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# Valuation of port assets : impact on the financial performance of port and the national economy

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**WORLD MARITIME UNIVERSITY**  
Malmö, Sweden

**VALUATION OF PORT ASSETS: IMPACT ON THE  
FINANCIAL PERFORMANCE OF A PORT AND  
THE NATIONAL ECONOMY**

By

**MARTISON ANKOBIAH**  
Republic of Ghana

A dissertation submitted to the World Maritime University in partial  
fulfilment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

in

**MARITIME AFFAIRS**  
**(Port Management)**

2001

## **DEDICATION**

**To my wonderful wife,  
Margie  
our daughter Sharon  
and the boys,  
Kofi  
Tabi  
Adwinsa  
Adutwum  
Osei-Bonsu.**

**The greatest is love.**

## DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature) .....

(Date) .....

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## ABSTRACT

Title of Dissertation: **Valuation of port assets: impact on the financial performance of a port and the national economy.**

Degree: **MSc**

This dissertation is a study into the impact that the valuation of port assets could have on the running cost and thus the financial performance of a port and eventually on the national economy depending on whether the source of financial input is from foreign or local sources.

The study starts with a look into what constitutes port assets and the difficulties involved in deciding what to include in a port asset valuation. The types and functions of ports and the role of ports in the national economy are also explained. The need for privatisation of ports, types or methods of privatisation and issues concerning valuation of assets during privatisation are considered.

Valuation of port assets is then discussed and various international conventions and methods that are applied for the valuation of port assets are examined. The advantages and difficulties associated with each of these valuation conventions or methods are highlighted.

An analysis of the available data comprising mostly operational and financial records from the ports of Tema and Takoradi in Ghana is enhanced with a comparison of collated information from various sources for ports in Europe and the major port cargo handling equipment manufacturers, Kalmar.

The study ends with various conclusions and a set of recommendations for improving the practice of asset valuation in ports including a suggestion to incorporate trained human resource on the list of port assets to serve as a vital component of the port asset valuation process and the need for further investigation into the subject at a later date.

**KEYWORDS:** Asset, Financial performance, Impact, Economy, Port, Valuation.

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## LIST OF ABBREVIATIONS

APS	Atlantic Port Services
BOO	Build-Own-Operate
BOP	Balance of Payment
BOT	Build-Operate-Transfer
CFS	Container freight station
CMC	Cocoa Marketing Company
DCF	Discounted Cash Flow
DKK	Danish Kroner
EBVM	Earnings based valuation methods
ECT	European Combined Terminal
EDI	Electronic Data Interchange
EMS	Expert Maritime Services
ERP	Economic Recovery Programme
ESCAP	Economic and Social Council Of Asia and Pacific
EU	European Union
FRS	Financial reporting standard
GBP	British Pound Sterling
GCHC	Ghana Cargo Handling Company
GCM	Glencar Mining
GDP	Gross Domestic Product
GHATIG	Ghana Trade and Investment Gateway Project
GPA	Ghana Port Authority
GPHA	Ghana Ports and Harbours Authority
HIT	Hong Kong International Terminals
IAPH	International Association of Ports and Harbors
IDA	International Development Agency
IMO	International Maritime Organisation
IPP	Improving Port Performance
IRR	Internal Rate of Return
IT	Information Technology
MMA	Malta Maritime Authority
MBO	Management Buy Out
MEBO	Management Employee Buy Out
MIS	Management Information System
MTS	Maritime Transport Services
NPV	Net Present Value
OECD	Overseas Economic Co-operation and Development Fund
PBC	Produce Buying Company
POE	Pre-owned Equipment
PNDC	Provisional National Defence Council
ROI	Return on Investment
RoRo	Roll-on-Roll-off
SDF	Saudi Development Fund

SDV	SCAC-Delmas-Vieljeux
SEK	Swedish Kronor
SOE	State Owned Enterprise
SSC	Speedline Stevedoring Company
SWL	Safe Working Load
TLC	Takoradi Lighterage Company
TEU	Twenty-foot Equivalent Unit
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
USD (\$)	United States (of America) Dollar
VALCO	Volta Aluminium Company
WACC	Weighted Average Cost of Capital
WMU	World Maritime University
WTO	World Trade Organisation

## **CHAPTER 1**

### **INTRODUCTION**

Ports serve as an interface between sea and land in maritime transport, a place where facilities and services are provided for ships and cargo, a link in international trade. Ship time in port and overall quality of service are important factors that affect the cost of maritime transport. Provision of efficient and quality service to ships and cargo are vital to attract ships to a particular port. Containerization, computerization and automation have led to improvement of standards required from ports by ship owners, shippers and other port users. International trade have been growing at a fast rate as a result of globalization, liberalization and commercialisation. This has brought a lot of pressure to bear on ports as logistic platforms to help improve and expand facilities, raise productivity and lower port costs. Processing, packaging and movement of goods and services from the manufacturer to the final consumer are now done with the just-in-time strategy and ports serve as a vital link in this chain. Serving the external trade of a country implies therefore heavy investments by ports.

#### **1.1 Consistency of port assets**

Port assets could be made up of land, moveable and unmoveable property, infrastructure such as breakwater, entrance channel, main basin and quay apron and superstructure including container yard, transit shed, container freight station (CFS) and warehouse. Port equipment includes floating craft, cranes, conveyor belt, forklifts, Roll-on-Roll-off (RoRo) tractors and trailers. An agreement on what particular items constitute the assets of a port at any specific period could be influenced by the type of port, organisational structure, and services provided to customers and accounting procedures to be used.

Service port, landlord port or tool port could have different ownership structure and regulatory function and separate management responsibility for assets and commercial services.

Port asset could be material or non-material and the impact of the valuation of port assets could be quantifiable or non-quantifiable and have positive or negative effect. Human resource is one of the most important assets of any port. Human resource is the factor that brings other resources or assets of the port together for a productive venture. Human resource management and development is essential for the efficient use of other resources. Trained management and skilled operators are needed to handle planning, maintenance and effective use of port infrastructure, facilities and equipment. Automation and computerisation have become essential parts of most efficient ports. The use of information technology (IT) and the electronic data interchange (EDI) in ports relies very heavily on trained human resource.

The human resource base of a port could also be considered as a productive force that contributes towards the efficient running of the port. However, Trade Unions could have positive or negative effect on the operation of ports and thus on the asset valuation of a port. For example, in France, the action (or inaction) of port workers on strike for a number of days could deal a severe blow to the finances of a port much more than the unavailability of a material asset of the port which could be replaced. We can thus consider human resource training as an investment that should be evaluated too.

## **1.2 Valuation of port assets**

There is the need for valuation of port assets, infrastructure, superstructure and equipment for many reasons. Valuation of port assets is carried out to place assets on the balance sheet, find the net present value (NPV) and future expected income from a particular asset or agree on the replacement value of an asset. Asset valuation practices vary according to the type of port, the valuation convention that is in use at any specific port and the available financial and statistical data. Valuation of port assets could affect the



financial performance of the port and the national economy in different proportions. Valuation of port assets for lease, joint venture or outright sale of a terminal could lead to inflow of capital or foreign exchange that could affect the financial status of a port and impact on the Gross Domestic Product (GDP) or Balance of Payment (BOP) of a country. This is especially true for situations in which foreign firms participate as private sector investors and bring in foreign exchange, equipment or technology or even technical assistance as their contribution.

Some situations justify the importance of valuation of port assets and explain difficulties of each valuation.

- Privatization. The increasing growth in world trade and economies of scale in cargo shipment are two important factors that have encouraged private sector investment in port development (Port Development International, 2000, September). Privatization of a port is the situation in which the ownership and control of existing port assets are transferred from the public to the private sector. The most common arrangement for private sector participation in port is usually through long-term concession contracts. Such contracts involve private management, operation and investment in existing public assets.
- Rehabilitation. An investment in port assets such as rehabilitation of terminal facilities or replacement of cargo handling equipment should be based on an insight into the viability, potential and profitability of such an investment. The rate of return on the investment or the economic benefits to be derived from additional facilities could only be ascertained if a fair idea about the value of the asset is known. Valuation of port assets is essential both to the public authority of a port and the management of the private operator in a port to ensure that any planned investment in facilities or equipment has the potential for future economic growth.
- Economic impact. Two different concerns exist as to the impact of ports.

- The main concern of the state for the national port is to ensure that the import and export trade of the country can be sustained and jobs created for the people. Governments or public port authorities may not be too much concerned with the cargo forecast, the need for additional facilities, equipment maintenance, costs or income projections and may not make any meaningful analysis of investment requirements once the basic aim of establishing a port is achieved. The public function of the port is thus mainly to facilitate trade and employment but not just as a commercial entity.
  
  - On the contrary, the private sector is driven by the desire to make profits and thus seek to minimise costs and maximise return on investment (ROI). Private sector investment in port assets could look at the port function as one of a profit venture. As much as possible, valuation of port assets by the private sector is handled in a professional manner with the view to make profit. The Associated British Ports had to cut over £80million British Pound Sterling (GBP) from the original valuation of American Port Services, which was acquired in 1998 after only 2 years of activity. This was due to the fact that operational profits went down by about £3m as a result of the lowering of performance by 70%. The relevant amount was then written off from the original acquisition price (Port Development International, 2000, March).
- Future policies. Whichever way the conception of the port is placed, the valuation of the fixed assets of the port is necessary to determine future policies. Investment in port infrastructure and equipment is an expensive and risky venture and the dynamic and competitive nature of maritime transport business requires that the ROI be carefully calculated. The ROI for certain aspects of port assets such as entrance channel and breakwater could be difficult to determine but future profit could be equated to future traffic volumes. Future traffic volumes in a port could also be affected by macroeconomic variables and other factors in the national economic sector such as demographic changes.

- Economic value of port assets. Moreover, a financial decision on the economic value of port assets depends on the economic life of the assets, the method of depreciation used, the running cost of the asset and the cash flows available. For example, the cost of land in a port used for other services could attract higher revenue depending on the nature of the activity. Land cost in the port of Copenhagen is expensive due to the fact that the location of the old port is inside the city. The market value of the land in the port of Copenhagen is thus higher than usual for port land. Buildings on the fringes of the port are used as warehousing facility and office accommodation and attract higher rent charges. The port of Copenhagen saw an increase in surplus revenue at the end of 1998 of about 83 million Danish Kroner (DKK) and DKK 212m in 1999 with sale of port sites amounting to DKK 214m for the same period (Port of Copenhagen, 1999).
  
- Life cycle of port assets. The long life cycle of port investment could also affect the ROI. The breakwater could have an investment life of 50 years, the wharf or quay, 30 years and container cranes, 15 years (Port Development International, 2000, March). The choice of a particular life cycle obviously results in different running costs and valuation for the port. The port industry requires long-term investment but different time periods for different aspects of port assets so it is appropriate to divide the port into segments to look at each piece separately for the purpose of port asset valuation. The sources for the financial management of a port could be local or foreign currency, receipts from tariff and other port charges, grants and loans from foreign or local source. Traffic forecast, present and future operational performance of a port could be linked to the financial performance of the port. The cash flow of a port could be compared with interest rates or shares on the stock market as there could be other uses for investment in a port and an analysis of the NPV or internal rate of return (IRR) could be calculated on such a basis.

Various international conventions exist to be applied for the valuation of port assets. Depending on the type and function of a port, the nature of port administration and

operation, accounting practices and methods used for valuation, the valuation of port assets could be different for different ports. Certain problems are encountered during port asset valuation and these could in turn affect the financial capacity of a port and the national economy.

In conclusion, we can say that from an economic point of view, valuation of port assets is important to enable the public port authority or private sector operator to have an idea of the assets of a port and place them on the balance sheet, know their economic life span and when to replace them, determine whether to increase assets to match future traffic projections or calculate the value or cost to place on them for leasing, concession or outright sale. The value placed on port assets after valuation could affect the financial performance of a port and the national economy. Growth in the national economy could come about as a result of development of external trade and creation of direct, indirect or induced employment and added value services. These could also have effect on the financial operation of the port, the GDP and BOP of the country.

### **1.3 Purpose of the study**

The topic for this study is the impact of valuation of port assets on the financial performance of a port and the national economy. The objectives of the study are to

1. Identify the criteria for the use of a particular convention for the valuation of port assets
2. Examine the effect of the valuation of port assets on the financial performance of a port and on the national economy
3. Determine factors that could lead to positive impact of the valuation of port assets on the national economy
4. Make recommendations to improve the practice of valuation of port assets.

Valuation of port assets could have implications for the management and operations of a port, the financial performance of the port and the national economy. The value of port

assets such as land, infrastructure, superstructure and equipment could depend on the alternative use for the asset, whether it is purchased new or pre-owned, the maintenance schedule, the economic life and replacement procedure. Valuation of port assets could also give an idea of the current value of an asset, future economic benefits to be derived from it and the need to invest in other assets for efficient operation of the port.

Sea transport continues to handle a greater proportion of international trade and ports serve as a link in the global logistics chain. Containerization, automation and computerisation and the use of IT and EDI are essential for the efficient planning and provision of effective services for the handling of ships. Valuation of port assets will enable the port authority or private sector operator to have an idea of the facilities and inputs available for provision of services to ship, the cost to be incurred and the expected profit margins. Human resource development and training are essential port assets and are virtually indispensable for the efficient management and operation of a port. Port management is a combination of the factors that enable a port to attract ships and offer efficient services to them and valuation of port assets could be a vital component.

#### **1.4 Methodology**

The initial topic was proposed at the end of the 2<sup>nd</sup> semester in November 2000 and data was collected during the Christmas break from the ports of Tema and Takoradi in my home country, Ghana. However, at the beginning of the 3<sup>rd</sup> semester further changes were made and the current topic was approved in March 2001 and retrieving of new information then began from sources on the Internet. Actual work could only start at the beginning of the 4<sup>th</sup> semester in June and ended on 31 August.

Further information was gathered during field studies to the ports of Le Havre in France, Rotterdam and Amsterdam in the Netherlands (Holland), Malta Freeport in Malta, Arhus in Denmark and at the equipment manufacturing plant of Kalmar Group at Lidhult, Sweden. The port and shipping seminar organised at the University with participants

from the ports of Malmo in Sweden and Copenhagen in Denmark and also MaerskSealand, lectures on Improving Port Performance (IPP) 1- 4 and on other port-related topics by visiting professors from the port of Hamburg in Germany and elsewhere were the other sources of information.

Three main sources were considered as literature review and base for the study. These were various reports on port privatisation by UNCTAD (1995 and 1998) and Cass (1996 and 1998) and valuation conventions by Nobes (1997).

Annual reports from various ports, journals and periodicals also provided background information and review of literature. Questionnaire (see Appendix H) were also sent to the ports of Tema and Takoradi in Ghana, MMA in Malta, the port of Hamburg in Germany and the port cargo handling equipment manufacturers, Kalmar Group, at Lidhult in Sweden. Return of the necessary response to the questionnaire was slow and needed quite a number of reminders in most cases. In certain instances, the author was directed to retrieve information from sites that offered only Swedish, Danish or German and such data was available but not easily usable due to the language barrier.

The author was employed as a management trainee at the GPHA in 1989 and went through quite a rigorous training schedule. This included lectures on IPP-1 and management skills and attachment to the ports of Tema and Takoradi for practical on-the-job training. He has worked in the port operations department throughout his career and attended various short courses, seminars and other training programmes on port operation and management. He also had the opportunity to experience at first hand the port rehabilitation programme, restructuring exercise and policy reform, which were geared towards efficient operations and greater private sector participation. Such a varied experience in port operations and management were vital in shaping some of the thoughts on the topic.

## **1.5 Structure of the study**

The study is divided into 5 chapters. Chapter one is the introduction and it gives a general background and significance of the topic, defines the problem and the aim of the study, outline the methodology used and difficulties encountered and a summary of the various chapters.

Chapter two describes the role of ports in the national economy, types and functions of ports, the need for privatisation of ports and a description of some of the methods used for port privatisation.

Chapter three discusses valuation of port assets, asset recognition and ownership of port assets, the various methods of international valuation conventions, the practice and application of port valuation methods and the problems of port asset valuation and suggested solutions.

Chapter four attempts to give an insight into asset valuation and financial performance of ports. It traces the history and current status of ports in Ghana, indicates operational data and tariff setting and sets out the effect of port rehabilitation and policy reform on the financial performance and development of the ports. The chapter ends with notes on the financial statement of GPHA and MMA and valuation methods for newly manufactured machines and pre-owned equipment from Kalmar.

Chapter five is the last chapter and it gives the conclusions from the study and provides recommendations to improve the practice of valuation of port assets.

## **CHAPTER 2**

### **ROLE OF PORTS IN THE NATIONAL ECONOMY**

Sea transport is the most viable alternative for the enormous quantities of cargo moved around the world each year. Port users require reduced transport and handling costs in order to sell at a reasonable price and make profit. This can be achieved through expansion of port facilities, improved cargo handling and efficient services. Governments require investment in port facilities and management capabilities to ensure the continued role of ports in the national economy. Most shipping services are now in the hands of a few global companies who control modern facilities and IT through alliances, consortium or investment policies to take advantage of the economies of scale in shipping services and port operation (Port Development International, 2000, September).

#### **2.1 Role of Seaports**

Since the earliest of times the basic purposes of most seaports have been to offer shelter to ships and allow discharging and loading of cargo to take place. Ports serve as an interface in maritime transport, a place for provision of technical facilities and other services to ships, space for storage of cargo and industrial development. Ships carry about 99% of world trade in volume and 80% in value (Branch, 1986). The geographical location, physical design, infrastructure, operation and function of a modern port are essential to determine the facilities available for ships and equipment for cargo handling.



Services to ships include stores, bunkers, ship repair, maintenance and auxiliary services, insurance and banks.

Modern ports serve as a link in International trade by allowing quality service to ship and cargo. World trade have been growing at a faster rate than world economic growth (WTO, 1998) and there is the need to have adequate and efficient transport system to move goods and services around the world. Sea transport is responsible for the movement of greater volumes of cargo in world trade as a result of a combination of factors. These include economies of scale, globalisation, increase in ship size, improved technology in ship design and operation, containerisation, multi-modal and door-to-door service, development of container terminals with adequate draft and equipment for handling modern vessels, IT and just-in-time strategy which are all vital to the global logistic chain system.

Ports in developing countries generally lack strategies for decision-making in terms of developing patterns of international trade, legislative and institutional procedures and regulations to cover tariffs and inland transport. Notwithstanding these problems ports could still lead to development of a particular region as a result of industrialisation, direct employment at the port and indirect or induced employment for other professionals such as Ship Brokers, Shipping Agents, Freight Forwarders and Ship chandlers. Foreign exchange could be earned as a result of revenue from exports, port dues, stevedoring or cargo handling charges, ship repair and Agency fees. Land-locked countries may form part of the hinterland of a seaport in another country as ports in nearby countries usually service import and export trade for such countries.

For example, the port of Le Havre contributes quite substantially to the national economy of France through value added in industries, transport and commercial services (Alderton, 1999). Rotterdam port has a lot of influence on especially the location of

industries, distribution of goods and services and employment and value added in the region where it is located. According to “Projections 2020”, a document published by the Rotterdam Municipal Port Management, at the end of 1995 the total number of people employed in the Rotterdam port was 315,000 (63,000 directly and 252,000 indirectly). This represent 5.4% of total national employment and total value added was 6.8% of the national Gross Domestic Product (portmanagement.com, 2001).

## 2.2 Types of Ports

The separation of ports into different types usually relates to the nature of port ownership, management, organisation, administration and operation. Ports could be said to be state or private owned, with municipal or autonomous status. Alternative forms of port ownership, organisation, management and administration are usually of 3 distinct types. Alderton (1999) describes the 3 classical types of port ownership and operation as

- Landlord port
- Tool port
- Service port.

**Table 2.1 Port Authority Responsibilities**

<b>Port type</b>	<b>Infrastructure</b>	<b>Superstructure</b>	<b>Stevedoring</b>
Landlord	Yes	No	No
Tool	Yes	Yes	No
Service	Yes	Yes	Yes

Source: Alderton, 1999.

Various levels of ownership and operation may be seen in the port system and the extent of involvement of the central or municipal government or private enterprise may vary according to the management, organisational and administrative style.

The Landlord port is where the state, port authority or municipal council own the land and lease the terminal to private stevedores. The state provides the infrastructure such as quays and land for the terminal while the private operator provides superstructure and equipment like cranes, warehouse, terminal equipment and other commercial facilities. An example is the Rotterdam Port Authority, which lease the port infrastructure to European Combined Terminal (ECT).

The Tool port is the situation where the state owns both the infrastructure and superstructure and the private stevedore company provide the labour for operation. Competition is very high and tenders are put in to secure rights. Examples are Houston in the United States of America (USA) and most of the autonomous ports in France and other ports in Europe.

The Service port is also known as comprehensive or public port. The state or port authority owns both the infrastructure and superstructure and also provides all services and facilities for ships. Examples include Singapore Port Authority, which was made private in 1997, and ports in India, Israel, South Africa and Ghana.

A survey organised by the International Association of Ports and Harbors (IAPH) for member ports with responses from 188 ports representing over 80% of the total membership, showed that majority of seaports (about 92%) were owned by public organisations while only about 7% were private (Ports and Harbors, January-February 2001).

It is crystal clear that valuation of port assets will be a big problem because state owned assets do not answer to the same purposes or perform the same functions as the private ones and the reasons for investment by the state and public sector are different.

### **2.3 Functions of Ports**

According to the port function matrix proposed by Baird (Cass, 1998), there are 3 essential functions performed by a port whether it is in private or public ownership. These are

- Landowner function
- Utility or Cargo handling function and
- Regulatory or Statutory function.

The Landowner function refers to the provision, development, maintenance and management of channels, breakwaters, basins, and other major civil engineering works and port facilities. The Utility function concerns cargo handling, stevedoring and physical transfer of goods and passengers between sea and land. The Regulatory or statutory functions include provision of vessel traffic management, maintenance of sound environmental policies, safeguarding of interest of all stakeholders and enforcement of other laws and regulations.

The port function matrix makes it possible to measure the extent or balance of public and private sector influence on ports and also help to identify the 4 main forms of port models. These are the

- Public port
- Public/Private port
- Private/Public port
- Private port.

The Public port, also known as a service or comprehensive port have all 3 functions controlled by the state. The Public port could be said to be inefficient due to state control but it can also be one of the most efficient as in the case of the port of Singapore even before it was turned into a private entity.

The Public/Private port has the public or state as the dominant force with control of both Landowner and Regulatory functions. Utility or cargo handling function is performed by the private sector. It is also known as the Landlord or Tool port and is common in Europe and North America, Estonia, Latvia and Poland in Eastern Europe, Asia and Latin America.

The Private/Public port has both Landowner and Utility functions in the hands of the private sector while the state controls Regulatory functions. Several ports in the United Kingdom including port of Tilbury conform to this model.

The Private port has the private sector as the dominant force. All 3 functions of Landowner, Utility and Regulatory are controlled by the private enterprise. However actual port operation could be a mixture of both public and private ownership. Examples are ports of Felixstowe, Manchester and Liverpool and other private ports especially in the United Kingdom (UK).

**Table 2.2 The Port Function Matrix**

<b>Port Model</b>	<b>Landowner</b>	<b>Utility</b>	<b>Regulatory</b>
Public	Public	Public	Public
Public/Private	Public	Private	Public
Private/Public	Private	Private	Public
Private	Private	Private	Private

Source: Cass, 1998.

Whichever the type and function of ports, it is very common to engage in privatisation of certain portions of the port to enhance productivity. The following is a summary of the reasons for privatisation and some of the common methods used.

## **2.4 The need for Privatization of Ports**

In recent years Privatization have been proposed as a sine qua non for the development of ports in Africa and other less endowed countries. The Port of Antwerp made a very interesting observation when they said in response to a survey that privatisation means different things to different ports (Alderton, 1999).

Privatization of ports could be defined as the situation where governmental control and involvement in the ownership, administration, management and operation of a port is decentralised to allow more private sector participation. There is increased commercialisation of the port activities and more involvement of the private sector in provision of capital for infrastructure, superstructure and equipment and most especially participation in cargo handling operation (Alderton, 1999).

Privatization aims at reduction of state involvement or control in the activities of the port and increase private sector participation. It helps to reduce the size of financial commitment by government to the port and make available funds for other social and economic services of the state. It could break bureaucracy, lead to optimised labour force and improve productivity through competition. The objectives of an efficient port system should be the optimum utilization of available resources within acceptable safety standards at minimal cost and maximum profit for the port and port users, ship owners, shippers and other service providers to ship and cargo (Alderton, 1999).

The basic aim of privatisation is to make the private investor more efficient, make profit and seek higher returns on investment. The private sector ensures optimum use of resources by applying management principles in viable ventures to ensure profit over capital cost. An efficient port management system is required to increase productivity and improve quality service at a port to merit privatisation. In 1985 the container terminal at Port Klang was given on a 21-year contract to a private consortium and since then there have been an increase of 75% in container handling and 85% in labour wages and a reduction of 50% in repair, maintenance and administrative costs (Alderton, 1999).

Factors that spur on greater private sector participation and commercial orientation in ports include growing international trade as a result of higher growth rate for world trade as against world economic growth, economies of scale and increase in ship size, modernisation and improvement in port facilities through the use of IT, higher productivity and lower costs, efficient management and larger investment portfolio and benefits to the national economy as a whole.

Privatization could also mean the actual transfer of ownership of all or certain parts of the existing land, infrastructure and equipment of a port to the private sector to own in perpetuity (ESCAP, 1997). This long-term concession contract cedes management and investment in the port to the private sector and there could be problems as to the nature of the deed of title from public to the private sector. Some of the problems to be encountered include determination of value of the asset, basis for deciding on economic or market value, whether the asset should be sold for just financial consideration to the highest bidder, future regulation and restriction on private operator due to shift in ownership and loss of social role of the government to the private sector.

Privatization of public port assets is seen as a solution to budget deficit because the benefits to be gained lead to improved efficiency and productive use of resources.

Reasons for Privatization may be political, economic, fiscal or social but the objective should be to reduce public debt, lead to stable economy and promote savings and investment (UNCTAD, 1995).

There are various types or methods of Port Privatization including

- Commercialisation
- Liberalisation
- Corporatisation
- Management or Technical contract
- Concessions such as Build-Operate-Transfer (BOT) and Leases
- Joint Ventures
- Outright sale of Assets

The results of the IAPH survey showed that terminal concessions and leasehold arrangements, BOT, Joint venture and Outright sale of port assets were the most common methods used to facilitate private sector intervention in ports (Ports and Harbors, January-February, 2001). Corporatisation was usually combined with concession/lease arrangements or other methods.

**Table 2.3 Methods of Privatization used by Ports**

Concession or lease	BOT	Joint venture	Sale of Port land	Corporatisation	Management contract	Other methods
52%	19%	10%	4%	13%	2%	13%

Source: IAPH



Considering the results from the IAPH survey as depicted in Table 2.3 and some of the reasons given under the need for privatisation of ports in section 2.4, this paper would concentrate on BOT, Joint venture, Outright sale of Assets and Leases. These four methods are the most widely used during most port privatisation ventures. They allow parts of the port to be given out to the private sector for investment.

#### **2.4.1 Build-Operate-Transfer (BOT)**

High capital costs are needed for construction of ports and they have high commercial risks and very long payback periods (ESCAP, 1997). Civil facilities such as berths and breakwaters have investment life of between 30 to 50 years while that for equipment such as container cranes could be 15 to 25 years (Port Development International, May 2000). Traffic forecasting is a very important feature of the decision to invest in port infrastructure and equipment. The dynamic and competitive nature of the maritime industry requires a sustained traffic to achieve good return on investment and future profit.

BOT is the situation in which the private sector makes major investment in infrastructure and equipment to create an operational container terminal and transfer it back after managing for a period of time. In 1994 Westport, Malaysia was given on BOT concession to the private sector to design, finance, build, operate and manage 30 berths and 1200 acres of land for a period of 30 years (Cass, 1998). The cost of construction of the facility was important to the government because when the facility reverts back in future it could be operated by the state or re-allocated to a private company.

A BOT concession operates at the port of Felixstowe in the UK while Compagnie Industrielle Maritime for oil and petrochemical storage facilities operate at the port of Le Havre in France. Other variants of the BOT are Build Lease Transfer, Build Transfer

Operate, Build Transfer and Build-Own-Operate (BOO), in which the developer has ownership in perpetuity as at the dedicated container terminals in Hong Kong and China.

#### **2.4.2 Joint Venture**

A Joint Venture is an association of 2 or more legal entities collaborating in an enterprise and sharing risks and benefits (UNCTAD, 1995). The total amount involved, ratio and form of contribution by each party, terms and consequences of termination of the venture are agreed upon at the outset. One partner usually contributes fixed assets while the others bring financial capital, management and technological expertise.

Instead of wholesale privatisation to the private sector a Joint venture is entered into whereby an operating company is established jointly owned by the government or port authority and the private entity (local/foreign) to construct, manage and provide port infrastructure and services within a laid down legislation. The government make available assets, land, infrastructure and superstructure while the private sector provide finance, up-grade facilities, purchase new equipment and contribute to technological and managerial expertise (ESCAP, 1997).

Joint ventures have clear laid down conditions for investment, duration of lease, landownership and reasonable tariff charges. The advantages are that capital is made available for construction of new facilities and purchase of new equipment, there is reduced level of investment and risk, technological transfer and training of staff, efficient management and operational schemes, increased productivity, shared costs and rewards and mutual benefit.

The Shanghai Container Terminal Co. Ltd. is a joint venture between the Port of Shanghai, a state organisation and Hutchison Whampoa Ltd. of Hong Kong or Hong

Kong International Terminals (HIT), a private terminal operating company. Financial assistance and managerial skills of HIT was crucial for this partnership. The duration is 50 years and operation commenced in 1993 on existing container facilities with plans for new development. It is on 50-50 share equal basis and offers opportunities for equality, mutual sharing of risks and benefits, and commitment to future negotiation for the public and private sectors (ESCAP, 1997).

The new container terminal, Freeport Terminal Ltd. was established at Marsaxlokk, Malta through a joint venture between Malta Freeport Corporation, an agent of the government of Malta and the UK-based Maritime Transport Services (MTS). MTS was contracted for their reputation as a container terminal operator and for transfer of technology (Cass, 1998). This privatisation process moved a step further when the government of Malta decided to implement the option of selling up to 100% of the share capital of the Malta Freeport Terminal with a 30-year exclusive licence prior to the sell off (Lloyds List, 18 May, 2001).

#### **2.4.3 Outright sale of assets**

Outright Sale of assets refers to the total sale of infrastructure, superstructure and other port facilities by the government. It could be at a bargain price or to the highest bidder as in Hong Kong or China. The problem is how maximum return of income to the government can be achieved by the price quoted and controversy over subjective judgement in valuation of the asset can be avoided. A rigorous screening procedure of potential buyers and quotations may be needed to keep intact the objectives of the government.

According to Baird (Cass, 1998), Outright sale of assets could also be the situation where there is transfer of ownership of port infrastructure, superstructure and equipment

either on full or partial basis on the Stock exchange, in an open trading of shares in total or large blocks or to employees and other small investors. The disadvantage is that port assets could end up been sold to competitors in other ports in the same country or region or even to foreign companies who may have diametrically opposed concepts to operation of the port. A classical example is the case in which some foreign investors who expressed interest in the port of Takoradi which handles over 85% of the main export trade of Ghana, were said to have plans to turn the port into a passenger terminal for tourists, speed boat operators and holiday makers during initial talks on a possible privatisation arrangement.

The alternative is to have competitive tender for bidding, sale of assets and not shares, encourage negotiated sale on Management and Employee Buy Out (MEBO) or Management Buy Out (MBO) basis and as much as possible discourage single buyers who may not offer the right price or may be unable to pay outright.

#### **2.4.4 Lease**

A Lease is a contractual arrangement whereby the owner of an asset (lessor or state) grants another party (lessee or private company) the right to use the asset and to profit from it for an agreed period of time in return for the payment of rent (UNCTAD, 1995). It could also be the full transfer of specified assets from the port to a private operator for an agreed period of time (ESCAP, 1997).

The lease is thus an agreement or the right to use port asset, land or equipment for an agreed period of time with a series of payments. A large investment is needed for the creation of infrastructure, superstructure and other facilities at a port with very long and uncertain payback period. Lease agreements in China and Hong Kong are usually for 50 years duration with automatic extension (ESCAP, 1997).

Though facilities and equipment are available for use during the lease period transfer of assets on permanent basis through either sale/purchase or lease/purchase agreements could be arranged. The contract period usually takes into account the economic life of the asset and permanent transfer could be limited to mobile assets only.

The lease period could be dependent on the investment made and adapted to suit the changing market situation. Lease periods for fixed facilities could be between 5 to 20 years or more while that for land developed by the lessor could be for a period of 15 to 30 years (ESCAP, 1997).

The value of the asset could depend on the function or service to be rendered by it, restrictions that may be placed on the use of the asset, and availability of the asset for optimum utilisation. There could be a vast difference in the value for land and a mobile crane. Land could be sold at the price of the highest bidder due to current availability, the future revenue potential of the asset at the same place or opportunities for use for other purposes. The value of land in ports in North America and Europe are higher than those in ports in Asia and Africa. Development of housing estates on the fringes of the port of Copenhagen have led to rapid increases in cost of warehousing facilities at the port and a greater contribution to revenue of the port from non-port operation sources (Port of Copenhagen, Annual Report, 1999).

Various forms of leases may be available but with combined features of different types. The main problem is with valuation of the assets especially that of the residual value. Where there is an option to purchase at termination of the lease, renew the lease after the first period or conduct sale of specified assets at the end of the lease an amount must be agreed upon and a fair, just and viable valuation is essential. Over 25% of the privatisation process in Jamaica between 1981-1992 was through the lease method (UNCTAD, 1995). Lease is also applied in the ports of Amsterdam, Rotterdam and

Hamburg, which are located in one of the most wealthy and efficient region for port operation in Europe, the so-called blue banana area.

Whichever the alternative for privatisation, be it total or partial, valuation of port assets is necessary to determine the value of assets.

## **2.5 Privatization and valuation of port assets**

The valuation of the assets of a port is usually a normal procedure and practice for the financial department of a port authority or the management team to determine the financial state of the assets of the port in the annual balance sheet. This is normally carried out at the end of the financial year of the port using certain laid down procedures, rules and conventions. It gives a clear idea of the value of the assets of the port in the accounting books and also the physical assets on the ground. This information is equally important as a form of data through which a decision to build, maintain or buy new infrastructure, superstructure, equipment or any other form of assets for the port could be taken. It could also be used to help in the disposal of assets that might have outlived the economic life.

The valuation of the assets of any port depends on the specific assets available for the port. The assets of a port is linked to the type of port or the nature of the ownership, administration and operation of a port. A service port, tool port or landlord port will have different range of assets as a result of the nature of ownership of infrastructure, superstructure, equipment and other port assets. The value of the assets for a particular port will thus depend on the type of port and the assets available for the port. The value of the assets of a port could have effect on the financial operation of a port due to the

fact that the need to build, buy, maintain or scrap a particular asset of the port depends on the value attached to that asset.

As previously mentioned, the value of the assets of a port is usually determined at the end of the year on the balance sheet and the effect of the valuation is usually seen more in the financial operation of the port and to some extent the national economy. The ability of a port to handle imports and exports and give other services to ship and cargo depend on the asset base and availability of inputs for the port and this may add on to the national economy. On the other hand, the valuation of the assets of a port during the privatisation process or increased private sector participation could be done at any point in time within the year. The effect of such a valuation for purposes of privatisation could have more impact on the national economy rather than the financial performance of the port. Depending on the nature of the privatisation the income accruing could be put into the national coffers and this could go a long way to make available funds to the government for the implementation of economic projects, the provision of social services and general economic growth.

## CHAPTER 3

### ASSET VALUATION

#### 3.1 Asset recognition

The provision of physical facilities and services by ports and the periodic maintenance of such facilities are done at a cost. The beneficiaries of these facilities and services are port users, cargo owners and ship owners who pay for the benefits they derive. Revenue received by ports for services they render is used for replacement of facilities. The real or economic cost of facilities is usually higher than the cost of resources especially where they have alternate uses. Port facilities such as breakwater, quay apron, CFS and cargo handling equipment form physical assets while capital is used to provide port services including pilotage, cargo handling, towage and storage.

The problem with asset recognition has been the difficulty in deciding what constitute port assets for valuation. Assets are excluded if they are on lease, have no scrap value or capital is utilized for unfruitful development such as research project with uncertain future benefits. Assets could also not be placed on the balance sheet due to accounting conventions while trained staff, good reputation, brand name or customer loyalty is not recognized because it is difficult to identify the cost or value. The unique assets of Port Jervis was said to

“... include outstanding architecture landmark buildings, the city’s history as a railroad center, its location on the Delaware River, its proximity to nearby national parks and a rail system that connects the city to metropolitan areas.” (th-record.com, 2000).



It is uncertain which of these assets can be placed on a port valuation list because of the difficulty in deciding their cost or value and the control the port have over them.

### **3.1.1 Fixed assets**

The Balance Sheet, which is a statement of assets and liabilities show the financial position at a particular point in time of what is owned in monetary value by a firm or enterprise. The Financial Reporting Standard (FRS) of the UK define assets as the “rights or other access to futures economic benefits controlled by an entity as a result of past transactions or events” (Nobes, 1997, p. 142). Assets are seen as expected future economic benefits over which a firm have legal right of control. They have a market value and help the owners to make profit.

Fixed assets are those intended for use and not to be sold out such as land, buildings, plant or machinery. They can be differentiated into Intangible, Tangible and Investments. Intangible assets are made up of development costs, concessions, goodwill, patents and trademarks. Tangible assets include land, buildings, plant, machinery, fixtures, fittings, tools and equipment. Trade Investments could be shares or loans (Nobes, 1997).

### **3.1.2 Current assets**

Current asset are assets that can be transformed into something else within a short period of time and may include stocks of raw materials and finished goods, amount owed to trade debtors, trade investments or shares and cash at hand or cash at bank (Nobes, 1997).

### **3.1.3 Liabilities**

The FRS of UK has defined liabilities as “an entity’s obligations to transfer economic benefits as a result of past transactions or events” (Nobes, 1997, p. 142). Liabilities refer to a sum of money to be accounted for as future payments, an obligation owed to others. Current liabilities are obligations that are to be discharged within a year and examples

include trade creditors, amount owed to suppliers or debts payable, overdraft and short-term loans. Contingent liability is “an obligation that will be incurred at a future date” (Nobes, 1997, p. 21).

### 3.1.4 Equity

Equity, also known as capital or owners interest is the retained profit or share capital earned by shareholders. If profit is earned in a year there is excess of assets over liabilities and it leads to an increase in capital.

### 3.1.5 Ownership of Port Assets

The survey organised by the IAPH also showed the type of ownership for port assets in the area of access channel, breakwater, land and cranes for the container terminal. Some of the results did not round up to 100% probably due to some incomplete responses (Ports and Harbors, January-February, 2001). Table 3.1 shows that Port Authorities and some other forms of public organisations such as municipal or city councils, public agency, corporation or government departments control greater percentage of port assets. Private companies have negligible control over most port infrastructure or superstructure but own a sizeable portion of cargo handling equipment due mainly to stevedoring handled by the private sector.

Table 3.1 Ownership of port assets

	Access channel	Breakwater	Land	Cranes
Private company	0%	0%	4%	22%
Public organisation	27%	17%	11%	7%
Port Authority	60%	56%	76%	58%

Source: IAPH

## **3.2 Valuation conventions**

Valuation is a requirement to give value, attach monetary consideration or worth to an asset. It is usually done at the end of the accounting or financial year of a company to place items in the balance sheet for the information of owners or others who may be interested in it. It could also be required when an asset is to be replaced, leased or sold. Valuation of port equipment is usually done taking into consideration the life cycle or useful economic life and net depreciation value of the particular item. Depreciation is normally pegged at about 50% of the historical, purchase or replacement cost or value of the equipment.

Several alternative valuation conventions are available for inclusion and valuation of assets on the balance sheet. Some valuation conventions are specifically required by law, others help to maintain standards while others are used for adjustment with current value accounting (Nobes, 1997). The following are the various alternative valuation conventions as set out by Nobes (1997).

### **3.2.1 Prudence**

This is also known as conservatism as it prefers the lowest of a reasonable value for an asset. There is the need to have caution, balance and optimism and an attempt to take care of all uncertainties when using it. It holds responsibilities towards shareholders, creditors, buyers and owners. It could sacrifice the most likely and realistic figure for the lowest value.

### **3.2.2 Objectivity**

It is based on reliable facts about the estimated valuation and it is deemed to be better than another valuation that may be based on realistic figures. It is acceptable to shareholders, creditors and the government as it provides figures on both assets and liabilities that are easily verifiable and have positive effect on revenue and expenditure.

### **3.2.3 Money measurement**

As the name suggests, this considers only items expressed in monetary terms and it relies on ready information based on money as a measurement of value. It is difficult to include assets such as skilled management and customer goodwill that may not easily be quantified as a measure of money.

### **3.2.4 Historical cost**

This is closely related to the valuation convention of money measurement. Asset valuation is done on the basis that assets are recorded at the cost at the time of their purchase and at proportion to that cost throughout their useful life. Cash as an asset can have an identical market value to the cost whereas land can have a different value over a period of time (Nobes, 1997). The advantage of this valuation convention is that it is simple, objective and easy to compare with the market value or a series of future cash flows. However, the disadvantage is that inflation could affect the asset that could either depreciate or appreciate in value over time like land or wine in a cellar.

### **3.2.5 Stability**

This is usually used together with two other valuation conventions, money measurement and Historical cost. The assumption is that to ensure a stable valuation figure there should be no change in the value of currency so that the value of money over time could be the same. However, from about 1970 after the Israeli-Arab conflict over the Palestine issue leading to oil crisis and steep changes in oil prices which were reflected in International trade relations, world economy, inflation and currency differentials there has been the need to adjust the value of money in relation to major world currencies. The stability convention takes into account not only historical cost but also the value of an asset over a time period as it is possible for identical assets to have different values at different times.

### **3.2.6 Current value**

Due to the problem with the valuation convention of historical cost especially in relation to a stable value of an asset over a period of time particularly after 1970 with high inflation and wide differentials in currencies, the current value convention was developed. The valuation of assets in the normal circumstance is related to the replacement cost of the asset but not the historical cost. The value of an asset to an entity is the deprival value of that asset or the maximum loss that the entity would feel if it were deprived of the use of that asset (Nobes, 1997). The deprival value is thus related to the cost of replacement of the asset or the current value of the asset.

### **3.2.7 Going concern**

It is based on the “assumption that the business will continue for the foreseeable future” (Nobes, 1997, p. 19). The value of most fixed assets depend not on what they can be sold for but on what they can contribute to the profit of the entity. Assets that are specific to a particular business may not be useful for others and could have low scrap value and hence low market value. However, the value to the entity could be higher due to their productive potential, replacement cost or deprival value. Most assets of ports including breakwaters, quay apron, cranes and forklifts and other plant, equipment and machinery fall into this category. “The going concern convention seems to encourage a value-in-use approach, which entails consideration of the future benefits from an asset” (Nobes, 1997, p. 19).

For example, the Irish-based gold mining company, Glencar Mining (GCM) decided to sell the gold mine at Wassa in Ghana as a result of low prices on the world market and a production shortfall that made the project unable to meet scheduled debt repayments. The mine was put up for sale as a going concern and this meant that the sale would “leave Glencar with no debt, a significant number of exploration assets and sufficient cash resources to continue its exploration” (ghanaweb.com, Business News of 28 June 2001).

### **3.2.8 Consistency**

Whenever there is the need to choose between different methods of asset valuation and allocation of expenditure to different time periods the consistency convention is used. There is the need to ensure that the same method of valuation is used by each business entity to allow comparison of accounting information from year to year within the organization and with other entities. Consistency is important so that in case of any change in methods the effects of such changes on the entity itself and between two different companies can be seen.

### **3.2.9 Materiality**

“The convention of materiality states that there are some transactions or events that are not significant enough for accountants to record or disclose with strict correctness” (Nobes, 1997, p. 20). The cost of the purchase of an oil filter for a forklift truck could be added to the value of the equipment and depreciation taken on it at the end of the year. The purchase could also be taken as an individual expense and this could be much more easier and would not cause any material difference on the balance sheet. The materiality convention concerns the disclosure of detail in the accounts of valuation of assets. It is easier to record similar items together and present them as one figure and also attempt to value them on that same basis.

## **3.3 Asset valuation practice**

There is always some difficulty in deciding the nature of valuation for port assets. The quay apron could be looked at simply as a wall adjoining the land and water of a specific depth. The value of a quay with shallow depth could be low due to the requirement for the use of lighterage services, which could lead to high operational costs and hence reduced revenue or even losses. The evolution of technology and rapid changes in container handling equipment at the port, could also lead to some particular machines

such as forklift trucks becoming obsolete and having a low value as a result of their high replacement value.

On the other hand, portions of the seashore filled with waste sand or soil from dredging of the water basin could have a high value if the new land area is used for recreational purposes or as storage for cargo. An example is the high value attached to portions of the land in the port of Copenhagen that is close to the city and is used as storage for cargo. The valuation of port assets could require the use of either a specific international valuation convention or a combination of 2 or more of those set out by Nobes (1997). The use of a particular valuation convention could depend on the objectives or purpose of the valuation and any of the alternative valuation conventions could be applied depending on the specific situation.

Among the various reasons assigned for asset valuation practice is the need to allow the management team or the owners of a company to have a fair idea of company assets and their value on the balance sheet. Valuation could also ensure fairness for potential sellers, buyers or investors in the case of disposal of assets and also for lease agreements during privatization. There is also the need to have the best possible terms especially for valuation based on a tender or sale to the highest bidder due to the fact that the state of any valuation could be exposed to future public scrutiny (Cass, 1998). The main objectives for privatization of various state organizations in Ghana have been the desire to reduce the size of State Owned Enterprises (SOE), relieve government of financial burden in propping up non-profitable entities, improve management, efficiency, competition and profit and increase revenue through sale of assets and taxes from the private sector (UNCTAD, 1995).

Divestiture options have usually tendered to favour transfer of ownership rights from the public to the private sector. UNCTAD (1995) list the following as some of the various forms of divestiture

- direct private sale
- public share offer on the stock market

- strategic investment or joint venture partners
- employee or management buy out
- mass privatization
- liquidation and sale of assets or auction.

The decision to divest should be based on firm and transparent principles and procedures. Transparency, accountability and fairness should help build confidence and promote wide participation among interested parties from the private sector. As far as possible details of sales, bidders, bids, successful bids and amounts received should be published in the national and international press (UNCTAD, 1995). In some developing countries there could be instances where state assets are sold out to the private sector, especially foreign-owned entities, at prices less than their true value. This is usually motivated by political or economic considerations where government ministers and party officials collude with unscrupulous foreign firms to form questionable joint ventures who manage to sell to themselves state assets at ridiculously low prices. The share price of such ventures could rise significantly soon after the initial sale without any injection of capital and re-sold at fantastic profits to genuine investors.

Asset valuation should be a careful and detailed analysis aimed at establishing fair and reasonable value for an asset on the balance sheet, replacement of obsolete equipment or the price for the lease or sale of a public enterprise to the private sector. The book value of an asset is the historical cost or accumulated depreciation of the asset. It could be different from the market value, social or economic cost of the asset (UNCTAD, 1995). In the UK most companies value their assets on the basis of historical cost and depreciation. Major assets such as land and buildings are re-valued each year to bring them to current values (Nobes, 1997). Competitive bidding allows market forces to be involved in valuation of public enterprise especially where initial public share offer and direct sales are involved. Accurate valuation is crucial to the success of privatization programmes as it leads to a show of sufficient interest by investors and could act as a cushion against criticism to the state on whether a fair price have been achieved (UNCTAD, 1995).



Valuation of assets and liabilities for an entity on liquidation is usually done through the going concern valuation convention. The amount the entity can fetch as a continuing business is used as the basis for the value. The difficulty is how to determine the value of an asset when those assets have a long history. The relation between the original cost and the present value may not be easy to agree upon. In such a situation both the current value and the historical cost are used to determine the present value (UNCTAD, 1995). The reason behind the use of both current value and historical cost valuation conventions to determine the present value of an asset could be due to the fact that investments made at the time of the original purchase could be when relative prices for goods and services were high or they were made for a non-commercial purpose. Valuation is indispensable in situations where “there is only one prospective buyer and hence no competitive bidding” (UNCTAD, 1995, p. 103).

Some other methods proposed for valuation will now be discussed and a comparison made with the other conventions enumerated above.

### **3.4 Valuation methods**

Two of the fundamental problems that face accountants in asset valuation are the measurement of value and profit. There are various ways to do such measurement but there is the need for a theoretically sound basis, useful and verifiable information, practical approach, defined time frame and professional expertise. Different individuals or groups such as port authorities, government and private investors have interest in valuation of assets and could prefer different valuation methods. To measure the value of a business there is the need to add together all future net benefits or expected cash flows and discount or adjust such future flows to cater for inflation (Nobes, 1997).

The present value of an asset is the equivalent of the sum of the discounted amounts based on some estimates. Proper conventions must be used to decide on which assets or liabilities to include in the valuation and how to measure the value. Transfer of

ownership rights from public to private sector in divestiture during privatization could be through various options. Direct sale could be full or partial direct transfer to private buyers through competitive tender bidding or predetermined buyer. Public share offer on the stock market could be by fixed price or tender and usually 60% could be given out to core investors and 40% reserved for small investors and workers in countries such as the UK, France and Sri Lanka (UNCTAD, 1995).

Strategic investors may request for special privileges and auctions should be guarded against chance, rigging and collusion. Mass privatization methods are common in Central and Eastern European countries like Slovakia, Poland and Romania while liquidation and sale of individual assets at the highest possible price through tender, bidding or auction has been practiced in Poland. Asset valuations in Sri Lanka by people employed by the government were said to favour the government as against private operators until adequate training put an end to such a practice (UNCTAD, 1995). Government valuers work more with land and building valuations and find it difficult assessing ongoing business operations until they are trained in the technique of estimation of projected earnings and discount cash flow.

According to Cass, “there are four main methodologies considered by valuers for any valuation and they are

- (i) Earnings based valuation methods (EBVM)
- (ii) Asset based methods
- (iii) The market based method and
- (iv) Industry specific methods “ (Cass, 1998, p. 60).

### **3.4.1 Earnings based valuation methods**

The three sub-divisions for this method are

- (a) The capitalisation of earnings
- (b) Discounted cash flow (DCF)
- (c) Dividend yield

(a) The capitalisation of earnings

This is the most popular method for estimating the market value of the equity of a company. It is relatively simple and is represented by the formula

- $P/E \text{ multiple} \times \text{Earnings (after tax)} + \text{surplus assets} = \text{value}$

P/E earnings is the price earnings multiple and it is a comparison of the current market capitalisation of the equity of the company to the earnings available for distribution to ordinary shareholders after interest and tax. Where the calculation is by reference to earnings of the previous year or the forecast of such earnings, the multiple must be applied in a consistent manner to the method of valuation. The higher the growth prospects of a company the higher the P/E multiple and the lower the equity returns required by investors the higher the P/E multiple. Private companies are thus able to trade at a discount to public companies (Cass, 1998).

This is not common to the valuation of port assets.

(b) Discounted cash flow (DCF)

This is said to be the most conceptually correct method of valuation. It is based on the assumption that the value of a business to an investor is the present value of the future net cash inflows to be derived from it. When applied to the port, the value of the core business, which is service to ship and cargo, is calculated by discounting the operating cash flows before interest and after tax, add value of surplus assets and deduct interest-bearing debts (Cass, 1998). The value of surplus assets such as land is added because they could be developed into non-port uses. A case in point is the use of land for residential and office buildings around Copenhagen-Malmö Port.

Among the issues worth considering when using the DCF method are the type of currency to work with and the Weighted Average Cost of Capital (WACC) as against equity rate of return. Due to currency differentials especially as a result of inflation, cash flows are projected using the United States of America dollar (USD) and discount rates

are calculated on a consistent basis. When assessing the value of the total assets of an entity the WACC is applied to the operating cash flows before interest of the said company. The WACC is calculated through an assessment of the rates of return required by the providers of the two main sources of funding for a firm, debt and equity (Cass, 1998).

Other difficult judgements that need to be made when using the DCF for a port include

- preparation of traffic forecasts and revenue projections based on future shipping demand, competition, the nature of the market and government regulations
- assessment of future operating costs depending on labour productivity and operating efficiency
- identification of capital expenditure to be influenced by the nature of the leasing arrangements, conditions of existing facilities and anticipated technological changes
- nature of “one-off” expenditures and receipts including inherited liabilities and assumptions on scrap or residual values (Cass, 1998).

Some private ports such as Felixstowe in the UK and Hong Kong are known to apply the DCF in certain situations.

#### (c) Dividend yield

This is used to assess the value of minority shareholdings and the focus is on projected dividend flows to equity. It is not commonly used.

### **3.4.2 Asset based valuation methods**

The most commonly used are

- Orderly realisation of assets
- Liquidation value
- Replacement value

(a) Orderly realisation of assets.

This is based on the principle of selling assets on piecemeal with values for only tangible assets. It has a lower value than EBVM as intangible assets are excluded unless they are easily identifiable, have quantifiable value or can be sold separately.

There may be the need to seriously consider the valuation of non-material assets of a port such as trained management staff, skilled technicians and operators and maintenance staff in order to arrive at the real value of the total assets of a port.

The purpose of the entity engaged in the valuation could be essential to the value under this method. A public corporation may only aim at achieving a reasonable profit whereas the objective of a private company could be to get maximum financial gains from the transaction.

(b) Liquidation value

It is similar in principle to the concept of orderly realisation of assets except that it has a shorter time period and thus a lower value.

A port can never be said to have been completely liquidated. There could be a change in purpose and function from a commercial seaport to a mariner for fishing vessels, pleasure boats and other recreational purposes.

(c) Replacement value

This can be a reasonable test of the real value of a business especially in situations where an entity in operation is valued on the earnings basis at a cost far higher than that for the establishment (replacement value) of a similar entity.

Current technological evolution, automation and computerization could give an idea as to the value of plant, equipment and machinery to be replaced but the replacement value for breakwater and quay could be difficult to determine.

### **3.4.3 Market based valuation method**

It is an appropriate method for companies with listed shares. The most important information necessary for applying this method are the relevant period of share price movement, share price volatility over the selected period and whether the share transaction is at arm's length or not.

This is an unlikely method to be applied to valuation of ports.

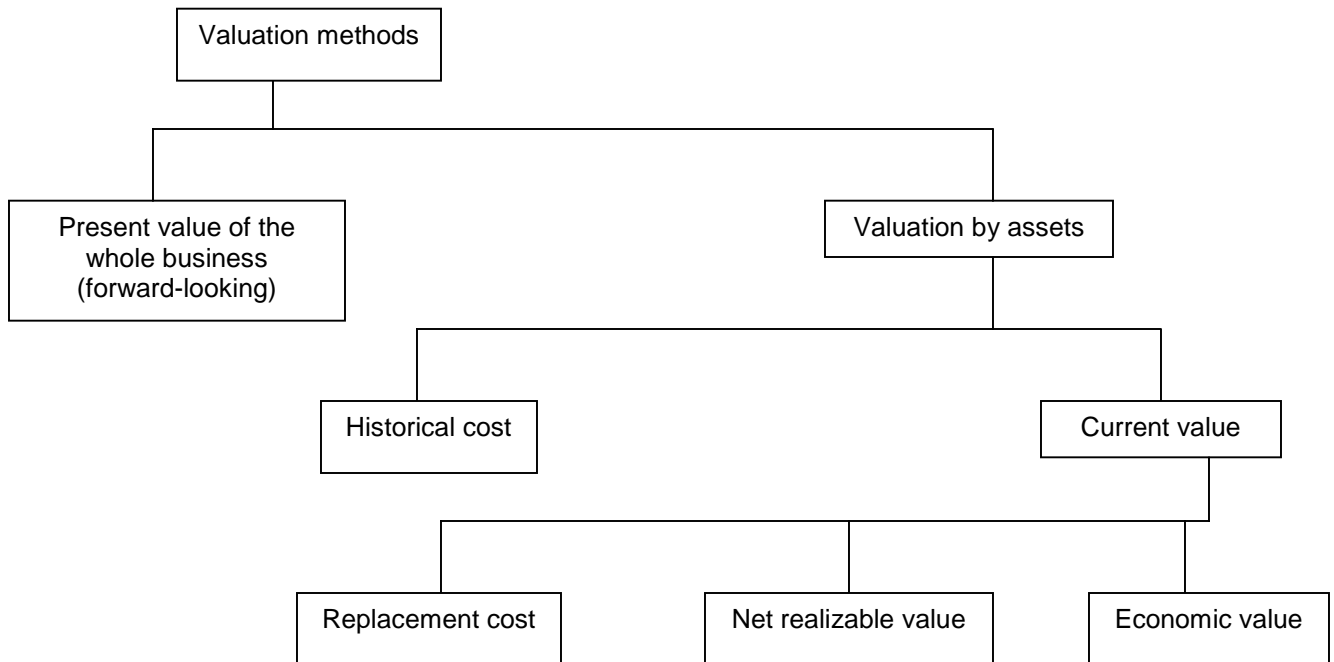
### **3.4.4 Industry specific valuation methods**

Certain rules of thumb exist to provide an indication of value for particular industries. They may not be adequate and could provide only a rough estimate that need to be tested against other methods especially where there are data from other countries. It is difficult to apply such a method to situations in ports because different ports have different throughput, growth and revenue prospects (Cass, 1998).

The most relevant and likely valuation methods to be applied for privatisation are the capitalisation of earnings and DCF under the EBVM.

Capitalisation of earnings usually refers to the market value of equity. Private companies tend to pursue maximum financial benefit while public corporations may be satisfied with reasonable profit. Under the DCF, the value of an entity is the present value of the future net cash flows.

Figure 3.1 Valuation methods



Source: Nobes, 1997

### 3.5 Specific port valuation issues

Asset valuation methods can be put into two main categories of historical cost and current cost. The historical cost concept is based on facts recorded about prices paid for assets in the past and it is simple, objective and prudent. The current cost system is a more recent idea and it is more complicated but it addresses most of the problems of historical cost especially those related to inflation. There are three main asset valuation bases that are used with current value accounting. These are replacement cost, net realizable value and economic value. The realizable value is the difference between the cost of a sale and the expected receipts from the sale. The economic value refers to the net present value of the asset (Nobes, 1997).

The use of any of the three bases for the valuation of an asset at the current value depends on the circumstances. A useful method is to consider the use of the deprival value of the

asset or the replacement value, which is the maximum amount that an entity will lose if it is deprived of the asset. This depends on the system of value accounting in use and involve subjectivity more than historical cost valuations. A value based on historical cost could be faulty as a result of the effect of inflation and change in the value of money. The choice of any valuation method is determined by the needs of those who require the valuation. Owners and prospective buyers want the most realistic estimate of the entity as a going concern while lenders prefer a more conservative valuation based on valuation of individual assets in a situation of possible close down of the business (Nobes, 1997).

The following are some specific port valuation issues that are encountered mostly in ports in developing countries due mainly to lack of investment in facilities.

- cost structure
- port capacity and growth
- valuation of assets
- surplus assets versus operational assets
- tax losses.

### **3.5.1 Cost structure**

Labour costs could account for about 70% of the total annual operating costs and a small reduction in labour costs can lead to significant increase in profits. Changes in labour cost structure and not just a decrease in numbers is the way to increase the value of ports as was experienced by ports in the UK after privatization (Cass, 1998).

Privatization in most developing countries and especially in Africa has always brought along with it restructuring, retrenchment and redeployment and this has always basically meant the loss of jobs for a number of people. The entrenched position of very strong labour unions against privatization and their eagerness to halt the implementation of the process could be diluted if proper consultation is done to ensure efficient and optimum use of labour. The integrated gang system in which each member of a unit of the labour force possess requisite skill and expertise in more than one aspect of the cargo handling



process can lead to efficiency and optimisation of labour. Automation could also be applied to guarantee the interest of workers by re-training and creating more job opportunities through data processing, systems analysis and other auxiliary functions and value-added services. These could ultimately lead to increase in value and profits.

### **3.5.2 Port capacity and growth**

The capacity of a business and the level of capital expenditure required to generate growth can easily be determined for most industries. However the situation is not the same for the port industry as a number of different measures can be used. The management team of a port can increase the capacity and growth of the port through various measures such as changes in the four major port performance indicators of service, output, utilisation and productivity. Customers of the port can also increase port capacity and growth through their own capital expenditure on storage facilities and cargo handling equipment (Cass, 1998).

For example, the \$10 million (US) private venture between the London-based transport logistics specialists, the Antrak Group and the French-based international shipping agency, SCAC-Delmas-Vieljeux (SDV) which are both part of the Bollere Group, led to the establishment of a new dedicated off-port cargo terminal facility in the port of Tema, Ghana. Both Antrak and SDV are customers of the port and the 60 000 square metre container terminal with an annual capacity of 75 000 Twenty-foot Equivalent Unit (TEU) form an integral part of the long-term infrastructure investment of the Port Authority and the Government of Ghana. It will help ease traffic congestion in the port, enhance container handling, reduce transit time of cargo to land-locked countries, improve customer service and lead to overall trade and economic growth (Maritime Journal, May, 2001).

“The most obvious indication of potential growth is usually un-utilised land in, (the port) or in close proximity to, the port” (Cass, 1998, p. 62). The development of the project termed “The Ecological City of Tomorrow, BoO1” in the Vastra Hamnen or Western

Harbour in Malmo, Sweden is an example. It is a planned construction of a new urban district with about 800 apartment blocks, homes, offices, businesses and shops to be located by the sea near the Malmo port and next to Kokum shipyard (Roberts & Sillen, 2000).

The price demanded for each of the apartments for the project is quite high. This is an example of unutilized land near a port gaining a higher growth rate.

### **3.5.3 Valuation of assets**

Port infrastructure assets can form between 30-70% of the net book value of assets in a port but their actual value could depend on the profitability of the port (Cass, 1998). An agreement on the cost of construction and value of port infrastructure has always been a difficult decision to take. This is due to the fact that costs are different in different parts of the world and at different time periods and most ports are not too eager to declare the cost of the varied infrastructure they have and may use different approaches for valuation of such assets. The cost and value of breakwater, access channel, berths suitable for deep draught ships, quay apron and container terminal, hectares of land for container yard, CFS, the gate system, roads and rail for inland connection, plant and equipment and many other such port infrastructure and superstructure could be difficult to determine.

The value of land utilised for port operations are usually estimated with reference to the earning capacity of the port and it could be difficult to attempt to estimate the value of port land used for alternative purposes (Cass, 1998). The projected total investment budget for a period of 25 years for the port of Arhus in Denmark with a total port land area of 350 hectares, planned infrastructure including access roads to the port and water depth of 15.5m for the quay was DKK 2.3 billion. The annual investment was to be DKK 100 million while the cost of a new container terminal was estimated at between DKK 250-400 million (Port of Arhus, 1998).

Each of the over 65 000 machines manufactured by Kalmar and operational in most ports worldwide have an economic life of about 20 000 running hours depending on the operating and environmental conditions. The cost of a piece of equipment could be very tricky to estimate because so many models are made and the price is dependent on the specific options required by the buyer (Kalmar, Lidhult, 2001).

Table 3.2 shows the estimated value of some models of port cargo handling equipment manufactured at the Kalmar plant in Lidhult, Sweden as quoted in June 2001.

Table 3.2 Estimated cost of some Kalmar Equipment, Lidhult

Equipment Type	Estimated Cost (million Swedish Kronor)
Empty container lift truck	SEK 1-1.7 M
45T (Tonne) lift truck	SEK 2-3 M
42T (Tonne) ContChamp reach stacker	SEK 3-4 M

Source: Kalmar, Lidhult, 2001

### **3.5.4 Surplus assets versus operational assets**

Surplus land in valuation terms is used to describe the situation in which excess land not required for development of the core business of the port is let out to other entities not using the facilities of the port. Land utilised for port activity become operational asset while those let out to other businesses is the surplus asset. Some ports in the UK are said to have used this system for their privatisation process (Cass, 1998).

### **3.5.5 Tax losses**

When a port is transferred to the private sector during a privatization venture with significant tax losses these can be calculated to the advantage of the new owners. A valuation of such tax losses could lead to a significant value of the assets for the private sector (Cass, 1998).

### **3.6 Problems with valuation of port assets**

As mentioned by Nobes (1997), some of the problems associated with asset valuation practice include

- determination of the cost of the asset
- estimation of expenditure to maintain the asset
- calculation of the useful life of the asset
- agreement on residual or disposal value of the asset
- revaluation to determine the change or increase in value of the asset.

Valuation is important for initial public offerings, in joint ventures, when contribution of assets is expected, for corporate formation, evaluation of bids based on different structures and negotiated sales. Valuation of contingent liabilities could include guarantees and environmental liabilities and in situations where only one potential buyer is available there can be no substitute for careful valuation (UNCTAD, 1995).

Valuation of port assets in most developing countries could be heavily discounted due to various uncertainties and problems some of which could include

- Lack of adequate investment in port infrastructure and facilities as a result of cash shortages by the government and port authorities
- Unclear legal and regulatory framework for the port authority and private sector operator
- Improper process or procedure for conversion and repatriation of profits
- Reliance on port revenue forecast as a basis for national economic prospects
- Difficulties in dealing with labour unions with set minds leading to lack of freedom in employment negotiation and decision on size of workforce based more on government social policy than on commercial terms
- Risk of abrupt changes to agreed terms and conditions in the event of rapid change in government, nationalisation or political instability (Cass, 1998).

The use of any specific valuation method for valuation of port assets will depend on the parameters to be handled. The nature and type of port, whether tool port, service port or landlord port could influence valuation as the value of assets could be different for each type of port.

Replacement cost for the breakwater could be difficult to determine in a situation where the port is to be transferred from a public to a private entity. However, for the state, the breakwater could still command a reasonable value to the national economy. The breakwater in the port of Lome, Togo is essential in keeping out tidal waves that could easily wash away portions of the port or even the city.

Some of the land around Keta in the south east of Ghana and adjacent to Lome, has been washed away by the sea as a result of the constant action of the waves over the years. An on-going project is building breakwaters as shelter, reclaim land from the sea and restore the land.

### **3.7 Strengths of port asset valuation**

There is no doubt that a decision on what constitute port assets could be difficult to make. Port assets could generally be divided into infrastructure, superstructure, land, equipment and other facilities for the provision of service to ship and cargo. Various valuation conventions are available for use based on the requirement of owners of port assets, the nature of management teams, potential buyers and the need for adjustment to meet specific goals. Historical cost and Current value together with Objectivity and Prudence are the most widely used conventions. The net present value and the future economic benefit of an asset seem to be the over-riding aspect when a decision is to be made for valuation of port assets especially in situations of privatization and divestiture.

Valuation of port assets should aim at a fair book value for the balance sheet, good replacement value and maximum returns for port authorities and the state and reasonable price and profit for the private investor. Various methods are applied for valuation of port assets but the most commonly used is capitalisation of earnings and DCF in EBVM. Numerous problems could exist for asset valuation in ports but a careful analysis of the situation and strengths of a particular port could lead to solutions to the benefit of all parties involved.

More often than not the aim of most governments engaged in privatization of port assets in developing countries has been to attract and mobilise funds from the private sector for short and medium-term development not only in the port but also in other sectors of the economy for national economic growth. The long-term objective of efficient management and discipline in the capital market that is unfortunately often relegated to the background, could lead to significant improvement in the value of the business if some of the identified problems are solved and private investors assured of a minimum net cash flow (Cass, 1998).

Valuation of port assets for privatization purposes could be enhanced by some of the following fundamental strengths inherent in some ports in some developing countries

- ❖ Relatively strong market position of a port with competing ports far away and weak inland transportation infrastructure
- ❖ Highly responsive port throughput relative to future economic growth
- ❖ Improved efficiency that could lead to significant gains through less cost, more profit and considerable increase in value (Cass, 1998).

## **CHAPTER 4**

### **PORT RESTRUCTURING AND FINANCIAL PERFORMANCE**

Most of the information and data contained in this chapter comes from a document prepared by the GPHA on the financial situation of the ports of Tema and Takoradi. They give examples of the link between port restructuring and financial performance. Information from the MMA is also included to serve as a comparison of the financial performance of ports in Ghana and Malta. Information from the Kalmar Group serves as a point of reference for the cost and valuation of one of the most important assets of a port, cargo-handling equipment.

#### **4.1 Ports of Ghana**

Ghana lies between latitude 6 & 11 North of the equator in the west coast of Africa. The Greenwich Meridian passes through the country at the port city of Tema near the capital, Accra. It has a tropical climate with a land area of about 238 540 sq. km. and a coastline of 540 km. The country shares borders with Togo to the East, Burkina Faso in the North, Ivory Coast to the West and the Atlantic Ocean in the south. Ghana has a population of about 18 million and about 60% of the people are engaged in agriculture, which contributes 45% of GDP. Income from services and the mining sector contribute 40% and 15% respectively to GDP. Ghana has two seaports at Tema and Takoradi ([ghanaweb.com](http://ghanaweb.com)).

#### **4.1.1. Port of Takoradi**

The port of Takoradi was the first to be constructed to cater mainly for the export of commodities such as cocoa, timber, bauxite and manganese. It is a natural harbour about 228km west of Accra. It was commissioned on 3 April 1928 and started operation on 3 December in the same year. Extension works were carried out between 1953-56 to expand facilities for the growing export market. It has an access channel of about 150m wide and a maximum draught of between 9.5-11m at the main quay area. The terrain of the port is such that ships had to anchor some distance away from the transit sheds and cargo brought alongside in lighters and other floating crafts. This led to the establishment of Takoradi Lighterage Company (TLC) to offer lighterage services in addition to Ghana Ports Authority (GPA) for management of port infrastructure and services and Ghana Cargo Handling Company Ltd. (GCHC) in charge of stevedoring activities. Currently the port of Takoradi handles over 75% of the export trade for Ghana (GPHA, 1999).

#### **4.1.2 Port of Tema**

Construction work for the artificial port of Tema began in 1954 and was completed in 1962. The main purpose of the new port was to serve as an interface for movement of imported equipment and material from outside the country for the construction of the hydroelectric project near Akosombo and export of aluminium ingots. The port of Tema has also served as the main import point to serve the numerous industries in the Accra-Tema metropolis. It has an access channel of about 240m wide and water basin of 10.5m deep. There are 12 berths with maximum draught of between 9.6-12.5m, which is to be increased to 15m through dredging. The private berth of the Volta Aluminium company (VALCO) for handling aluminium ingots has a quay wall of concrete block 175m wide and draught of 9.6m deep. The GPA was in charge of port management while GCHC was the stevedore operator. Tema handles mainly import products (GPHA, 2001).



Table 4.1 Container Volumes by Vessel Type at Tema Port (1996-2000)

<b>Vessel Type</b>		<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>1996 – 2000</b>
Cellular	Calls	264	247	275	324	274	1,384
	TEU	81,787	83,831	109,471	119,760	107,270	502,119
Container		<i>310</i>	<i>339</i>	<i>398</i>	<i>370</i>	<i>391</i>	<i>363</i>
	TEU Share	64%	58%	63%	61%	62%	62%
Semi-Container	Calls	97	102	90	126	171	586
	TEU	16,976	25,375	23,346	30,419	25,009	121,125
	<i>TEU/Call</i>	<i>175</i>	<i>249</i>	<i>259</i>	<i>241</i>	<i>146</i>	<i>207</i>
	TEU Share	13%	18%	13%	15%	14%	15%
RoRo	Calls	91	113	121	136	171	632
	TEU	21,300	28,445	31,008	36,534	34,703	151,990
	<i>TEU/Call</i>	<i>234</i>	<i>252</i>	<i>256</i>	<i>269</i>	<i>203</i>	<i>240</i>
	TEU Share	17%	20%	18%	19%	20%	19%
<b>Sub-Total</b>	<b>TEU Share</b>	<b>94%</b>	<b>96%</b>	<b>95%</b>	<b>95%</b>	<b>96%</b>	<b>95%</b>
All vessels	Calls	567	548	579	708	802	3,204
	TEU	128,340	143,406	173,202	196,606	173,743	815,297

Source: GPHA

#### 4.2 Ghana Ports and Harbours Authority

The GPHA was established as a statutory public corporation in 1986 under Provisional National Defence Council (PNDC) Law 160. It was a merger of 3 separate entities, the GPA, GCHC and TLC. It was charged with the sole responsibility to plan, build, develop, manage, maintain, operate and control ports in Ghana. The assets and liabilities of the erstwhile companies were transferred to the GPHA as from July 1986. The GPHA handles 75% of all traffic through the port while the remaining 25% is shared between

two private Stevedoring companies, the Atlantic Ports Services (APS), 15% and Speedline Stevedoring Company (SSC), 10% (GPHA, 1999).

#### **4.2.1 Operational units**

There are four operational units within the GPHA

1. The Headquarters
2. Tema Port
3. Tema Fishing Harbour
4. Takoradi Port including the Sekondi Fishing Harbour

Each operational area prepares its own Operating Statements to determine the individual units yearly performance. The units also prepare separate balance sheets to determine the financial position of each unit at the end of the Authority's financial year. The Headquarters, in addition to its own financial statements, prepares a combined financial statement for the GPHA as a whole. A firm of independent private Chartered Accountants audits the consolidated financial statement. The GPHA operates both local and foreign currencies, the Ghana cedi and the US Dollar (USD or US\$). However the consolidated accounts are prepared in the local currency, the Ghana cedi.

The current cost accounting convention or replacement cost (earning capacity) method is used for valuation of assets. The cost of shed area in the port is estimated at USD 15 per square metre per annum. The cost for land in the port or the quay apron is also estimated at USD 0.8 per square metre per annum (GPHA, 2001).

#### **4.3 Port Rehabilitation Project**

As a result of changes in technological advancement and the trend towards containerization and automation in the global maritime industry, a major rehabilitation in port infrastructure, equipment, facilities and human resources was carried out between

1986-1991 at both Tema and Takoradi ports. Funding was secured for the ports through the government of Ghana as part of the national Economic Recovery Programme (ERP). Some of the funding agencies included the World Bank, the International Development Agency (IDA), European Union (EU), Overseas Economic Co-operation and Development Fund (OECD) the Saudi Development Fund (SDF) and other donors.

A major component of the port rehabilitation project was the recognition of human resource as one of the most important aspects of the production process and an integral part towards the realisation of quality services in the port. Sound and efficient management systems through effective training programmes were introduced at all levels of GPHA. The training section, which was hitherto under the Personnel and Administration Manager at the port level, was restructured and raised into the department of Training and Manpower Development at the port level. The training unit at the port was upgraded into a training school to cater for staff needs and the Chief of Training was appointed as part of the management staff at the Headquarters.

Financial administration was also restructured with a Financial Controller at the Headquarters and Financial Managers at both ports. Each port was to handle day-to-day financial situations and prepare annual financial statements while the Headquarters was responsible for formulation of financial policy and oversight of activities at the port level. Separate sections in charge of Revenue, Expenditure, Procurement and Stores were also established in the financial department.

#### **4.4 Port Policy Reform**

A study for a master plan for the ports in Ghana was commissioned in 1993-94 as Phase II of the port rehabilitation project with assistance from the EU. The objective was to

- Make appropriate institutional changes in GPHA
- Delimit operational and financial obligations
- Promote private sector participation and increase competition

- Increase draft through dredging to allow modern generation container vessels to be received at the port.

This was ultimately to lead to a downsizing of staff at the Headquarters, make the two ports at Tema and Takoradi autonomous and gradually change the status of GPHA from service to landlord port.

The report on the master plan was submitted in 1996 and a national public workshop of all stakeholders in the port industry was organized in Accra in April 1996. The port development policy was initiated as a result of a memorandum submitted by the Ministry of Transport, which is the sector ministry responsible for port development, to the cabinet of the government of Ghana in May 1997. After a period of further study, cabinet approved a port reform programme for the development of ports in Ghana. The Ministry of Transport issued the terms of reference for the engagement of consulting services for the implementation of private sector participation in port operations in August 1999. Arnheim Tite and Lewis, ports legal and operational experts and First Atlantic Merchant Bank Limited, financial consultants were appointed as consultants to provide the framework for concessions on container handling at the port of Tema.

As a result of these initiatives a draft Landlord Ports Bill specifying the new port law and regulations for Tema and Takoradi prepared by an international transport consultant, Jean C. Grosdidier de Matons was made ready in July 2000. The new law was presented to the government of Ghana for consideration and it was to be submitted to Parliament for debate and consideration for legislative approval later in the year. However due to national elections held in December 2000 this was delayed. The elections resulted in a change in government that took office in January 2001. The new sector minister who was appointed later had to study the Bill before it goes to the legislature.

Some actions initiated in both Tema and Takoradi ports seem to indicate that some aspects of the implementation aspect of the port reform are on course. A new private stevedoring company, Expert Maritime Services (EMS) have started handling 25% of

general cargo at Tema port. The handling of bulk cocoa for export at port of Takoradi is shared between a private foreign company, Unicontrol and the Produce Buying Company (PBC) of the Cocoa Marketing Company (CMC). A private firm, Gateway Services has installed X-ray scanners at Tema port as part of a 10-year contract to ensure efficient container services. The scanners are able to examine 30 containers an hour and this has reduced drastically the time spent on each container by custom officials and hence led to decline in congestion at the port. Haulage is made easier by the establishment of container terminals just outside the port of Tema by private developers. Dredging has led to an increase in depth of the basin from 9.6m to 11.5m while the access channel is increased to 12.5m. New floating crafts, tug boats, pilot launches and equipment for hydrographic survey have also been purchased.

#### **4.5 Ghana Gateway Project**

In January 1995, the government of Ghana launched Vision 2020 as a programme of accelerated economic growth to enable the country attain a middle-income status by the year 2020. The Ghana Trade and Investment Gateway Project (GHATIG) was subsequently set up with about \$55million support from the IDA to create an environment conducive for economic growth and development to be led by private sector initiatives. The Board of the World Bank approved GHATIG, also known as the Ghana Gateway Project in August 1998 and it was officially launched in February 1999.

There are 22 coastal states, 5 inland or landlocked countries and 33 ports in the West and Central African sub-region. It is estimated that about 1.3million TEU of cargo move in and out of this sub-region every year. GHATIG was set up as the core of national development strategy and the main objectives were to help make Ghana a gateway to the West African sub-region, a hub for shipping, manufacturing and processing activities and a centre for provision of value-added services for shipping, commerce and trade. The ports of Tema and Takoradi were declared a sub-component of GHATIG together with 6

other strategic public organisations to promote import and export trade at the air and seaports and enhance trade facilitation (World Bank, 1998, January).

#### **4.6 Port Tariff**

The current port tariffs were revised in 1997 and are applicable in both Tema and Takoradi port. The tariff rates are denominated in the local currency, the Ghana Cedi, and the USD. Most of the Cedi denominated rates have been variously revised especially between 1998 and 2000 as a result of rapid changes in the exchange rate (See Appendix G). The tariff consists of the following items:

- ❖ Vessel Handling Dues including Ship Dues, Harbour Rent, Port Dues on Cargo, Light Dues, Pilotage Dues, Towage, Mooring and Berthing, Shifting Charges, Anchorage Charges
- ❖ Port Services such as Supply of Fresh Water, Under-Water Services, Fire Fighting Equipment, Ambulance
- ❖ Stevedoring, Cargo Handling, Labour Rates
- ❖ Shore Handling, Lighterage
- ❖ Hire of Cranes and other Equipment
- ❖ Slipway and Dry Dock Charges

##### **4.6.1 Operational efficiency of Tema port**

The Operational efficiency of the port is obtained by using the following equations:

$$\text{Operating Ratio} = \frac{\text{Operating Expenses}}{\text{Operating Revenues}} \times 100 (\%)$$

The operating ratio shows the operational efficiency of the port and generally should be less than 70 – 75%.

$$\text{Working Ratio} = \frac{\text{Operating Expenses} - \text{Depreciation Expenses}}{\text{Operating Revenues}} \times 100 (\%)$$

The working ratio shows the efficiency of the routine operation of the port and generally should be less than 50 – 60%.

Table 4.2 shows the Operating Ratio of Tema Port from 1993 to 1999. The Operating Ratio has been around 50 – 60%.

Table 4.2 Operating Ratio of Tema Port

Year	1993	1994	1995	1996	1997	1998	1999
Tema Port	59	58	63	60	49	52	50

Table 4.3 shows the working ratio from 1993 to 1999. The Working Ratio of Tema Port has been around 40%.

Table 4.3 Working Ratio of Tema Port

Year	1993	1994	1995	1996	1997	1998	1999
Tema Port	41	38	39	43	38	41	41

#### 4.6.2 Container cargo through Tema port

Container cargo relates to cargo shipped into or out of the country in containers through the port. Analysis of the revenues and costs from 1995 to 1999 is provided in Table 4.4.

Table 4.4: Container Cargo Revenue and Cost Analysis, Tema Port (1995-99)

REVENUE & COST	1999 ¢ Million	1998 ¢ Million	1997 ¢ Million	1996 ¢ Million	1995 ¢ Million
Revenue	50,111	36,252	28,099	20,650	12,852
<i>Trend Analysis</i>	38%	29%	36%	61%	
Cost					
Staff Cost	3,766	3,071	2,155	1,342	1,067
Maintenance	4,750	4,610	2,407	3,427	793
Fuel, Water, Power	882	771	431	582	380
Depreciation of Fixed Assets	5,588	5,421	4,175	4,811	4,732
Administrative Expenses	307	318	323	222	120
Total Cost	15,292	14,191	9,491	10,385	7,092
<i>Trend Analysis</i>	8%	50%	(9)%	46%	
Net Operating Profit	34,819	22,060	18,608	10,265	5,760
Net Profit to Turnover	69%	61%	66%	50%	45%
<i>Trend Analysis</i>	58%	19%	81%	78%	

Source – GPHA

In 1999 the total volume of container cargo rose to a record high of 197,900 TEUs against 102,809 TEUs in 1995; an increase of about 92%. The associated revenue also increased from ¢12,852 million in 1995 to ¢50,111 million in 1999; an increase of about 290% over the five-year period. Stevedoring (charged in USD) alone accounted for about 65% of the total revenue. The highest movement of the revenue was in 1996 where the revenue recorded a 61% increase over that of 1995 (i.e. from ¢12,852 in 1995 to ¢20,650 in 1996). The revenue trend decreased to 36% in 1997 and 29% in 1998 but picked up again at 38% in 1999 over that of 1998.

The total expenditure also increased from ¢7,092 million in 1995 to ¢15,292 million in 1999; an increase of about 115.6% for the five years. The single largest cash expenditure



item during the period was in the area of maintenance of plant and machinery. The maintenance bill rose from ¢793 million in 1995 to ¢4,750 million in 1999.

Over the five-year period (i.e. from 1995 to 1999), the operating profit grew by more than 505.5%; increasing from ¢5,750 in 1995 to ¢34,819 million in 1999. The ratio of net profit to turnover fluctuated from 45% in 1995 to 69% in 1999. These fluctuations and other wide disparities in the yearly net operating profit percentages during the period were largely due to:

- Increase in throughput during the period
- Low tariffs in 1995 and 1996
- Increase in the tariffs from 1997
- Sharp depreciation in the cedi especially in 1999.

Table 4.5: General Cargo Revenue and Cost Analysis, Tema Port (1995-99)

REVENUE & COST	1999 ¢ Million	1998 ¢ Million	1997 ¢ Million	1996 ¢ Million	1995 ¢ Million
Revenue	20,222	20,984	13,539	10,008	6,182
<i>Trend Analysis</i>	-4%	55%	35%	62%	
Cost					
Staff Cost	9,768	7,596	4,714	3,444	2,436
Maintenance	1,841	2,520	1,399	1,413	382
Fuel, Water, Power	1,347	973	791	531	400
Depr. of Fixed Assets	3,725	3,614	2,783	3,208	3,154
Administrative Expenses	797	786	707	570	273
Sub Total	17,479	15,489	10,394	9,166	6,646
<i>Trend Analysis</i>	13%	49%	13%	38%	
Net Operating Profit	2,743	5,495	3,145	842	(464)
Net Profit to Turnover	14%	26%	23%	8%	-7%
<i>Trend Analysis</i>	-50%	75%	274%	282%	

Source – GPHA

### **4.6.3 General Cargo through Tema Port**

In 1999 the total volume of General Cargo rose to 790,646 tons as against 551,910 tons in 1995; an increase of about 43.3%. The associated revenue also increased from ₵6,182 million in 1995 to ₵20,222 million in 1999; an increase of about 227% over the five-year period. The highest movement of the revenue was in 1996 where the revenue recorded a 62% increase over that of 1995 (i.e. from ₵6,182 million in 1995 to ₵10,008 million in 1996). The 1999-revenue figure of ₵20,222 showed a decrease of 4% over that of 1998, which recorded total revenue of about ₵20,984 million.

The total expenditure also increased from ₵6,646million in 1995 to ₵17,479 million in 1999; an increase of about 161% over the five-year period. The single largest expenditure item during the period was staff cost. The staff cost rose from ₵2,436 million (i.e. about 37% of total cost) in 1995 to ₵9,768 million (i.e. about 57% of total cost) in 1999.

Over the five-year period (i.e. from 1995 to 1999), the operating profit grew by nearly 900%; increasing from a loss of ₵464 million in 1995 to a profit of ₵2,743 million in 1999. The increase in the net operating profit over the period, were due mainly to the effects of stevedoring revenue (charged in US Dollars), the sharp depreciation of the cedi and the increase in throughput. The fluctuations in the yearly net operating profits to turnover were however, due to the low tariffs in 1995 and 1996. The 1999 operating profit showed a 50% drop off the 1998 level of ₵5,495. The drop in the 1999 operating profit was due to the 4% drop in the revenue and the increase of staff cost of about 29% over that of 1998.

### **4.7 Notes on the Financial Statements of Port of Takoradi**

These notes represent extracts on the accounting year that ended 31 December 1999. The financial statements of the port of Takoradi have been prepared under the historical cost

convention as modified by the internal revaluation of certain fixed assets and liabilities as vested into or transferred to the new corporate body, the GPHA from the 3 erstwhile organisations since the merger in 1986. The assets and liabilities represent those taken up for the accounting year under discussion since 1992.

With the exception of office furniture and equipment, all other fixed assets taken over from the GPA are stated at cost. The office furniture and equipment of the GPA were written off prior to the take over. Depreciation is provided on a straight-line basis at rates calculated to write off the cost of fixed assets over their estimated useful lives from the date of purchase. The principal depreciation rates used by the port of Takoradi are presented in Table 4.6.

Table 4.6 Depreciation Rates for Port of Takoradi.

ITEM	RATE
Building and Port Infrastructure	4%-10%
Port Plant and Equipment	5%-13%
Crafts and Launches	4%-5%
Motor Vehicles	17%-25%
Office Equipment	10%-33.33%
Household Equipment	33.33%
Workshop Equipment	33.33%

Source: GPHA

The depreciation rates quoted for the port of Takoradi seem to be fairly reasonable for most of the items covered. The exceptions are those for office, household and workshop equipment. They seem rather to be on the high side. There could be a reasonable explanation for this based on the history of the organization and assets that were carried from the previous entities into the merger and the need to write them off within their useful economic life.

Capital work-in-progress represents uncompleted capital development jobs and capital items in transit. Valuation is based on direct cost of materials and labour expended on the jobs to date. Stocks are valued on the basis of the lower cost and net realisable value while debtors is stated after providing for general and specific debts considered to be doubtful.

Foreign exchange translations are done for cost of services received in either USD or Ghana cedi as indicated on the port tariff. Transactions denominated in foreign currencies (USD) are translated into cedis at the rates of exchange ruling at the dates of the transactions. Balances held in foreign currencies at hand or at the foreign account of GPHA in London are translated into cedis at rates of exchange prevailing at the date the Balance Sheet is prepared. All exchange rate differences arising as a result of these transactions are reflected in the Operating Statement.

The following information and data from the MMA is included to serve as a basis for some form of comparison between the depreciation rates and valuation methods used in ports in Ghana and Malta.

#### **4.8 Notes to the Financial Statements of the Malta Maritime Authority**

The following are the exact extract from the Notes to the Financial Statements of the MMA under the title “Principal Accounting Policies – Tangible Fixed Assets”.

On 1 January 1992, the MMA took over by virtue of the MMA Act the legal title of the property and undertakings owned by the Government and used by it for the operation of any Port within Malta. The transfer was extended to all property and assets with the exception of wharves, quays, piers and jetties whose ownership remain that of the Government, but the use, administration and operation are vested in the MMA. Some of the types of cargo handling equipment available for use include tractors, trailers, forklifts and cranes.

As no historical cost information was available on the date of transfer, the MMA commissioned detailed independent valuations and all other additions are shown at cost. International Accounting Standards were followed to arrive at the value for depreciation. Depreciation is calculated to write off the value of tangible fixed assets other than freehold land and capital works in progress less any anticipated residual value by equal annual installments over their estimated useful lives. The annual rates of depreciation used by the MMA for accounting purposes are set out in Table 4.7.

Table 4.7 Depreciation Rates for MMA

ITEM	RATE
Office furniture and equipment	15%-20%
Port and marina improvements	20%
Port infrastructure	5%
Plant and machinery	15%-20%
Motor vehicles	20%
Buildings	5%

Source: MMA

Port assets are valued on the historical cost basis, less accumulated depreciation. The value of the fixed assets includes all associated costs including transport, installation and professional fees (which can be substantial in port infrastructure projects). Assets taken over are valued by appointing independent experts.

The depreciation rates and valuation methods for the port of Takoradi and the MMA seem to be fairly similar.

The information that follows gives an idea of the cost, economic life and valuation process used for various types of port cargo handling equipment. This could ultimately affect the valuation of port assets.

#### **4.9 The Kalmar Group**

The Kalmar Group is a global provider of almost 25% of all handling equipment and services to ports and terminals in the world. It is the largest supplier of mobile equipment, trailers and heavy-duty machinery for handling containers at ports and terminals. It also provides value-added services in terms of financial arrangement for purchase of equipment, supply of spare parts, maintenance, upgrading and exchange of trailers and other equipment and rentals of various machines with a just-in-time strategy.

A recent restructuring following the merger between Kalmar and Sisu terminal systems have led to better performance and service for their valued customers especially in the pre-owned equipment business. Customers are encouraged to sell pre-used equipment back to Kalmar or deliver them to be revitalized. Quotations on the value of any pre-owned equipment is given within 48 hours of the assessment visit by a team from Kalmar. Pre-owned equipment is reconditioned at the factory in Lidhult, Sweden or Tampere, Finland. They are functionally tested and then sent with a limited warranty to customers in ports around the world (Kalmar, 1999).

The cost of each new machine manufactured at Kalmar is based on the specific demand for a particular type of equipment and the range of functions required by the customer or end user. Valuation of the cost of a new machine at Kalmar is thus based on the specific manufacturing instructions received for a particular type of equipment and the expected economic life of the machine.

Valuation of the cost of a reconditioned machine or pre-owned equipment is also based on the state of the machine at the time of the refurbishment, specific demands on the type and range of functions and the period of warranty to be offered.

## **CHAPTER 5**

### **CONCLUSIONS AND RECOMMENDATIONS**

Ports play a significant role in maritime transport and contribute immensely towards international trade. Ships carry over 90% of world trade in volume and about 80% in value. Goods and services are received at ports before they are transferred to consumers at the final destination. Ports contribute substantially to the national economy through provision of direct, indirect and induced employment. Activities leading to value-added on goods and services in ports, industries, transport and commercial activities are equally essential for the growth of the national economy.

As indicated in chapter two, there are three classical types of port ownership and operation and these are the Landlord port, Tool port and Service port. Ports perform different functions based on management and administration and ports could also be identified as either private or public. The need to reduce state involvement and control have led to increasing participation of the private sector in port activities. Various types or methods of privatisation are available but the most widely used for the port sector are BOT, joint venture, outright sale of assets and leases.

The mode of investment in a port could determine the nature of privatisation. In most developing countries investment rate is low so in the event of a lease the amount offered for a particular asset in the port could be low though the government could aim at a higher price. It should be noted that each port have a captive traffic at least for the import and export to that country and an investor could be free of competition for such a market.

Where foreign capital is attracted there could be a positive effect on the national economy and the overall growth and development of a country.

From the discussion in chapter three, it is clear that a greater proportion of port assets, especially infrastructure and superstructure are usually owned by the government through the port authority or some other form of public organisation such as municipal or city council, public agency or government department. The private sector may own mainly cargo handling equipment at the port. Human resource is a vital non-material asset of the port essential for provision of efficient services but it has been difficult to equate the value to that of other material port assets during any valuation exercise. The value of management staff and skilled manpower do not appear in valuation of port assets due to the difficulty in deciding the monetary value to place on them. Training of manpower resource could be seen as an investment and the value of skilled operators and experienced managers should have an impact on valuation of port assets.

Various alternative international conventions exist for the valuation of port assets. The advantages and difficulties in using some of them are summarised here. Prudence has the advantage of using the lowest reasonable value but there is the need for caution. Objectivity is based on reliable facts and could have a positive effect on both revenue and expenditure. Money measurement uses monetary value of assets and cannot consider skilled manpower and human resource. Historical cost is easy, simple and objective as it is based on cost of an asset but the disadvantage is that inflation could affect the value of land and cash in different proportions. Stability assumes no change in currency value but globalization and the position of the USD is a potent force in world economy. The current value is based on the current or replacement cost for an asset.

Valuation of port assets could require the use of either a specific international valuation convention or a combination of two or more of them depending on the purpose of the valuation. The two main categories of international valuation conventions that are applied most frequently are historical cost and current cost system. Historical cost is based on the principle of depreciation and it is simple, objective and easy to use while current cost is



more complicated but solves the problem of inflation associated with historical cost. The use of any valuation convention or method for valuation of port assets could affect the efficiency of a port.

Asset valuation practice could be different for ports in the same country. The port of Takoradi in Ghana, uses the historical cost convention on straight-line depreciation basis just as the Malta Freeport of the MMA but the port of Tema also in Ghana applies the current cost accounting convention or replacement cost (earning capacity) method for valuation of assets.

Valuation of port assets depends on the type of port, nature of assets available to the port and the need to determine replacement value through depreciation. Asset valuation in ports is usually a procedure to determine the book value of port assets on the balance sheet. Port asset valuation could be done to enable the replacement, lease or sale of equipment or other port assets to be carried out. Port asset valuation is also essential during port privatisation process to enable the state, the port authority and the potential private investor to have an idea of the value of port assets. Valuation of port assets during privatisation could lead to accumulation of funds not only for the port but also for implementation of national economic projects.

The operational and financial data presented in chapter four shows the impact that valuation of port assets could have on the financial performance of the port and the national economy. Port asset valuation could lead to proper management and utilisation of available assets and inputs, increased availability or otherwise of cash flow for day-to-day operation of port services, cash reserves for the replacement of obsolete equipment and foreign exchange for the improvement of GNP and BOP in the national economy. The operational efficiency for the port of Tema for the period 1993-99 is depicted by the operating ratio of an average of 59% (Table 4.2) and the working ratio of average of 40% (Table 4.3) for the same period. Both are within the range for efficient financial performance of the port.

As has been indicated in chapter four, there was an increase in the revenue and expenditure patterns (stated in Ghana cedi) for the port of Tema during the period 1995-99 (Table 4.4 and 4.5). The increase in revenue was due to an increase in throughput and a corresponding increase in stevedoring charges (in USD) and a very sharp depreciation of the rate of the Ghana cedi against the USD. The increase in expenditure was due to increased cost of maintenance of plant and equipment and staff cost. The net operating profit, net profit to turnover and trend analysis, all showed huge increases as a result of the same reasons.

Based on the primary and secondary data presented, the analysis made and the conclusions reached the following recommendations are made to improve the practice of valuation of port assets.

### **1. Statistical Database**

Ports should have a comprehensive and up-to-date statistical database for all port assets to ensure that any decision on the valuation of port assets will be based on correct and current information. Record keeping and inventory of port infrastructure, superstructure and equipment, maintenance schedules and replacement procedures are essential for proper valuation of port assets. Management Information Systems (MIS) for ports should be for both operational statistics on cargo handling and financial analysis.

### **2. Traffic forecasting**

Traffic forecasting should be effective and reliable to ensure that available resources are able to match projected traffic. In situations where there is the need to increase input to match a required output, the additional resource should be adequate for the need and waste should be avoided. Consultations with the various sectors within the port and other stakeholders such as ship owners, shippers and other interested parties are vital for a reliable traffic forecast. National economic projections, growth of international trade and

a safety factor in terms of deviation from the norm could be essential in arriving at an effective and reliable traffic forecast.

### **3. Port restructuring**

Port policy reform or restructuring to encourage greater private sector participation in port operation should be handled in a matured manner. Effective management and not just Privatization could be the key to improved services in ports. The situation of each port should be looked at critically and steps taken to take advantage of reform programmes for modernisation and improved services.

### **4. Choice of valuation convention**

The choice of a particular valuation convention should be made with care. Though various international valuation conventions exist for the valuation of port assets, a careful study should be carried out to ensure that the method used is suitable and efficient. Weaknesses inherent in the specific valuation method should be prevented to achieve positive impact on the financial performance of the port and on the national economy.

### **5. Human resource as port asset**

Efforts should be made to incorporate human resource into assets of ports so that they can form part of the basis for valuation of port assets. Previous methods for valuation of port assets did not consider inclusion of human resource due to the difficulty in deciding whether to place them on port assets or not. Efficient management, skilled operators and other staff and manpower requirements are critical for the success of the development of ports. The available human resource of a port could form a vital component of the valuation of port assets.

## **6. Further research**

Further in-depth analysis could be made into the area of valuation of port assets. The current study was handicapped by time constraints, limitation in scope of cover and problems with the data collection process. A new study at a later date could unearth more information to improve upon the practice of asset valuation in ports.

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## APPENDIX A

### HANDLING EQUIPMENT AT PORT OF TAKORADI

EQUIPMENT TYPE	CAPACITY
Demag mobile crane	90T, 30T, 14T
Kalmar RoRo Tractor	35T
Sisu RoRo Tractor	32T
Mafi RoRo Tractor	25T
Buisca RoRo Trailer	50T
Mafi RoRo Trailer	40T
Forklift Trucks	3T, 4T, 5T, 8T, 15T, 16T, 28T, 42T
Stot & Pits Portal, Overhead crane	3T, 15T
Metalna Portal crane	15T

### FLOATING CRAFTS

Berthing tugboat  
Buoy laying barge  
Lighter  
Lighter tug boat  
Mooring buoy  
Mooring launch  
Personnel launch  
Pilot boat  
Pilot launch  
Pontoon  
Speedboat  
Water barge

## APPENDIX B

### AVAILABILITY AND UTILIZATION REPORT - PORT OF TAKORADI (JANUARY-APRIL 2001)

#### JANUARY 2001

Equipment type	Quantity	Availability	Availability %	Utilization	Utilization %
3T Forklift	15	14	93	11	78
4/5T Forklift	27	25	93	20	80
8-16T Forklift	6	4	67	4	100
28-42T Forklift	5	5	100	5	100
Mobile crane	3	3	100	3	100
RoRo Tractor	16	11	69	11	100
RoRo Trailers	30	30	100	30	100

Source: GPHA

#### FEBRUARY 2001

Equipment type	Quantity	Availability	Availability %	Utilization	Utilization %
3T Forklift	15	14	93	10	71
4/5T Forklift	27	27	100	25	93
8-16T Forklift	6	6	100	6	100
28-42T Forklift	5	3	60	3	100
Mobile crane	3	3	100	3	100
RoRo Tractor	16	11	69	10	91
RoRo Trailers	30	28	93	28	100

Source: GPHA

#### MARCH 2001

Equipment type	Quantity	Availability	Availability %	Utilization	Utilization %
3T Forklift	15	14	93	14	100
4/5T Forklift	27	25	93	25	100
8-16T Forklift	6	5	83	5	100
28-42T Forklift	5	5	100	4	80
Mobile crane	3	3	100	2	66
RoRo Tractor	16	11	69	11	100
RoRo Trailers	30	30	100	30	100

Source: GPHA

APRIL 2001

Equipment type	Quantity	Availability	Availability %	Utilization	Utilization %
3T Forklift	15	14	93	14	100
4/5T Forklift	27	27	100	25	93
8-16T Forklift	6	6	100	5	83
28-42T Forklift	5	4	80	4	100
Mobile crane	3	3	100	3	100
RoRo Tractor	16	14	88	14	100
RoRo Trailers	30	28	93	28	100

Source: GPHA

## APPENDIX C

### SHIPPING TRAFFIC - PORT OF TAKORADI (1990-2000)

<b>SHIP TYPE</b>	1990	1991	1992	1993	1994	1995
General cargo	139	138	157	187	129	102
RoRo	55	46	47	58	99	68
Container (cellulose)	3	9	14	38	40	52
Container (Multipurpose)	63	71	57	43	58	87
Tanker	32	17	40	63	41	15
Bulk cargo	64	73	83	88	97	88
<b>TOTAL</b>	<b>356</b>	<b>354</b>	<b>398</b>	<b>477</b>	<b>464</b>	<b>412</b>
Others	0	0	0	32	57	70
Quarantine anchorage	0	0	0	71	53	41
<b>GRAND TOTAL</b>	<b>356</b>	<b>354</b>	<b>398</b>	<b>580</b>	<b>574</b>	<b>523</b>

Source: GPHA

<b>SHIP TYPE</b>	1996	1997	1998	1999	2000	2001
General cargo	83	86	87	79	67	
RoRo	98	113	114	135	104	
Container (cellulose)	53	55	80	78	103	
Container (Multipurpose)	88	91	89	92	60	
Tanker	13	25	25	32	45	
Bulk cargo	74	84	89	96	106	
<b>TOTAL</b>	<b>409</b>	<b>454</b>	<b>484</b>	<b>512</b>	<b>485</b>	
Others	96	87	48	90	0	
Quarantine anchorage	68	116	40	36	0	
<b>GRAND TOTAL</b>	<b>573</b>	<b>657</b>	<b>638</b>	<b>638</b>	<b>485</b>	

Source: GPHA

## APPENDIX D

### CONTAINER TRAFFIC - PORT OF TAKORADI (1989-2000)

<b>PARAMETER</b>	1989	1990	1991	1992	1993	1994
Import – stuffed (TEU)	1398	2179	1834	2000	2781	2703
Import – empty (TEU)	1457	4588	2596	2113	5744	5650
<b>TOTAL IMPORT</b>	<b>2855</b>	<b>6767</b>	<b>4430</b>	<b>4113</b>	<b>8525</b>	<b>8353</b>
Export – stuffed (TEU)	2669	5143	3634	3072	10411	6709
Export – empty (TEU)	532	1523	0166	946	1543	1681
<b>TOTAL EXPORT</b>	<b>3201</b>	<b>6666</b>	<b>4700</b>	<b>4018</b>	<b>11954</b>	<b>8390</b>
<b>GRAND TOTAL</b>	<b>6056</b>	<b>13433</b>	<b>9130</b>	<b>8131</b>	<b>20479</b>	<b>16743</b>

Source: GPHA

<b>PARAMETER</b>	1995	1996	1997	1998	1999	2000
Import – stuffed (TEU)	2340	3450	5328	5994	4573	4660
Import – empty (TEU)	3134	5480	6586	6643	9957	10727
<b>TOTAL IMPORT</b>	<b>5474</b>	<b>8930</b>	<b>11914</b>	<b>12637</b>	<b>14530</b>	<b>15383</b>
Export – stuffed (TEU)	3859	12277	14579	14626	18082	22914
Export – empty (TEU)	1415	1814	2650	2080	1738	1504
<b>TOTAL EXPORT</b>	<b>5274</b>	<b>14091</b>	<b>17299</b>	<b>16706</b>	<b>19820</b>	<b>14418</b>
<b>GRAND TOTAL</b>	<b>10748</b>	<b>23021</b>	<b>29143</b>	<b>29343</b>	<b>34350</b>	<b>39805</b>

Source: GPHA

**APPENDIX E**

**BALANCE SHEET AS AT 31 DECEMBER 1999**

	\$ 000	PRESENT QUARTER \$ 000	PREVIOUS QUARTER \$ 000
FIXED ASSETS		43,837,537	43,791,528
 <b>CURRENT ASSETS</b>			
STOCKS	4,517,545		4,966,781
DEBTORS & PRE-PAYMENT	5,870,723		6,500,066
CASH & BANK BALANCE	404,379		592,095
	.....		.....
	10,792,647		12,058,942
 <b>LESS: CURRENT LIABILITIES</b>			
CREDITORS & ACCRUALS	(4,258,379)		(4,595,318)
NET CURRENT ASSETS		6,534,268	7,463,624
INTER GROUP BALANCES		(41,312,386)	(34,502,760)
		.....	.....
NET ASSETS		9,059,419	16,752,392
 <b>FINANCED AS FOLLOWS</b>			
GOVERNMENT FUNDS		1,200	1,200
OUTSIDE SHAREHOLDERS INCOME SURPLUS		9,058,219	16, 751,192
		.....	.....
		9,059,419	16,751,192

## APPENDIX F

### CASH FLOW STATEMENT FOR THE FOURTH QUARTER ENDED 31 DECEMBER 1999

	PRESENT QUARTER \$ 000	PREVIOUS QUARTER \$ 000
NET CASH FLOW OPERATING EXPENSES	3,337,071	4,574,917
RETURNS ON INVESTMENT		
INTERESTS RECEIVED	6,786	5,643
<b>INVESTMENT ACTIVITIES</b>		
PURCHASE OF FIXED ASSETS	(1,428,150)	(1,132,652)
NET CASH INFLOW (OUTFLOW) BEFORE FINANCING ACTIVITES	1,915,707	3,447,908
TRANSFER TO HEADQUARTERS	(2,103,423)	(3,075,915)
INCREASE (DECREASE) IN CASH EQUIVALENT	187,716	371,993

## APPENDIX G

### AVERAGE EXCHANGE RATES - GHANA CEDI TO US \$ (1982-2001)

YEAR	CEDI EQUIVALENT OF US \$
1982	2.75
1983	—
1984	37
1985	55
1986	108
1987	162
1988	200
1989	266
1990	323
1991	363
1992	443
1993	658
1994	963
1995	1,194
1996	1,619
1997	2,014
1998	2,300
1999	2,615
2000	6,760 (DECEMBER)
2001	6,780 (JANUARY) 7,030 (JULY)

Source: Various



## **APPENDIX H**

### **QUESTIONNAIRE**

#### **Port Authority, Terminal Operator**

1. List the fixed assets of the port or terminal.
2. List the types and safe working load (SWL) of plant and equipment used.
3. Indicate year built, purchased or rehabilitated and the cost of equipment.
4. List the floating craft available to the port.
5. What is the cost per square metre of land, quay and storage shed?
6. What accounting method and rates are used for depreciation?
7. Mention the procedure and reason for valuation of port assets.
8. Provide annual balance sheet and cash flow statement.

#### **Kalmar Group, Lidhult, Sweden**

1. What are the types, SWL and cost of lifting equipment manufactured?
2. Which ports and countries request for or buy equipment from you.
3. What is the economic life of manufactured equipment?
4. What types of pre-owned equipment (POE) are available?
5. Which ports or countries request for POE.
6. What is the SWL of handling equipment before and after rehabilitation?
7. What is the average cost of rehabilitated equipment?
8. What is the economic life of POE after rehabilitation?