreds of MW of load. Another major system disturbance also occurred in 1985, caused by loss of both the transmission circuits from Paka to Kampung Awah. The tripping resulted in a loss of 500 MW of power generation into the grid. Since 1990, electricity disruptions, power surges and voltage trips have been on the rise. Figures

As noted by Tate these problems were highlighted in newspapers since 1950s.


NEB Annual Report, 1981/82.


The system demand at that time was 1650 MW while the highest demand during that year was 2134 MW which took place in August. It took NEB nine hours to install 90 percent of the electricity supply to affected consumers.
from the Electricity Supply Department shows that disruptions have been on an increasing trend from an average of 6,000 a month in 1990.\textsuperscript{6}

The problems of reliability and security of supply can be attributable to three factors - bureaucratic delay, poor project implementation, and government and political intervention.

Bureaucratic delay

One of the major problems with the security of supply was that the plan was not executed on time due to bureaucratic process. The bureaucratic red tape comes in the form of complying to procedural and policy rules set by the relevant ministries which are sometimes conflicting and give rise to problems of coordination, monitoring and supervision by the relevant ministries. Bureaucratic delay in selection and awarding of tender, within TNB itself and between TNB and the relevant ministries, affects the execution of capacity expansion plans to meet increase in demand growth. These delays threatened the reliability and security of supply as reserved capacity reached minimum level in 1992 (Table 7.1). Problems of monitoring and supervision due to bureaucratic process had resulted delay in the expansion programme of existing plant. For example in 1991 the Ministry of Energy had anticipated that there would be problems of electricity supply sometime in September or October, 1992.\textsuperscript{7} To overcome the problem, as a short term solution, TNB was to install 2 x 500MW and 2 x 350MW turbines. In August 1991 a task force was formed to look into the short term and long term energy needs of the country.\textsuperscript{8} The responsibility of the task force was to

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\textsuperscript{6} New Straits Times, 01.03.1993.

\textsuperscript{7} Business Times, 30.07.1991.

\textsuperscript{8} As revealed by the Deputy Minister of Energy in the Star, 06.08.1991.
devise plans and strategies to meet increasing demand until 1996. According to the Minister quarterly reports would be submitted to inform the Cabinet on energy situation.\textsuperscript{9} At the same time it was reported that TNB intended to purchase electricity from the private sector in order to overcome the expected power shortages.\textsuperscript{10} By August 1991, believing that the expansion programme was on schedule, the Ministry saw no immediate problem on the security of supply and readjusted its forecast by announcing that the country will only face a slight shortage in June 1993.\textsuperscript{11} In spite of this, a major power failure occurred in June 1992 which took place in several areas in Kuala Lumpur affecting households and causing disruptions to business and manufacturing activities.\textsuperscript{12} The capability of the system to meet rapidly growing peak demands deteriorated to the point where planned load shedding and unplanned outages became a daily occurrence in late 1992. Power disruptions on average jumped to 28,000 a month in early 1992 and 30,000 towards the later part of 1992.\textsuperscript{13} The table below shows the supply and demand of electricity from financial year 1990/91 to 1993/94.

\begin{table}
\begin{tabular}{|l|c|c|}
\hline
Year & Supply & Demand \\
\hline
1990/91 & 123,456 & 123,456 \\
1991/92 & 123,456 & 123,456 \\
1992/93 & 123,456 & 123,456 \\
1993/94 & 123,456 & 123,456 \\
\hline
\end{tabular}
\end{table}
Table 7.1: TNB's Installed Capacity Expansion (1990 to 1994)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Installed Capacity (MW)</td>
<td>4,919.0</td>
<td>5,652.0</td>
<td>5,909.0</td>
<td>7,319.0</td>
</tr>
<tr>
<td>Maximum Demand (MW)</td>
<td>3,990.0</td>
<td>4,498.0</td>
<td>4,971.0</td>
<td>5,610.0</td>
</tr>
<tr>
<td>Reserved Capacity (MW)</td>
<td>929.0</td>
<td>1,154.0</td>
<td>938.0</td>
<td>1,709.0</td>
</tr>
<tr>
<td>% of Reserved Capacity</td>
<td>18.9</td>
<td>20.4</td>
<td>15.9</td>
<td>23.4</td>
</tr>
<tr>
<td>% of Reserved Margin</td>
<td>23.3</td>
<td>25.7</td>
<td>18.9</td>
<td>30.5</td>
</tr>
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</table>


Poor monitoring

The major power supply disruption in June 1992 should have sent the danger signal to the Ministry of Energy and TNB on the acute danger of the power shortages facing the country. From Table 7.1, one could easily spot the problem of the security of supply when reserved capacity was just 18.9 percent 1990/1991. This was a critical position when one takes into consideration of the TNB's maintenance policy that 20 percent of the installed capacity has to be allocated for maintenance at any one time. In September 1992, the problems of power supply became acute. There was no reserved capacity available due to maintenance of plant. TNB clarified that its capacity to supply just before the September 1992 incident was in the region 4,105MW. This was 866MW short of peak demand. The explanation given by TNB was that many plants were old and require more frequent

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15 In Shaikh Othman article in New Straits Times, ?, 1993.

16 Calculated from Table 7.1, that is maximum demand in 1992 (4791MW) minus available capacity at that time (4105MW).
This meant that 30 percent of the installed capacity was not available at that time, 10 percent higher than the usual 20 percent capacity reserved for maintenance purposes.

The question is how did TNB, despite of the critical situation, try to maintain equilibrium between supply and demand in the system? There are two plausible explanations to this. Firstly, it increased supply by delaying maintenance schedule, especially that of older plants. This meant that the capacity taken out for repair and maintenance was below the 20 percent under normal circumstances. This undoubtedly would have repercussions on the efficiency of the older generating plants. Secondly, it made arrangements for importing electricity from neighbouring countries, Thailand and Singapore, during peak demand time. After the blackout incident TNB’s on recommendation of its consultant increased its reserve capacity requirement to 35 percent. This is to ensure that TNB can provide the security of supply in a rapidly expanding economy.

The blackout incident in September 1992 took place when four distributional lines from Paka to Teluk Kelong was damaged by lightning resulting the loss of 1,000 MW of installed capacity from the system. Prior to this, in February 1993, three of its seven turbines were out of operation for various reasons related to maintenance (New Straits Times, 24.02.1993). This could be one of the reasons why power disruptions occurred in February and March which resulted 9 firms in Penang filing compensation from TNB as discussed earlier. There was another crisis in March 1993 when 1000MW was taken out for maintenance work (New Straits Times, 19.01.1994). During the September blackout, certain older plants such as power stations in Prai and Pasir Gudang were also undergoing overhauling and rehabilitation work besides the Port Dickson plant. TNB’s spokesman later clarified that a large part of the problem during the power shortage was due to plants were out for overhaul. New Straits Times, 21.12.1993.

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17 For example the 600 MW Tuanku Jaafar steam power station in Port Dickson was built in 1968 and has been operating at maximum capacity. In February 1993, three of its seven turbines were out of operation for various reasons related to maintenance (New Straits Times, 24.02.1993). This could be one of the reasons why power disruptions occurred in February and March which resulted 9 firms in Penang filing compensation from TNB as discussed earlier. There was another crisis in March 1993 when 1000MW was taken out for maintenance work (New Straits Times, 19.01.1994). During the September blackout, certain older plants such as power stations in Prai and Pasir Gudang were also undergoing overhauling and rehabilitation work besides the Port Dickson plant. TNB’s spokesman later clarified that a large part of the problem during the power shortage was due to plants were out for overhaul. New Straits Times, 21.12.1993.

18 NEB had arrangement with Singapore Electricity Board (SEB) and Electricity Generating Authority Thailand (EGAT) of buying and selling electricity at different time of the day.

19 Senior General Manager. Utusan Malaysia, 10.10.1992.
same morning of the blackout incident, there was a cut off in transmission connection between TNB and SEB in Singapore when a power plant station in Singapore caught fire. This meant that Singapore was unable to make up the subsequent loss of 1,000 MW. The issue then, knowing that security of supply could be in danger due to maintenance problem of the old plants, did TNB have the necessary contingency plan to cope with the likelihood of an upsurge of demand of the scale of the September blackout? TNB did not reveal the answer to this question to the public. Two things can be concluded from the above incident. Firstly, coordination and monitoring of the power plant projects have led to the failure of TNB to take necessary steps to balance demand and supply. As admitted by the DGES\textsuperscript{20},

"The shortage of energy and electricity disruption in 1992 was as a result of planning and implementation not being able to catch up with demand and consumption."

TNB's failure to secure sufficient reserve margin as a result of poor planning has led to the massive tripping as demand was higher than supply in the system. Part of the problem lies in the monitoring difficulties and the involvement of different level of public authority in the decision making process. The problem of monitoring also brings into limelight the problems of coordination among the various ministries and agencies involved in the planning of the energy needs in the country in line with the rapid economic transformation and growth.

Secondly, the blackout incident has questioned the issue of

\textsuperscript{20} New Straits Times, 03.09.1994.

\textsuperscript{21} An example of implementation problem is the M$300 million Sungai Piah hydro-electric project. Its completion was delayed by 2 two years due technical problems with the machine. The generators and the turbines, provided by India-based contractor Bharat Heavy Electrical Ltd, could not function properly in the reliability run. The project started in 1987 and was scheduled to be completed in 57 months i.e 1993. New Straits Times, 02.03.1993.
coordination, red tape, bureaucratic process and delay reflecting the decision making constraints faced by TNB. In addressing the problem of power shortages and future planning of the electricity sector in February 1993, the Minister of Trade and Industry was noted as saying "My Ministry is also willing to give ideas to Tenaga on the current and future needs of the country's industrial sector." Undoubtedly, there was poor coordination between TNB as the authority entrusted to ensure enough supply of electricity and the Ministry of Trade, the approving authority for planning and investment programme. It was only in July 1993 that the Minister of Energy announced that a Committee comprising of Ministry of Energy, Electricity Supply Department (ESD) and TNB would be formed which will work closely with the Ministry of Trade, to monitor the supply and demand of electricity in the country. According to the Director General of ESD, they realised the problem of power shortages well before 1990 but "...efforts were not too focused." Although the Chairman of TNB accepts full responsibility for the blackout incident by saying "The buck ends here", he went on to point out that the decision to build new power plants did not rest with TNB alone. It also involved many other parties among whom were the various Government Department and Ministries. The Chairman went on to say, "If it is only Tenaga, then decision making will be much faster."

The need to have less red tape and less bureaucratic decision making process is a major concern for the

24 New Straits Times, 01.03.1993.
26 ibid.
efficiency of the TNB. As pointed out by the Director General of ESD

"This (planning period) has shortened because of rapid development of industries and accelerated demand for electricity. Investment decisions are taken so fast that we have to try and be ahead with the increased supply of electricity to the private sector which is expanding rapidly."^27.

At the same time, the property right theorists put ownership as the focus of their explanation as to why managers fail to monitor enterprises performance (Chapter 3). They argue that as managers cannot directly own property rights in state-owned enterprises they have weak incentives to monitor performance and take a long-run view of its development (Lawson, 1994). In this context there was a failure on the part of Ministry of Energy to monitor the performance of NEB to implement policy taken especially on the plant capacity expansion programme to meet increase in demand. Ex post evaluation revealed that even by August 1992, just a month before the blackout, the Ministry failed to monitor the acute problems of power supply. While approving participation of the IPPs from the private sector in electricity generation, implementation of the Ministry decision was not carried out with any urgency. Despite of the critical supply position, the Minister was quoted as saying, "We plan to implement it (entry of IPP in the electricity sector) within two years as the present plant capacity of TNB is not sufficient to cater for future electricity demand which is ever increasing."^28 Based on this statement one could conclude that the Government intended to introduce IPPs into the electricity sector by late 1994. And if this is true then the IPPs generating plants would come into the system some time late 1997. The

^27 New Straits Times, 16.02.1993. Words in bracket are mine.
Ministry believed that, at that time, TNB's plant expansion programme would be able to cope up with the demand growth until such time. This obviously reflects the difficulty of monitoring by the Ministry of Energy of the electricity supply. The policy did not reflect the sense of urgency on part of the Ministry to resolve problems of acute power shortages in spite of all the complaints of frequent supply disruption by the public in the newspaper. However, as we have described above the plans were not implemented as scheduled.

Unsatisfactory track record of project implementation

Another problem which plagued NEB was that of project implementation. The inability of NEB to complete construction projects as scheduled has two implications. One as discussed in Chapter 6, was that NEB had to incur higher costs of capital in terms of interest paid and second, was unreliability of supply due to a failure to expand supply in line with demand growth. Most of the difficulties centred on the construction of hydro-electricity stations where unanticipated problems slowed down the progress of construction. Temenggor Dam, Kenyir Dam and Sg Piah Dam were also behind completion schedule by between twelve to twenty-four months.

One of the contributory factors which led to the blackout in September 1992 was the failure to complete the Sg Piah hydro-electricity project. In its 1986/87 Annual Report, NEB planned that the Sg Piah hydro project would be completed in 1992 in time to alleviate the problem of the anticipated increase in peak demand in that year. The delays were due various factors such as delay in awarding of contracts, delay in signing the Loan Agreement by the Government and poor contractor's performance. Another problem associated with the delay in construction of the
hydro-electricity project is the very nature of the project. Most of the projects were located in remote and inaccessible areas. The civil construction works were extensive and highly dependent on exogenous factors such as weather, the nature of the terrain and the supply of labour, which are beyond the control of the contractors.

**Autonomy of TNB and Government intervention**

Initially NEB was set up based on commercial undertakings with minimum Government interference in its operations. However, the Board began to be sensitive towards matters of national interest after independence, although at the same time it maintained that Government should not interfere with the running of the enterprise. NEB was then assured that it would continue to be an independent, self-accounting, statutory corporation, free from ministerial interference in running its affairs.

Although assurance of an autonomy was given, NEB in practice was never really free from Government and political interference. The problem lies in the appointment of the members of Board of Directors. The Board was composed almost entirely of political appointees. Besides some limited representation from commercial and industrial sectors, the rest of the Board members were either representatives of ministries or political appointees with political connections either within UMNO or MCA. The existence of this political element exposed NEB to the political expediency of the politicians and the government which impeded the running of NEB. As noted by Tate (1991),

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29 Tate (1991).

30 As clarified by the Federal Legislative Council in 1952 and the Chairman in 1957. Tate (1991) p 43.

31 Assurance given by Minister of Commerce and Industry. Tate (1991), p50.

32 Annual Reports reveal that between six to seven members of the Board out of ten are political appointees.
this trend continued right until its corporatisation.\textsuperscript{33}
When the new Minister of Energy came into office in 1979, he made an unprecedented attendance at the Board meeting.\textsuperscript{34}
Although he did not participate in the meeting, as pointed out by Tate, he "provided the Board with what the cabinet thought regarding the Board's activities". This reflects the extent of political interference which erodes and limits the autonomy of NEB in carrying out its duties.

Government intervention in awarding of contracts has also impeded NEB in running its operations and the implementation of its plant expansion programme. Some engineers in TNB claimed that the delays in awarding contracts have been a major problem in project implementation.\textsuperscript{35} They claimed that intervention by the Economic Planning Unit and the Treasury has hindered TNB's work. A case in point is that, following the decision of the Cabinet on "Buy British Last" policy the Prime Minister expressed his disapproval of retaining Ewbank of Britain as their consultants for the Second Phase of Port Klang power station.\textsuperscript{36} On the recommendation of the Prime Minister, NEB opted for Electric Power Development Corporation of Japan. The Pergau Dam controversy have sparked political consequences on TNB's autonomy in running its operations. In line with the Government policy not to award contracts to British firms, TNB had to cancelled a contract for British companies to supply five 33MW gas turbines at a cost of M$150 million. Another construction contract of 500kW transmission lines awarded to a British firm to enable IPP Sikap Energy Ventures to supply power to

\textsuperscript{33} Tate (1991), p173.

\textsuperscript{34} During his tenure as Minister of Energy, Loes Moggie attended the Board meeting on four occasions. Tate (1991), p230.

\textsuperscript{35} New Straits Times, 01.03.1993.

\textsuperscript{36} Tate (1991), p246. Eubank was the consultant for the First Phase of the Port Klang power station.
TNB was also cancelled.\footnote{New Straits Times, 28.02.1994.}

The commercial status of NEB again came into question with the implementation of the NEP. NEB, besides operating on a commercial basis was obligated to undertake socio-economic objectives with developmental goals. As viewed by the Public Service department the objectives of NEB should "be related to the national objectives of promoting national unity whereby measures and programmes to be undertaken should be geared to redressing the imbalances of opportunities and on job creation for Malaysians in less favourable positions and to further extend the supply of electricity to rural areas and providing the necessary incentives to the growth of industries in rural areas" (Tate 1991)\footnote{Report on NEB " by Management Analysis Unit of the Public Service Department in 1970.}. It added that "the true value of an electricity undertaking to a nation should not be measured in terms of its financial viability. It is also the broader indirect benefits that are likely to be of far greater social and economic significance."\footnote{Tate (1991), p180.} On the same note the Prime Minister in 1972 suggested that NEB is a service organisation and not a profit motivated enterprise.\footnote{ibid, p215.}

Accountability

There was little evidence to support that TNB was accountable to the consumers. The question of public accountability became a controversial issue when the Ministry of Energy and TNB failed to provide satisfactory explanation to the public for the causes of the September 1992 blackout incident. Although disruptions had been a daily occurrence in Petaling Jaya and Kuala Lumpur for a
couple of months before the incidents, the Ministry of Energy denied that load shedding was undertaken by TNB.\(^{41}\) The Minister described the September 1992 incident as "an act of God" and declined to take responsibility for the matter\(^{42}\) and put the blame squarely on TNB\(^{43}\). The Minister further warned NEB that they should be more efficient and solve the power crisis failing which they would be held responsible for not supporting the country's industrialisation policy.\(^{44}\) This invited furious criticism from the public. The disappointment of the public in relation to the explanation given is reflected in newspapers by two columnists who questioned and highlighted the issue of public accountability both by the Ministry and TNB. They challenged the Ministry of Energy and TNB to explain openly what actually went wrong.\(^{45}\) An ex Member of Parliament claimed that the Minister of Energy is fully responsible for the problems\(^{46}\). Responding to public criticism the Minister later clarified that "...the blackouts we have are due to technical and mechanical faults which lead to break downs."\(^{47}\) The absence of public accountability by both the Ministry and TNB was also reflected earlier in July 1992, two months before the September incident. In its explanation to the public, TNB attributed the problems of rising disruptions to thunderstorms\(^{48}\), thereby avoiding accountability and

\(^{41}\) ibid.

\(^{42}\) New Straits Times, 01.10.1992.

\(^{43}\) New Straits Times, 28.02.1993.

\(^{44}\) New Straits Times, 15.03.1993.


\(^{46}\) Lee Lam Thye. Utusan Malaysia, 03.03.1993.

\(^{47}\) New Straits Times, 08.04.1993.

\(^{48}\) TNB's managing Director explaining the cause of power disruptions. New Straits Times, 01.03.1993.
failing to provide transparency to the public.

An interesting question is, why did the Ministry or TNB refuse to accept full responsibility or provide transparency to the public on the true nature of the problem? There are two possible reasons for this - a) political and b) legal. Politically, the response is an example of the expediencies in providing explanations which are due to the short-termist nature of political life. One could argue that as the political life of politicians relies on electoral votes, shifting away from real issues and blaming the public servants is a better options than confronting the issues which will jeopardise the politician's position. This is not an uncommon phenomena in the political sphere in Malaysia. As pointed out by a highly placed senior civil servants, "Civil service bashing seems to be one of the best methods used by politicians to attract attention." In this context responsibility shirking as describe in the theory of bureaucracy could also be applied to politicians in general. Secondly, the Government cannot accept liability of negligence or accept responsibility because they are liable to be sued over the breach of contract in providing security of supply to the consumers. Admitting liability would be tantamount to inviting legal litigation against TNB in the form of seeking compensation by firms over the losses due to the black out incident. One could argue that the September 1992 incident was not an isolated case where the Ministry and TNB denied responsibility for disruptions.

Rent seeking behaviour and corruption

There is evidence that NEB was having a problem of monitoring malpractice among its employees. Some illegal
factories were connected with electricity supply.\textsuperscript{50} It is also reported that TNB had found its staff involve in helping consumers to "steal" electricity through tampering with meters.\textsuperscript{51} Similarly, it was revealed that illegal electricity connections were found made to households which were not entitled to power supply with the probable knowledge of TNB officers.\textsuperscript{52}

Some claimed that corruption and malpractice were taking place in NEB where rent seeking activities create opportunities for bribery and corruption. The purchase of 8 gas turbines generators in 1990 from Asia Brown Boveri (ABB) generated furious debate in Parliament following allegations that tenders for the contract were rigged and that their cost, then reported to be M$1 billion, grossly inflated.\textsuperscript{53} These allegations, which were dismissed by the Minister, were contained in a widely circulated letter purportedly sent by a group identified only as "Concerned Engineers of TNB". During the Budget session in Parliament in December 1990, a member of the opposition raised questions pertaining to significant corruption within TNB.\textsuperscript{54} In its Bulletin a major opposition party pointed out

\textsuperscript{50} The Corruption Agency was ask by the Member of Parliament of Pulai in Johor, to investigate how these illegal factories have access to electricity supply. He claimed that there were abuse of power in some of the relevant Government Department or Agencies (Utusan Malaysia, 05.05.1992). The State Housing and Local Government Committee Chairman pointed out that some of these factories costs million of ringgit and had heavy equipment, operating on agricultural land. The matters come under the jurisdiction of four Government Agencies namely Municipal Council, TNB, Water Supply Department and Land and Mine Office. All the four Agencies were asked to investigate how these factories were given electricity and water supply (The Star, 14.05.1992).

\textsuperscript{51} The Star, 19.05.1992. It is also reported that several people were caught stealing power in Taiping in Perak. Some of those involve were huge hawkers complex, some light industries and household consumers.

\textsuperscript{52} This was revealed during a visit by Ampang State Assemblyman during his visit to Taman Cahaya, Ampang. Harian Metro, 23.06.1992.

\textsuperscript{53} New Straits Times, 01.03.1993.

\textsuperscript{54} DAP Member of Parliament for Petaling Jaya. The Rocket, Volume 24/4, 1991. The above accusations were in reply to answers given by the Minister in Parliament.
that there were indications that the Minister of Energy was involved in some questionable deals. Among the issues raised were the awarding of contracts to an inexperienced contractor. It claimed that the Minister had a special relationship with Bharat Heavy Electrical, a supplier to TNB and that the purchase of the gas turbine from Asean Brown Boveri was overpriced. It also questioned the conduct of some retired TNB officials who joined top posts in contractors firm for TNB after their retirement. The opposition party claimed that this is a contravention of the Pension Act 239, which states that retired officials of TNB must not join companies doing business with TNB for a period of five years after retirement. The report cited three cases where senior TNB staff joined the TNB contractor’s company and held posts such as Director of Business Development, Technical Director and Managing Director after retiring.

Evidence also seems to suggest that lobbying and rent seeking activities by interested parties to get construction projects were present in TNB. This is reflected in the case of the Kenering-Bersia project. The Treasury in 1980 rejected the recommendation of the Board to award the project to Hazama-Mitsubishi but instead wanted to award it to another company, Nedam/CPBO/Percon JV. The rejection by the Treasury was due to two reasons. Firstly, Hazama-Mitsubishi had made the bidding, the lowest among the tenderers, only after having discovered the bidding of their rivals secondly, the Treasury wish to give local firms an opportunity to participate in the project.

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56 Tate (1991).
7.3 THE PRIVATISATION OF THE ELECTRICITY SECTOR AND ITS ACHIEVEMENT

Listings of NEB on KLSE

Under the name of Tenaga Nasional Berhad (TNB), NEB was incorporated as a public limited company under the Malaysian Company Act 1965, corporatising its operation through the Electricity Supply (Successor Company) 1990. Pursuant to Section 3 of the Act, all properties, rights and liabilities of NEB were transferred to TNB. Its operations are regulated through a licence issued by the Director General of Electricity Supply. The licence is valid for twenty one years but it does not however contain any provision for renewal.57

Privatisation Achievements

7.3.1 Reducing financial burden of government on providing infrastructure.

Revenue collected from listings

TNB listed 30 percent of its shares on the Kuala Lumpur Stock Exchange (KLSE) on 28.05.1992 at M$8.00 a share, a premium of M$3.50 above its issue price of M$4.50.58 At M$4.50 a share TNB was valued at M$13.5 billion which was about 10 percent of market capitalization of the 300 companies listed on the KLSE.59 The listing was the biggest in the flotation history in the country. The capital accumulated during the listing which was six times

57 Interview source.

58 TNB opening premium of M$3.50 is one of the highest ever recorded by a company going public. Sports Toto Malaysia Berhad registered M$3.15 above its issue price, Edaran Mobil Nasional Berhad (BON) at M$1.20 and Southern Bank M$1.50 above their issue prices.

oversubscribed, would have been sufficient to absorb its entire shares if they were put up for the listing.

However, the shares of TNB were seriously underpriced. Using a "fully paid" basis, the Government stood to collect M$6 billion before expense from the issues. The market valued these issues, at an opening prices, at M$3 billion. Thus the loss to the government amounted to over 50 percent of the value as a result of underpricing. Although some loss was inevitable, the amount involved in this case is surely excessive. The cost of underpricing was in conflict with the financial objectives of the privatisation programme and equity distribution. The technique used to determine the listings premium did not benefit either the Government or the tax payer. The issue is then who benefited from the underpricing? Generally three groups benefited from it. Firstly, the "priority applicants" which include the privileged institutions and companies listed with the Ministry of Finance which provide pre-placed shares to those entitled. These institutions include the unit trusts such as National Unit Trust (ASN), Bumiputra Unit trust (ASB), some cooperatives, Employees Provident Funds, Pilgrimage Board and the Bank Simpanan Nasional. Secondly, the Bumiputra companies which qualify in fulfilling certain criteria and thirdly, the underwriters who earn their commission for standing by to take up shares in the event of a flop.

However some might argue that the underpricing is justified since the market’s capacity to handle such large issue was in doubt. Such arguments have little basis for two reasons. First looking at the listing record of the KLSE, as

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60 Inevitable because there needs to be a margin between the premium and the listing price to attract investors investing in the listed company. The question is what is the right margin between the premium and the listings price. In the context of the listing of TNB, the margin of M$3.50 a share is the gain earned by the shareholder on every unit held. Had the premium been higher, more revenue would have accrued by the Government. In a way, the lower the premium the more revenue forgone by the Government.
discussed in Chapter 2, all those companies seeking listings on the KLSE were over subscribed by many times over. This includes the privatisation of the Telecom shares which was the largest flotation in the history of KLSE before the privatisation of TNB. Second, Security Companies have correctly estimated in their studies that the actual price of the TNB shares would be in the region of M$8.00 a share. However, the loss to the Government is cushioned by the fact that the Government still holds 73 percent of TNB’s equity. In the event if the Government fully divests its interest in TNB, it stands to gain from the increase in share TNB’s share prices after its listing. In addition the loss can be treated as a transfer payment from the Federal Government to government institutional holders and cooperatives which received pre-placed shares during the listings. Since a large part of the shares went to institutional investors one would argue that the public nevertheless received the indirect benefit of the listings.

Another feature of the privatisation of TNB, just like the Malaysian Airline System and the Telecommunication Department, was that it was partial. There are two justifications for adopting this policy. Firstly, the Government was cautious in its strategy in carrying out the privatisation programme. Privatisation on a partial basis will ensure that mistakes or errors made can be absorbed and rectified instead of facing a disastrous outcome. Full privatisation requires substantial investment from the domestic capital market: the risk was too high to undertake. Secondly, going for full divestiture would create a crowding out effect on other listings in other sectors. For example in 1994, the banking sector provided a total of M$12 billion loan to the public for purchase of shares in listed companies. In addition the policy ensures that the capital market has the capacity to absorb

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61 This is higher than the previous year (1993) of M$11.5 billion. Utusan Malaysia, 09.02.95.
future listings as the privatisation programme gains momentum where more utilities and projects will be privatised.

Impact on the financial performance of TNB

Short term

The profitability of TNB from financial year 1990/91 to financial year 1993/94 is shown in Table below.

Table 7.2 : TNB’s Profit and Loss (1990-1994)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover</td>
<td>3,688.3</td>
<td>4,269.2</td>
<td>5,010.6</td>
<td>5,608.8</td>
</tr>
<tr>
<td>Total Operating Exp</td>
<td>2,996.4</td>
<td>2,865.1</td>
<td>3,174.9</td>
<td>3,622.4</td>
</tr>
<tr>
<td>Profit Before Taxation</td>
<td>691.9</td>
<td>1,404.1</td>
<td>1,835.7</td>
<td>1,986.4</td>
</tr>
<tr>
<td>Taxation</td>
<td>(194.8)</td>
<td>(263.7)</td>
<td>(315.4)</td>
<td>(258.4)</td>
</tr>
<tr>
<td>Profit After Taxation</td>
<td>497.1</td>
<td>1,140.4</td>
<td>1,519.9</td>
<td>1,728.0</td>
</tr>
<tr>
<td>Dividends (Net)</td>
<td>(35.2)</td>
<td>(131.9)</td>
<td>(241.9)</td>
<td>(252.6)</td>
</tr>
<tr>
<td>Retained Profit</td>
<td>461.9</td>
<td>1,008.5</td>
<td>1,278.0</td>
<td>1,475.4</td>
</tr>
</tbody>
</table>

Source: TNB’s Annual Report 1990/91 to 1993/94

The above Table shows that profit has been increasing at an average of 54.9 percent per annum. This is attributable to rising electricity demand and turnover growth of 14.2 percent and 15.0 percent respectively, against a 6 percent average annual increase operating costs. The low increase in operating cost is partly due to the savings in fuel costs and the lower interest payable due to the debt rescheduling (Chapter 6) as shown in Table 7.3.
Table 7.3 : Breakdown of Debt Currency (%) : 1990-1994

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ringgit</td>
<td>21.0</td>
<td>29.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Yen</td>
<td>31.0</td>
<td>26.0</td>
<td>25.0</td>
</tr>
<tr>
<td>US Dollar</td>
<td>28.0</td>
<td>20.0</td>
<td>21.0</td>
</tr>
<tr>
<td>European</td>
<td>19.0</td>
<td>24.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Others</td>
<td>1.0</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Total Borrowed 5,580.6 5,810.0 6,584.1

Note:
a : Total debt for 1992/93 financial year was M$5,382.5 million.
No break down available.

Source : NEB’s Annual Reports, 1990/91 to 1993/94.

Profit Before Tax in 1994 has increased by 2.4 times as compared to 1990 when it was corporatised. This has benefited the Government through a) increase in taxation from revenue and b) increase in dividends from 70 percent holding of equity in TNB. The increase in profitability has made TNB financially strong as retained profit has also increase by 3 times since the 1990/1991 financial year. Given the current scenario, where the IPPs has invested about M$9 billion to meet capacity expansion until year 2,000, TNB should be cash rich. This will benefit TNB in the long run where expansion of capacity can be financed through internally generated fund thus lowering debt equity ratio. A low debt equity ratio will ensure higher profitability due to lower costs of capital. Table 7.4 shows that TNB has been able to reduce its production costs by 12 cents a unit while maintaining its electricity price as shown in the Table below.
Table 7.4: Revenue, costs, capital expenditure and employees
(1990-1994)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Unit Sold</td>
<td>19,538.0</td>
<td>22,630.8</td>
<td>25,484.7</td>
<td>29,132.9</td>
</tr>
<tr>
<td>Sales Revenue</td>
<td>3,515.2</td>
<td>4,089.8</td>
<td>4,819.3</td>
<td>5,408.1</td>
</tr>
<tr>
<td>Cost / unit of elec</td>
<td>15.3</td>
<td>12.8</td>
<td>12.5</td>
<td>12.4</td>
</tr>
<tr>
<td>Price / unit of elec</td>
<td>18.0</td>
<td>18.1</td>
<td>18.9</td>
<td>18.6</td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>1,931.4</td>
<td>3,076.0</td>
<td>4,052.1</td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>23,065</td>
<td>22,752</td>
<td>22,767</td>
<td>24,281</td>
</tr>
</tbody>
</table>

Source: NEB’s Annual Reports; 1990/91 to 1993/94

Long term

In the long run, TNB’s revenue will depend on a) its capacity expansion and higher demand growth of electricity in the sector b) efficiency and cost saving measures c) diversifications into unrelated business activities. The prospect of the financial performance will depend on the following factors:

Capacity expansion and demand growth

Traditionally electricity growth has always been higher than GDP growth. Economic Growth in the Sixth Malaysia Plan is expected to exceed the average of 8 percent per annum exceeding the 7 percent forecasted. The shift in the sectoral composition of TNB’s consumers towards industrial users will be a key factor in demand growth for electricity in the future. The M$80 billion investment target for the manufacturing sector during this period is expected to be surpassed. In 1990 and 1991 alone total investment in the

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manufacturing sector totalling M$56.4 billion.\textsuperscript{63} Demand for electricity during the Sixth Malaysia Plan is forecast to grow at an average rate of 12 percent per annum as compared to GDP growth of 7.5 percent per annum.

Reducing transmission and distribution losses

Future operating profit may also be improved through minimising electricity losses during transmission and distribution. TNB is investing in better transmission and distribution lines, replacing some of the existing old 66kV, 132kV and 275kV cables which stretch 11,000 kilometres throughout Peninsular Malaysia, and is upgrading to higher voltage cable 6,110 km cable of 500kV by year 2000.\textsuperscript{64} Losses would thus be reduced. Based on the estimated generation figure a reduction by one percent will provide TNB with extra revenue of M$65 million in 1995 and M$70 million in 1996.

Equity stake in IPPs companies

The Government has imposed condition on the IPPs that an equity of 20 percent should be offered to TNB. Although TNB is not obliged to take up the offer, it would be difficult to interpret if it is not doing so. Besides revenue, TNB's other benefit is its eligibility to sit on the Board of Directors. This would provide TNB with accessibility to inside information thus reducing asymmetric information problems on competitors.

Diversifying into unrelated activities

The Minister dismissed the possibility of NEB diversifying

\textsuperscript{63} As revealed by Minister of Trade and Industry in addressing on National Conference on Industrialisation in Malaysia in Kuala Lumpur. NST, 17.06.1994.

\textsuperscript{64} As revealed by TNB's Chairman. Utusan Malaysia, 24.09.1993.
its business activities after it is listed on KLSE. "Tenaga is licensed as a utility company supplying power. If it undertakes other businesses, then it is incompatible with the licence granted to it." However, with the privatisation programme, TNB could diversify into non-energy related business activities through subsidiary companies. The license granted is silent on the range of activities permitted to TNB. Accordingly TNB has set up subsidiaries to diversify into activities which are not related to its core business of generating, transmitting and supplying electricity.

TNB has a substantial land asset which is located in the prime residential areas in the city such as in Kenny Hills, Taman Duta and Jalan Ampang in which it is keen to develop. It is also venturing into unrelated business and there is a possibility that it will be venturing offshore in future. TNB is diversifying into non related business area to help it expand its business activities.

Venturing into international markets

TNB has also formed a joint venture company with one of the

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65 The Star, 03.01.1992.

66 TNB's Memorandum and Articles of Association empowers it to carry on any business activity except that of life insurance, fire insurance or banking.

67 Tenaga Nasional Engineering Consultancy Sdn Bhd (TNEC) Managing Director in an interview with NST. TNEC is a wholly owned subsidiary of TNB. It has secured a few hundred million ringgit worth of contract for conversion of the Malacca Power Station into combined cycle plant. NST, 25.17.1994.

68 In a paper on Privatisation of Tenaga Nasional Berhad presented by its Managing Director in a Seminar on Malaysian Securities Market in Tokyo, Japan on 29.11.1991.

69 Malaysian Digest, February/March, 1994.

70 Tenaga Nasional Engineering Consultancy Sdn Bhd, a wholly-owned subsidiary of NEB was set up to venture into new business. It also provides consultancy services to TPP Genting Sanyen Power Sdn Bhd and Sikap Energy Ventures Sdn Bhd. New Straits Times, 25.05.1994.

71 New Straits Times, 03.01.1994.
largest hydro-electric power companies in the world, Kvaerner Energy AS of Norway, to undertake power development project worldwide. In addition TNB was having negotiation with several Indian state authorities on the privatisation of power projects in India. To undertake the IPP projects, TNB has formed a joint venture company with two Indian firms and signed a memorandum of understanding with a group of Malaysian companies to undertake a 2x500MW coal-fired thermal plant costing about M$1.8 billion in Tamil Naidu.

Policy on reserved capacity.

Future profit will also be greatly affected by the Government policy of having TNB’s adopt a reserve margin of 35 percent by 1995 as compared to 10 percent in 1993. A higher reserve margin is a means of securing better security of supply by constructing more generating plants at the expense of profitability. With more new generating plants, operating allocations for depreciation and interest rates will eat into operating profit. However this could be offset by the growth in demand for electricity which is expected to be in the region of 12 percent per annum.

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72 Kvaerner Energy AS is a supplier of power plant equipment to TNB for a number of projects. The company has signed memorandum of understanding relating to the formation of joint venture in 1994 to undertake a 29MW power project in Philippines. The two parties are also identifying hydro-electricity projects in Vietnam, Laos, India and Latin America where there is huge hydro-electric power potential. NST, 15.10.1994.

73 As revealed by TNB’s Chairman. NST, 14.10.1994.

74 It is reported that TNB will have a 40 percent stake, Usaha Tegas Energy Sdn Bhd 30 percent, Arab Development Bank 20 percent and an individual 10 percent. NST, 14.10.1994.

75 As reported in the New Delhi Financial Daily a consortium led by TNB has been awarded stage four of thermal power project in Tamil Naidu. NST, 13.09.1994.

76 As revealed by the Minister of Energy the proposal to have 35 percent reserve margin was recommended by the National Grid Company from Britain in its study to ascertain and overcome the power crisis in Malaysia.

7.3.2 New Economic Policy and wider share of ownership

Wider ownership of capital

The objective of widening share of capital can be discussed in terms of the distribution of share holdings as listed below:

Table 7.6: Distribution of Shareholding: 1993 and 1994

<table>
<thead>
<tr>
<th>Size of Shareholding</th>
<th>Shareholders</th>
<th>% 1993</th>
<th>% Shareholdings</th>
<th>% 1994</th>
<th>% Shareholdings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 499</td>
<td>6</td>
<td>0.07%</td>
<td>600</td>
<td>0.0%</td>
<td>600</td>
</tr>
<tr>
<td>500 - 5,000</td>
<td>98,488</td>
<td>96.2%</td>
<td>131,299,760</td>
<td>95.1%</td>
<td>105,622,400</td>
</tr>
<tr>
<td>5,001 - 10,000</td>
<td>2,617</td>
<td>2.6%</td>
<td>19,101,000</td>
<td>3.1%</td>
<td>18,107,000</td>
</tr>
<tr>
<td>10,001 - 100,000</td>
<td>1,051</td>
<td>1.0%</td>
<td>52,744,400</td>
<td>1.5%</td>
<td>24,794,400</td>
</tr>
<tr>
<td>100,001 - 1,000,000</td>
<td>138</td>
<td>0.1%</td>
<td>53,694,000</td>
<td>0.2%</td>
<td>47,041,700</td>
</tr>
<tr>
<td>&gt; 1,000,000</td>
<td>82</td>
<td>0.1%</td>
<td>2,786,180,300</td>
<td>0.1%</td>
<td>2,786,180,300</td>
</tr>
<tr>
<td>Total</td>
<td>100,374</td>
<td>100.0%</td>
<td>3,786,180,300</td>
<td>100.0%</td>
<td>3,786,180,300</td>
</tr>
</tbody>
</table>

Source: TNB’s Annual Reports 1992/93 and 1993/94

It is obvious that the distribution of ownership is highly skewed: 82 big shareholders control 92.4 percent of the shares. The majority of the 98,448 shareholders hold minority shares of just 4.4 percent of the total shares listed reflecting the uneven distribution of the share holdings. However the 82 majority shareholders come from institutional investors constituting unit trusts investors, cooperatives and various state Governments. This provides the justification for better distribution of ownership among the public. For example the National Unit Trust (ASN) and the Bumiputra Unit Trust (ASB) have about 3 million investors registered between them. The Government allocated 3 million TNB’s share to a cooperative MOCCIS as a measure
to redistribute wealth arising out of the privatisation programme.\textsuperscript{80} Perak state Government was allocated 4 million TNB shares at M$4.50 a unit by the Ministry of Finance.\textsuperscript{81} Similarly Penang State Government was allocated 2 million units.\textsuperscript{82}

In order to ensure wider share of ownership among the public more shares should be allocated to the unit trusts, pension boards and cooperatives in future divestment programme.\textsuperscript{83} This strategy will provide a better opportunity for the small investors who can\textsuperscript{t} afford to buy shares on the KLSE\textsuperscript{84} to invest in TNB through their membership in such organisation.

**New Economic Policy**

**Number of Bumiputra shareholders**

As discussed in Chapter 2, one of the objectives of the NEP is to achieve 30 percent Bumiputra equity in the commercial and industrial sector in the country. The Government in its rationale for the privatisation policy has regarded the privatisation programme as a tool for achieving this objective. The achievement of the NEP with regard to the privatisation of the NEB can be illustrated from the following breakdown of TNB's share holding at the end of

\begin{itemize}
  \item \textsuperscript{80} Deputy Minister of Finance. Berita Minggu, 21.06.1992.
  \item \textsuperscript{81} As revealed by the Public Enterprise and Industry Chairman. The Star, 13.10.1992.
  \item \textsuperscript{82} The Star, 18.06.1992.
  \item \textsuperscript{83} There are about 600 out of 3000 cooperatives which are properly run in the country.
  \item \textsuperscript{84} Shares are traded in lots basis of 1000 units/shares each. Assuming a share price of M$14 a unit (the highest ever achieved by TNB's shares, one needs to have M$14,000 to buy TNB shares on the stock market. This is beyond the affordability of average Malaysians. By allocating shares to Unit Trusts more ordinary Malaysians, including the poor, would be in a position to participate in the scheme as each unit trust shares cost only M$1.00.}
\end{itemize}
the financial year:

Table 7.7: Composition of share holding (1991 - 1994)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra shareholders</td>
<td>86,076</td>
<td>62,714</td>
<td>27,765</td>
<td>(3)x</td>
</tr>
<tr>
<td>Non Bumiputra shareholders</td>
<td>111,053</td>
<td>92,237</td>
<td>51,343</td>
<td>(2)x</td>
</tr>
<tr>
<td>Institutional shareholders</td>
<td>1,880</td>
<td>1,600</td>
<td>884</td>
<td>2x</td>
</tr>
<tr>
<td>International shareholders</td>
<td>195</td>
<td>280</td>
<td>274</td>
<td>41%</td>
</tr>
<tr>
<td>Government shareholders</td>
<td>23</td>
<td>34</td>
<td>40</td>
<td>74%</td>
</tr>
<tr>
<td>Nominees</td>
<td>79</td>
<td>167</td>
<td>173</td>
<td>2x</td>
</tr>
</tbody>
</table>

Notes:
( ) denotes decline
x denotes times


From Table 7.7, it is obvious that the individual investors have been declining in numbers thus confirming the suspicion that most of those who participated in the listings were short-termist individual investors. The number of Bumiputra individual holders have decreased by 3 times as compared to twice of the non Bumiputras. One possible reason is that many of the Bumiputra individual investors were also National Unit Trust (ASN) and Bumiputra Unit Trust (ASB) unit holders who sold their unit trusts shares to buy TNB shares and then resold them after the listings, making some profits on the transactions. If the profit made by the individual Bumiputra unit trust holder is further invested in investment activity such as buying

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Before the listings of TNB, Tenaga shares were fetching at M$6.30 in the black market, i.e M$2.10 above its premium price of M$4.50 a share. It was reported that these shares were mainly offered by Bumiputra investors who have been informed of an allocation of the shares. Business Times, 13.03.1992.
unit trust shares or future premium listings on KLSE or invested in business venture then it helps Government efforts toward achieving the NEP objective. However, if the profit is used for personal consumption then it is detrimental to the achievement of the 30 percent Bumiputra equity participation as targeted by the NEP. However, in terms of investment, holding TNB shares promise higher future returns than holding unit trust shares. This is because holding TNB’s shares provides the unit trust investors with dividend in the short run and capital appreciation of share value in the long run. Thus from long term investment point of view one would expect the unit trust investors to retain their TNB’s. Thus one can conclude that the unit trust investors sold their TNB’s shares for personal consumptions.

Since 1991/92 the ratio of Bumiputra to non-Bumiputra individual holders has been declining from 86 : 111 to 27:51. However to make a more meaningful assessment of the achievement of the NEP, one needs know value of shares own by the individual Bumiputra investors. A similar trend is observed for institutional shareholders. It is difficult to know whether institutions sold their shares for the purpose of further investment or just for quick money to be distributed as dividends to its shareholders. The long term investors come from the Government shareholders and international shareholders and these have increased in numbers. However there is an increasing trend in the preference of individual investors towards using nominee companies to take charge of their investment as reflected in the increase in the number of nominee companies as shareholders of TNB.

Bumiputra equity participation

The list of 20 Major shareholders in 1993 and 1994 are as follows:
### Table 7.8: Institutional Breakdown of Shareholding (1993-1994)

<table>
<thead>
<tr>
<th></th>
<th>Nov 1993</th>
<th>Nov 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Finance Inc</td>
<td>72.871</td>
<td>22.409</td>
</tr>
<tr>
<td>Khazanah Holdings Bhd</td>
<td>-</td>
<td>39.679</td>
</tr>
<tr>
<td>Central Bank</td>
<td>-</td>
<td>8.389</td>
</tr>
<tr>
<td>Permodalan Nasional Bhd (PNB)</td>
<td>2.033</td>
<td>2.112</td>
</tr>
<tr>
<td>Amanah Saham Bumiputra (ASN)</td>
<td>4.388</td>
<td>4.221</td>
</tr>
<tr>
<td>Nominee Companies</td>
<td>7.679</td>
<td>9.308</td>
</tr>
<tr>
<td>Institutions(^a)</td>
<td>1.725</td>
<td>2.546</td>
</tr>
<tr>
<td>State</td>
<td>0.321</td>
<td>0.286</td>
</tr>
<tr>
<td><strong>Total Percentage</strong></td>
<td>89.623</td>
<td>90.531</td>
</tr>
<tr>
<td><strong>Total shares</strong></td>
<td>2,702,340,300</td>
<td>2,750,350,800</td>
</tr>
</tbody>
</table>

Notes: \(^a\) Includes Bank Simpanan Nasional Berhad (0.611%), LTAT (0.390%), LUTH (0.335%), EPF (1.210%)

Source: TNB Annual Reports, 1992/93 and 1993/94

The above figures show that only 17 percent of the shares were allocated for individual shareholders with 7.679 percent through nominee companies. Surprisingly the Government did not allocate 30 percent of the total shares to Bumiputra which would be in accordance with the NEP objectives of Bumiputra equity participation in TNB. In terms of equity participation, Bumiputra institutions (PNB, ASN, ASB, LTAT and LUTH) hold only about 7 percent of the total shares. However data is not available on the shareholding breakdown for nominee companies and individual in order to know the actual equity participation of the Bumiputra community. One possible reason as to why the Government did not allocate 30 percent of TNB shares to Bumiputras is the perceived limited Bumiputra funds to undertake such a big allocation which would undermine future Bumiputra participation in KLSE listings.
To address the issue of Bumiputra individuals selling their pre-placed shares given to Bumiputra community and jeopardise Government effort to achieve the 30 percent target, any future divestment of Government equity in TNB should be allocated, at least 30 percent, to Bumiputra institutions such as LTAT, LUTH, PNB, ASN, ASB and all the 9 state unit trust companies. This will ensure that the investment caters for a more wider share of ownership among Bumiputras in the long run.

Construction projects

The small and medium Bumiputra contractors are also benefiting from the privatisation programme. TNB has allocated M$500 million worth of contracts to Bumiputra contractors to undertake construction works in 1995. The construction of the 400 km of 500kv transmission network worth of M$8.8 billion was awarded to a consortium of PNB and MRCB between 1996 to 2000. One of the critical issues involving Bumiputra contractors participating in TNB projects is the allowance of 20 percent above tender price. This policy does not take into consideration the aim of achieving the lowest possible production cost and ultimately higher costs will have to be passed over to the consumers. This is an example of efficiency versus equity in distribution and the multiple conflicting objectives of the privatisation programme which underline the difficulty of achieving all stated objectives of the programme.

State Economic Development Corporation (SEDCs) participation

In 1994, the Ministry of Energy has started a vendor scheme programme for small and medium Bumiputra construction firms to undertake projects in the privatised companies such as Telekom and TNB. For this programme Telekom has allocated M$800 million worth of project to these firms. New Straits Times 27.01.95.

Interview source.
The privatisation programme has provided an opportunity for SEDCs to participate in the electricity sector. Three SEDCs submitted application and approved for licence on joint venture basis with the private sectors. This includes the Hypergantic Sdn Bhd a subsidiary of Negeri Sembilan State Government teaming up with TNB, Sime Darby and Malaysian Resources Corporation Bhd, to build M$1 billion 450 MW natural gas power plant\(^{89}\), Melaka Power Sdn Bhd, a joint venture between Melaka SEDC with TNB, Arab Malaysian Development Berhad and Power Tech Sdn Bhd building a M$900 million 250 MW combined cycle plant\(^{90}\), and Landmarks Bhd, Perlis SEDC with Time Engineering building M$1.4 billion 600 MW power plant\(^{91}\). Sikap Sdn Bhd is a 100 percent Bumiputra company\(^{92}\) and some of its shareholders were former TNB executives\(^{93}\). The participation of the SEDCs in the IPPs projects have two positive effects on the public. Firstly, as electricity generation is a lucrative business i.e an ever expanding business in terms of demand growth with little risks on the demand side, SEDCs involvement will generate revenue to the state in the form of a dividend which enables the government to continue undertaking developmental projects for the benefit of the public. This will help to reduce the dependency of the state government on Federal budget and to lessen the Federal Government financial burden on those states. In a wider context, many state's Government such as Penang, Perak and Pahang, and institutions and cooperatives also hold shares in the privatised TNB. Secondly, the involvement of SEDCs contributes towards the achievement of the NEP objective of creating a Bumiputra commercial

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\(^{89}\) New Straits Times, 28.05.1993.

\(^{90}\) Ibid.


\(^{92}\) New Straits Times, 02.03.1993.

\(^{93}\) New Straits Times, 24.02.1993.
society through Bumiputra exposure and participation in the electricity sector. Priority is given to Bumiputra participation in the electricity generation sector. In issuing new licences priority will be given to local companies with majority Bumiputra equity. However, this will not really guarantee Bumiputra participation in the generation sector. The rent seeking activities could hamper Government objectives of achieving Bumiputra participation in the industry. As observed by Kasper (1987) regulation in Malaysia has created profit seeking by lobbying and political connection rather than hard work, investment and risk taking. A licence for electricity generation is not based on open tendering process and can be sold at a high premium. Sikap Energy Ventures was sold to new shareholders, later known as Segari Energy Ventures, before it became an established company. The new shareholders consist of Malakoff Bhd (75 percent), TNB (20 percent) and Malaysian Resources Corporation Bhd (MRCB). In line with the issue raised by Kasper on rent seeking activities, the Government is concerned about Bumiputras company selling their licence for quick gains. To avoid this problems, the Government should consider imposing conditions where the license given is not transferable to new ownership without the approval of the regulatory body. One would argue that this will lead to more intervention by the regulator in the industry and is contrary to market discipline in determining efficiency in the industry. However, this is a trade off between more intervention by the regulator and ensuring wider distribution of ownership among a racial group to meet the objective of more Bumiputra participation in the electricity industry. This strategy needs to be adopted in order to counter the possible rent seeking activities to get the licence by interested parties.

94 New Straits Times, 02.11.1994.

95 Malakoff Bhd is wholly-owned by MRCB. New Straits Times 07.09.1994
7.3.3 Efficiency / Quality of service

Efficiency

No studies have been done to measure the impact of the privatisation programme on the efficiency of TNB in terms of total factor productivity analysis possibly because of two reasons. Firstly, less published data is available on technical and financial matters after the corporatisation and privatisation of the NEB. Information such as the thermal efficiency, load factor, and electricity loss were not available as such information is treated as trade secrets. Secondly, a comparison based on a two year time series data does not provide meaningful comparison.

However, the privatisation has addressed the question of incentives, the central issue of property right theorists, to motivate NEB employees to achieve better efficiency. Incentives were given in 3 forms; shares, increases in pay and a bonus. The Executive Chairman and the Managing Director were each allocated 300 thousand units and 250 thousand units respectively under the ESOS scheme. Several other senior executives were allocated as high as 200 thousand units. The lay Board of Directors were allocated 10 thousand shares each. In addition TNB also allocated 2 million shares to 375 of its pensioners. However, in conforming to the status of Government employee, the Government appointed Board of Directors through the various Ministries, did not get any allocation of shares. This policy demonstrated the basic fundamental

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96 These technical indicators, after privatisation, are presented only in graphic forms in the Annual Reports.

97 TNB Annual Report, 1992/93

98 As disclosed by TNB's Executive Chairman, New Straits Times, 09.04.1992.

difference of incentives between public and private enterprises (although TNB is still 70 percent owned by the Government).

TNB also introduced an employee loyalty scheme which is being introduced for the first time in the privatisation programme, essentially aimed at encouraging employees to retain TNB shares for a longer duration.\(^{100}\) Under the scheme, TNB employees have options to subscribe for additional shares in TNB provided they still retained the Pink Form shares for a specific period of time.

There was also no retrenchment exercise in the privatisation of TNB. The policy was adopted for three reasons. Firstly, the company is forbidden to take such action within 5 years after privatisation. This is to protect the employees from being dismissed on ground of cost cutting measures by TNB. Second, electricity is a growing industry and TNB could absorb its excess staff, if any, to support its expansion programme. Thirdly TNB could reduce its staff through attrition. With the participation of IPPs many of TNBs staff will be recruited by the IPPs as they need more experienced staff to join their operations thus eliminating the possibility of retrenchment measures.

However, the privatisation programme has increased staff costs and benefits as shown in the Table below.

\(^{100}\) New Straits Times, 11.02.1992.
Table 7.9: Staff Cost and Benefits (M$'000)

<table>
<thead>
<tr>
<th></th>
<th>1989/90</th>
<th>1990/91</th>
<th>1991/92</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Staff Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Salary (1)</td>
<td>203,954</td>
<td>282,437</td>
<td>288,948</td>
</tr>
<tr>
<td>Overtime</td>
<td>49,043</td>
<td>65,916</td>
<td>78,740</td>
</tr>
<tr>
<td>Bonus</td>
<td>-</td>
<td>41,000</td>
<td>56,084</td>
</tr>
<tr>
<td>Entertainment Allowance</td>
<td>2,855</td>
<td>3,122</td>
<td>3,071</td>
</tr>
<tr>
<td>Others (2)</td>
<td>16,303</td>
<td>14,833</td>
<td>14,724</td>
</tr>
<tr>
<td>Total Salaries</td>
<td>272,155</td>
<td>407,308</td>
<td>441,567</td>
</tr>
<tr>
<td><strong>Employees Benefit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical and dispensary</td>
<td>17,992</td>
<td>21,366</td>
<td>22,300</td>
</tr>
<tr>
<td>Pension &amp; Gratuities</td>
<td>20,484</td>
<td>35,391</td>
<td>40,253</td>
</tr>
<tr>
<td>EPF</td>
<td>24,032</td>
<td>32,937</td>
<td>33,995</td>
</tr>
<tr>
<td>Others</td>
<td>1,826</td>
<td>17,061</td>
<td>27,339</td>
</tr>
<tr>
<td>Total Employees Benefits</td>
<td>64,334</td>
<td>106,755</td>
<td>123,887</td>
</tr>
<tr>
<td><strong>Total Staff Cost</strong></td>
<td>336,489</td>
<td>514,063</td>
<td>565,454</td>
</tr>
</tbody>
</table>

**Notes**

(1) Includes entertainment allowance, electricity allowance, hardship allowance, dhoby allowance.

(2) Includes:

- Unrecorded leave: 820, 1,400, 1,243
- Local Leave Pay: 31,539, 29,200, 29,579
- Sick Leave Pay: 3,820, 4,724, 5,006
- Sports Leave: 298, 404, 327
- Total: 36,487, 35,728, 36,155

When TNB was corporatised in 1991, salaries jumped by almost 40 percent from about M$203 million to M$282 million to bring them into line with salaries in the private sector. In the same year a bonus was given, although not after a hard confrontation and negotiation between the Management and the Unions. However, two notable features were unusual or inconsistent with the corporatisation and privatisation policy. One, the increase in overtime by almost 30 percent from M$49 million to M$65.9 million in 1990. Two, the exceptionally high medical expenses and dispensary of M$21 million, and sick leave pay of M$4.7 million. We will address this issue in the light of the theory of bureaucracy, property rights theory and the X-Inefficiency theory in a later part of this Chapter.

Quality of service

The privatisation of TNB has put pressure on TNB to improve its quality of service and to be more responsive to customer needs. Consumers were accorded certain rights as spelt out in the terms and conditions of the licence given to TNB, the most important of which are restoration of electricity supply within four hours in the event of an interruption and within two days in the event of a blackout. TNB is obliged to make arrangements to collect payment for bills from the handicapped and senior citizens who might have problems travelling. Written complaints should be answered within seven days of receipt of letter and twenty four hours for complaints by telephone. Disconnection of supply for non-payment of bills are to be reconnected the same day if payment is made before one p.m. TNB officials should not arrive later than 30 minutes after the appointment and any postponement of appointment should not be delayed by more than two days.

101 As disclosed by the Director General of Electricity Supply Department (JBE) in New Straits Times, 03.09.1994
market discipline

Since its privatisation, TNB has been exposed to market discipline in terms of its accountability to the consumers. The cost of the September 1992 power failure in the form of losses registered by firms was massive. The Kuala Lumpur Stock Exchange recorded a M$17 million losses resulting from one day suspension of operation,102 196 firms lost a total of M$219103 in revenue while TNB itself lost M$6 million104. It was reported that some consumers were contemplating taking legal action against TNB because of the losses incurred during the blackout.105 In addition, nine factories in Penang were filing compensation claims totalling M$17.6 million for losses suffered in January and March due to further supply disruptions.106 The Director General of Electricity Supply Department clarified that those firms and factories which experience disruptions in electricity supply can take TNB to court if they believe that TNB has contravened the contract of supplying electricity.107 Commenting on this, the Deputy Minister of Energy pointed out that TNB will not compensate corporations which suffered heavy losses during the September power failure as it was caused by natural disaster.108

Evidently, the privatisation of NEB has made the company

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102 New Straits Times, 03.10.1992.
104 Utusan Malaysia, 03.03.1993.
105 As confirmed by the Executive Director and Chief Executive Officer of Federation of Malaysian Manufacturers (FMM). New Straits Times, 14/2/1993.
106 Confirmed by the Chief Minister of Penang. NST, 24/6/93.
107 Utusan Malaysia, 06.10.1992.
108 The Star, 12.10.1993. He was quoted as saying, "TNB will not do so because the failure was caused solely by thunderstorm and lighting."
contractually accountable to its customers. Penalty on non-performance of contractual obligation to secure the reliability and security of supply as specified by the Electricity Act and stipulated in its license, is enforced through the court of law. Applying the rationale of the X-efficiency theory, this will spur the company to improve its efficiency in order to avoid the penalty of the market discipline, which comes not only in the form of maintaining the lowest possible cost of production so as to stay in business, but also in fulfilling its contractual obligation to customers.

7.4 INTERNATIONAL INVESTORS PARTICIPATION IN POWER PROJECTS

The listings attracted international investors. The number of international shareholders increased from 195 in 1991/92 to 280 in 1993/94 reflecting the international investors confidence in the long term investment growth of TNB. However, in terms of foreign participation involvement in the Independent Power Producers (IPPs) it was disappointing. This could be attributable to two reasons. Firstly, foreign participation is on a minority basis which is not attractive to foreign companies and secondly these newly formed Malaysian companies do not have experience in running the electricity sector and therefore do not command the confidence of the foreign investors. For example, Sikap Energy Ventures Sdn Bhd offer of 25 percent equity to Asean Brown Bovari of Sweden\(^{109}\) was not taken up.\(^{110}\) Similarly, YTL Power failed to attract National Power Plc of the UK as

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\(^{110}\) British Gas Plc initially indicated that it was interested to construct, operate and own a plant in Malaysia with local construction company (New Straits Times, 28.05.1993). However it did not materialise.
the latter pulled out\textsuperscript{111} as both parties, YTL Corp the majority shareholder and National Power, failed to reach an agreement on the project\textsuperscript{112} However, the lack of foreign participation shows that there is sufficient domestic capital to undertake electricity projects in the country as shown by their capability to raise M$9 billion to undertake the power projects.

7.5 CONCLUSIONS

This chapter began with two policy issues: a) Why is privatisation of the electricity sector desirable in Malaysia? and b) Has the privatisation of the electricity sector achieved its objectives?

To answer the first question we have examined the problems faced by NEB in running its operations which are related to the issue of ownership. As expected, NEB has been beset by problems similar to most public enterprises in Malaysia as discussed in Chapter 3. These problems came in the form of government and political intervention, plural accountability, and bureaucratic delay and red tape which limit and constrain NEB from efficient operations. These problems have threatened security of electricity supply resulting a major blackout in the country in 1992. As discussed in Chapter 3, government and political interference in public enterprises is not surprising as there are tendencies for politicians to use public enterprises as a source of patronage, wealth and power. Evidence presented in this chapter on rent seeking behaviour and allegations of corruption by the politicians and the NEB’s staff is a major cause of concern for efficient running of NEB. We have seen in this chapter,

\textsuperscript{111} Initially YTL Power shareholders were YTL Corp Bhd (55 percent), National Power Plc of UK (10 percent), Bumiputras individuals (30 percent) and International Finance Corporation (5 percent). New Straits Times, 14.07.1993.

\textsuperscript{112} New Straits Times, 23.07.1993.
government and political intervention sometimes undermines investment and financial decisions of NEB. As politicians are utility maximising agents, political interference could lead to financial and investment decision inconsistent with optimal management practices.

The second issue addressed in this chapter is whether privatisation of the electricity sector has met its intended objectives. Financially, the participation of the five IPPs have benefited the government. The IPPs have invested M$9 billion in capacity expansion programme relieving the government from its financial responsibility in providing electricity to the country. The Bakun hydro-electricity project, which is to cater for the long term needs of the electricity in the country, is being undertaken by a private firm at a cost of M$17 billion (Chapter 8). The IPPs participation in the electricity industry is crucial in ensuring rapid development of the economy in the future. Investment programme by the year 2020 is estimated to be in the region of about M$100 billion. Similarly, the privatisation programme has placed TNB in a financially better position to undertake more projects in the future. With the prospect of increasing revenue through diversifying into other business activities, equity stakes in the IPPs companies and venturing into international markets TNB is expected to benefit from the privatisation programme as well.

The privatisation programme has also achieved the Bumiputra equity participation in the listings but with a worrying prospect of not being able to sustain the objectives as the number of Bumiputra individual shareholders is decreasing by the year. Similarly, the number of institutional shareholders have been declining while international and government shareholders has been increasing. These trends confirm that in the long run the objectives of wider share of ownership is difficult to sustain. In terms of
efficiency it is not possible to measure its impact to make any meaningful evaluation given the short time frame of post privatisation period. However, indications are that NEB is now subjected to market discipline to ensure better reliability of supply.

The next chapter looks at electricity sector reform in Malaysia focusing on the government policy of introducing competition in the generation sector. As we have pointed out this is an essential element to accompany the privatisation programme to ensure the attainment of efficiency objective. It discusses the reform of the industry structure and its liberalisation i.e. the opening up of competition or the removal of restrictions on competition in order to increase efficiency of the industry. It examines the present industry structure as a transitionary period to introduce limited form of competition and an alternative model is developed for long term achievement of efficiency objective. It looks at the rationale and objectives of the theory of regulation and methods of regulation. It then examines the regulatory framework of the industry and assesses the regulatory reform of the electricity industry.
8.2 Participation of the Private Sector 258
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8.4 Alternative Model of Industry Structure 290
8.5 Regulation 298
8.5.1 Rationales for Regulation 298
8.5.2 Problems of Regulations 300
8.5.3 Regulatory Framework 301
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8.6 Conclusions 306
Chapter seven discusses the problems of the electricity sector which provide justification for the privatisation of the NRB and the electricity sector. We have also looked at the achievements of the privatisation programme as measured against the intended objectives of the programme. As we have pointed out in the last chapter, it would be too premature to measure the success of the privatisation programme in terms of increased economic efficiency due to the limited time frame available for comparison. Although the NRB has been privatised, as we have seen, it still exhibits its pre-privatisation problem of government and political interference, poor planning and bureaucratic delay, and a poor track record of project implementation, which eventually led to the September 1992 blackout incident that affected the whole country.

The objective of this Chapter is two fold: firstly to examine the impact of the Government policy of introducing IPPs into the electricity sector on the attainment of increased efficiency through competition, and then to provide an alternative model for increasing efficiency; and secondly, to look into the regulatory aspects required to ensure the realisation of such objectives in the short term (1993-2015) and long term (Post 2016). This Chapter is organised as follows: Section 2 looks at participation of the private sector in the electricity industry after the black out incident in 1992. Section 3 examines the present industry structure and discusses issues and problems relating to achieving the efficiency objectives of the privatisation programme. Section 4 examines an alternative model of industry structure and strategy to introduce competition to enhance efficiency in the electricity sector. Section 5 discusses the regulatory framework of the industry and examines the effectiveness of the regulatory body in discharging its role to introduce
competition in the electricity sector. Section 7 provides a conclusion on issues discussed in this chapter.

8.2 PARTICIPATION OF THE PRIVATE SECTOR IN THE ELECTRICITY INDUSTRY

As a temporary measure to ease the problem of power shortages in 1992, the Cabinet approved the issuing of licences for a duration of 6 months to allow factories to generate electricity to meet their own requirement.\(^1\) During this period the small private generators were given a subsidy of 9 cents per unit of electricity as their costs of production were higher by the same margin.\(^2\) However, this is unlikely to continue in the long run as producing electricity at a higher price than that of TNB is inefficient and requires government subsidies. To redress the shortage of electricity supply, the Government invited IPPs to participate in electricity generation. As discussed in the previous chapter, IPPs participation in the electricity sector was planned to materialise only in 1994. Thus, the awarding of licences to the IPPs in 1993 was done not on efficiency motives but in response to the blackout incident, to provide a quick solution to the power shortages facing the country. As we will see later this has had serious effects, in the short run as well as in the long run, on the efficiency of the electricity sector.

The Government conceded that one of the reasons for inviting the participation of the IPPs in the electricity

\(^1\) The Star, 30.06.1993.

\(^2\) The New Straits Times, 12.02.1993. Based on the 1992/93 cost of production of electricity of TNB of 12.4 cents a unit, the cost of production of the private generators is therefore estimated to be in the region of about 21.4 cents a unit. Looking at this figure, there was no loss to the commercial consumers as commercial rates was 21.22 cents a unit. However, there is a possibility of the industrial customers making a gain of about 1.45 cents for every unit they produced. This is because the cost of production was 12.4, 1.45 cents less than the industrial rates of 13.85 cents a unit. The amount of subsidy paid by TNB could not be estimated because of lack of available data on the amount of electricity generated by the small generators.
sector is the inability of TNB to provide efficient generation and to meet the demand growth resulting from constraints and limitations faced by TNB. It announced its decision to invite the private sector's participation in power generation in September 1991 on an open tender process. Priority is given to local companies which have joint venture arrangements with foreign companies, or local companies which have a working cooperation with companies that have the necessary experience in power transmission. The rationale for this policy is first, to encourage foreign firms to provide funds and invest in the electricity sector in Malaysia and second, to benefit from foreign organisational and operational expertise and transfer technology from foreign firms to Malaysia. The response from the private sector was encouraging as reflected by the 20 proposals received by the Economic Planning Unit before August 1992. Most of the interested parties were construction based companies in a joint venture basis with foreign firms.

The power shortage problem was overcome within five months by increasing total installed capacity through the plant expansion programme and the fast-track plant construction programme undertaken by TNB. Ninety tonnes of power plant equipment was air-freighted in order to undertake the fast-track plant construction programme. This was made possible because the Ministry had given full authority to TNB to solve the problems without interference. Additional installed capacity of the electricity sector will increase

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3 Director General of ESD. New Straits Times, 03.09.1994.


5 However according to an interview source some of these were just in the form of letter of intent.

6 Examples are Times Engineering Bhd and YTL Corporation both of which got their tender accepted. New Straits Times, 05.08.1992.

7 The New Straits Times, 03.01.1994.
by 2,300 MW through IPPs participation which will cater for electricity demand until year 2000. The participation of the IPPs has shortened the planning period and relieved TNB to some extent of planning and construction activities in the electricity sector expansion programme. YTL Power, the first IPP to be awarded a licence, would provide 1,170 MW of electricity from its power plants in Paka in Trengganu and Pasir Gudang in Johor within 23 months of the licence being awarded in October 1992. As a result of the installation of new CCGS plants the power project can be completed in a time frame of less than 15 months.

The participation of the IPP in generating activities has proved that it is possible to develop a local capital market to fund infrastructure projects in order to achieve privatisation objectives. The five IPPs have been able to raise about M$9 billion to participate in the generation of electricity. By 1997 generation capacity is planned to reach 11,700 MW against a projected demand of 7,800MW - 8,000MW. It is expected that by 1995, TNB will increase its reserved capacity to 35 percent to ensure a consistent supply of electricity in the country.

The IPPs electricity plants are expected to be in commission by 1996 when total installed capacity of the IPPs will constitute about 40 percent of the total installed capacity of about 10,000 MW. Only TNB has been given the licence to generate, distribute and supply electricity after the privatisation programme.

**Awarding of IPPs licence**

The process of obtaining an IPP licence was done on a
negotiation basis. One argument in support of the negotiated tender approach is that it is less bureaucratic and the decision making process is shortened. This approach was well suited for the Government in trying to solve the acute power shortages problem in the country. However, critics could argue that the awarding of licences to the IPPs on a negotiated basis has some fundamental flaws in achieving cost efficiency. Firstly, the negotiated tender approach encourages rent seeking activities (as discussed in Chapter 4)\footnote{As discussed the rent seeking activities by the entrepreneurs from the private sector or the lobby group could lead to bribery and corruption. The cost incurred to the entrepreneurs could be built into the project cost which is then transferred to the price paid by the consumers.} which could work against the interest of the consumers. Secondly, an open tender approach would have been a better option both for TNB and the consumers as a whole where price is determined in the tender offer before the licence is awarded. This is argued for two reasons. Firstly, an open tender system including tenders from TNB would be a better alternative in terms of achieving the lowest production cost of electricity from competing sources. Secondly, the failure to achieve the lowest production cost will increase price, reduce the profit margin and the profitability of TNB. This leads to a loss of revenue to the Government in terms of less dividends and taxation received due to lower profitability than would have been otherwise. However, there is a problem associated with using the open tender approach. It would have given an advantage to TNB in making the offer price, as they have access to full information regarding the cost of building an electricity plant. Given the scenario, this information is costly for the IPPs which will give rise to high transaction costs (Chapter 4) involved in getting the licence. In addition TNB is in a position to quote lower production costs because of the possibility of cross subsidy within power plants. However, these problems could have been addressed by requiring TNB to submit its tender through a new subsidiary company. This would restrict cross
subsidy between plants or within departments in TNB as the subsidiary company would have separate legal and financial entities which could be easily accounted for.

Although electricity comes under the purview of the Electricity Supply Department and the Ministry of Energy, the awarding of licences and the negotiation process was handled by the Privatisation Unit of the Economic Planning Unit (EPU), Prime Minister Department. Some critics have questioned the involvement of the EPU in the implementation of the electricity privatisation programme especially its role in processing applications and negotiating the award of licences.\(^{12}\) There is a strong argument against the interference of EPU in the decision making process of awarding the licence. The jurisdiction actually comes under the purview of the Ministry of Energy which has delegated the responsibility to the Director General of Electricity Supply (DGES). However, one can also look at the issue from three perspectives as to why involvement of the EPU was necessary at that time. Firstly, the Privatisation Unit of the EPU has been set up to oversee the planning and successful implementation of the privatisation programme in the country. By virtue of its set-up which is under the PM Department, it carries more weight or authority in getting things done to ensure successful implementation of the programme. Secondly, the track record of the Ministry of Energy in supervising, monitoring and ensuring the security of supply in the country has not been impressive, as reflected by the major power supply disruptions including the September blackout in 1992. Another failure of such magnitude, would be a detrimental to the economy and would undermine investors confidence to invest in the country. To overcome the shortage of electricity supply the Government

\(^{12}\) According to an interview source, this have caused some friction among officials on Ministries concerned. Two plausible reasons for this friction. One, there was no clear guidelines on roles and responsibilities of all the parties involved. Second, intervention by the EPU tends to weaken the decision making power of other Ministries.
had to take drastic action to see its successful implementation. Thirdly, there is also a lack of expertise in the Ministry to undertake the programme on a negotiated tender basis.

Criteria of Awarding a Licence

The Government announced that local companies with foreign partners experienced in electricity would be given priority. In addition Bumiputra companies would be given special consideration. The participation of foreign companies was aimed at getting funding from abroad to part-finance the projects. However efforts made by applicants to get foreign partners did not materialise. Negotiations between YTL and the National Grid of Britain failed to agree on terms and conditions for the joint venture. Hypergantic also failed to team up with a company from United States for an undisclosed reason. With the exceptions of YTL, the other four IPPs are majority owned by Bumiputras.

Evidence shows that some of the IPPs were having financial difficulties in undertaking the project. This is demonstrated by the fact that some IPPs started to seek partners with strong financial standings to provide backing to the project only after the issuance of the licence. For example Sikap was reported to make an offer of equity participation to Perak State Government and National Equity Corporation (PNB), which was not taken up. It required a M$1 billion shareholders fund in order to obtain a M$2

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13 As revealed by the Minister of Energy. The New Straits Times.
14 The New Straits Times.
15 The New Straits Times.
16 State Economic Development Boards, Bumiputra owned institutions and a minority of Bumiputra individuals.
billion loan to construct the M$3 billion project. The company was later sold to Malakoff presumably because of the failure to get the right partners needed to provide the required shareholders fund in order to obtain project financing. With strong financial backing from the new shareholders Sikap, later renamed as Segari, was able to obtain financing facilities from the Employees Provident Fund (EPF) and two leading banks, Bank Bumiputra and Malayan Banking Berhad. Some view this as contrary to the government strategy of increasing Bumiputra participation in commercial and industrial sectors through the privatisation programme. It does not come as a surprise when later both the Prime Minister and the Minister of Energy commented that there were those who were given opportunity in the privatisation programme who sold their projects to others instead of undertaking them. YTL Power had similar problems of raising the capital. Final participation of TNB (20 percent), Employees Provident Fund (10 percent) Mayban Ventures (20 percent), John Laing Investment Singapore Pte Ltd and a Bumiputra company Bara Aktif Sdn Bhd came after an initial failure to get other partners to undertake the project.

One important issue which needs to be addressed here is whether the procedure and criteria used by the authority

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18 A criteria imposed by lenders is that at least one third of the total cost of project must come from the borrower.


24 According to interview source this is generally the view on many people in the relevant ministries concerned.


22 An interview source claimed that the initial shareholders of Sikap made a few millions from selling the company.


26 The word authority is used here as there was confusion over who is really responsible in issuing the licences - Economic Planning Unit, Electricity Supply Department or Ministry of Energy.
in awarding the licence is appropriate in ensuring successful completion of the project by the licensee. The awarding of licence without proper regards to financial standings of the applicants as demonstrated in both cases discussed above is a notable flaw in the Government’s strategy. One way of overcoming this problem in the future is to require applicants to have the necessary financial standing which will allow them to obtain loan facilities by banks or other lenders before being considered. This could be done by interested parties forming consortiums to vie for the projects.

**Signing of Power Purchase Agreement (PPA)**

The negotiations and signing of the Power Purchase Agreements between TNB and the IPPs were completed after the IPPs had obtained their licence from the Electricity Supply Department (ESD). This had a negative impact on achieving the lowest cost of production possible which could have benefited the customers and the country as a whole. This is because given the acute problem of power shortages, TNB was faced with the conflicting objectives of maximisation of profit in terms of getting the best purchasing price of electricity from the IPPs, which would take a lengthy bargaining and negotiation period, or solving the shortage of electricity problem in the cause of the national interest by giving in to the price demand of the IPPs. In another words, while the IPPs could prolong the negotiation process, as time was on their side while TNB was faced with the task of solving the shortage of power problems at the shortest time possible. Thus, it makes it harder for TNB to get a better deal from the APPs agreement. The pressure was therefore on TNB to get the APPs accepted and signed without delay. This obviously has given the IPPs an advantage to get a better selling price deal for their electricity output. YTL Power, the first IPP to sign the APP got the highest price for its electricity
at 15.5 cents a unit while Sikap achieved 13.5 cents a unit. The Minister of energy and the Chairman expressed their dissatisfaction over the purchasing price of the electricity which TNB has to pay to the IPP. The Minister claimed that the price agreed in the APP does not provide a profit for TNB.

8.3 RESTRUCTURING - PRESENT INDUSTRY STRUCTURE (1992 - 2015)

As discussed in Chapter 7, TNB’s organisational and operational set up remains intact after privatisation. It still controls the transmission and distribution activities. The operations are still based on a regional organisational, consisting of Southern, Central, Northern and Eastern regions. Five IPPs were approved to generate and sell electricity for a 21 year period. The present industry structure is shown in Figure 8.1 and the distribution of present installed capacity as at December 1994 is as follows:

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Figure 8.1: Liberalisation of Generation

Notes:
YTL - YTL Power Berhad
SEG - Segari Power Berhad
GIG - Gigantic Power Berhad
LAN - Landmark Power Berhad
MRB - Malaysian Resources Berhad
BAK - Bakun Project
Table 8.2: Breakdown of generating capacity by companies - 1994

<table>
<thead>
<tr>
<th>Generation Company</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenaga Nasional Bhd (TNB)</td>
<td>7,319</td>
</tr>
<tr>
<td>Yeoh Teong Ley Power (YTL)</td>
<td>2,000</td>
</tr>
<tr>
<td>Segari Sdn Bhd (SEG)</td>
<td>1,700</td>
</tr>
<tr>
<td>Gigantic Bhd (GTG)</td>
<td>1,000</td>
</tr>
<tr>
<td>Land Mark Bhd (LAN)</td>
<td>1,700</td>
</tr>
<tr>
<td>Genting Sanyen^(2) (GEN)</td>
<td>300</td>
</tr>
<tr>
<td>Melaka Power Sdn Bhd (MPB)</td>
<td>450</td>
</tr>
<tr>
<td>Bakun^(b) (BAK)</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>17,669</strong></td>
</tr>
</tbody>
</table>

Notes:
- a - Genting Sanyen produced electricity for own consumption in Genting.
- b - Bakun's project is at its initial stage although no licence has been issued.

Under the present industry structure all the IPPs will sell their electricity output to NEB for a 21 year period,\(^{27}\) that is until year 2015.\(^{28}\) Even with the existence of the six IPPs in the industry, the structure and the fixed tariff structure of the IPPs do not allow effective competition to take place.

**Competition Policy**

There seems to be no doubt that the Government does not

\(^{27}\) New Straits Times 02.03.1993.

\(^{28}\) The year is calculated from the date of signing the Agreement in 1994. This also coincides with the validity of the licence for 21 years. Although no published source available on the exact expiry date of the APPs, the year 2015 could be rightly assumed. The Ministry of Energy has also mentioned that the introduction of (effective) competition is only possible by 2015.
have a definite policy as to how competition should be introduced in the electricity sector in order to achieve better efficiency. This is demonstrated by the conflicting signals from the Minister of Energy with regards to Government effort to introduce competition in the industry. Initially, when privatisation of the electricity sector was approved by the Cabinet in 1988, the Minister of Energy made a statement that NEB would eventually concentrate solely on electricity generation after its privatisation programme. Again in January 1994, there was another indication of the separation of generation from transmission and distribution in the future. In a statement the Minister of Energy was quoted as saying "I believe the industry structure for Malaysia in future will change. It may combine vertically integrated licensees, with competitive generation and common carriage for all buyers and sellers in the wholesale electricity market." However later, the Minister made a conflicting statement confirming that transmission and distribution activities would still come under TNB’s jurisdiction. This clarification came in the light of falling shares price of TNB in the stock market in response to the earlier statement made by the Minister on the separation of transmission and distribution from TNB’s activities.

In May 1994, again the Minister of Energy clarified that competition will only exist after the year 2000.\footnote{New Strait Times, 19.01.1994.}

\footnote{The use of the word "believe" can be interpreted in many different ways. Firstly just a personal opinion. It is difficult to guess whether the opinion is based on knowledge of future plans of the Government and does not want to reveal it to the public for fear of causing speculative activities in the KLSE, or just based on a hunch. Secondly, it can be taken as an indication that the Government has no policy or master plan strategy as to how effective competition should be introduced. Whatever the interpretation adopted, it signifies the uncertainty in the introduction of effective competition in the industry. However, what is certain is that in the next 21 years there will be no such competition given the current policy where IPPs are guaranteed a market and a predetermined price for their electricity.}

\footnote{Utusan Malaysia, 10.05.1994.}
According to the Minister this will takes place once the IPPs start producing electricity which TNB will not be obliged to buy at the current rates of 15.5 percent a unit. According to the Minister, IPPs will be required to submit price tender to TNB which is anticipated by the Minister to be cheaper than the present rates. This statement is conflicting. One could not fully interpret and understand the Governments thinking on the direction of introducing competition. After all the IPPs have signed their APPs with TNB which includes pre-determined tariff rates for a 21 year period. Thus the introduction of a tariff based on a merit order or pool system, as adopted by the electricity industry in Britain, could only be introduced after the year 2015. In November 1994, the Minister made another statement which implied the Government had a plan to introduce effective competition by the year 2000. He was quoted as saying that "Tenaga Nasional Berhad is the major supplier now and will remain the controller of the industry until year 2010." The statement confirming the position of TNB in the industry can be taken as controlling entry into the industry through limiting the issuance licence until the year 2010. It does not come as a surprise that later the Ministry initiated a move to give protection in the form of a production quota to TNB. This however conflicts with his earlier statement in January 1994, where he clarified that as a result of the blackout incident privatisation and competition would be accelerated and introduced.

To add to the uncertainty and confusion, there were also

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32 There is a possibility of a reporting mistake by the newspaper on this issue. However, we take it as true because there has been no correction made either by the Ministry or the reporting newspaper on this matter.

33 New Straits Times, 02.11.1994.

34 New Straits Times, 23.11.1994.

inter-Ministry conflicting statements and signals on policy matters which reflect the lack of planning and coordination by the Government. In early November 1994, the Prime Minister made a statement that the Government planned to issue more licences to increase the electricity supply.\(^{36}\) Commenting on the statement, the Minister of Energy clarified that more licences would be issued if there was an increase in demand particularly from the industrial sector.\(^{37}\) He went on to clarify that the Government will only issue new licences to IPP in another two years time after ensuring existing IPPs are viable and functioning. What is difficult to understand is that the question of the viability of the IPPs is being raised after licences have been issued to six IPPs. One may then argue that the statement demonstrates the lack of proper plan and strategy as to how competition should be introduced in the electricity sector. This view was confirmed when in late November 1994,\(^{38}\) the Minister went to the Cabinet to request a production quota for TNB with the view of providing ensuring its market dominance in the electricity sector.

**Protection of incumbent**

While one of the objectives of privatisation programmes is the enhancement of productivity and efficiency to be achieved through competition, a proposal to limit the amount of power generated by IPPs conflicts with this. The Minister submitted a proposal to the Cabinet to reduce the amount of power generated by IPPs from the current 40 percent to 30 percent.\(^{39}\) The Ministry proposed that there should be a policy on the extent of private sector

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\(^{36}\) New Straits Times, 02.11.1994.

\(^{37}\) ibid.

\(^{38}\) New Straits Times, 23.11.1994.

\(^{39}\) New Straits Times, 23.11.1994.
participation in the electricity sector in future. It claimed that failure to achieve this ratio would have grave repercussions on the tariff structure which would affect the consumers. The Ministry argued that it is detrimental to TNB to buy electricity from the IPPs and distribute it without making a profit.40 Advocating a definite policy on the percentage of power required from the IPPs the Minister was quoted as saying, "At the moment, there are no plans to issue new licences for IPPs. But there is a necessity to have a definite policy on the percentage of power IPPs should provide".42 One can argue that if accepted, this policy would be a step backward to the introduction of effective competition in the electricity industry. A protection given to TNB to maintain it as a major and dominant producer will encourage rent seeking activities to feature in the market place. If this happens, the market is then posed with an institutional problem of dealing with the market power of TNB. Eventually, this could translate into a higher price for electricity in the absence of fair competition.

Market power and Merger potential

The Government has specified that all IPPs are obliged to offer TNB up to 20 percent stake in their companies.42 TNB has agreed in principle to take up stakes in some IPPs but will only decide when IPPs have sorted out their own internal matters such as financing and equity partnerships and all technical negotiations between itself and the IPPs have been concluded.43 The five IPPs will be supplying about 4,500MW or almost 40 percent of electricity supply by

40 New Straits Times, 23.11.1994.
41 ibid.
42 New Straits Times, 09.07.1993.
the year 2000.\(^4^4\) TNB estimated that it will require M$500 million should it decide to take up stakes in five licensed IPPs\(^4^5\), excluding Genting Sanyen Sdn Bhd which does not sell electricity to TNB. All the five IPPs have invested about M$9 billion in power plants to produce electricity.\(^4^6\) The IPP have set up an association known as PENJANA to work towards their common objectives and sort out problems facing them.\(^4^7\) Among the objectives of the Association is its strong commitment to ensure quality is maintained by the industry with profitability subject to social responsibility. TNB will also be invited to join the Association.

In the absence of merger restrictions the possibility of concentration of market power is a threat to the effort of introducing competition in the electricity industry. For example Malaysian Resources Corporation Berhad (MRCB), a shareholder of Hypergantic Sdn Bhd, has increased its controlling stakes in electricity generation with the acquisition of an 80 percent stake in Segari Sdn Bhd through Malakoff Sdn Bhd. The two IPP constitute about 3,700 MW which is 26 percent of the total installed capacity. This raises two important issues: one, the possibility of merger between the generating firms and two, the issue of interlocking directorship which could be detrimental to the introduction of competition in the electricity industry in the long run. The possibility of merger between IPPs gives rise to the problem of market power. If a business group is large in relation to the entire economy or the industry, it can use its power or

\(^{44}\) New Straits Times, 23.11.1994.

\(^{45}\) New Straits Times, 09.07.1993.

\(^{46}\) Utusan Malaysia, 10.05.1994.

\(^{47}\) New Straits Times, 07.09.1994.
position to gain privileged access to scarce resources. These resources include underprice credit, import licences, tariff protection, and a host of favours granted by the government and the private sector in a disequilibrium market. The interlocking directorship could also act against the interest of the consumers through coordinated decision making by the relevant IPPs and undermine the Government's effort to introduce competition in the industry.

The issue of market power again becomes important in the light of completion of the Bakun hydro-electricity project in 2002. Presently, it is not known how the Bakun factor will affect the future electricity supply equation and the electricity tariffs in Peninsular Malaysia. With potential capacity of 10,000MW and with limited demand for electricity in East Malaysia one could assume that electricity produced by the project is for supply in Peninsular Malaysia. The first phase of the project will have an installed capacity of 2,500 MW which is estimated to be ready by the year 2002. In the event of realising its full potential of 10,000 MW, Bakun will control about 45 percent of the nation's electricity requirement by year the 2020. In the absence of clear policy on electricity and strategy to induce competition, it is difficult to anticipate the impact of Bakun hydro-electricity on electricity tariff and competition in the electricity industry. If the Bakun project materialises, it will deprive entry of more IPPs until the year 2020. However, in the event of the ASEAN electricity grid comes to reality then there is potential for more IPPs to participate in the generation of electricity. This will facilitate the ESD to introduce more competition in the industry.

**Competition in export market**

Although there is no effective competition in the
generation of electricity in the domestic market, limited competition exists in the export market to Thailand and Singapore. For a start, the Government has approved Landmarks Berhad to supply electricity to EGAT in Southern Thailand. The Cabinet has also approved YTL to supply 500 MW annually to the Public Utilities Board of Singapore. In the long term perspective, if the Asean Electricity Grid materialises, then effective competition in electricity generation will take place sooner than expected, that is before the year 2015. With such a huge potential capacity, the Bakun hydro-plant and other generating companies are well placed to compete in the export market in the Asean region.

**Tariff**

The licence restricts TNB from imposing a tariff exceeding those charges fixed under tariffs as in September, 1990. Future tariffs will be based on the "CPI-M+Y" formula which incorporate an adjustment for fuel-cost-pass through element. The formula is to be reviewed every four years by the Director General of the ESD.

i) **Price Formula**

The formula in general form is:

\[ A = P (1 + CPI - M) + Y - K \]

where

- **A** = Maximum allowed average revenue per unit for the coming year

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41 The Asean countries has plan to construct electricity grid for member countries to export and import electricity.
42 Interview source.
43 New Straits Times.
The price formula ensures TNB does not abuse its dominant position by making excessive charges for electricity. This general formula takes consideration of both the supplier and the consumer interests. It accommodates the duties of the Director General as imposed under Section 4 of the Electricity Supply Act 1990 to promote the interest of consumers of electricity supplied in respect of the price to be charged. It also aims to secure that the licensees are able to finance the carrying on of activities for which they are authorised by their licence. Thus, the formula will enable TNB’s tariffs to be set sufficiently to earn a reasonable rate of return on its assets as well as funding its future investment required to meet demand.

The determination of "M" - will take account of potential gains and TNB’s investment needs. Potential efficiency gains come from improved low availability, increased thermal efficiency of certain plants, and rehabilitation programmes. The "Y" factor provides the amount of fuel cost that could be recovered through the tariffs. It allows adjustment to be made to the fuel element in TNB’s tariffs whenever the actual cost per unit exceeds the "benchmark" fuel price from the Base Year 1992. It is understood that only an increase or decrease of fuel element by more than + or - 10 percent will be passed on to the consumers.\(^\text{52}\) This means that if the actual fuel costs per unit exceed the "benchmark" by 13.5 percent, the additional fuel cost per unit to be passed on to the customers is 3.5 percent of

\(^{52}\) Interview source.
The "K" factor provides correction of forecasting errors and takes the following general form:

\[ K = (R-A)(1+I) \]

where

- \( R \) = actual revenue per unit for the year in respect of which the correction is to be made
- \( A \) = Allowed revenue per unit for the year in respect of which the correction is to be made
- \( I \) = a specified interest rate

However, there are some problems of implementing the formula due to the following reasons:

i) Hydro electricity constitutes 25 percent of the installed plant capacity of TNB, as at 1992. The above formula does not provide adjustment of an unanticipated shortfall in the availability of water for hydrogen. In this event more fuel will be needed to replace electricity which would have been produced from hydro sources.

ii) The CPI does not reflect NEB’s actual cost structure which is shown as follows:

<table>
<thead>
<tr>
<th></th>
<th>NEB</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>25</td>
<td>4.5</td>
</tr>
<tr>
<td>Operation and maintenance</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Interest payments</td>
<td>15</td>
<td>7-10</td>
</tr>
<tr>
<td>Loan repayments</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Profit</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Taxes</td>
<td>15</td>
<td>-</td>
</tr>
</tbody>
</table>

It can be seen that the financing cost constitutes of interest as the major cost elements. In addition NEB faces
high foreign exchange exposure as ninety percent of its borrowing is in foreign currency. The interest cost and fuel cost are not weighted accordingly within the CPI components. One way of overcoming this problem is to provide a fuel adjustment clause Y in the formula which allows any increase or decrease in fuel costs to be passed on directly to the consumers. For example if the tariff were 17 cents per KWh and fuel cost 4.8 cents per KWh, an increase of fuel cost to 6.5 cents per KWh would allow tariff setting of 17 cents plus fuel cost increase of 1.5 cents a KWh. However the problems with this method is that it does not provide incentives for NEB to optimise its fuel mix but would simply pass it through.

Since adopting the electricity tariff formula, two price adjustments have been made to electricity prices. The first was in March 1994 where the price was reduced by 0.65 percent and the second in July 1994 where price dropped by 5.2 percent equivalent to 1.04 sen per unit from 19.73 sen to 18.69 sen per unit. The adjustment rate is to be adjusted every three month depending on fuel costs.\(^{53}\)

**Treatment of IPPs in the Equation**

The Minister has claimed that the electricity price paid by TNB to the IPPs does not provide TNB with profit. In addition it was claimed that consumers will be losing if the participation of the IPPs in generation is more than 30 percent. It is understood that IPPs will be supplying base-load electricity generation and TNB under its arrangement with the IPPs is obliged to buy the full amount.\(^{54}\) This could have an impact on TNB’s future profitability. In this case, IPP’s have an advantage over TNB due to the following:

\(^{53}\) Minister of Energy. New Straits Times, 09.06.1994.

\(^{54}\) Interview source.
1) The first issue is whether IPPs would be required to maintain the reserved capacity for the security of supply reason. This has not been decided. The uncertainty of the policy is reflected in the statement made by the Minister of Energy, "My Ministry has looked into the matter and has directed TNB to do so. This percentage can be attained through TNB’s own power houses or through co-generation with private firms".55 Adopting a policy under which IPPs are not required to maintain reserved capacity would affect the electricity expansion plan and participation both by IPPs and TNB in the electricity sector. The future investment plan will then tilt in favour of the IPPs – for three reasons. Firstly, if IPPs do not have to maintain a reserve capacity of 25-30 percent as required of TNB plants, then TNB’s cost of production is going to be higher than that of IPP. For example, a 1000 MW - IPP plant can operate at full capacity during peak period and provide a higher return than a TNB’s plant of the same size but operating at lesser capacity providing the IPP a competitive edge in terms of lower unit costs. Second, a higher rate of return to the IPPs will shorten the payback period on investment by the IPPs. A shorter loan financing period will reduce interest charges thus allowing IPPs to quote a lower project cost for future capacity expansion programme. If this lower cost of production is passed on to the consumers in terms of low electricity price, then consumers should benefit from such productivity gains. However, the APP which provides a 21 year guaranteed fixed electricity price for the IPPs will deprive such gains from the consumers. Thirdly, TNB is faced with uncertainty on foreign exchange fluctuations thus exposing uncertainty on its cost of production. IPPs would expect a stable cost of production as borrowing is made in the domestic market.

2) As the IPPs are using the latest technology, such as

55 New Straits Times.
combined cycle plant (CCGTs), costs of production of IPPs will be lower than TNB's own overall cost of production for three reasons. Firstly, CCGTs are technically much more efficient than fossil-fuel plant (Robinson, 1992). This technology constitutes only about 25 percent of TNB's electricity generation plant. Secondly, the cost of building a gas-fired electricity generation plant is much cheaper at M$1.5 million - M$1.7 million per MW as compared to M$2.8 million - M$3.0 million in the case of hydroelectric power. Thirdly, TNB has low thermal efficiency for its thermal plants due to old age and these require rehabilitation work and high maintenance costs (Chapter 6). In the likelihood of competition in the supply of electricity IPPs have a clear advantage in terms of more competitive tariffs to offer due to higher technical efficiency. If the first merit order system is used during the off peak period the IPPs will benefit more as their plants are more efficient than most thermal plants operated by TNB.

However, these high costs incurred by TNB have to be weighed against two factors which are to the advantage of TNB. Firstly, TNB has the advantage of lower costs of capital for its past projects as well as present projects. As discussed previously (Chapter 6), about 96 percent of TNB's loans are Government guaranteed and thus enjoy a lower interest rate as compared to the market rate which will keep cost of production lower. For example in 1991, TNB obtained a M$500 million soft loan from Britain at 0.835 percent interest rates to finance the Pergau project. The repayment will begin six years after completion of the dam, in 17 instalments over eleven-year

56 The technical efficiency of CCGT technology is around 50 percent as compared to about 35 percent that of fossil-fuel plant.


period. It can be argued that as long as the Government is the majority shareholder TNB will be in a position to obtain loans cheaper than the market rate. Secondly, TNB also enjoys technical economies of scale\(^5^9\) which provide decreasing unit costs for its output which IPPs do not have. The adoption of larger generating units and their concentration in larger power stations such as Paka and Pasir Gudang placed TNB in a position to reap significant economies of scale. However, although this is true in technical aspects, it does not necessarily reflect its advantage in an operational sense. Diseconomies of scale in production occur when firms get beyond a certain size after which costs per unit of output may start to increase. Management problems of coordination, monitoring, supervision and control becomes larger and more complex, and lines of communication get longer. As we have seen in Chapter 7, supervision and monitoring problems\(^6^0\) of TNB are demonstrated by its difficulty in controlling shirking activities as reflected in high medical expenses and a high number of medical leaves taken by TNB's employee. The problem of communication is another feature of TNB due to its size, and the high number of staff could offset gains from technical economies of scale. For example, the Executive Chairman has commented that some of the regional offices were not even aware that there was an austerity drive to minimise wastage and keep costs down in TNB in order for TNB to remain competitive.\(^6^1\)

3) TNB has a contractual obligation to buy electricity

\(^{5^9}\) Scale economies refer to the effect of increasing output along a negatively sloped Long Run Average Cost curve resulting from rising output within the boundary of known frontier or technology. In the context of efficient frontier as described in Chapter 5, a firm will be moving closer to the reference frontier indicating relative efficiency improvement.

\(^{6^0}\) One could argue that the monitoring and supervision problems are a function of the management system and the size of the employee. The problem becomes greater as size increases and the system of management is centralised which cause a problem of moral hazard and adverse selection.

\(^{6^1}\) New Straits Times.
from the IPPs for a 21 year period. The IPPs have been assured of a ready market where TNB is obliged under its agreement to buy all electricity produced by the IPPs. However rates differ slightly among the IPPs. Under the Power Purchase Agreement (PPA) with YTL, the first IPP to be given the licence to generate electricity, TNB is buying electricity at 15.5 cents per kWh and 14 sen per kWh during Sundays and public holidays. However Segari has a lower rate at 13 cents per kWh during peak and 8 cents per kWh during off-peak. The differences in rates among the IPPs probably was attributable to combinations of factors such as the different cost structures, timing of approval of licence, negotiation skills and the personality of those involved in the negotiation. In addition, as described earlier there was pressure for TNB to finalise PPA agreements to solve problems of power shortages quickly when the PPA was negotiated. TNB also lacked experience when negotiating for its first APP with YTL, which made it difficult for TNB to get a better deal. With experience, TNB managed to negotiate a lower price for its electricity from Segari.

Determination of PPA’s price structure

It is apparent that the IPPs flat rate structure did not go too well with the Ministry of Energy which favours a more competitive rates structure. Initially, the Minister of Energy maintained that IPP’s selling price would not be higher than TNB’s own cost of production. Showing his disappointment, the Minister was quoted as saying, "With no competition to establish a price, it will be difficult

63 New Straits Times.
64 According to a source, the price of electricity produced by other generating firms will be in the region of 13.5 cents a unit.
to verify gains from the issuance of these licences. One argument put forward as to the attractive term enjoyed by the IPP is to encourage private sectors participation in the electricity industry. According to a source, the return on investment for the IPPs is in the region of 20 percent which is considered to be attractive enough to entice private sector participation in the capital intensive power industry. For example the Hypergantic Sdn Bhd will expects the payback period within 7-8 years after operations.

Looking back, there are two issues which need to be examined in relation to the electricity price agreed between TNB and the IPPs. Firstly, is the agreed price of 15.5 cents per unit for YTL and 13.5 cents per unit for Segari, a justifiable price for TNB? Secondly, why did TNB accept the price despite the claim that the agreed price does not provide any profit for TNB? In order to answer the first question we need to know what is the estimated cost of production of the two IPPs. Although one would expect the costs functions of each individual IPPs to vary, one could assume the variations to be minimal as the IPPs are using the same technology, combined gas cycle turbine (CCGT). In the absence of available data and accurate estimation, it is difficult to estimate the projected costs of production of the IPPs on a per unit basis. However, one could use the 20 percent rate of return promised by the regulator to the IPPs as a basis to estimate the cost of production for both IPPs. Using this estimation method, a 20 percent rate of return on 15.5 cents per unit of selling price will provide YTL with a return of 3.1 cents

67 Interview source.
68 Interview source.
69 As revealed by the Managing Director of Hypergantic Bhd in New Straits Times, 05.04.1994.
per unit at a production cost of 12.4 cents per unit (i.e. 15.5 cents - 3.1 cents). This means that YTL cost of production is the same as TNB’s cost of production in 1992/93 at 12.4 cents per unit, when the priced was agreed (i.e PPA signed). Similarly, profit margin for TNB and YTL is about the same in the region of 3 cents per unit. Looking at the Segari case, using the same 20 percent return on 13.5 cents per unit gives us its cost of production of 10.8 cents per unit, leaving it with a profit margin of 2.7 cents every unit of electricity sold to TNB.

Between the two costs of production calculated above, we argue that the 10.8 cents per unit is reflective of the estimated cost of production of the IPPs. This is argued for two reasons. Firstly, since YTL is using the CCGT plant, its cost of production is expected to be lower than that of TNB. As pointed out earlier, some of the TNB’s thermal plants have low thermal capacity due to old age and require high maintenance costs. Thus YTL costs of production should be lower than those of TNB’s 12.4 cents per unit. Secondly, the 20 percent rate of return allowed for IPPs, was meant to act as an incentive for the IPPs to participate in the capital intensive electricity sector. Based on this principle, one could argue that as all the IPPs should get at least the 20 percent return to attract them into the industry, then Segari’s cost which is the

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70 That is calculated as follows:

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<thead>
<tr>
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<tr>
<td>YTL selling price</td>
<td>15.5 cents/ unit</td>
<td></td>
</tr>
<tr>
<td>YTL Production cost</td>
<td>12.4 cents/ unit</td>
<td></td>
</tr>
<tr>
<td>Profit margin</td>
<td>3.1 cents/ unit</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TNB selling price</td>
<td>18.9 cents/ unit</td>
<td></td>
</tr>
<tr>
<td>Buying price from YTL</td>
<td>15.5 cents/ unit</td>
<td></td>
</tr>
<tr>
<td>Profit margin</td>
<td>3.4 cents/ unit</td>
<td></td>
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71 That is calculated by:

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<tbody>
<tr>
<td>Selling price</td>
<td>13.5 cents/unit</td>
</tr>
<tr>
<td>Profit margin</td>
<td>2.7 cents/unit i.e(20% of 13.5 cents)</td>
</tr>
<tr>
<td>Cost of production</td>
<td>10.8 cents/unit</td>
</tr>
</tbody>
</table>
lowest among the two should represent the 20 percent minimum rate of returned.

Based on the above calculations, there is no justification to support the Ministry of Energy and TNB’s claim that it is not making any profit from purchasing electricity produced by the IPPs. However, it could be argued that YTL has a higher profit margin as compared to Segari if its cost of production is assumed to be at 10.8 cents per unit. While YTL is making a higher margin on the selling price of 15.5 cents per unit, TNB is earning a higher profit margin from its purchasing price of 13.5 cents a unit of electricity from Segari. This estimation correlates closer to the payback period of 7-8 years\(^2\) of the two IPPs which is based on the 70 percent supply availability. This dismisses the earlier fear of the possibility that a higher purchased price paid to IPPs will be absorbed by TNB to be passed on to the consumers.\(^3\)

However, one may argue that the introduction of the IPPs has created a loss to the consumers. The reason is that, the lower cost of electricity production by using CCGS is not passed on to the consumers through a lower tariff. Looking from another perspective, while it is not a loss to TNB, as it still make the same profit margin from selling a unit of electricity purchased from the IPPs, consumers are deprived of what would have been a lower price for the next 21 years. The rationale for providing the 20 percent return is to encourage private sector participation in the generation of electricity. However, this is not consistent with the objective of increasing efficiency through the

\(^2\) Interview source.

\(^3\) Before the signing of the APPs, sources from the EPU did not discount the possibility that the high purchase price paid by TNB to the IPPs would be absorbed by TNB and then passed on to the end users. New Straits Times, 05.08.1992 This is another evidence which substantiated the claim that IPPs participation in the electricity sector essentially was not economically motivated but in response to a quick solution to the power shortages problem in the country.
lower production costs and higher productivity achieved by the introduction of competition. The trade-off in achieving the two conflicting objectives certainly points in favour of the former. Although the Government has succeeded in encouraging the private sector's participation it is at the expense of efficiency and consumers' interest in the long run. The problems of trying to keep electricity prices low will make entry unattractive (Helm, 1993) for rewarding investors for risk-taking. On the other hand, no one would be prepared to enter the market unless backed by a power purchase contract with TNB. These have created several difficulties associated with increasing competition in the electricity industry.

It was initially suggested that in the absence of competitive tendering, the purchase price by TNB for IPP's electricity be based on TNB's unit cost plus profit margin for new plant. However, the Government has adopted a flat rate per unit supplied rule. The issue which arises then is in the event of an increase of fuel cost IPPs will have to absorb the extra costs which could impair profitability and security of supply. One solution is the incorporation of the CPI-M+Y formula in the PPA between TNB and the IPPs. This will then take account of escalation of the base price. However, two issues have to addressed here. One, the non-fuel costs of IPPs are likely to be small and thus it may not be appropriate to apply an escalation factor to an IPP's total non-fuel costs. Two, the CPI-M component assumes the existence of inefficiency where the higher the value of M the greater the potential efficiency gains thus providing correct incentives to improve performance. However, the M factor should be zero in a competitive tendering process. On the other hand, in the absence of competitive tendering process, as in the case of negotiated basis where asymmetry of information tends to be

74 Interview source.
significance, then the M factor should be positive. In the case of the IPPs the problems of escalation is minimised by the fact that all IPPs are operating on a combined cycle gas plant and IPPs have signed long term contracts with PETRONAS for the supply of gas. This ensures a stable cost of production for the IPPs and has been given due consideration in the formulation of flat rate tariffs. It is reported that the fixed rate will be adjusted based on a gas-passed through formula at the ceiling and floor prices of gas of M$6.40 and M$5.00 per million BTU respectively. This means that both parties will renegotiate the rate when the price of gas reaches the stipulated ceiling or floor levels.

The second issue is, why did TNB agree on the price (i.e sign the PPA) despite the claim that it is not making profit? There are three plausible answers to this. Firstly, as admitted by a senior TNB official, one of the problems faced by NEB was that they had no precedent to work on regarding the terms and conditions of the entirely new arrangement and there were no specific guidelines to follow. Secondly, according to one source, there was also political interference and pressure for NEB to accept the rates. There were overlapping roles and responsibilities among the various authorities involved in the privatisation programme. The Ministry of Energy and the EPU stepped in as mediators when negotiations came to deadlock over certain terms. Anyway, the dissatisfaction expressed by the Minister of Energy on the outcome of the agreement suggests that as mediator it was not having much say in getting a satisfactory deal (as it claimed) for TNB. Thirdly, as been

75 New Straits Times, 01.04.1993.
76 New Straits Times, 03.01.1994.
77 Interview source.
78 Business Times, 15.05.1992.
pointed out, TNB had a weak negotiation position during the negotiation process as the result of the September blackout. While there was an urgent need to address the problems of shortages of power which is the responsibility of TNB, the IPPs had time on their side to prolong the negotiations. The Government was concerned about the delay in the negotiations and cautioned both parties to expedite the process as the national interest was at stake.  

Long term prospect of introducing competition (Year 2000 - Year 2015)

One of the issues which is detrimental to the introduction of competition in the long run is the guaranteed price for the IPP for the duration of 21 years. The decision to award this privilege can be traced to two motives. One motive was to induce the private sector to participate in the capital intensive investment and reduce uncertainty. Second, extending the infant industry argument, for the IPPs to get protection and special treatment in order to ensure their orderly development. The policy on infant industry regulation has led to further uncertainty on the long term effort to introduce competition in the power industry. One issue that needs to be examined is how future IPPs are incorporated in the long term strategy to introduce competition. The present capacity of 14,000 MW caters until the year 2000. As pointed out, effective competition can only exist by year 2016 (21 years from now i.e 1995) when the present IPPs either have to renew their licences or make an exit from the industry. The question to be addressed is what policy or strategy is appropriate during the second transition period (i.e 2001-2016) before full competition can be introduced in the power sector following the year 2016. In order to formulate a competition policy three important factors have to be taken into account.

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79 Interview source.
Firstly, the completion of the Bakun project. If it is completed by the year 2000 with its 10,000 MW capacity the Bakun hydro-electricity plant will then deny the entry of future IPPs. In fact one can safely say that no new IPPs are required until the year 2020, and effective competition can only take place after year 2016. Second, if the ASEAN grid materialises by the year 2000, then electricity will be exported to neighbouring countries like Indonesia, Philippines, Singapore and Thailand on a larger scale. In this situation it is more beneficial for Malaysia to export electricity from its Bakun power station because of lower costs. With low production cost more foreign exchange earnings will flow from abroad due to the higher profit margin. Given this scenario, more IPPs are desirable in Peninsula Malaysia. However, if the ASEAN grid does not materialise by year 2000, or if it does not materialise at all, then one possible way to encourage new IPPs is to continue the infant industry treatment only up to year 2016.

Another issue which is still uncertain is this: if new IPPs are brought in after the year 2000, do they receive the same guaranteed purchase price as enjoyed by the existing IPPs? The same treatment means that there will be no change in status quo on competition in the industry. Not extending the same privilege means that the new IPPs are playing on a different field which is to the advantage of the existing IPPs. This policy could be a deterrent to entry for future new IPPs and could lead to under-investment in the power sector in the future. If the Government intends to change the policy, then the problem is the cut off point. Potential entrants to the industry would be deterred to invest as it is to their disadvantage of not having being guaranteed a market.
8.4 ALTERNATIVE MODEL OF INDUSTRY RESTRUCTURING

Model 2 - Vertical Separation between Generation and Transmission, and Liberalisation of Generation (Transitional period to introducing competition)

Figure 8.2: Model 2 of Industry Structure - Transition period 1995 to 2016
Generation

Based on the model developed in Section 3.3, restructuring and liberalisation of the electricity generation can be carried out to achieve efficiency in the present industry structure by two approaches: One, by adopting a policy of vertical separation between generation and transmission activities, and two, by a horizontal breakup of TNB with the liberalisation of generating activity.

One way to minimise the problem of externalities due to the de-intergration process (Section 3.3) is by providing incentives for the generating companies to have equity interest in the transmission company. This strategy has been adopted and proved successful in Britain and US. Given the equity interest of the IPPs in the transmission company, the transmission investment programme is likely to be carried out in accordance with the generation investment programme. The reason is that their survival and growth also depended on the smooth running and expansion of the transmission line. The answer to monopoly power by the transmission is by regulating transmission so that it does not use its monopoly power to overcharge consumers. In an unregulated electricity supply system the vertical separation would be highly damaging for two reasons. One, the monopolistic transmission entity would have as much market power as an integrated utility and two, the inefficiencies from loss of coordination benefits could be significant. Therefore there is a strong argument in favour of regulating both the generation and the transmission activities.

The second restructuring option available (which could be done simultaneously) is the horizontal break up of TNB into four different regional units as subsidiary companies.

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Equity participation of each generating company could be based on the percentage of their installed capacity to total capacity.
Although this model does not produce competitive characteristics in the industry structure, it provides efficiency gains through minimising X-inefficiencies and wastage arising from supervision and monitoring problems as a result of asymmetric information between the headquarters and the regional offices. As we have explained in the previous chapter, TNB was having problems in monitoring activities of the regional offices in ensuring policies and directives were carried out. These problems as we have seen are demonstrated in the failure of some regional offices to implement the austerity drive measures to keep costs down and the illegal connection of the electricity to certain areas. The problem of asymmetric information is again reflected in monitoring shirking activities at the regional level. For example as shown in Table 7.5, medical and dispensary costs were exceptionally high from 1989 to 1992. On the average in the financial year 1989/90, TNB was spending M$778 a year per employee on these costs on an increasing trend. By 1991/91 these costs has increased to M$976 a year. This means that, with average costs of M$15 per visit for medical care (i.e. the current fee), each employee visited his doctor five times a month. On average therefore one can conclude that every employee of TNB visited his doctor once a week. In addition sick pay leave

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<tr>
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<th>1989/90</th>
<th>1990/91</th>
<th>1991/92</th>
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<tbody>
<tr>
<td>Medical cost &amp; dispensary (M$ mil)</td>
<td>17.9</td>
<td>21.3</td>
<td>22.3</td>
</tr>
<tr>
<td>No of employee</td>
<td>23,108</td>
<td>23,065</td>
<td>22,767</td>
</tr>
<tr>
<td>Cost/employee/year</td>
<td>778.60</td>
<td>926.00</td>
<td>976.00</td>
</tr>
<tr>
<td>Cost/employee/month</td>
<td>65.00</td>
<td>77.00</td>
<td>82.00</td>
</tr>
<tr>
<td>No. of visit for medical care by an employee per month</td>
<td>4</td>
<td>5</td>
<td>5.5</td>
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Assumptions used: Medical fee of M$15.00 per visit which is on the average the current rate.
Does not take into consideration of serious illness which needs special medical attention which obviously costs more.
has been on an increasing trend from M$3.8 million in financial year 1989/90 to M$5.0 million in 1991/91 (Table 7.5 under notes). Exceptionally high costs of medical, dispensary and sick leave pay reflects the problem of monitoring shirking activities by TNB in its regional offices. Another acute monitoring problem resulting from asymmetric information is indicated by high overtime allowances as shown in Table 7.5. These allowances shot up by 34 percent in financial year 1990/91 from just M$49 million in the previous year to M$70 million. By the 1991/92 financial year it jumped by 61 percent as compared to 1989/90 figure. There are two plausible explanation for this. Firstly, the increase of shirking activities among the lower category of employee especially in the technical group. Secondly, the morale and motivation of employees dropped during the initial stage of the privatisation programme which affected the productivity of labour. While there is some justifications for overtime to increase due to the reduction in the number of employees, the exceptionally high increase does not mitigate such a view. Total numbers of employees decreased only by 33, from 23,108 to 23,065 in 1990/91.

Creating subsidiaries would minimise the problem associated with monitoring and supervision which are delegated to the regional manager. The burden of monitoring performance is thus rest with the manager of the subsidiary. This gives more authority to the manager and creates more pressure for him to monitor performance of his subordinates in order to achieve performance standards set by the principal (in this case the Board) which will determine his salary, bonuses and other benefits. Within the subsidiary company, less asymmetric information between the manager and the subordinates due for the smaller number of employee

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83 Generally most executives are not entitled for overtime allowances. Most of the overtime incurred by the technical group who has to attend to matters outside their normal hours of eight hour duty. Interview source.
provides better opportunity to the manager to monitor rent seeking and shirking activities which lead to minimising costs, wastage and inefficiencies. The separate financial entity of the subsidiary exposes it to financial market discipline which could act as a mechanism of cost controlling and eliminate wastage and inefficiencies. Since the subsidiary company has its own corporate structure it could provide better opportunities for career advancement and promotion which could act as an incentive for the achievement of better efficiency. Increased efficiency will be reflected in terms of low production costs which can be passed on to the consumers in the form of lower electricity prices. By horizontal break up, the informational and the transaction costs of monitoring will be reduced and the responsibility of monitoring lies with the Board and the head of the respective subsidiary unit. The self maximising behaviour of the employee could be reduced as the reward and incentive are better and depend on performance of the subsidiary company.

The second component to this model is the divestment of Government shares in TNB to public hands - in other words going for a fully privatised TNB. The alternative model also attempts to address two problems associated with the Niskanen theory of bureaucracy which are faced by TNB as a government owned utility; firstly, the issue of government and political interference which by limiting TNB’s autonomy in carrying out its activities could affect its performance, and secondly, the self interested maximising behaviour of the bureaucrats, in this case the managers. As we have pointed out the Government and political interference still persist in TNB directly or indirectly through its representatives on the Board or through its plural accountability to different Ministries. Full privatised TNB will make room for professionals and business corporations to be appointed on the Board to lead and monitor performance of the company. Monitoring can also
be carried out by market discipline, including monitoring by lenders (financial institutions and banks) as they have a short term interest to recover their money. With the present ownership structure, Government interference can come from two sources. One, from the Ministry of Finance who owns about 40 percent of the TNB's equity and the Ministry of Energy who is responsible for the electricity sector. Interference from the Ministry of Finance on investment decision could most likely come through its representative in the Board\(^3\). Likewise, interference from the Ministry of Energy could come in the form of lobbying providing quota protection for TNB. Without change of ownership, TNB can still be used as a political tool to achieve political, social and personal objectives of the politicians. In the Malaysian context, the theory of bureaucracy is not only applicable to bureaucrats but also to politicians. As we have discussed in Chapter 3, huge bureaucracy is also associated with political power, prestige and patronism which can be used for political gains. Second, another source of political interference is from Khazanah Holdings\(^4\) which holds about 30 percent of the shares. Interference from Khazanah Holdings or through the Economic Planning Unit (EPU) of the Prime Minister Department. As we have seen, the Privatisation Unit of the EPU is a powerful unit with wide-ranging involvement in privatisation matters. Going for full privatisation address the issue of direct Government and political intervention in public enterprises. In addition, about 50 percent of the Government owned companies were loss making (Chapter 3), this despite the fact that they were created for commercial objectives and were operating in a competitive market

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\(^3\) One would not expect direct intervention on financial matters, procedures and directives from the Ministry of Finance as TNB is incorporated under the Company's Act 1965.

\(^4\) Under the Chairmanship of the Prime Minister, but its set up within the Ministry of Finance.
environment. As pointed out by the report, one of the reasons for the failure of Government owned companies is that there is no pressure for senior officials to perform better in contrast to the hiring and firing system used in the private sector. This is because there is no threat of bankruptcy as the public enterprises are well aware that the Government will bail out bad public enterprises by injecting more funds to ensure continuance of operations. Security of tenure, enables the managers to pursue their self-maximising behaviour without fear of being punished in the event of failure to achieve the enterprise's objectives. The eagerness associated with the creation and expansion of the Nuclear Department in the early 1980s and the controversy arising from Board's ignorance of such development (Chapter 7) demonstrates the relevance of self interest maximisation of some of the employees associated with the expansion of budgets, staffs and prestige as explained by the theory of bureaucracy.

It could be argued that one of the reasons for the failure of Government owned companies is because the government's appointment of the Chief Executive and Board members is based on the patronage system. This provides security of tenure to managers in running the organisation. Salleh (1989) have shown that private companies tend to be more efficient than public companies in terms of lower unit costs and that they achieve higher profitability. Thus this alternative model addresses the issue of increasing efficiency and productivity not through competition (as there is no scope for it until the year 2016) but through further restructuring of the industry which will enable us to address the issue of agency and incentive problems in TNB.

Competition in transmission and distribution

As pointed out earlier, transmission is a monopoly activity and thus needs regulation to avoid monopoly abuse. However, the Government has been unable to unambiguously clarify its position as to whether transmission will be privatised. Contrary to an earlier statement, the Government has stated that transmission of electricity will not be privatised and Tenaga Nasional Berhad will continue to be the prime distributor in the country.66 This is in conflict with the initial Government plan to separate generation from transmission and distribution activities. In a statement before the privatisation programme of the electricity sector in 1991 the Minister confirmed the plan, "Our ultimate aim is to make Tenaga become a company responsible for power transmission and distribution only."67 In Jan 1994 it was reported that the Minister of Energy openly said that the Government would further liberalise the power sector which will include the privatisation of transmission and distribution activities.68 However, the following month the Minister confirmed that the monopoly of transmission and supply of electricity should still be vested in TNB.69 The clarification came in the wake of falling TNB's share prices due to rumours that transmission will be privatised since Government was working on the National Grid Code. The Minister went on to say "Tenaga Nasional has trained and experienced expertise and employee, there is no reason for us to privatisate the electricity supply."70

Although direct competition in the existing transmission

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66 Minister of Energy, in New Straits Times, 10.08.1994.
68 New Straits Times, 03.01.1994.
69 New Straits Times, 15.02.1993
70 New Straits Times, 10.08.1994.
and distribution network is unlikely, competition in the form of providing new transmission lines is still possible. An example is to provide a transmission line to service new areas providing direct links between new power stations and principal markets as an alternative to existing indirect links. In the light of the Bakun project, generation and transmission should be fully integrated as only one generating company is involved in the generation of electricity to be supplied to Peninsular Malaysia.

8.5 REGULATION

8.5.1 Rationales for regulation

We have argued that there is an economic case for regulation of the generation and transmission company. Basically the need to regulate arises from the argument of market failure i.e. the market fails to operate efficiently. There are several reasons why markets fail to operate at optimal level. One arises from the problem of asymmetric information where producers and consumers have difficulty in making choices in markets due to complex, and costly information which leads to differences in information held by both parties. Asymmetric information results in bias towards one of the parties involved in the transaction. From the suppliers point of view this can lead to too much or too little production which affects both the productive and the allocative efficiency of the firm and the industry.

Second, the case of no effective competition resulting in market power to the producer. The problems of market power exist when a market suffers from ineffective competition thus creating a monopoly market condition. Monopoly markets fail because of both allocative and cost inefficiencies. Standard economic theory suggests that a monopoly tends to abuse its monopoly power by reducing quantity and charging higher price. As discussed in Chapter 6, whenever price
does not equate with the marginal cost of supplying the goods there is an inefficient allocation of resources which results in a loss of welfare or allocative inefficiency. Again if marginal cost pricing rules are followed in the public utilities this can lead to financial losses by the utilities. Certain industries have the characteristics of decreasing cost industries, that is as the firm expands its costs per unit decline up to a minimum efficient scale. When the firm reaches this point, the cost per unit is roughly constant regardless of the firm size. An industry with decreasing costs tend to be a natural monopolist.

The third economic case for regulation is the problem of externalities which arise when economic agents impose on, or deliver benefits to others who are not parties to the transaction. When the behaviour of a firm affects other firms or people in either a positive or negative way then it is necessary for regulatory intervention to improve the welfare of all parties concerned. However, Posner (1974) argued that market failure arises from inadequate specification and enforcement of property rights rather than from inherent defects of market mechanism. According to Posner the appropriate ways for dealing with pollution for example is to make the polluter pay the costs of pollution activity by means of a tax rather than attempt to prevent pollution by administrative means.

These basic problems limit the power of markets to produce efficiently. Intervention in the form of regulation is therefore required to ensure that the pursuit of profit does not conflict with social welfare and efficiency (Train, 1991, 1994) and this provide rationale for various kinds of economic regulations. However, Littlechild (1983)

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91 An example of positive externality occurs in the telephone network. Present subscribers to a network also benefited from the addition of further subscribers due to increased possibilities of communication. On the other hand, the generation of electricity using fossil fuel produces acid rain resulting more pollution. This imposes direct cost on others which are not borne by the firm.
argues that competitive markets by themselves are the best regulators. They serve the interest of consumers through the operation of market forces. He argues that "Competition is indisputably the most effective means - perhaps ultimately the only effective means - of protecting consumers against monopoly power. Regulation is therefore essentially a means of preventing the worst excesses of monopoly; it is not a substitute for competition. This view places consumer interest as a primary concern and the reliance on competition to achieve efficiency which will benefit the consumers. To achieve the desired efficiency results appropriate regulation is necessary. Appropriate regulation means maximising the benefits from removing market failures in relation to the costs of government intervention (Jones, 1993). The costs of regulation include the opportunity cost of the private and public resources devoted to the regulatory process. Vickers and Yarrow point out that there is a need for regulatory policy to influence the behaviour of the regulated firms by establishing an appropriate incentive system to guide or constrain economic decisions.

8.5.2 Problems of regulation

However there are problems associated with regulation which arise from the basic informational asymmetry; One, where the regulators usually have far less information about the costs and demand conditions facing the firms they regulate than do the firms themselves and second, capture of the regulator by the industry and the politicians.

The probability of the industry not providing the true information as requested by the regulator, to protect their own interest, could be detrimental for the regulator to regulate effectively. Initially this will involve high information and transaction costs to the regulator. However, given time as more generating firms participate in
the industry the regulator could have access to more information easily.

The second problem is, regulators could have their own agendas which include career advancement, self-aggrandizement, political support (Train, 1994). The capture theory suggests that over time regulated firms gain control over the process by which they are regulated (Posner, 1974). Stigler (1975) on the same issue comments that "as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit" (p.115). Willig (1993) argues that government proved to be incapable of abiding by its own rules where political reality is inevitably injected into regulation. He pointed out that regulators are often political actors themselves or serve at the pleasure of those in political power. He further argues that regulators of private enterprises are less able to act contrary to public interest than high-ranking officials in public enterprises. When the individual agenda or political agendas of public officials are important the regulated private firms may be better insulated from these pressures.

8.5.3 Regulatory Framework of the electricity sector in Malaysia

The Electricity Supply Act (1990), among other things provides for the appointment and specifies the functions of the Director General of Electricity, and also for the supply of electricity at a reasonable price and the licensing of electrical installation, plant and equipment.

The functions, duties and powers of the DG as stipulated in the Act include, inter alia, the following:

a) to exercise regulatory functions in respect of the service of providing the licensee including the
determination of performance standards and standards of facilities and services and enforcement thereof;

b) to promote competition in the generation and supply of electricity and to ensure the optimum supply of electricity at reasonable prices

c) to promote the interest of customers of electricity supplied by the licensees in respect of price to be charged, the continuity of electricity supply and the quality of services provided

d) to secure that all reasonable demands for electricity are satisfied

e) to secure that licensees are able to finance the carrying on of activities which they are authorised by their licences to carry on;

f) to promote and encourage the generation of energy with the view of economic development of Malaysia

g) to carry on all such other activities as may appear to the Director General requisite, advantageous or convenient for the purpose of carrying out or in connection with the performance of his functions and duties under the Act.

The Act also gives wide powers to the Power and Energy Minister where he may make regulations in respect of any matter which may be prescribed under the Act. Under the Act TNB has certain duties and obligations to supply electricity in Peninsular Malaysia. However, there is no provision for the license to be renewed after its expiry date (21 years) creating uncertainty in the industry which will have an impact on the investment programme of the generating firms. Since the Minister has the power to amend
and make regulation under the Act, this provides opportunity for rent seeking activities by the industry towards the end of the expiry period.

Studies on the framework to regulate the IPPs were completed in October 1993 and will be submitted to the authorities for approval.\(^{92}\) A national electricity grid code was also formulated in 1993 to regulate the power industry\(^{93}\) The main objective of the code is to provide access to all grid users without discrimination. The system is expected to be connected to the rest of the Asean countries to form the Asean grid system.

8.5.4 Regulation in the Malaysian context

Duplication of responsibility

The Electricity Act is aimed at regulating the conduct or behaviour of TNB and IPPs in the electricity market. However, one of the problems of TNB in complying with the regulations is that it also comes under the control of other Ministries with regards to its operations. The duplication of responsibilities has led to friction among the related Ministries and the privatised bodies. The Finance Ministry is in the process of producing guideline to define more clearly the powers of ministries in controlling privatised companies.\(^{94}\) There are three possible reasons for this problems. First, there is lack of separation between ownership and power which sometimes could lead to conflicts of interest. TNB is still owned by the Ministry of Finance and Khazanah Holdings as majority shareholder. The Finance Ministry has its responsibilities as a ministry and at the same time as a shareholder which

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\(^{93}\) New Straits Times, 03.08.1993.

could come into conflict. Khazanah Holdings as has already been mentioned is under the Chairmanship of the Prime Minister. Secondly, ESD is not an independent authority as it comes under the Ministry of Power and Energy. The Deputy Minister has said "A ministry has its responsibilities and prerogative as the major, and sometimes sole, shareholder of the privatised entities". The EPU has also drawn up a paper outlining the scope of power of various ministries over privatised bodies. The paper was to be submitted for discussion in the Cabinet initially without the views of the Ministry of Energy. The Minister of Energy said that there was a confusion over the scope of power of the Finance Ministry and Energy Ministry over Telekom and Tenaga Nasional Berhad:

"We don't know which aspects we have control over and which we don't. Sometimes when I enquire about some matters concerning Tenaga Nasional, I'm told that Tenaga Nasional is under the Finance Ministry ....... since they come under the purview of my ministry, I decide on the policies and I'm also answerable to parliament and the people."

**Regulatory capture**

Given the Malaysian scenario where bureaucrats, politicians and businessmen are closely linked, the issue of regulatory capture and administrative appropriation could pose a threat to achieving the efficiency objectives of the privatisation programme where both issues are essentially asymmetrical (Levy, 1993). Since many parties i.e Economic Planning Unit, Electricity Supply Department, Ministry of Energy and Ministry of Finance are involved within the regulatory system, this could provide room for capture and

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55 The Star 25.04.1991

96 Star, 25.04.1991
expropriation. Three ways could be adopted to deal with these problems. One, there should be a clear separation of policy, regulatory and operational responsibilities. Two, by having precise and specific rules about substance, process or procedures which restrain the discretion of decision maker. Complex monitoring procedures are vulnerable to asymmetries of information and differential bargaining power. Three, by adopting open bidding or a tender process capture at the time of the deal can be avoided. A case in point is the awarding of licences to IPPs in response to the power shortages in September 1992. The absence of a requirement to tender competitively has led to long term problems of introducing competition in the industry.

**Power of the regulator and the Ministry**

Although the use of regulatory mechanisms is required to constrain the power of the IPPs in order to achieve optimal regulation, the next issue is of course the rule of law which also requires the power of the public regulator to be constrained. Butler, Robinson et.al (1993) argue that there should be a transparency, rational and beneficial in regulatory decision - i.e the regulator should be required to give reasons for each proposed change in the utilities licence terms. This would then indicate the direction of policy and the long term objectives of the regulator. Presently no Monopolies and Mergers Commission exists in Malaysia to address any dispute between the regulator and the IPPs. The dispute can be settled in court although it is not the best solution to solving disputes among the various parties involve. This is because court settlement involves legal costs to the reputation of both parties which could severely damage their relationship.
Autonomy and plural accountability

Another factor which could reduce the regulators role in promoting competition due to the regulatory capture is based on two issues pertaining to accountability. One, ESD is not an independent body. It comes under the Ministry of Energy and the appointment of the Director General is made by the Minister himself. The question is therefore whether the DG of ESD could conduct his tasks free from ministerial interference or "ministerial capture"? Second, as pointed out there is a dominant influence of EPU over ESD in policy matters which come under the purview of the ESD and the Ministry of Energy. A classic example is the issuance of IPP licences. In this case regulatory capture comes within the Government department which is distinctively different from ministerial interference. It could work in this way. The interested party may pursue rent seeking activities outside the formal framework", in order to get a licence for IPPs. Laффont and Tirole (1993, pp. 100-103) suggest the situation could lead to the granting of a licence to "a relative or compatriot of the president". This could then well lead to a problem of over-investment which affect both productive efficiency and allocative efficiency of the electricity industry.

8.6 CONCLUSIONS

This Chapter began with two central questions on efficiency issues in the privatisation programme of the electricity sector. One, has the privatisation programme increased the efficiency of the electricity sector? Secondly, what is the role of the regulatory system in ensuring the realisation of the efficiency objectives given the structure of the electricity industry?

97 The framework refers to the Electricity Act stipulates that the power to issue licence for IPPs comes under the purview of the DG of the JBE.
Although TNB has been privatised (partially), it still exhibits its old problems; poor planning, bureaucratic delay, poor track record of project implementation and, Government and political interference which affect its financial and investment decisions. The restructuring of the industry which accompanied privatisation did not provide sufficient framework for the achievement of efficiency through competition among the generating firms. The awarding of licences on a negotiated basis and the flat rate of electricity price paid to the IPPs for a twenty one year period, did not conform to the objectives of achieving efficiency through competition. The price formula of CPI-M+Y formula benefited both TNB and the IPPs. This is because it was formulated when there was so much scope for efficiency improvement by TNB. Such efficiency improvements will not be transferred to the customers. Putting it in other words, in the long run TNB is reaping benefit out of its inefficient practices before the formula was formulated. The effort to provide a protected quota to TNB, the potential concentration of market power through merger and acquisition within the generating firms, and the absence of Merger and Monopolies Commission highlighted the problems faced by the industry to achieve efficiency through competition.

As discussed, the Government has no proper plan or strategy on how to introduce competition in the industry as demonstrated by the conflicting signals from the Government. However, one could argue that the approach taken by the Government to introduce competition could be viewed as a transitional path and a sensible one, given the initial imperfections and the strategic importance of the industry to the economy. One would agree that there is a possible conflict, at least in the short term, between the objectives of promoting competition, on the one hand, and looking after the customers interest on the other hand i.e minimising operating costs of the existing system and
a low electricity price. However, what is questionable is that the time frame given for this evolutionary approach to take place is far too long to benefit the industry and the consumers.

Although efficiency could not be achieved through competition within the present framework, it is proposed that an alternative model of achieving efficiency through further restructuring of the industry should be adopted. The model provides vertical separation between generation and transmission, and the horizontal break up of TNB into four subsidiaries of TNB and a fully privatised TNB.

As pointed out, the present system is neither planned nor strictly market driven. The expansion of capacity decision has been determined by a combination of regulatory bias and political action, and government and political interference. It is obvious from the evidence that there was little overall coordination or coherence as a result of ad hoc elements in policy decision making. Regulatory capture could create significant problems for optimal regulation. To combat the problem of regulatory capture as well as other rent seeking related activities such as bribery and corruption, three issues need to be addressed. Firstly, less regulation is required. Secondly, regulation should be clear and unambiguous. Thirdly, rewards of bribery and corruption have to be minimised by imposing higher penalties. The capture issue exists both for public and for regulated firms.

It is argued that in order for the regulator to achieve its objectives in promoting competition, ensuring an orderly investment programme and protecting the consumers, it should be given the autonomy to carry out its duties.
9.2 Desirability of the Privatisation Programme
9.3 Feasibility of the Privatisation Programme
9.4 Limitations of the Study and scope for Further Research
CHAPTER 9: CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The study presented in this thesis contributes to an understanding of issues underlying the privatisation policy in Malaysia in general and in the electricity sector in particular, and highlights other issues which need to be addressed in order to achieve a successful electricity privatisation programme. The objective of this thesis was to address two policy questions involving the privatisation of the electricity sector in Malaysia: a) Why is privatisation of the electricity sector in Malaysia desirable and b) Given the Malaysian context, is the privatisation programme feasible? Can it be implemented and achieve its intended objectives as specified by the government.

9.2 DESIRABILITY OF THE PRIVATISATION PROGRAMME

To address the first policy question we have examined three related questions. Firstly, what is the rationale and objectives of the privatisation programme in Malaysia; secondly, what has been the performance of the electricity sector and thirdly, can privatisation improve the performance of the electricity sector.

Rationale of the Privatisation Programme

As we have seen (Chapter 2) there are two underlying factors which led to the Government adopting the privatisation policy: the weak financial position of the Federal Government and the poor performance of the public enterprises set up under the New Economic Policy (NEP) (1970-1990). The decline of the Malaysian economy from the beginning of late seventies to early eighties has led the Malaysian government to examine and review its development policy. Falling commodity prices contributed to large
fiscal deficits. Appreciation of currencies of major trading partners such as Japan, Britain, Singapore and USA has raised foreign debt service. In addition the NEP has resulted in a huge public sector and heavy Government involvement in commercial activities which have created monitoring and supervision problems to the Government. The poor financial performance of the public enterprises which were set up to create a Bumiputra commercial society has further compounded the financial problems of the Federal Government. The NEP’s target of achieving 30 percent Bumiputra participation in commerce and industry was also not achieved. Most state governments and public enterprises depended on Federal Government’s budgetary assistance thus undermining its ability to pursue its developmental plan. The privatisation policy was then undertaken as a strategy to reduce the financial burden of the government by minimising its involvement and intervention in the economy and encouraging more private sector participation in the development of the economy. The Government’s privatisation objectives were then; to relieve financial and administrative burden of the Government in undertaking and maintaining a huge and constantly expanding network of services and infrastructure; to increase efficiency and productivity through competition and entrepreneurship; to stimulate private investment to increase the rate of growth; to reduce the size of the public sector and its monopolistic tendencies and bureaucratic support in the economy and finally to promote wider distribution of wealth through share ownership of privatised public utilities and enterprises in line with the NEB objectives of creating Bumiputra commercial society.

The Performance of the Electricity Utility (National Electricity Board - NEB)

The performance of NEB as measured in terms of its technical efficiency and financial performance was mixed.
Employing the Data Envelopment Analysis (DEA) model, based on inter-country utility comparison, it was shown that the relative technical efficiency of NEB has not been impressive (Chapter 5). Using a cross section data of 27 countries in 1987 NEB’s efficiency rating was 18, operating at a relative efficiency of 70 percent. Comparisons based on time series data from 1975 to 1990 between NEB, EGAT and CEGB show that on the average NEB was also relatively less efficient (at 89 % efficiency) than EGAT (at 97 % efficiency) and CEGB (100 % efficiency). The main reason for the different level of efficiency was that NEB has a lower thermal efficiency and higher system losses than EGAT. Another possible reason is that EGAT enjoyed increasing return to scale as it had bigger plant capacity. The results above suggests that there is a lot of scope for NEB to improve its technical performance given the right strategy and policy.

In terms of financial performance NEB, on average from 1975-1990, has a good financial performance track record (Chapter 6) which was commended by the World Bank in 1989. It has been able to meet covenants imposed by its major lenders, the World Bank and the Asian Development bank, on rates of returns, self financing rate, debt coverage ratio. Its performance was better than that of EGAT which is reflected by higher rate of return as measured by Return on Capital Employed (ROCE), a higher self financing rate, higher debt coverage ratio and lower debt equity ratio. However, its billing effectiveness was not as efficient as EGAT and CEGB.

Privatisation and Performance of the Electricity Sector

We have examined the issue as to whether the privatisation programme, that is the change of ownership from public to private, can improve the efficiency of public enterprises (Chapter 3). This leads us to the controversial issue of
performance comparison between the private firm and public enterprises. From a theoretical perspective, the property rights theory, the theory of bureaucracy and the X-Inefficiency theory all attempt to explain why performance of the public enterprises might be less efficient than private enterprises. The theory of bureaucracy suggests that bureaucrats are both utility maximisers and budget maximisers. According to this theory, the bureaucrat as utility maximiser will try to maximise his utility faction, which includes his salary, the size of staff working under him and their salaries and his power and status. As a result, public sector bureaucracy tends to expand output over what is socially optimal and to incur higher costs of production. The property-rights theorists centred their argument on public ownership as the source of inefficiency. They argue that the non-transferability of ownership implies that the public has weak incentives to check on the performance of the public enterprises. Similarly, the managers of the public enterprise have the same weak incentives to monitor and to take the long-term view of the public enterprises development, as they cannot increase their own wealth by increasing the wealth of the firm. The X-Inefficiency theory focuses on the imperfectly specified contracts and the difficulty associated with the policing and the enforcement of the contract as the reason for bureaucratic inefficiency. Inefficiency comes in the form of waste, over-manning and low productivity. With these inefficiencies the public enterprise is not operating on its production possibility frontier but instead at some point within the frontier. These theories provide an understanding of the problems, limitations and constraints that confront public enterprises which have to be addressed in order to improve their performance. Based on these theories we can predict the behaviour and characteristics of public enterprises. Characteristics of the public enterprises as modelled along these theories are; political and government intervention, multiple sometimes conflicting
objectives, plural accountability to several ministries, existence of a patronage system, dependency on Government budgetary assistance and a weak incentive to achieve better performance. The outcome of these characteristics are that public enterprises may be instructed to give preferential rates to domestic customers, provide similar service regardless of location, to borrow from approved institutions at preferential rates, adopt labour intensive techniques, construct plants in line with national plan and meet social objectives at the expense of profits. From the above we can predict that outputs of public enterprises are likely to be at sub-optimal levels.

However, as discussed in Chapter 3, empirical evidence from previous studies done in Europe, UK and US have shown that there is no conclusive evidence to support the superiority of the private enterprises over the public enterprises and vice versa. In the case of Malaysia, empirical evidence from the few studies on the comparative performance of public and private enterprises tend to support the view that public enterprises are less efficient than the private enterprises. Performance comparisons in cement, construction and milling industries in Malaysia, show that private enterprises tend to perform better than public enterprises in terms of lower cost per unit of output and higher profitability and productivity. Studies of the profitability of the public enterprises also showed that 50 percent of public enterprises in commercial activities were loss making inspite of various sorts of Government assistance such as equity fund, low interest rates, subsidised input costs in certain cases and bureaucratic preference treatment.

Institutional evidence in Malaysia shows that the behaviour and conduct of the public enterprises in general, conforms to the model of state owned enterprises as developed by the theory of bureaucracy, property rights theory and the X-
inefficiency theory discussed in Chapter 3; over-manning or over-size department, higher unit cost of production, and high investment programme. The growth of the public enterprises in Malaysia is consistent with the theory of bureaucracy. Public sector expansion in Malaysia was associated with the implementation of the NEP. Departmental expansion means more responsibilities which provide better promotion opportunities with higher salary scales for departmental heads and senior managers who are senior bureaucrats in the organisation. In addition, expansion of departments leads to better benefits, and associated power and prestige for top bureaucrats. Politicians too have vested interest in the expansion of the public enterprises in association with the NEP. The patronage system which is entrenched in the Malaysian political and administrative systems made bureaucrats more vulnerable to political manipulation and government intervention in the operations of the public enterprises. This has led to an overlapping of the political and administrative functions as there was no clear separation between political and administrative spheres. Chairman of public enterprises and some top bureaucrats were selected and appointed more on the basis of political connections than on merit. It was not surprising that as a result of this some enterprises were created with duplicating functions and overstaffing, and were used as political tools and as power bases for some politicians.

As we have described earlier (Chapters 3, 7, and 8), Government intervention in the economy has created more opportunity for rent seeking activities which lead to bribery and corruption. The performance of the public enterprises undermined by mismanagement and corrupt practices reflects the maximisation of bureaucrats self interest. Government and political intervention combined with the patronage system resulted in rent seeking activities among bureaucrats and politicians and led to
unnecessary expansion of some public enterprises. Bribery and corruption lead to the use of capital and other resources inconsistent with optimal management practices. It resulted in higher costs of inputs and higher cost of production which subsequently transferred to the consumers through higher pricing. Although there are laws and regulations such as the Anti Corruption Act 1961 (Amendment 1971), Financial Procedures Act 1972 and the General Orders (Conduct and Discipline) to curb corruption and malpractice in the public sector, the problems were getting serious over time for reasons of difficulty in getting evidence for offenders to be brought to court.

The patronage system dominantly prevailing in the political and administrative system through appointment of the Chairman and the Board members have created problem of accountability of the public enterprises. As studies have shown, some Chairman and Chief Executives of public enterprises have no regard for financial objectives and procedures set for the public enterprises. Sometimes investments made and expenses incurred were not necessarily based on financial criteria but were based on political and personal considerations. The appointment of a Board based on political consideration and connections rather than merits has made it difficult for the Board to check the running and performance of the public enterprises. Although most of the public enterprises operate in a competitive commercial environment they lacked self dependence to survive and compete competitively. As we have pointed out, there are two plausible reasons for this. Firstly, the patronage system provides protection for any possible enforcement of contracts pertaining to wrong doings or failure to fulfil obligations under the contract. Secondly, the public enterprises have strong ties and links with the Government as the owner, in terms of budgets and financial matters. This insulates the public enterprises from closure or bankruptcy. In the event of a closure, employees of
public enterprises can always be absorbed in other public enterprises to avoid any possible political repercussions to the Government. As a result there was less pressure for public enterprises to achieve their financial objectives. This is evident by the fact that 50 percent of the public enterprises were incurring losses from year 1982 to 1990 (available data). These public enterprises despite incurring losses kept operating at the cost of the taxpayers. As discussed in Chapter 4, more often than not they put the blame on social objectives as the cause of the poor performance.

The bureaucrats also had no incentive to cut costs as they were not beneficiaries to such actions. Bonus systems which relate performance and income does not prevail in the public sector. Bureaucrats in the public enterprises, due to the nature of the contractual agreement of appointment are not easily removed from office irrespective of performance of the enterprise. As pointed out some of the head of departments were reluctant to take disciplinary action for fear of being unpopular or because of the entrenched patronage system in the administrative sphere.

Monitoring and supervision of the public enterprises by various relevant Ministries was not too effective. Monitoring and supervision problems due to asymmetric information was associated with the increasingly huge size of the bureaucracy. Official incompetence on the part of Ministries exacerbated these problems of monitoring and supervision. This is compounded by the fact that public enterprises have to be accountable to different Ministries with different roles requiring different types of information and coordination. Efforts taken to standardise and coordinate by different Ministries do not guarantee efficient and effective control due to limited resources, red tape and bureaucratic process. In addition most bureaucrats believe that they are underpaid as compared to their counterparts in the private sector. The public sector
salary scale is based on a fixed annual increment and not performance based. As a result of less incentives, motivations for higher productivity were low in the public sector.

We have addressed the issue of whether ownership matters in improving performance of the utility. The results of our findings on NEB fit into the public enterprise model described above. The findings support the general implications of the property rights analysis, theory of bureaucracy and the X-Inefficiency theory on the behaviour and performance of NEB. In spite of its privatisation in 1992, TNB is still inhibited by problems relating to its operations which hindered it from achieving better performance.

Government and political intervention have inhibited the autonomous decision making of the utility. As discussed in Chapter 6 and 7, intervention at the highest level come from the Prime Minister, Minister of Finance and the Minister of Energy affecting commercial and investment decision making process. The Prime Minister and the Minister of Finance’s intervention in the award of contracts and choosing of consultants, purchasing of plants and attendance of the Minister of Energy during the Board meeting on a number of occasion is a testimony to the extent of Government intervention in NEB. Government and political intervention also come into the Board room in the form of the selection of Board members on the basis of political connections rather than merit. As political appointees Board members carry "political weights" in influencing and determining the directions of decisions of the Board. The politically appointed Board member’s system had some negative effects on the way the Board was functioning. In the words of its former Chairman " in consequence of this (Board members as being political
several Board members have shown little or no interest in the activities of the Board and have absented themselves from meeting after meeting". One could further conclude that the patronage system in the political and administrative system of the country could also be a strong contributory factor which led to such conduct and behaviour of the Board members.

It was observed that NEB was having financial difficulties due to various reasons. Firstly, the tariff structure is government controlled. In the event of an increase in oil price NEB's profit will be eroded as prices could not be raised as quickly as operating costs. Secondly, the high dependency on foreign loans has exposed NEB to foreign exchange fluctuation risk. With the appreciation of foreign currencies against the Malaysian Ringgit notably the Yen and the American Dollar, NEB's outstanding loan has become increasingly expensive to repay as also new borrowing. Thirdly, NEB has still to depend on equity injection for its cashflow requirements in spite of a high internally generated fund from retained profit, in order to meet the high demand growth of electricity from the industrial sector. Part of the cashflow problems of the NEB was due to poor billing policies which left substantial monies tied up in debtors. Although financial performance has improved since the last tariff revision in 1980 which based tariff structure on LRMC pricing, meeting investment in the electricity sector could still prove difficult for NEB. Capital requirement to meet demand growth is estimated at around M$100 billion until the year 2020 - an average

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1 Words in brackets are of the researcher

2 Tate, (1991, p170). As mentioned by the Chairman in his handing over notes to his successor in 1964. He also urged his successor to draw the attention of the Minister on this trend and for the Minister to pay more regard in the choice of the Board Members. However as pointed by Tate, the existence of a strong political element was retained right to the end.

3 As pointed by Tate (1991, p171), quite a number of Board members serve the Board for a period of at least eight years.
annual capital requirement of M$4 billion a year. Fourthly, Government and political intervention and interference sometimes lead to financial decisions incompatible to the commercial objectives of the utility.

As a public enterprise with social objectives NEB undertook an unprofitable electrification programme. However, the financial implications on this unprofitable project is outweighed by the preferential treatment in terms of a lower tax rate and capital expenditure allowance and with subsidised or low interest rates enjoyed by NEB. In addition, the burden of undertaking rural electricity project was shared between the Federal Government, State Government and NEB.

There is evidence of the existence of rent seeking activities (Chapter 6). This is demonstrated in the rejection by the Treasury on the recommendation of awarding contracts to JVC, alleging that the company submitted their application after finding out the tender price of their competitors. The Treasury in turn wished to offer the contract to a local Bumiputra company. Rent seeking activities could lead to bribery and corruption and increase cost of production (Chapter 3). The Opposition party alleged that there were grounds to believe that NEB is no exception on this matter. As we have pointed out in Chapter 7, corruption could occur in awarding of contracts, tampering of meters and illegal connections all imposing costs on NEB. The costs of corruption comes about in the form of higher production and investment costs which eventually are embedded in the electricity price paid by the consumers. Thus one can argue that corruption tends to 

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4 The cost of corruption is not only borne by the electricity consumers but also by all members of the public in the form of higher costs of consumer goods. In addition it undermines an industry's competitiveness domestically and internationally. If the corruption cost is just embedded into production costs without affecting price then corruption does not directly affect electricity consumers. However it still affects the Government as a shareholder in terms of less dividends paid due to lower profitability.
shift NEB away from the efficient frontier contributing to technical inefficiency.

We have argued that ownership does matter in improving the performance of the electricity sector in Malaysia. We have also argued throughout, that the debate is not only on whether private enterprises are more superior to public enterprises but also to focus attention on what factors might inhibit performance of the public enterprises. Eliminating these factors therefore would contribute to better performance or efficiency of the public enterprises. We have pointed out in Chapter 7 and Chapter 8 that in order for privatisation objectives to be achieved and NEB to improve its performance and efficiency two issues need to be addressed. One, is the question of what changes in the framework of public enterprise control are necessary to bring about efficiency. This involves a revolutionary change in the objectives of TNB, the introduction of competition among the generating firms in the electricity industry, the establishment of an effective regulator to monitor economic regulations imposed on the industry, the freedom to raise capital and the minimisation of government and political interference in the running of the TNB. Second, the internal changes address the vital role of appropriate incentives to all parties in NEB - the Board members, managers and employees.

Performance and efficiency improvements will have to address all the above issues. Ownership issues relate to problems of autonomy, objectives and market discipline while the competition issue relates to the structure and nature of the industry. Although autonomy, objectives and market discipline, and government and political intervention issues can be tackled on their own account, all are highly dependent on the issue of ownership. We argue that without change of ownership, the other issues will be difficult to address. This is because as the owner.
or the shareholder of public enterprises is the Government, political intervention is most likely to occur. Government, just like any other private enterprise shareholders, will directly or indirectly exercise their rights in controlling, supervising and monitoring the performance of the public enterprises. While participation of the shareholders in private firms is aimed at increasing the efficiency and profitability of the company, government and political intervention in public enterprises leads to policies or decisions inconsistent with optimal management practices due to political, social and personal considerations. Thus as mentioned in the previous chapters, we argue that the limitations and constraints on the public enterprises could only be addressed effectively by the change of ownership. Addressing the issue of ownership will consequently address the issue of autonomy, objectives and market discipline of the public enterprises which will subsequently improve their performances.

9.3 FEASIBILITY OF THE PRIVATISATION PROGRAMME

The second policy questions addressed in this thesis is whether, given the Malaysian context, the privatisation programme is feasible and objectives are achievable.

Capital Market

When the privatisation programme was first introduced there was scepticism among the policy makers and the public in general as to the capacity of the local capital market to absorb the flotation of the public enterprises in Malaysia. However, listings of shares of the Malaysian Airline System (MAS), the Telecommunication Department and the National Electricity Board (NEB) have been over subscribed many times over. A strategy is needed to ensure future divestment of the remaining 70 percent equity by the Government as the value is excessively large (M$7 billion)
for the capital market to absorb it at one go. This can be achieved a) on staggered basis or b) by pre-placing TNB’s shares to institutional investors, unit trusts agencies, cooperatives, pension funds besides the general public. Full government divestment, in the long run, is one of the essential requirements of the successful implementation of the privatisation programme.

Effectiveness

Although it is a bit premature to conclude on the achievements of the privatisation of the electricity in achieving its intended objectives, one nevertheless can assess its progress towards achieving those objectives. Firstly, the Government has not only benefited financially in terms of increases in dividends and taxation paid by the company due to improved profitability (Chapter 6). In the longer term, the diversification programme will provide TNB with potential earning growth and higher profitability which directly and indirectly benefits the Government. And related to this, is the participation of the private sector which has released the Government from planning and building the electricity infrastructure responsibilities (Chapter 7). Private entrepreneurs have injected M$9 billion in private investment into the electricity sector. Government stands to save another M$17 billion from building the Bakun Hydro electricity project with the submarine transmission cable from East Malaysia to Peninsular Malaysia which has been privatised. In the long term perspective, the private sector could be relied upon to undertake the massive investment programme in capacity expansion in total of M$100 billion by year 2020.

In terms of achieving the NEP objectives of equity participation, when the Government first divested 30 percent of its shares in TNB 44 percent of the total number of individual investors were Bumiputras. However, after two
years, the number of individual Bumiputra shareholders has dropped dramatically to 35 percent. Bumiputra institutions remain holding about 7 percent of the total shares. One notable feature is the increasing number of Government shareholders, represented by public enterprises and state Government, and the increase in number of international shareholders. The increasing number of Government holders which come in the form of state government, SEDCs and agencies and institutions is a good development in avoiding concentration of holdings of shares in a limited few hands. The dispersed equity holdings even among Government institutions would act as a check and balance mechanism against any possible mismanagement of the company. The increasing number of international investors in TNB reflected their confidence in the future development of TNB and is a source of fund for further capacity expansion programme of the electricity sector in Malaysia.

Although the Government is committed to introduce competition in the electricity industry its implementation has cast some serious doubts over its practicality and effectiveness in the long run. Failure to adopt an open tender system for licence awarding led to practical and implementation problem as to how and when effective competition can actually be introduced in the industry. The guaranteed purchase price of electricity for the IPPs for a duration of a 21 year period makes it difficult for the introduction of a merit order generation system for the benefit of the consumers. The implementation of the Bakun hydro project, though will address the issue of security of supply, has complicated the issue of gaining efficiency through competition. Uncertainty about the price of electricity prevails until the completion of the project. The issue of electricity pricing and its contribution to the supply of the electricity in the country are still far from certain. Thus the policy towards competition in the long run is still uncertain. With potential capacity of
30,000 MW the Bakun project could be a major factor in upsetting the introduction of more competition from potential smaller generating company which could operate at 300 MW capacity of CCGT plant with efficiency. Whether the consumer is going to benefit from the Bakun project hinges on the actual date of completion of the project, the actual costs incurred and the cost of fuel of its rival in generating electricity in the future. However to increase efficiency through competition within the existing framework (1995 - 2015) further restructuring of the industry is needed. We argue that TNB should be broken up into three different entities with TNB solely operating as a generating company. Transmission and distribution activities should be undertaken by separate companies to ensure fair competition to all participants in the industry. To create competition and efficiency within TNB we argue that the best alternative is to split the company into four regional units each with the formation of subsidiary companies while TNB remains as a holding company. It is beyond the scope of this research to look into the legal aspects of such a proposal although we believe that it could be done as TNB is still a government company with a majority share of 70 percent. Although the Bakun hydro electricity project could be a stumbling block in achieving efficiency at the generating level due to its potential capacity to dominate the generating capacity, the consumers could still benefit from its implementation given the right strategy. The Bakun hydro plant should not be tied to sell electricity to TNB but remain as a direct competitor in providing electricity to the country through an independent transmission and distribution company. With the implementation of the Asean Grid all the IPPs should be allowed to compete and sell electricity to the neighbouring countries on a competitive market basis without government intervention. Presently, it can be seen that during this transitionary period (until 2015) increasing efficiency will not be due to effective competition, but more due to
restructuring of industry structure and the implementation of the cap price formula to the generating sector which will reduce costs and wasteful practices.

Implementing the above formula needs an effective system to regulate the industry. As we have pointed out the existence of an independent regulatory body is crucial to ensure effective economic regulation of the industry. However, as discussed in Chapter 8 and 9 this is a difficult task to achieve as the problems of regulatory capture by the politicians and senior bureaucrats in the Prime Minister Department and the Ministry of Energy remain a threat to an independent regulatory system. We have argued that unless there is a full commitment on part of the Government to restrain interference on the regulator the objective of achieving economic efficiency will be a difficult task to achieve.

In conclusion, although the Government is advocating an electricity sector privatisation programme, the electricity sector model pursued in Malaysia has not yielded the maximum efficiency benefits as discussed in Chapter 3 (Section 3.7). The electricity industry was corporatised but no attempt was made to introduce competition, to de-integrate the industry or to impose independent regulation. As a result, the TNB still exhibits many inefficiency characteristics. The TNB is still majority owned by the Government and this has led to continued government interference in its operations; competition has not been introduced; and finally there is an absence of an independent regulator as the Electricity Supply Department comes under the Ministry of Energy. As we have argued throughout this thesis, in order for efficiency to be achieved in the Malaysian electricity sector, policies should address issues pertaining to introduction of competition and industry reform in the Malaysian electricity sector.
9.4 LIMITATIONS OF THE STUDY AND SCOPE FOR FURTHER RESEARCH

The research reported in this study raises some question that can be pursued in future work. In short, the performance comparison using the inter-country model as used in Chapter 5, has its limitations. Given time a comparison between public enterprise such as TNB and other private generating firms will overcome the methodological problems of comparing "apple with apple" in the electricity sector. Further study on whether privatisation has indeed increased the efficiency of the TNB could be undertaken given enough time to obtain time series data on the post privatisation period. DEA models can then be used to measure the efficiency between pre and post privatisation periods. Such studies have been undertaken by Weyman Jones (1993) on the comparison of pre and post technical efficiency of the various generating firms in the United Kingdom electricity sector before and after privatisation.

Finally, there are lots of uncertainties on policy matters pertaining to competition and regulatory policies which in time to come will determine the shape of the electricity industry structure and efficiency of the industry as a whole. The scope of future research therefore depends on the directions of the policies adopted by the Government which are full of uncertainties at the moment.
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Efficiency coefficient calculated by using DEA method
## DATA OF ELECTRICITY SECTOR IN SELECTED LDCs - 1987

### Appendix 1 (cont)

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<th>Production</th>
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*Source: World Bank (1990)*
### DATA OF ELECTRICITY SECTOR IN SELECTED LDCs - 1987  
**Appendix 1 (cont)**

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Dang (1991)
CEGB Statistical Year Book 1990
## System Losses (%) : 1975-1990

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**Note:**
- **AU** - Auxiliary Use
- **T/D L** - Transmission and Distribution Losses
- **TL** - Total Losses

There is no breakdown for CEGB.

**Source:**
- NEB Annual Reports - 1975 - 1990 issues
- CEGB Statistical Data, 1975 - 1990 issues
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Source: NEB Annual Reports - 1975 - 1990 issues
Dang (1991)
Thai Power 1990 issue (1981 - 1990 figures)
CEGB Statistical Yearbook 1990
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Source: NEB Annual Report, 1975-1990
Dang (1991)
CEGB Statistical Year Book 1990
### 1985 - Present Tariff Schedule Rates

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<td>Next 900 units/month</td>
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<tr>
<td>Commercial</td>
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<td>18 sen</td>
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<tr>
<td><strong>TARIFF C2</strong></td>
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<tr>
<td>MV Peak</td>
<td>Each kW MD/month</td>
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</tr>
<tr>
<td>Off Peak</td>
<td>All units during peak period</td>
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</tr>
<tr>
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</tr>
<tr>
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<tr>
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<tr>
<td>Off peak</td>
<td>All units during Peak period</td>
<td>16 sen</td>
</tr>
<tr>
<td>Industrial</td>
<td>All units during Off Peak period</td>
<td>8 sen</td>
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<tr>
<td><strong>TARIFF F</strong></td>
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<td>Off Peak</td>
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</tr>
<tr>
<td><strong>TARIFF G</strong></td>
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<td>Public &amp; Street</td>
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<td>Lighting</td>
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Comparison of Electricity Tariff Rates (1992): Sen/Unit

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<th>Industrial</th>
<th>Others</th>
<th>Average</th>
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<td>15.40</td>
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<td>18.78</td>
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<td>28.51</td>
<td>26.15</td>
<td>17.88</td>
<td>27.77</td>
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<td>18.65</td>
<td>16.09</td>
<td>-</td>
<td>19.99</td>
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<td>16.88</td>
<td>-</td>
<td>19.77</td>
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<td>-</td>
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<td>14.38</td>
<td>15.45</td>
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</table>

Ranking (Lowest)

- 5th
- 3rd
- 2nd
- 3rd
- 2nd

Source: TNB (1993) - Information Booklet, p 14

1 The China Light and Power Company, a Hong Kong utility did a similar comparison in July 1992 covering 15 Asia-Pacific countries: Australia, China, Hong Kong, Indonesia, Japan, Macau, New Zealand, Papua New Guinea, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, and Malaysia. The ranking for TNB in terms of the lowest electricity tariff is as below:

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<tr>
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<tr>
<td>Small industries</td>
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<td>4th lowest</td>
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<tr>
<td>Large industries</td>
<td>6.51</td>
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Source: TNB (1993)
### NEB: Operating Profit (M$'000)
#### 1975-1990

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<th>Operating Revenue</th>
<th>Operating Expenses</th>
<th>Operating Profit</th>
<th>Other Income</th>
<th>Profit Before Interest</th>
<th>% Change in (A)</th>
<th>% Change in (B)</th>
<th>% Change in (C)</th>
<th>% Change in (D)</th>
<th>% Change in (E)</th>
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<td>376,281</td>
<td>111,600</td>
<td>13,367</td>
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<td>-</td>
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<td>124,152</td>
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<td>(6.2)</td>
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<td>(7.9)</td>
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<td>(9.6)</td>
<td>(8.2)</td>
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**Notes:**
1. Operating revenue from sales of electricity
2. Operating expenses: Costs on generation, transmission, distribution, consumer services, meter reading, billing, collection accounts, training and welfare, administration and general expenses.
3. Depreciation included in generation, transmission, distribution and general transport and workshop expenses.
4. Other income: Income from tax exemption, Government subsidies for rural and diesel.

**Source:** NEB Annual Reports 1975-1990
<table>
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<tr>
<th>Year</th>
<th>Government Loan (GL) (A)</th>
<th>Domestic Loan (DL) (B)</th>
<th>Foreign Loan (FL) (C)</th>
<th>Total Loan (TL) (D)</th>
<th>% FL to TL (E)</th>
<th>% GL to DL (F)</th>
<th>% GL to TL (G)</th>
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<td>45.2</td>
<td>54.0</td>
<td>29</td>
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<td>1986</td>
<td>2,642,578</td>
<td>463,484</td>
<td>2,047,223</td>
<td>5,153,285</td>
<td>39.7</td>
<td>85.0</td>
<td>51</td>
</tr>
<tr>
<td>1987</td>
<td>3,019,760</td>
<td>303,605</td>
<td>2,247,938</td>
<td>5,661,303</td>
<td>39.7</td>
<td>91.0</td>
<td>58</td>
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<tr>
<td>1988</td>
<td>2,863,446</td>
<td>459,691</td>
<td>1,753,226</td>
<td>5,076,363</td>
<td>34.5</td>
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<tr>
<td>1989</td>
<td>2,722,303</td>
<td>471,700</td>
<td>1,489,567</td>
<td>4,683,570</td>
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<td>58</td>
</tr>
<tr>
<td>1990</td>
<td>3,344,062</td>
<td>514,470</td>
<td>1,286,178</td>
<td>5,144,710</td>
<td>25.0</td>
<td>85.0</td>
<td>65</td>
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</tbody>
</table>

Source: NEB Annual Reports 1975-1990
## NEB: Profit After Tax (M$'000)
### 1975-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit Before Interest (a)</th>
<th>Interest Before Loan (b)</th>
<th>Loan Charges (c)</th>
<th>Profit Before Tax (d: a-b-c)</th>
<th>Taxation (e)</th>
<th>Profit After Tax (f: d-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>123,967</td>
<td>27,882</td>
<td>1,974</td>
<td>100,111</td>
<td>11,000</td>
<td>89,111</td>
</tr>
<tr>
<td>1976</td>
<td>124,152</td>
<td>29,521</td>
<td>2,371</td>
<td>92,260</td>
<td>25,000</td>
<td>67,260</td>
</tr>
<tr>
<td>1977</td>
<td>163,477</td>
<td>44,591</td>
<td>3,897</td>
<td>114,989</td>
<td>15,000</td>
<td>99,989</td>
</tr>
<tr>
<td>1978</td>
<td>150,528</td>
<td>55,326</td>
<td>5,635</td>
<td>89,567</td>
<td>-</td>
<td>89,567</td>
</tr>
<tr>
<td>1979</td>
<td>69,190</td>
<td>72,874</td>
<td>4,138</td>
<td>(7,822)</td>
<td>-</td>
<td>(7,822)</td>
</tr>
<tr>
<td>1980</td>
<td>219,906</td>
<td>76,847</td>
<td>17,204</td>
<td>125,755</td>
<td>-</td>
<td>125,755</td>
</tr>
<tr>
<td>1981</td>
<td>343,155</td>
<td>82,938</td>
<td>5,071</td>
<td>255,146</td>
<td>-</td>
<td>255,146</td>
</tr>
<tr>
<td>1982</td>
<td>468,048</td>
<td>77,551</td>
<td>5,250</td>
<td>385,247</td>
<td>-</td>
<td>385,247</td>
</tr>
<tr>
<td>1983</td>
<td>772,207</td>
<td>107,561</td>
<td>3,359</td>
<td>661,287</td>
<td>-</td>
<td>661,287</td>
</tr>
<tr>
<td>1984</td>
<td>746,021</td>
<td>121,100</td>
<td>640</td>
<td>624,281</td>
<td>27,502</td>
<td>669,779</td>
</tr>
<tr>
<td>1985</td>
<td>783,115</td>
<td>176,806</td>
<td>-</td>
<td>606,313</td>
<td>-</td>
<td>606,313</td>
</tr>
<tr>
<td>1986</td>
<td>956,870</td>
<td>247,961</td>
<td>-</td>
<td>708,909</td>
<td>164,404</td>
<td>544,505</td>
</tr>
<tr>
<td>1987</td>
<td>1,080,510</td>
<td>297,974</td>
<td>2,494</td>
<td>780,042</td>
<td>54,210</td>
<td>725,832</td>
</tr>
<tr>
<td>1988</td>
<td>1,186,525</td>
<td>295,710</td>
<td>19</td>
<td>890,796</td>
<td>88,994</td>
<td>791,802</td>
</tr>
<tr>
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<td>1,140,698</td>
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<td>-</td>
<td>827,950</td>
<td>230,000</td>
<td>597,950</td>
</tr>
<tr>
<td>1990</td>
<td>1,082,823</td>
<td>294,251</td>
<td>-</td>
<td>788,572</td>
<td>200,000</td>
<td>588,572</td>
</tr>
</tbody>
</table>

### Notes:
1. 1982 and 1990 Extraordinary items of 5,250 and 115,000 respectively are not shown.
2. 1978 to 1983 Exempted from tax payment
3. 1985 tax in 1986 provision

### Source:
NEB Annual Reports 1975-1990
Appendix 10

**NEB : Key Average Exchange Rates**
(Ringgit Malaysia Per Unit of Foreign Currency)

<table>
<thead>
<tr>
<th>Year</th>
<th>US Dollar</th>
<th>Japanese Yen (Y100)</th>
<th>Singapore Dollar</th>
<th>Pound Sterling</th>
<th>Deutsch Mark</th>
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</thead>
<tbody>
<tr>
<td>1983</td>
<td>2.3208</td>
<td>0.9776</td>
<td>1.0980</td>
<td>3.5194</td>
<td>0.9110</td>
</tr>
<tr>
<td>1984</td>
<td>2.3433</td>
<td>0.9871</td>
<td>1.0985</td>
<td>3.1292</td>
<td>0.8257</td>
</tr>
<tr>
<td>1985</td>
<td>2.4824</td>
<td>1.0471</td>
<td>1.1286</td>
<td>3.2099</td>
<td>0.8488</td>
</tr>
<tr>
<td>1986</td>
<td>2.5808</td>
<td>1.5437</td>
<td>1.1851</td>
<td>3.7878</td>
<td>1.1549</td>
</tr>
<tr>
<td>1987</td>
<td>2.5238</td>
<td>1.7406</td>
<td>1.1963</td>
<td>4.1111</td>
<td>1.4004</td>
</tr>
<tr>
<td>1988</td>
<td>2.6181</td>
<td>2.0466</td>
<td>1.3012</td>
<td>4.6617</td>
<td>1.4936</td>
</tr>
<tr>
<td>1989</td>
<td>2.7077</td>
<td>1.9688</td>
<td>1.3866</td>
<td>4.4421</td>
<td>1.4431</td>
</tr>
<tr>
<td>1990</td>
<td>2.7044</td>
<td>1.8762</td>
<td>1.4938</td>
<td>4.8253</td>
<td>1.6772</td>
</tr>
<tr>
<td>1991</td>
<td>2.7498</td>
<td>2.0451</td>
<td>1.5924</td>
<td>4.8613</td>
<td>1.5627</td>
</tr>
</tbody>
</table>

Source: Annual Statistical Bulletin - 1983 to 1991 issues
### Appendix 11

#### NEB : Appropriations of Profit After Tax (M$'000) 1995-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit After Tax (A) : (B+C+D)</th>
<th>Dividend Paid (B)</th>
<th>Transfer to General Reserve (C)</th>
<th>Transfer to Current Development Account (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>84,112</td>
<td>5,032</td>
<td>13,600</td>
<td>65,480</td>
</tr>
<tr>
<td>1976</td>
<td>67,260</td>
<td>6,377</td>
<td>7,800</td>
<td>53,083</td>
</tr>
<tr>
<td>1977</td>
<td>99,989</td>
<td>7,102</td>
<td>7,700</td>
<td>85,187</td>
</tr>
<tr>
<td>1978</td>
<td>89,593</td>
<td>8,700</td>
<td>17,800</td>
<td>63,093</td>
</tr>
<tr>
<td>1979</td>
<td>(7,822)</td>
<td>-</td>
<td>(7,822)</td>
<td>-</td>
</tr>
<tr>
<td>1980</td>
<td>125,755</td>
<td>-</td>
<td>83,522</td>
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</tr>
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<td>1981</td>
<td>255,146</td>
<td>-</td>
<td>26,200</td>
<td>228,946</td>
</tr>
<tr>
<td>1982</td>
<td>390,438</td>
<td>44,921</td>
<td>1,800</td>
<td>343,717</td>
</tr>
<tr>
<td>1983</td>
<td>661,287</td>
<td>39,921</td>
<td>16,700</td>
<td>604,666</td>
</tr>
<tr>
<td>1984</td>
<td>569,779</td>
<td>42,421</td>
<td>19,500</td>
<td>534,858</td>
</tr>
<tr>
<td>1985</td>
<td>606,313</td>
<td>44,539</td>
<td>-</td>
<td>561,774</td>
</tr>
<tr>
<td>1986</td>
<td>544,504</td>
<td>32,497</td>
<td>-</td>
<td>512,008</td>
</tr>
<tr>
<td>1987</td>
<td>725,832</td>
<td>35,205</td>
<td>12,529</td>
<td>678,098</td>
</tr>
<tr>
<td>1988</td>
<td>791,802</td>
<td>35,205</td>
<td>25,533</td>
<td>731,064</td>
</tr>
<tr>
<td>1989</td>
<td>597,950</td>
<td>35,205</td>
<td>34,300</td>
<td>528,445</td>
</tr>
<tr>
<td>1990</td>
<td>495,897</td>
<td>35,205</td>
<td>-</td>
<td>460,692</td>
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Source: NEB Annual Reports 1975-1990
# Appendix 12

Electricity Tariff, Operating Cost, Fuel Cost and Inflation Rates (1975-90)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average tariff/unit (sen)</th>
<th>Operating cost/unit (sen)</th>
<th>Fuel cost/unit (sen)</th>
<th>CPI</th>
<th>GDP Deflator</th>
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<td>13.31</td>
<td>8.28</td>
<td>4.6</td>
<td>4.5</td>
<td>8.1</td>
</tr>
<tr>
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<td>7.1</td>
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<td>4.7</td>
<td>9.9</td>
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<td>10.68</td>
<td>6.3</td>
<td>4.9</td>
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<tr>
<td>1979</td>
<td>16.98</td>
<td>14.63</td>
<td>10.2</td>
<td>3.6</td>
<td>7.1</td>
</tr>
<tr>
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<td>22.14</td>
<td>18.26</td>
<td>12.9</td>
<td>6.7</td>
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<td>23.93</td>
<td>19.09</td>
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<td>9.7</td>
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</tr>
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<td>18.11</td>
<td>13.1</td>
<td>5.7</td>
<td>5.6</td>
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<tr>
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<td>15.93</td>
<td>10.8</td>
<td>3.7</td>
<td>5.3</td>
</tr>
<tr>
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<td>24.12</td>
<td>16.60</td>
<td>11.0</td>
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<td>4.3</td>
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<tr>
<td>1986</td>
<td>20.50</td>
<td>12.64</td>
<td>5.2</td>
<td>0.6</td>
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<td>11.94</td>
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<td>11.68</td>
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<td>2.3</td>
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<td>6.9</td>
<td>3.1</td>
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</tbody>
</table>

Source: NEB Annual Reports, 1975-1990
### Internally Generated Funds (M'000) (1975-1990)

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit Transfer to CDA</th>
<th>Depreciation</th>
<th>Internally Generated Fund</th>
<th>Equity Injected</th>
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</thead>
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<td>65,480</td>
<td>50,079</td>
<td>115,559</td>
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<td>63,010</td>
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<td>-</td>
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<td>92,268</td>
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<tr>
<td>1980</td>
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<td>222,000</td>
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<td>1981</td>
<td>228,946</td>
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<td>309,000</td>
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<tr>
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<tr>
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<td>991,097</td>
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<td>460,692</td>
<td>465,549</td>
<td>926,641</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Internally generated fund did not take account into other income other than sales of electricity and depreciation.

**Source:** NEB Annual Reports 1975-1990
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