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PORT MODERNIZATION:
A pyramid of interrelated challenges

This document has been prepared by the Transport Unit of the International Trade, Transport and Financing Division (ECLAC). Comments or queries should be addressed to Sidney Rezende (e-mail: srezende@eclac.cl).

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CONTENTS

| | Page |
|---|-------------|
| ABSTRACT | 1 |
| DOCUMENT PRESENTATION | 3 |
| CHARACTERISTICS OF THE COURSE | 4 |
| | |
| I. FIRST MODULE: STRUCTURAL CHANGES | 5 |
| A. INTRODUCTION..... | 5 |
| B. THE GLOBAL ECONOMY..... | 6 |
| 1. Markets in a global economy..... | 6 |
| 2. Ports in the global economy..... | 8 |
| C. SERVICES..... | 9 |
| D. TECHNOLOGIES..... | 14 |
| 1. Capital and labour..... | 14 |
| 2. Limits of the global market..... | 17 |
| 3. Port productivity..... | 20 |
| E. CONCLUSIONS..... | 22 |
| | |
| II. SECOND MODULE: PRIVATE PARTICIPATION | 23 |
| A. PARAMETERS..... | 23 |
| 1. Pressures for private participation..... | 23 |
| 2. Pressures against private participation..... | 25 |
| 3. Identity and action of pressure groups..... | 25 |
| B. MARKET MECHANISMS IN A GLOBAL ECONOMY..... | 26 |
| C. MEASURES GOVERNMENTS SHOULD ADOPT TO ENCOURAGE PRIVATE PARTICIPATION..... | 32 |
| 1. Legal framework..... | 32 |
| 2. Transfer of control of port operations..... | 36 |
| D. RESULTS OF PRIVATE PARTICIPATION..... | 38 |
| 1. Economic results..... | 38 |
| 2. Political results..... | 39 |
| 3. Social results..... | 40 |
| E. CONCLUSIONS..... | 41 |

| | |
|---|-----------|
| III. THIRD MODULE: MARKET-BASED PORT LABOUR REFORM .. | 42 |
| A. THE NEED FOR MARKET BASED PORT-LABOUR REFORM | 43 |
| 1. Technological progress..... | 44 |
| 2. The role of macroeconomic policies and the advent of a global economy | 46 |
| 3. Private participation in public-sector ports | 47 |
| 4. Mandate..... | 48 |
| B. STRUCTURE OF MARKET-BASED PORT LABOUR REFORM . | 49 |
| 1. Objectives..... | 49 |
| 2. The institutional framework..... | 51 |
| C. CONSEQUENCES OF MARKET-BASED PORT LABOUR REFORM | 53 |
| 1. Economic | 53 |
| 2. Political | 54 |
| 3. Social | 55 |
| D. CONCLUSION..... | 56 |

ABSTRACT

The course entitled *Port Modernization: a pyramid of interrelated challenges* seeks to encourage participants to analyse a series of factors affecting the administration and operation of ports. Its central aim is to generate a consensus among the port community on the need to restructure the port system. The course is divided into three modules:

I. Structural changes: this module analyses structural changes in markets, services, technologies and the legal framework, which are affecting trade and port activities. The products that pass through ports must compete in the global economy, and port services have to reflect international levels of productivity and cost. In that sense, port operations need to be optimized and carried out in an integrated fashion so as to become systems. The move towards "systems optimization" provides a global, as opposed to a fragmentary view of port activities in the logistic and physical distribution chain.

II. Private-sector participation: The initiative for private-sector participation in public-sector ports usually arises from one or more of the following factors: competition from other ports, or competition between customers; Government political platforms; public outcry against high port charges; low productivity; theft and unavailability of the merchandise. Any entity providing port facilities and services should operate in a commercial environment governed by market mechanisms. Governments should adopt a legal regime combining deregulation and decentralization with antimonopoly laws and specific legislation defining private-sector participation.

III. Market-based port labour reform: the main aims of the reform are to expose the labour sector to market mechanisms so as to increase the speed with which workers respond to market signals, to their own benefit as well as that of users and private terminal operators. To achieve this goal, Governments need to deregulate and decentralize the commercial environment and collective bargaining in ports. Government participation in port activities should be confined to setting up a regulatory regime and dispute settlement systems, adopting antimonopoly laws to prevent abuses by private terminal operators or unions, redefining the concept of social equity to guarantee compensation to workers for acquired rights, early retirement and training.

The results of structural changes, private-sector participation and labour reform will be: i) **operational**, because they will attract new investments, foster specialization and improve productivity and competitiveness both within ports and between them; ii) **economic**, because efficient ports foment increased trade and, directly or indirectly, job creation; **political**, because Governments' commercial activities in ports, along with the chances of pressure groups abusing governmental powers, will be reduced, and iv) **social**, because they will facilitate co-operation between dock workers and private terminal operators, thereby ensuring more effective fulfilment of commercial and social goals.

PRESENTATION

In a world where open economies and globalization are becoming the rule, public-sector ports continue to operate largely according to an outdated model: namely, inward-looking development, with strong economic intervention by the public sector, a lot of inefficiency and labour regimes established more in accordance with sociopolitical criteria than commercial ones.

As a result, a significant part of the port system is a long way from responding adequately to the new demands of the world economy. What is more, in many cases the system tends to hinder full integration into the world economy, due to its bureaucracy, operational slowness, inadequate technology and a predominance of vested interests. For countries to be able successfully to follow the path of export-based development, it is essential to intensify port reform and modernization process, which in some cases has already begun.

This document is based on the three studies named below, and is intended mainly to provide didactic support material for participants on the course entitled *Port Modernization: a pyramid of interrelated challenges*. Among other sources, it makes use of information gathered during the 20 times this course was given in 1997 and 1998, in countries of Africa, Latin America and the Caribbean, Asia and West Asia.

The studies mentioned above are the following:

1. *Labour reform and private participation in public sector ports*, Cuadernos de la CEPAL N° 77, 1996, 167 pp.
2. *The restructuring of public-sector enterprises: the case of Latin American and Caribbean ports*, Cuadernos de la CEPAL N° 68, 1992, 148 pp.
3. *Structural changes in ports and the competitiveness of Latin American and Caribbean foreign trade*, Cuadernos de la CEPAL N° 65, 1991, 141 pp.

3. CHARACTERISTICS OF THE COURSE

Objectives: to train course participants to be able to:

- i) identify and understand the main market trends and signals and encourage a commercial outlook; and
- ii) make suggestions and recommendations for ports to facilitate the incorporation of modern technologies and provide a basis for private-sector participation and market-based reform of port labour regimes.
- iii) As a part of this strategy, two regulatory frameworks must be adopted to prevent the abuse of market mechanisms either by the private terminal operators or by the labour sector.

Methodology: Presentations are generally made in question and answer sessions, so as to encourage participants with diverse and often conflicting interests to work together to formulate a port-modernization strategy.

Profile of participants: high-level decision-makers from ministries of transport, finance, economics and planning; port authorities; the main port customers (exporters, importers and carriers); freight forwarders, unions, private investors and others.

Duration of course: the course is divided into three modules of four hours each. It is recommended they be held in the evening after working hours, to ensure attendance by a larger number of participants.

Plan of work: at the end of the first module participants will be asked to analyse a hypothetical case study involving two coastal countries and another landlocked one in order to draw up an infrastructure investment plan which enables the landlocked country to use the ports of its coastal neighbours. After the second module, another case study will be analysed by participants to identify elements of the regulatory frameworks in three countries with different alternatives for private participation in public-sector ports, bearing in mind that all three serve the same hinterland and compete with a private port. At the end of the third module, participants split up to analyse the different ideas and viewpoints put forward during the course, and then they draw up an action plan with concrete recommendations and proposals for modernizing the country's ports.

I. First Module: STRUCTURAL CHANGES

Ports are being steadily transformed by the evolution of markets, services, technologies and regulatory forces. These forces are contemporary expressions of centuries-old trends, and new ways of responding to them need to be found. In a global economy many firms scour the world for least-cost inputs, and this has led to input-to-final product competition and has made it necessary to integrate ports into manufacturing and distribution systems. The physical infrastructure of ports must ensure not only ready access for ocean and land transport operators, but also the reception, dispatch and handling of cargoes at reasonable cost. The regulatory framework for ports should also promote the cost-effective use of infrastructure and machinery, encourage decision-taking by staff in their respective levels and enable port stakeholders to plan future investments.

A. INTRODUCTION

At the beginning of the course, participants are asked to imagine they are living ten years from now and write the headlines of the day's technical press, in each of their respective areas of specialization. Participants are encouraged not merely to refer to

What changes in markets, services, technology and regulations do we need to modernize public-sector ports?

greater cargo volumes, bigger ships and deeper harbours, but instead put forward new services, technologies and legal regimes which respond to future market requirements, and then analyse their projections. The course aims to help participants approach with such issues and provide a basis for responding to these and other questions:

- i) What are the functions of a port?
- ii) What is the difference between international trade and global trade?
- iii) How does the global economy affect port activity?
- iv) What is an efficient port?
- v) Why is electronic data interchange (EDI) becoming increasingly relevant in ports?
- vi) What conditions must be met for a public-sector firm to be a candidate for private participation?

- vii) How much freedom of action do public-sector port managers have?
- viii) What are the consequences of the absence of competition or the threat of bankruptcy in public-sector ports?
- ix) How is the membership of pressure groups made up and what kind of influence do they exert on ports?
- x) Why does the port system need to be decentralized and be given financial autonomy?
- xi) What are the main goals of port labour reform?
- xii) Can employment be guaranteed in a global economy?

B. THE GLOBAL ECONOMY

1. Markets in the global economy

The term “globalization” has been used to refer to the wide-ranging process of commercial, institutional and technological change that is taking place in the international economy. This phenomenon, together with its constituent parts, is not clearly defined, and it is as much a process and driving force as an outcome. For the purposes of this course, “globalization of trade” means the interdependence among factors of production in different countries which results from collective efforts to obtain raw materials, produce components and provide assembly and distribution services for products that will be sold throughout the world.

What is the difference between international trade and global trade?

Interdependence is nothing new. On the contrary, it is part of a long historical process of exploiting comparative advantages. Trade has always been international in the sense of one country’s products being sold in others. However, a global economy alters this historical framework by establishing a basis for the firms and Governments of different countries to take advantage of complementarities between their factors of production to set up joint systems of manufacture, assembly and the distribution of inputs, components and products, thereby creating comparative advantages in a much broader range of activities.

The fundamental difference between international trade and global trade is the **degree of freedom to select** inputs, finished goods, services, capital and labour. The global economy has transformed competition between comparable finished products into **input-to-final product competition** where each input and final product has its own demanding market requirements. Trade in manufactured goods is **incorporating certain aspects of homogenous product exchange**, such as international quality standards and the use of electronic communication systems, to enable a comparison of prices and delivery times of the same type of products made by different manufacturers. In this context, the use of containers and electronic communications has encouraged the standardization of port and carrier services.

In the global economy a growing number of manufactures are no longer produced in one country to be sent to another. Manufacturers seek out least-cost

Where do the inputs used for manufactures come from?

inputs worldwide, producing and assembling products wherever they find the biggest advantages in terms of, for example, labour capacity and access to final markets, which in turn enables them to make higher profits. Decisions on raw material and labour sources, plant location, transport systems, delivery times and distribution channels are all taken on a worldwide basis.

The ability to compare, purchase and employ raw materials, labour services and finished goods worldwide means that equivalent inputs compete with each other, and that no one can escape competition in the global economy. The following examples show how this type of economy works.

How has business evolved over the past 20 years for producers and exporters, and for importers and carriers?

In London you can buy a three-part folding map entitled "London unfolds", which is produced in Mexico. Nissan automobiles from Japan are also produced in Mexico and sold throughout Latin America. This means that in terms of skill, cost, productivity and willingness to innovate, Mexican labour is competing with labour around the world to assemble and produce these and many other products.

In May 1989, the American company Faucet Queens, Inc. offered a kitchen appliance for sale, with the following indication about its origin: "This product and all HELPING HAND products are made to our strict specifications, in the USA, Taiwan, Hong Kong, Korea, Spain or wherever the best price for the consumer is to be found. Whenever possible, the product's country of origin is

indicated". The case of the sisal industry is also worth mentioning. Sisal is a fibre used in the manufacture of carpets and other fabrics. Four Asian countries (Bangladesh, India, Pakistan and Sri Lanka) compete, along with others from Africa, with their respective products on international markets, and any excessive port cost could affect the manufacturers' competitiveness.

2. Ports in the global economy

One of the main functions of a port is to act as an interface between ocean and inland transport and to provide complementary services to loading and dispatch operations, such as storage, processing

What are the functions of a port?

and distribution. In fulfilling these objectives, other physical, commercial, social and strategic aspects have to be taken into account.

The production of apples in Argentina, Chile, New Zealand and South Africa, and their export to the North American market in Chicago, creates competition between their individual production and distribution networks. If in any one of

How does the global trading environment materially affect ports?

them the costs of seeds, fertilizer, water, harvest, road haulage, or port labour or facilities are excessive, or if productivity is low, it could mean the loss of that market.

For example, let us assume the recent decision by the Governments of Argentina and New Zealand to restructure their ports through concession agreements has helped to cut the cost handling their apples (with a negative impact on exports from Chile and South Africa to Chicago). Fruit brokers in Chicago will probably ask growers in Argentina and New Zealand to provide them with greater volumes once they realize that apples can be obtained more cheaply from those countries. The fruit brokers will continue to buy apples from Chile and South Africa, but only to the extent that the volumes from Argentina and New Zealand are insufficient to satisfy market demand. A reduction in the demand for apples from Chile and South Africa could affect the demand for workers on farms and at fruit packing stations, for land and ocean transport services, and for cargo-handling services at ports.

The market signals transmitted from the fruit brokers to apple growers in Chile and South Africa provide an aggregate, indefinite and unanalysed indication that their costs are very high compared to the other two countries. The market-price signal does not indicate that the fall in costs of apples in Argentina and New Zealand is the result of specific changes made by the private sector in their ports. To identify the origin of such costs savings, it is necessary to look beyond the market-price signal and evaluate each input in the entire growing and distribution network of both Argentina and New Zealand, and compare it with the corresponding factors in Chile and South Africa. Thus, market mechanisms signal the need to reduce costs, but they do not identify the areas where costs need to be cut nor the options to achieve that goal.

C. SERVICES

At the beginning of the sixteenth century, the world economy was centred on the port of Venice (Italy). When more precise marine navigation was achieved at the end of that century, the demand for port services in the Mediterranean Sea began to change. As vessels were no longer limited to daylight sailing within sight of the coast, they ceased to view ports as a daily refuge and began to call only at those with larger cargo volumes. Producers and purchasers responded to this change by concentrating cargoes and commercial activities at certain points and, as a consequence, the trend towards port consolidation began some four centuries ago.

Advances in land transport and vessel propulsion and construction, along with the development of high-cost cargo handling equipment, strengthened and accelerated the tendency to concentrate cargoes in central ports, giving rise to a shift away from coastal shipping services and a further expansion of the hinterlands of major ports. Bigger volumes of trade being handled at one port mean that other ports have lost cargoes or volumes have increased, or both. Ports that have lost cargoes must either specialize in certain market segments, become recreational or tourist centres, or die. In short, the world market is moving towards the concentration and specialization of port activity and maritime transport.

Although port efficiency is a concept whose meaning has shifted over the years, it currently relates to the capacity to operate port machinery and installations to their specified performance levels. For example, a crane designed to handle 30 containers per hour has to be operated and maintained to comply with these specifications. However, in the coming decade it is reasonable to expect the

What is an efficient port?

meaning of the term “efficiency” to become much broader to cover productivity increases and cost reductions in all the inputs needed to operate and maintain machinery and infrastructure, including training courses for operators and repair and maintenance staff, along with investments in the field of electronic communications to facilitate customs, freight-forwarding and banking services.

One way of starting to analyse the modernization process in public-sector ports consists of comparing the way they currently operate with the needs of the world trade. To illustrate current modes of operation, the table below presents several real-life experiences going back to 1960, but which could still be occurring today in many ports. The second column describes port services in 2010, assuming the port has adapted to the requirements for competing in the global market.

| 1960 (and still today) | 2010 |
|---------------------------|------|
|---------------------------|------|

i) Fragmentation or Integration

Ports carry out their activities in a fragmented and sequential fashion, with no overall view. If one of the activities in the sequence is not carried out or is delayed, the tasks that follow are held up. Not all port functions are carried out efficiently, but the optimization of any one of them depends not only on the way it is carried out itself, but also on the preceding elements in the sequence: for example, when pilots fail to arrive on time to navigate vessels upstream and these have to wait another 12 hours till the next high tide.

Port services are no longer carried out separately but are integrated into a system that is optimized to reduce costs and raise productivity. Without “systems optimization”, the whole can be much less than the sum of its parts. In fact, inefficiency or low productivity in one activity may be quite acceptable if it results in proportionally higher gains for the system as a whole. The change towards “systems optimization” provides a global, rather than fragmentary view of port activities in the distribution chain. For example, IBM redesigned one of its printers so that the time taken to assembly it was cut from 30 minutes to three. With “systems optimization” it is no longer a matter of designing and building ships, ports, railroads or trucks using

isolated criteria, but rather to design and build distribution systems that include these and many other elements.

ii) Protectionism or market mechanisms

Dock workers are immune from market mechanisms thanks to State subsidies and monopolies. Ports are sheltered from competition by laws banning the entry of merchandise into the country through foreign ports. Stevedores pilfer a shipment of beer bound for North Africa for their own consumption. As they are not exposed to market mechanisms, dock workers have no commercial incentives, unlike private-sector terminal operators and the cargo owners themselves.

Dock workers are exposed to market mechanisms, and their wages and benefits have become tied to the interests of port customers and private terminal operators. This relation enhances the competitiveness of exports on international markets. Port labour representatives can no longer justify their cargo-handling monopoly with the argument that a certain volume of cargo is needed to achieve economies of scale with expensive equipment. Dock workers are the employees of private terminal operators and work with them to solve productivity and cost problems. Terminal operators, for their part, seek to motivate dock workers by offering them training programmes along with market-based wages and benefits.

iii) Inefficiency or productivity

Ports use obsolete institutions and technologies that generate unnecessary costs, in order to avoid any increase in unemployment, marginalization or poverty among dock workers, such as would presumably result from using new technologies or laying off superfluous workers. Moreover, Government funds for buying new

Governments no longer try to control the effects of commercial activities through regulatory structures. These now have market-economy principles built into them, and are used as tools for putting export-oriented economic policies into practice. The signals from these mechanisms lead private terminal

machinery and infrastructure are scarce, and weak port administration has ceded many of its functions to the unions. Previously, about one ton of cargo was handled per man-hour. With the advent of containers, special cranes whose real capacity is 30 units per hour are being used to handle just eight to 12.

iv) Political or economic goals

Port administrations, in their capacity as Government agencies, have to respond to numerous sociopolitical demands from pressure groups. In this context, economic development funds are used to build unnecessary facilities or else they are spent on essential activities but at inflated costs. Inter-governmental agreements are frequently not based on commercial criteria. For example, the Governments of Spain and Honduras agreed to build a refrigerated warehouse in Puerto Cortés (Honduras), at a cost of US\$ 12 million. Due to the lack of refrigerated cargo it had to be rented out at US\$ 180,000 per year, and some of the port's revenues had to be used to meet loan repayments of US\$ 2.3 million per year. There is no separation between Government and private-sector functions to prevent the public sector joining a terminal operator in pursuit of praiseworthy goals that later become distorted.

operators and their workers to negotiate collective agreements and working practices to improve productivity and cut costs. Governments, for their part, use them to adopt, apply and modify the regulatory framework based on commercial criteria.

Governments own the ports, regulate commercial and labour activity and undertake catalyzing investments when the private sector cannot or does not wish to do so. The private sector, for its part, invests and operates port terminals when there is a commercial basis for doing so, and provides services in response to market signals. This dichotomy recognizes, on the one hand, that Governments have an almost inexhaustible capacity to manage stable situations that require policy-making and the adoption of laws and regulations, to administer such regimes and ensure compliance with them. On the other hand, the private sector has the ability to respond to situations that are dynamic, uncertain and speculative from an operational and investment standpoint.

v) Individual or joint view

Ports respond to shipping-line requirements but exert very little control over them. For example, a ship's captain orders the chief engineer to shut down a generator to lengthen cargo handling times so the vessel can spend the night in the port of Alicante, Spain, and refuses to allow the merchandise to be unloaded using the port's cranes. Situations like these generate artificial demand for port machinery and infrastructure and raise costs to customers and the national economy.

Market mechanisms are used to harmonize the needs of shipping lines with the services provided by private terminal operators and their workers. The commercial needs of customers and the social needs of dock workers are not disconnected from the commercial goals of the operators. Official port administrations have the authority to move ships out to anchoring stations if they are not ready for loading and dispatch operations at the wharf, and they ensure shipping lines pay high mooring fees for any delay in starting these tasks. The goals of customers, private operators and workers are complementary and cannot be achieved without a collaborative effort.

vi) Environmental externalization or internalization

As there is no awareness of the harm caused by of pollution, the sanctions set out in the relevant legislation are seldom applied. It is a commonly accepted practice that oil and other liquid residues accumulated in ships' machine room bilges are diluted by turning on the fire hoses, and then pumped overboard at night on the rising or ebb tide for the tidal current to wash them away from the offending vessel.

Government policies and port legislation are linked to public welfare, thus ensuring the marine environment is protected, that there are facilities to collect and clean up spillages of harmful substances, and that pollution-related disputes are resolved harmoniously between the parties. Apart from this, port administrations seek private participation in protecting the marine environment by providing reception facilities and services for disposing of oil residues, refuse and other harmful substances.

D. TECHNOLOGIES

1. Capital and labour

The productivity of capital-intensive services grows faster than labour productivity. Given that the process of incorporating technological innovations is very slow, most ports are over-staffed because of the time it takes to obtain the necessary investment funds, train dock workers and maintenance staff and build infrastructure. In other words, they make less use of capital-intensive services and use more labour than necessary, which prevents them from minimizing costs. In a global economy, ports that are quicker to start using modern (capital-intensive) systems for vessel loading and dispatch and the handling and storage of cargo, will always have the lowest port costs and the shortest mooring times, and be least dependent on labour.

Due to inexact navigation systems, in the fifteenth century the vessels that plied the seas of the Mediterranean, Western Europe and the Baltic, and on to the Red Sea via the Suez land bridge, only sailed by day and kept in sight of the coast. Ports, which were no more than 50 miles apart, were open bays, or had been built in protected waters by local communities or feudal lords making trade possible in a limited variety of products. However, even at that time, some ports began to use manually operated wooden cranes to facilitate vessel loading and dispatch.

What is the role of leading-edge technology in ports?

The advent of the chronometer in 1594, and its use with sextants and navigation charts, allowed vessels to navigate by day and night, and they began only to call in at the ports with the larger cargo volumes, a trend that has accelerated today with long-distance land-transport services. For example in 1997, ten ports in the United States were handling 80% of all cargo, with annual growth of 12%. This was partly due to the growth of trade and partly to the transfer of cargo from smaller ports. The remaining 20% of cargo was handled in 67 ports, with 6% growth per year.

From the beginnings of commercial shipping to the advent of steamships, all types of merchandise (bulk, liquid or dry, semi-processed or manufactured), along with passengers, were transported in the same vessels. The first specialized ocean-going vessel designed specifically for transporting bulk petroleum was built in 1886 -the *Gluckhauf* of 3,070 deadweight tons (DWT)- and the first specialized passenger ship was launched some three years later. One month

after its launch, the *Gluckhauf* arrived at Philadelphia and took on 2,880 tons of oil. As there were no oil barrels or drums to handle, the dock workers at the port staged a violent protest against the vessel and tried to prevent her from loading coal for the return voyage. Nevertheless, bulk oil transport rapidly forced down rates for transport in barrels and drums, and by 1889 more than 40 tankers had been built.

Ocean-going oil transport clearly illustrates the difference between the systems used for homogeneous cargoes and those for manufactured goods carried on regular liners. Not all homogeneous cargoes are transported this way, but when volumes are big enough they switch from regular liners to specialized vessels. In the past, the regular liners that carried manufactured goods did not have to respond to this trend, because of the heterogeneity or diversity of their cargoes and the need to handle and stow each one individually.

However, with the introduction of containers on regular liners, most shipping companies no longer handle or stow manufactured products, and these functions are increasingly carried out at inland cargo terminals and factories, where containers are filled and emptied. The shipping lines themselves handle and stow the containers, not the cargo as such. Their services have become undifferentiated and interchangeable, and they compete only in terms of prices, routes, technologies and delivery dates. Containers have transformed the transport of manufactured goods by regular liners into a neo-bulk transport activity like the transport of automobiles or logs.

For over 100 years any attempt by shipping operators to respond to commercial needs or achieve new economies of scale, was restricted by the slow rate of loading and dispatch of general cargo vessels. For example, a vessel of approximately 10,000 dead weight tons (DWT) would require five days and nights and 125 dock workers per shift to load 10,000 tons of cargo, with similar requirements to unload. The slowness of cargo handling limited the maximum size of general cargo vessels: if more cargoes were to be moved on a particular trade route additional vessels had to be brought into service. Containerization reversed this "more-with-more" requirement by enabling productivity increases to be achieved using fewer vessels.

**Why were containers
seen as an enemy
in the 1970s?**

The transport of general cargoes in containers began on April 26, 1957, when the *Ideal X*, a modified T-2 tanker carrying 58 containers, set sail from

New York to Houston, Texas. Three months later, port handling charges on general cargoes had dropped from US\$ 5.83 to just US\$ 0.15 per ton, and handling times were cut to one fifth. However, many shipowners believed that containers would never come to be used in international trade. These lower costs and faster cargo handling times rendered obsolete the historical limits imposed on vessel dimensions and permitted new economies of scale: going from general cargo vessels of 10,000 DWT, to the *Regina Maersk* of 85,000 DWT and a capacity of 6,000 TEU (20 foot equivalent units).

Developing countries saw the container as a change imposed by shipping companies on routes between industrialized countries to avoid high labour costs and improve port productivity. Following the introduction of containers on routes between industrialized and developing countries, dock-worker unions, labour ministries and central Governments in the latter countries expressed their rejection of this new unit of transport. Most of the arguments deployed alluded to redundancies in the port sector at a time when rates of unemployment and under-employment were high; the inability of port machinery and infrastructure to handle containers; and the shortcomings of inland transport systems to carry the containers between the ports and centres of production and consumption.

The construction of an increasing number of post-Panamax vessels, whose beams are too big to pass through the Panama Canal, shows how far-reaching this question is. The Maersk Company required

Are ports obliged to accept ever larger vessels?

some of the ports it serves to expand their installations, increasing harbour depth and productivity. For example, when the *Regina Maersk* (85,000 DWT and 6,000 containers) called at Singapore, 3,500 containers were handled in 18 hours (194.4 per hour). The shipping line informed other ports that they would at least have to match productivity in the port of Kobe, Japan: namely, 120 containers per hour. Some port operators tried to avoid having to purchase higher capacity cranes and build modern infrastructure, in the hope that naval architects would design smaller-draught vessels and thus save on large investments in cranes.

However, the controversy had actually been resolved in favour of bigger vessels 75 years earlier. In the 25 years between 1898 and 1923, the members of the Permanent International Association of Navigation Congresses (PIANC) tried to negotiate an international treaty to limit vessel dimensions. There were two opposing groups: one argued that trade and naval construction ought to determine the size of vessels. The other lobbied for a treaty to ban the use of

vessels with dimensions greater than 275m length, 32m beam and 9.5m draught. By 1923 it was clear that the first group had prevailed, and since then vessel transport capacity had grown enormously.

2. Limits of the global market

It might seem that the global market has no limits; but this is not the case. Neither the market nor economic agreements between countries can take every situation into account, especially when they relate to public welfare. National priorities inevitably affect the working of the global economy, and geographical, environmental, political and labour aspects set parameters for the global market.

i) Port location and hinterland. Unlike manufacturing and ocean-going transport, ports are tied to a certain hinterland, and, if this is not appropriate vis-à-vis the major producers and markets in the global economy, investment in new facilities and the lowering of charges will only have a minimal effect. The prospect of manufacturers relocating their factories to improve the competitiveness of their products can be seen in the decision by a major US footwear company to shift its production back to South Korea, having set up in Thailand to reduce production costs just two years earlier. The marketing program for the Port of Rotterdam (Netherlands) highlights the fact that 80% of Europe can be reached by road from its facilities within 24 hours; the Port of Antwerp (Belgium), for its part, uses a centrality index to advertise its geographical advantages.

Some ports have locations that give them comparative advantages on oceanic routes. For example, the great-circle distance between the ports of Tokyo (Japan) and Seattle (Washington, USA) is 4,718 miles, whereas the distances between the ports of Tokyo and San Francisco (California, USA) and Tokyo and Los Angeles (California, USA) are 5,135 and 5,433 miles respectively, a difference that gives the Seattle and Tacoma (Washington, USA) a two-day advantage in voyage times from the Far East. These ports have expressed concern that their advantage might be less important with respect to South East Asia, as cargoes from that region could flow just as quickly to the East Coast of the United States via the Suez Canal for subsequent distribution to the entire country by land transport systems. Consequently, growth, stagnation or decay in ports often depends on factors over which they have practically no control.

Changes have occurred in trading routes and in the ports they serve thanks to inter-ocean canals, land bridges and tunnels and bridges. For example, the Panama Canal uses locks for inter-oceanic traffic and restricts maximum vessel size to 60,000 DWT. On the other hand, the Suez Canal a water course formed by excavation, has been gradually widened to currently permit the passage of 190,000 DWT vessels. For the future, the Panama Canal Administration is considering building bigger locks to allow the passage of larger vessels, while the Suez Canal has a dredging program scheduled to increase the dimensions of vessels passing through it to 210,000 DWT by the year 2000. Technological changes that shorten geographical distances between markets reduce the costs of ocean-going freight transport and increase demand in the ports which are best located for these shorter trading routes.

ii) Public welfare. Often the commercial goals of ports ignore wider public welfare issues, but this should not be so. Market forces lead customers to choose more productive and cost-effective ports and private terminal operators to invest in machinery and modern infrastructure, and dock-worker training programs. However, they do not always encourage public-purpose programs to protect the environment or create a safe workplace environment, nor do they promote laws banning the use of child labour, establish minimum wages or preclude discriminatory hiring practices.

In fact, history clearly shows that companies will carry out such undesirable activities unless national policies, laws and regulations expressly prohibit them. Governments should adopt international conventions and implementing regulations that offer incentives (such as the avoidance of joint penalties) for collaboration between port labour, private terminal operators and customers in detecting contraband and protecting the marine environment. For example, the International Convention for the Prevention of Pollution from Ships (MARPOL), has annexes that deal with a variety of topics ranging from the control of oil discharges to the elimination of sewage and garbage.

iii) Political Factors. In a global economy, ports are just as susceptible to market mechanisms as customers are. However, their location at the confluence of trade and financial flows, and the fact that they are sources of employment, may well make them more vulnerable to political pressures. Governments are sociopolitical institutions, and as such it is difficult, if not impossible, for them to resist pressures from national producers and port labour for protectionist measures and subsidies. Such pressures are usually justified in terms of maintaining national productive capacity in strategic areas, job creation and national defense, while commercial targets are put to one side and treated less rigorously.

Governments also make creative use of trade rules to achieve political ends. It is widely acknowledged that phytosanitary regulations respond to both public-health and political agendas. Governments manipulate them for domestic producers to achieve a wide range of goals, such as protection of the national market, and they are not always applied to protect national farmers against diseases. For example, in 1994 there was a rice shortage in Japan, but the Government did not allow imported rice to be carried at low cost in the traditional bulk vessels. Importers had to pack the rice in 50lb sacks and transport them in refrigerated vessels. Apparently, this measure had more to do with a surplus of refrigerator ships in Japan, coupled with a desire to bring the price of imported rice up to the level of rice grown in the country and protect national farmers, than a concern to ensure better hygiene, quality and freshness. The demand for cargo-handling services is often distorted when Governments make use measures of this type.

iv) Labour factors. The history of the union movement in many countries has paralleled the history of dominant political parties. Workers, political parties and Governments use collective bargaining more as a means of redistributing the nation's wealth (the role of taxes) and satisfying political aspirations, than as a means to obtain a market-determined wage, protect workers from unhealthy working conditions and satisfy customers' needs in a timely fashion. This has led to over-staffing, low productivity, high costs and corrupt practices, along with wages and working conditions that do not reflect market conditions.

Dock workers seek to establish and preserve monopoly privileges by means of alliances with elected or appointed Government officials, and political parties. Such alliances expose dock workers to manipulation by political parties, politicians and Governments, and *vice versa*. Politicians and labour leaders are elected as change agents, but they often become advocates of the *status quo* in order to hold on to their jobs. Both group tend to shy away from vote-losing decisions and seek to gain political advantage by criticizing unpopular but sensible innovations. Finally, union leaders are often reluctant to impose discipline on their members to increase productivity and reduce costs, or to report groups of workers that use the ports for personal enrichment.

Although the previous paragraph correctly describes the current situation in ports, things have started to change with advent of the global economy. In this type of economy it is much more difficult and costly to control labour activities than the influence of market mechanisms. This requires the establishment of a basis for port modernization. The labour dimensions of these issues will be analyzed in module three.

3. Port productivity

Improvements in port productivity have usually come from investments in new cargo-handling equipment, such as the use of robotics systems and parallel berths, which permit continuous loading and dispatch operations on both sides of vessels. However, the next increase could be achieved by eliminating the passive nature of cellular vessels during loading and discharge operations, and this should be given careful consideration when projecting the need for new port installations. Preparing a general cargo vessel for loading and dispatch uses most of the crew and begins at sea with the rigging of booms and the partial opening of hatches, but cellular vessels rely entirely on port labour for this preparatory work, and for the loading and dispatch operations themselves. Consideration has been given to vessel design modifications in order to reduce such passivity and enhance port productivity.

For example, each row of containers could have a central hatch through which the gantry cranes would lift or deposit the containers; the containers themselves would be moved to and from the hatch by onboard machinery. This arrangement would reduce the large amount of time used in moving the crane, and would also obviate the need to give cranes longer lifting booms to handle the increasing number of container rows in post-Panamax vessels (wider than 32.31m). The use of continuous cargo-handling systems could lead to the construction of piers in open belt-like structures with just enough space for crane legs, rail lines and loading ramps. MacGregor Navire, the cargo-handling equipment manufacturer is currently studying how to apply this central-space concept.

Computers, information systems and electronic data interchange (EDI) are leading to the total integration of manufacture, transport, warehousing and port operations. This integration, supported by computers and electronic appliances, is assisting in the identification, transmission, storage and processing of container and cargo information. As containers are used in nearly every country's trade, the electronic identification system used must be readable in virtually any port or inland cargo terminal in the world.

EDI requires the use of universally recognized standard messages, and a set of rules was drawn up under United Nations auspices in 1986, known as the United Nations Rules for Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT). In 1987, following a period of testing, the first standardized electronic document or message was adopted. By 1997, the business world had more than 150 universally recognized multi-sectoral

electronic messages, with another 60 under development, for use in a wide range of administrative and commercial activities.

With the progress achieved in standardizing universal electronic messages, together with greater access to personal computers, more user-friendly computer programs and real-time communications over the Internet,

Why is EDI becoming increasingly relevant for ports?

the prospects for intensifying EDI use worldwide are very encouraging. Ports are natural EDI users because of their role as an important link in the physical distribution chain, which means they have to exchange large amounts of information in a timely fashion with the other members of the chain.

The use of EDI in ports could mean resource savings and an improvement in services provided to customers. For example, implementation of the EDI system in a container terminal in Australia in the early 1990s made it possible to substantially reduce employees' idle time and eliminate truck queuing. It also enabled exporters to cut shipping document processing time to 24 hours. In 1995 the authorities at the Chilean port of Valparaíso authorized shipping agencies to submit cargo manifests electronically, which meant an immediate annual saving of about US\$ 75,000 in documentation, internal procedures and reporting.

In a highly competitive global market, no link in the chain can do without tools to save resources, increase productivity, generate new business opportunities and provide better customer-service. If the information flow that precedes and accompanies merchandise is not in harmony with its physical movement, it makes no sense to use faster container ships or speed up the work of the cranes. The merchandise will remain on the quayside or held up at the border unless each and every link in the chain (carrier, freight-forwarder, stevedoring company, container park manager, warehouse agent, and even the customs officer and vet) receive the information they need to carry out their functions at the right place and at the right time.

Direct and third-party EDI systems have already created a variety of novel situations. In 1988, for instance, the International Longshoremen's & Warehousemen's Union (ILWU) was involved in an arbitration dispute relating to the preparation of dock receipts on computers by shipping terminal opera-

tors in Japan, and their electronic transmission to ports on the west coast of the USA for truckers to sign when picking up containers. Just as the container totally transformed ocean-liner transport, the computer and modern communications technologies are going to transform production, distribution and consumption patterns.

E. CONCLUSIONS

For many years the Governments of developing countries assumed responsibility for economic growth in their respective countries, but neither the public nor the private sector was fully trusted. Perhaps the biggest problems stemmed from the permanent instability of State authority, alliances between unions or producer associations and politicians, and domestic economic policies that failed to inspire trust either among businessmen or among citizens. With the globalization or integration of the different players in the world economy, including input-to-final product competition, many Governments have concluded that they cannot continue responding to the pressures of dominant groups, such as dock-workers unions, exporter importer and carrier associations, or their own bureaucracy.

Commercial transactions between nations have given way to a much broader and more integrated worldwide exchange, in which port services are closely interrelated with economic changes and technical progress, inasmuch as they determine what to supply and which markets it is possible to serve. Having said that, to satisfy the commercial needs of port customers and the industry itself, ports need a suitable institutional or regulatory framework that uses market mechanisms to make sociopolitical requirements compatible with commercial goals. The intensity of competition inherent in the global economy, along with the shift from single-activity optimization to the optimization of integrated service systems, and huge investments in modern technologies and facilities aimed at raising productivity and bringing down costs, are forcing Governments to consider that ports institutions must create the basis for private participation and commercially-based labour reform. These topics are addressed in the second and third modules.

II. Second Module: PRIVATE PARTICIPATION

Governments have begun to consider the possibility of private participation in public-sector ports, in view of economic globalization, the role of ports in this process and the need for massive investments in modern technologies and facilities. Public-sector ports can no longer be expected to achieve conflicting goals while using inappropriate technologies, or cutting costs while keeping an over-staffed workforce. Private participation poses a dilemma for Governments: in a global economy they cannot isolate themselves from market laws or abolish them, but neither can they take away the benefits that dock workers enjoy. However, this impasse can be resolved with a regulatory framework that ensures that all port stakeholders (customers, labour force and terminal operators) respond to market forces. **In this module, the fundamental question** is not who should be the owners of port machinery and infrastructure, but what regulatory framework Governments should adopt to ensure that ports carry out their activities under commercial criteria.

A. PARAMETERS

To promote private-sector participation, Governments need to adopt a market-oriented institutional framework. In many developing countries today, port regulations are an heterogeneous set of rules that have grown out of controls imposed on each of the organizations and firms that carry out port activities. Private participation enables Governments to disengage from commercial decisions and concentrate on formulating and implementing laws, regulations and policies in harmony with these rules. Governments should avoid giving subsidies and imposing market restrictions which are no longer effective in bridging the gap between commercial goals and sociopolitical ones. It is essential that the regulatory framework prevent Governments from avoiding commercial goals, confining themselves to exercising weak supervision and allowing pressure groups to set up monopolies. Such practices lead to a situation where: i) all tasks end up labour intensive; ii) resources are allocated in response to political pressures; iii) experience and specialized knowledge are given secondary importance in the selection higher level management staff; and iv) competition and search for profits are replaced by budgets and subsidy systems.

1. Pressures for private participation

Private participation and market-based reform of labour legislation, are the first choice for port customers and private terminal operators. Yet, they are what Governments and the labour movement most resist, due to the presumed political and social costs involved. The initiative to create a basis for private participation in public-sector ports usually comes from one of the following three sources:

- 1) Public outcry against high port costs, low productivity theft, and corruption among Government officials, is generally caused by the non-availability of industrial inputs or products to be sold, or by the fact that prices are above international ones. These factors very often lead to pressures from public opinion in favour of private participation. However, the outcry can be placated, or its credibility undermined, by dealing with the symptoms of the problem rather than its causes. For example, dock workers can be offered economic incentives to improve productivity, but this will not succeed if they can make additional earnings through overtime by working slowly. Dock workers will likely compare their potential incomes in each system and choose the one that gives them greatest benefits. Public outcry may calm down once the symptoms have been dealt with, but the problem of port labour being disconnected from market mechanisms remains.
- 2) Candidates for public office use political platforms as a tool to communicate with citizens and gain their votes, but these do not amount to laws, regulations or contracts between parties whose fulfillment can be enforced. A political platform is a kind of unilateral pact, or statement of intent whose impact usually fails to last beyond the election, even if the candidate promoting it gets elected: it usually lacks support and can easily be cast aside. Having said that, Argentine president Carlos Menem, and former British prime-minister Margaret Thatcher, have made successful use of their respective political platforms to initiate the port modernization process.
- 3) Competition protects port customers from monopolies. Without competition, handing over the running of a public-sector shipping terminal to a private operator would amount to converting a public-sector monopoly into a private one. Governments may try to eliminate competition within and between ports in their respective countries, thereby awarding a monopoly position to each of them, but they cannot control or suppress competition between the products traded through ports on international markets. This competition is what

determines the demand for port services, so the regulatory framework must include measures to protect competition.

Of course, when these three factors -public outcry, political platforms and competition--come together, conditions for private participation are at their best.

2. Pressures against private participation

The main obstacles to private participation arise from four "ghosts" or claims that privatization will:

- i) transfer a public-sector monopoly to private interests;
- ii) socialize losses and privatize profits;
- iii) eliminate the port union movement;
- iv) submit national sovereignty to private interests or, worse still, to the private interests of another country.

Pressure groups stir up these "ghosts" to block any privatization initiative, using: i) the national constitution and other legislation which prohibits private investment and the divestment of public ownership in tidal areas; (ii) job losses caused by laying off surplus labour, which lead to a rise in unemployment with consequent social costs and unrest among the workforce; and iii) the loss of central Government control of ports which is deemed necessary for strategic reasons.

How is the membership of pressure groups made up and what kind of influence do they exert on ports?

3. Identity and action of pressure groups

The public ownership, administration and exploitation of ports has delayed decisions on investments, the negotiation of collective agreements that respond to customers' needs and the exploitation of commercial opportunities. This State of affairs has been taken advantage of by the various pressure groups. Port unions, along with exporter, importer and carrier associations and Government bureaucracy, exert monopoly control over their own activities and influence those of many other sectors. Customers have begun to express discontent at the monopoly control of cargo-handling and storage exerted by

public-sector port administrations and port labour. Each of the groups mentioned, along with many others, exerts such strong pressures on the national port administration, that they can decide hours of work, the cargoes to be considered dangerous, investments to be made, where merchandise can be stored and many other important issues that one would expect to be the exclusive prerogative of management.

To illustrate the complexity of this situation, it is worth recounting what happened recently in the port of Mombassa, Kenya. In order to satisfy International Monetary Fund and World Bank requirements, in August 1996 the national port authority signed a two-year management contract with Felixstowe Port Consultants, which in turn assigned six specialists to the container terminal. The problems they tried to solve through this contract included the elimination of theft, which apparently involved high-level managers, and the maintenance of port equipment. Due to the lack of repair work carried out on gantry cranes by the Kenyan port authority, in September 1997 the consultants reported that they had been unable to achieve the minimum required productivity of 375 containers handled per day, and informed the port authority of their intention to rescind the contract. Despite the Government's efforts to persuade them not to revoke the contract, it was annulled by mutual agreement in February 1998, seven months before it was due to expire.

B. MARKET MECHANISMS IN THE GLOBAL ECONOMY

In most public-sector ports there is practically no need to respond to market signals, and dominant groups participate through political pressure in the selection and use of buildings, machinery and facilities. For example dock-

How are resources in public-sector ports selected and used?

worker unions often reject modern technologies in order to protect their members' jobs, or if the acquisition of new machinery is inevitable they negotiate a contract that allows them to operate it with more workers than necessary. On the other hand, in ports with private participation, the competition inherent in a global economy exposes customers, Governments, workers and private terminal operators to market mechanisms, and this ensures that the selection and use of resources responds to commercial needs.

For many years developing-country Governments paid scant attention to deficits in public-sector ports, in the belief that they would be corrected, for example, by bigger budgetary allocations or higher port charges; or else they were simply seen as an internal cost of the country with no major implications for its foreign trade. However, the deficit caused by this situation affects export and import prices, especially in countries that have adopted export-oriented

macroeconomic policies. While recognizing these effects, it has to be kept in mind that ports are in themselves structurally competitive. In other words, ports provide commercial services which are exposed to market mechanisms, and no Government or private-sector measures can isolate, mitigate or avoid their economic consequences.

To understand market mechanisms, they need to be identified and evaluate how they operate, so as to determine their economic consequences and how to introduce them into the country's regulatory framework.

The term "market mechanisms" has become part of the professional lexicon as an academic term that is often meaningless at the operational level. Market mechanisms, which are crucial for establishing

What is understood by market mechanisms and what function do they fulfill?

competition within and between ports, involve the laws of *supply and demand*, *profit and loss*, *economies of scale*, *management autonomy*, *freedom of entry and exit*, *customer likes and dislikes*, and *the threat of bankruptcy*.

The free interplay of market mechanisms is needed for competition to exist. *Customers' needs* combine with private terminal operators' *profits and losses* (including the *threat of bankruptcy*) to determine the *supply and demand* for port services. Free market mechanisms make it possible to determine whether the quantity and prices of port services are cost-efficient or not; efficient production is assured by *managerial autonomy*, and includes decisions relating to port size, in order to take advantage of scale economies. Defining the ideal port size is thus linked to *freedom of entry and exit* for private investors, which in turn depends on cargo volumes.

In the absence of a suitable regulatory framework, however, there is a danger of market mechanisms being usurped by dominant groups to extract monopoly rents. We consider each of the relevant factors below:

i) Supply and demand. The demand for port and dock-worker services is derived from the volume of goods they have to handle. Port costs are added to those of manufacture, insurance and transport as a component in the final product price. Port costs include

Is the demand for port services direct or derived? Why?

vessel and cargo services, along with costs generated by the use of machinery, administrative procedures and labour agreements. These costs directly affect the market opportunities of cargo owners. If port costs are excessive because of

inefficiencies, inappropriate technologies or out-of-date regulations, the international competitiveness of the merchandise being handled will be affected, sales will be limited, the demand for port services will decline and the effectiveness of export-led growth policies will be reduced.

ii) Gains and losses. A private firm uses profit and loss accounting, operates in a commercial framework and can carry deficits forward only insofar as they do not lead to bankruptcy. A public enterprise, on the other hand, uses fund-based accounting and

How do accounting practices differ between the private and public sectors? When a state-owned firm is turned into a commercial company, is there any risk if 100% of the shares remain in State Hands?

has to justify variances from budget; it operates in a given sociopolitical context, can carry forward any loss by seeking greater budgetary allocations and cannot go bankrupt. For example, the State-owned Japanese National Railway (JNR), was losing US\$ 25 million a day and had an accumulated debt of US\$ 285,000 million. In April 1987 the company was converted into 12 limited liability companies with the Government holding 100% of the stock. One of the 12 companies, the JNR-Settlement Corporation (JNR-SC), took over about 62% of debt and the passenger lines the rest.

Prior to conversion, the railways were part of a State bureaucracy controlled by Government policies and objectives, with an accounting system based on justifying variations from budget, rather than profit and loss. Following conversion, both managers and workers realized that the only way to survive commercially was by controlling costs and generating profits, so they began to apply a system of profit and loss accounting. By April 1988, the three Honshu lines made profits of US\$ 1,120 million after debt repayments of US\$ 2.4 billion. In October 1993, 50% of the shares of the Japanese Eastern Railways passenger line were sold. The sale of Japanese Central Railways and Japanese Western Railways was delayed because of the 1995 earthquake in Kobe.

By 1997, ten years after the JNR companies had been converted, economic conditions in the country had changed. The Government has had to face a growing budget deficit and has refused to pay the debt assumed by the JNR-SC out of public funds. Earlier the Government tried to transfer part of the debt held by the JNR-SC to the individual railway companies, but this met with great resistance. The Government has put forward two alternatives: either the railroads assume the debt voluntarily or the Ministry of Transport will seek legislative approval for a law transferring US\$ 2,830 million dollars relating to pension liabilities to their accounts. Meanwhile, the railroad companies are

considering the possibility of filing suit in their country's courts to force the Government to comply with the terms of the original contract.

ii) Economies of scale. In manufacturing activities, economies of scale refer to unit production costs that fall as productive capacity expands. If greater economy of scale is achieved, the competitiveness of exports on international markets can be raised, thereby increasing the commercial penetration of national products in other countries. When applied to ports, this would mean expanding terminal size, acquiring modern technologies and installations and increasing water depth to reduce average costs per unit of cargo. Taking advantage of greater scale economies in ports will be restricted by difficulties in providing the necessary infrastructure and by limitations as regards cargo volumes.

**Can scale-economies be applied in ports?
Is there a limit to this?**

In other words, the possibility of achieving greater economies of scale is limited by a range of endogenous factors, such as labour force productivity and the space available for new facilities, together with exogenous factors such as competition from other ports serving the same hinterland, customers' needs, cargo imbalances and the seasonal nature of merchandise flows. Formerly, Governments would construct public-sector port capacity in the light of the supply or volume of merchandise flowing into or out of a given captive hinterland. Today, captive hinterlands no longer exist, and ports need to consider the impact of long-distance land transport creating an extended hinterland, along with competition from ports not only nearby but also much further afield.

iv) Managerial autonomy. Political leaders often see ports as a means to create a constituency, absorb unemployment and assign prominent positions to major supporters. If these practices

What freedom of action do public-sector port administrators have?

are not brought to an end, they can become part of such an enormous network of benefits, cross-subsidies and welfare payments that a port's chances of operating on a commercial basis are put at risk. In these circumstances ports act like nonprofit institutions, rather than enterprises that have to provide services which are cost-effective and productive. This has given rise, for instance, to dock workers rejecting labour-saving technologies and intermodal distribution systems and global economic realities, and usurping many of the functions of public-sector port management. Traditionally, Governments justified these bureaucratic obstacles to efficient, low-cost ports by asserting that they supported important economic, political and social goals. However, in

today's global economy of decentralized, deregulated, intermodal and electronically joined functions, port managers must have the autonomy needed to achieve commercial objectives.

v) Freedom of entry and exit for new private terminal operators. This freedom cannot be absolute as the number of port terminal sites in any country is strictly limited. However, the

What impact do Government subsidies have on freedom of entry and exit?

port regulatory framework should not contain any barrier to obstruct the entry of new operators. For example, Governments should not offer subsidies to prevent exit by operators that are bankrupt or inactive from a business standpoint. The concept of contestable markets means that the mere possibility of entry by new competitors ought to restrain the desire of current operators to raise port charges to increase their profits. By allowing private interests to participate in public-sector ports, by supplying infrastructure and offering services to customers, new competitive elements will be introduced and the market will thus be better served.

In many countries specialized knowledge of ports is not the key factor in deciding whether private interests will be allowed to enter the industry. Instead, to obtain Government approval, applicants have to satisfy time-consuming, labyrinthine, influence-ridden requirements for eligibility and be considered politically acceptable. Governments should draw up regulations that eliminate such selection procedures, but it is not practical to formulate detailed plans for private-sector involvement because the options for such participation are far too varied and changeable for universally applicable rules. Instead, Governments should draw up an institutional framework which would allow private interests to propose their own plans for participation, according to ever-changing market conditions.

vi) Customers' needs. Exporters, importers and carriers are no longer willing to accept that port management and labour remain tied to institutions

To what extent are port customers' needs satisfied?

and technologies that arose in the context of previous economic policies or past financial crises, or respond to pressures from particular groups. The needs of customers in a global economy ignore the clock, the calendar and even weather conditions; the decisive factors for customers are costs and productivity. As an example of this, a customer of the Port of Santos has stated that over a 10-year period his firm was never consulted about whether its needs were being satisfied. Customers are the key to terminal operators' profitability and the

commercial rationale for ports; consequently, their opinion should be sought.

Customers want access by land and sea to a port that works expeditiously and quickly, enabling them to reduce export, import and transport costs. For ports to be attractive to customers, they need to make investments in new technologies and have highly skilled workers. If a port does not meet customers' requirements in terms of cost, productivity and damage-free delivery, cargoes will flow to other ports nearby that serve the same hinterland.

vii) Threat of bankruptcy. Most public-sector ports are Government agencies operating in a sociopolitical framework characterized by its resistance to competition, risk-taking and innovation, and by the presence of pressure groups that play a dominant role in a wide range of activities. In contrast, corporatized public-sector ports and those operated by private interests are largely governed by market forces and face the threat of losses and bankruptcy. Profit and loss, competition and bankruptcy are the factors that constantly drive private interests to adapt their activities to serve port customers better, so as to ensure their own commercial viability. These are the factors that create the incentives for firms to invest, specialize and amalgamate into more viable enterprises. Without the threat of bankruptcy, the market system of penalties and rewards would be nullified.

What are the consequences of the absence of competitiveness and threat of bankruptcy in public-sector ports?

Public-sector ports operated by the State are sociopolitical institutions that generally do not respond to market signals, cannot go bankrupt and are used for political and strategic ends. Even if they are unprofitable they can obtain financing from their owners (Governments) for the acquisition of new buildings, machinery and facilities. In contrast, private terminal operators of public-sector ports carry out their activities in a competitive environment, can go bankrupt, do not receive Government subsidies and have to finance their acquisitions by borrowing or reinvesting profits.

Is it feasible for a private terminal and a public one to compete in the same port?

For competition to be possible between a private terminal and a public-sector one, each must face the same risks. In other words, they must both respond to market signals and financial market requirements and be subject to the threat of bankruptcy. However, a State-run terminal will never face the threat of bankruptcy, so competing with one is unacceptable to private investors. As an example, the director of Hutchison International Port Holdings of

Hong Kong warned that his firm would not make investments in a port if there was a public-sector facility within 100 miles.

C. MEASURES GOVERNMENTS SHOULD ADOPT TO TO ENCOURAGE PRIVATE PARTICIPATION

In many developing countries, high costs, low productivity and overstaffing in ports acted as macroeconomic transmission mechanisms that strengthened inward-looking growth policies and raised the price of imports in national markets.

What is the purpose of fostering private participation in the provision of port services?

However, with the introduction of export-led growth policies, the same factors cause an increase in the prices of both exports and imports and hinder the achievement of economic growth targets. Governments seek to foment the participation of private interests in the provision of port services and facilities, so as to ensure commercial discipline. This means reducing costs, improving productivity and rationalizing staffing while at the same time achieving growth targets by enhancing the competitiveness of exports on international markets.

1. Legal Framework

To promote private-sector participation in the provision of port services and facilities, Governments need to design a legal framework based on market mechanisms to ensure the functioning of

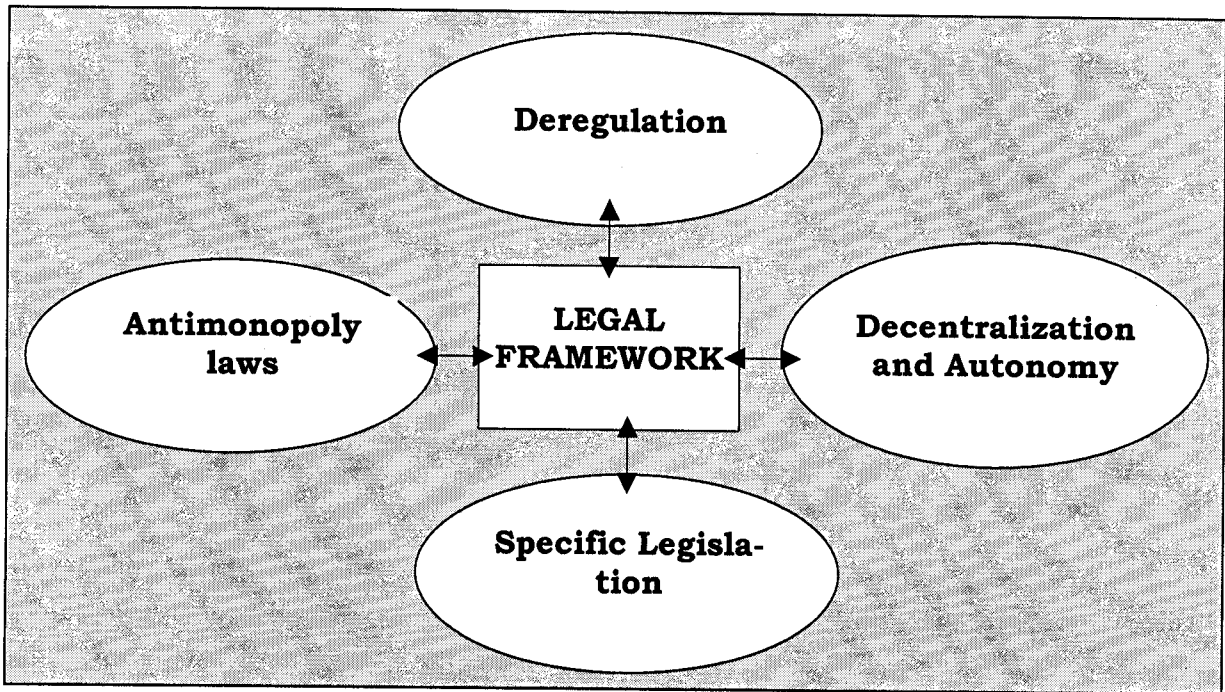
Why is a market-based legal framework needed?

the market, such that the entire port community comes under the same standards and competes on equal terms. It should also support economic policies and ensure pressure groups cannot distort the environment in which trade relations unfold.

The following legal measures lay the bases for private participation in public-sector ports:

- i) Deregulation of the port sector;
- ii) Decentralization and financial autonomy in ports;
- iii) Antimonopoly laws applied to private terminal operators; and

- iv) Specific legislation to define private-sector participation in public-sector ports.



i) Deregulation can be defined as the elimination of rules, regulations, bureaucratic measures and other obstacles such as direct and cross-subsidies, markets reservation, sociopolitical obligations, workers carrying out management functions and Government bailouts, which obstruct the free play of market mechanisms. The removal of such obstacles will create a regulatory vacuum unless other regulations are established which reorient the roles of Government and private interests to allow both ports and customers to respond to the demands of the global economy. If deregulation is not accompanied by such measures, port pressure groups will exploit the regulatory vacuum in an attempt to preserve their positions of control over market mechanisms and obtain monopoly rents.

What is meant by regulatory vacuum?

The lifting of control measures applied by Governments in their capacity as port operators and employers of dock labour, will not create a regulatory vacuum if they are replaced by market mechanisms, and if they are protected from monopoly practices by private terminal operators, exporter and importer associations, and unions. Subjecting port activities to market mechanisms might seem to conflict with Government measures regulating the port industry,

but this is not the case. This does not involve an either/or decision, as the global economy mandates the incorporation of market mechanisms into legal regimes.

ii) Decentralization and Financial Autonomy:

All sectors involved in port activity should be held responsible for the value consequences of their decisions as regards operations, planning and investments. Governments must remove themselves from day-to-day operating decisions to focus on longer-term policy making and planning in support of macroeconomic targets. The aim is to guarantee innovation in services and facilities, and improve productivity and cost-effectiveness by increasing local participation, the use of local resources for investment and transferring the accountability of public-sector workers from the national to the local level.

Why is it necessary to decentralize the port system and give it financial autonomy?

Decentralization does not relieve the Central Government of its obligations, but requires an institutional structure to be established to give local organizations and private investors the authority to carry out operational, planning and investment functions, and turn the public-sector port administrative body into a regulatory agency to supervise them. It is often suggested that decentralization will cause a fragmentation of business entities which cannot operate in a commercial environment. However, Governments should set up a legal framework for decentralization and allow the private sector to decide under what circumstances they wish to apply it. In this way, Governments would not have to decide the size of a viable stevedoring company, an almost existential task, because the private sector would assume that risk.

iii) Antimonopoly laws:

Private-sector participation in port services and facilities can help achieve national economic growth goals only if they are backed by vigorous competition. The antimonopoly commissions should have an unequivocal mandate to protect competition (not to protect specific firms or industries from competition), enforce property rights, initiate investigations and take appropriate steps with regard to complaints filed by third parties. Governments should authorize the antimonopoly commissions to hear and make rulings on cases of abuse of dominant position, issue cease-and-desist orders, and assess damages. Competition and antimonopoly laws also prevent a public-sector monopoly being handed over to private interests, a possibility that has under-

How to avoid transferring a public-sector monopoly to the private sector?

pinned arguments by all those seeking to preserve existing institutional arrangements and their own dominant positions.

Natural port monopolies exist when, for example, a single port serves an island or an isolated area. In such situations Governments can establish a basis for private participation, but must strengthen the regulatory framework to prevent the private operator from obtaining monopoly rents. This can be done by putting terminals out to public tender and granting concessions for shorter periods. Each of these measures helps to generate contestable markets. In addition, the regulatory framework should require the antimonopoly commissions to investigate claims of abuse by dominant firms and set fines much higher than the value of the damage caused to customers by any monopoly activity.

iv) Specific legislation: It is Government's job to expressly promote private-sector participation in the provision of port services and infrastructure, through appropriate legislation. The legal framework should very precisely define the different options for that participation, the properties and services to which private companies will have access, guidelines for valuing machinery, installations and buildings, measures for safeguarding investors' property rights, and any advantage or consideration granted to inhabitants of the country in which the port is located. The different alternatives for private-sector participation include the hiring of private stevedoring companies, management contracts, concessions, authorization for private terminals to handle third-party cargoes, and corporatization and sale. The alternative chosen will depend not only on national objectives but also on the main competitors.

What rules and provisions should be included in legislation for private-sector participation in ports?

Given the transitory nature of commercial opportunities and the traditional parsimony with which Government bureaucracies operate, the legislation should clearly define the rules governing the approval of private-sector bids. These should establish a clear presumption that greater private participation is in the national interest, so as to avoid endless problems and delays in attempting to justify vague arguments such as "economic needs" or "social return". The legislation should also set short time-limits for Government agencies to rule on bids and for them to acted upon by private-sector firms. For example, the relevant regulatory agencies should be given a very tight deadline (45 days, for example) for publishing its reasons for rejecting a bid to build new

or ancillary facilities. If the agency fails to give a ruling within the deadline, the bid would be approved automatically.

2. Transfer of control of port operations

The process for transferring the control of port operations to private investors includes the following stages, which should be carried out within a single Government term so as to avoid a policy change on private participation.

i) Constitute a privatization team: Each Government should appoint a director and team of highly qualified people committed to the restructuring of public-sector ports. These teams, which should be drawn from the ministries of finance, trade, transportation, public works and labour, along with the central

Who should be part of the privatization team and what should its functions be?

bank and port administration, should be given the authority to use the services of port specialists, accountants, attorneys, economists, exporters, importers, carriers and union representatives to prepare studies and supervise bidding procedures, so that all issues will be resolved transparently and equitably using commercial criteria. The functions of such teams would be to identify, evaluate and recommend economic, legal and social measures to be adopted by their individual Governments, aimed at creating a market-based institutional framework for public-sector ports and port labour so as to provide an attractive investment environment for private interests.

ii) Adopt a regulatory framework: (See Section 1, Legal Framework, in Part C of the Second Module).

iii) Establish a regulatory agency: Governments will find that global trade requires them to continually restructure the regulatory framework for ports, in order to improve productivity and reduce costs and thereby enhance the competitiveness of national products on international markets. There will always be people who challenge the regulatory framework (deregulation, decentralization, antimonopoly laws and legislation defining participation by private investors) as too restrictive, deficient or out of date. To respond to changing market requirements, Governments should either transform port administrations into regulatory agencies, or else set up other agencies to implement the new regulatory framework for national ports and make recommendations for adjustments to it.

iv) Identify and define the elements of the privatization process. The sociopolitical desire of a Government to create a development pole at a small port with reduced cargo volumes, can be a limiting factor in the process.

As a general rule, the process should begin with the port that has the largest cargo movement and end with the least traffic; otherwise there will be a risk of creating an unattractive environment for investors. In other words, international private operators normally tend to invest in ports with bigger cargo movements and better growth prospects, or in other ports close to neighbouring countries that seek to serve the same hinterland, and they would be unlikely to participate in the privatization process until Governments offer such opportunities. The wait-and-see attitude on the part of international operators creates uncertainty among small-scale operators as regards the size of the competition they might face, and this makes them limit their commitment towards ports with smaller cargo volumes.

What legal rules and provisions should there be for private-sector participation in ports?

In public bidding processes, many parameters are taken into account but they generally involve three aspects: firstly, the background of the bidding company, its experience and capital; secondly, its plans for the port and any investments envisioned; thirdly, the amount the bidder is willing to pay as an annual fee and as part of cargo volumes or profits, or both.

The transfer of a nation's ports to private investors should be carried out in stages, because the stock market and the main terminal investors cannot absorb so many commercial opportunities simultaneously. The period of concessions should not exceed 25 to 30 years if the basic infrastructure exists, 50 years if port installations have to be constructed, and 10 years if the terminal is fully equipped.

D. RESULTS OF PRIVATE PARTICIPATION

The following are the economic, political and social implications of private involvement in public-sector ports.

1. Economic results

The productivity of the ports should improve, leading to more throughput and/or lower costs. Imports and exports will thus be facilitated and national employment will grow. The following three examples illustrate this:

1) In 1981 the Government of Chile created competition in cargo-handling and storage operations, by deregulating port labour, eliminating the differences between shipboard and dockside workers, and authorizing the private sector to set up stevedoring companies. These changes had a positive impact on costs and productivity and eliminated a projected need for US\$ 500 million in infrastructure investments. Cargo-handling productivity at the port of Valparaíso went up from 2,060 boxes of fruit per hour in 1978-1979 to 6,500 in 1985-1986, which reduced vessel port-stay times from 129 to 40 hours and brought per-box costs down from US\$ 0.54 to US\$ 0.26. In 1985, a total of 572,479 metric tons of fruits and vegetables were shipped from Valparaíso/San Antonio and by 1995 the volume rose to 1,256,811 metric tons without any investments in new berths. Prior to these changes, it was found that the cost of loading pine trunks aboard a vessel was greater than the total cost of growing the trees, cutting them and preparing them for export.

2) New Zealand deregulated transport in 1984, but the cost structure stayed the same because its ports were State-owned and operated. In 1989, New Zealand Government harbour boards were converted into limited liability companies and the workforce was rationalized, whereupon the ports in that country immediately became more productive and started to generate cost savings for customers. For example, in 1990 the country's dairy industry, with annual freight charges amounting to US\$ 107 million, made savings of US\$ 5 million, or US\$ 3,500 for each farmer. The port of Tauranga is handling 60% more cargo per vessel per day and the productivity of log handling gangs has risen by 150%.

3) The container terminal at the Port of Klang (Malaysia) was transferred to the private sector in December 1992 for a period of 21 years. This led to a lowering of costs and a productivity increase, with the number of containers handled rising from 19,867 TEU in 1993 (August-December) to 137,937 TEU in 1994, 269,941 TEU in 1995, and 443,656 TEU in 1996. In 1996, the Port of Klang handled a total of 49 million tons of cargo; by the year 2000 it is expected to be

handling 74.8 million tons and by 2010 the figure is projected to rise to 113 million tons. Due to the good results of private participation, the Government of Malaysia privatized the rest of the Port of Klang along with the Port of Malacca, and it is planning to do the same with the country's other ports.

4) The UK adopted the Registered Dock Labour Scheme in 1947 to eliminate the casual employment of dock workers and guarantee them a job for life. The average cost per metric ton for handling cargo at a Scheme port was between US\$ 12 and US\$ 27, while the same activities cost from US\$ 4.50 to US\$ 6.50 at Rotterdam and Antwerp. The Dock Labour Scheme is estimated to have cost the UK economy more than US\$ 800 million in its 42 years of existence. The UK Government began privatizing its ports in 1983 and abolished the Registered Dock Labour Scheme in July 1989.

After that, the productivity of dock workers handling containers rose by 87% in the fiscal year ending July 1990, and productivity in conventional cargo-handling increased by 28.4% per dock worker during the same period. The UK Government estimated that repeal of the Scheme would lead to the creation of approximately 50,000 jobs over a five-year period. The port of Liverpool estimates that shipboard and dockside productivity have increased by 20% and 25%, respectively, and it is planning to promote itself as a major distribution centre for North Atlantic services.

2. Political results

Duly regulated private participation in ports will limit the chances of abuse of political power and reduce corruption. Governments respond to the needs of the people they represent and, without a carefully formulated institutional framework, it is extremely difficult to avoid the transmission of the desires of dominant groups to public-sector ports. For this reason, Government functions in ports should be limited to those of owners, promotional investors, regulators, facilitators, trade promoters, and decision-makers in dispute-settlement.

The sale or concession of ports for commercial operation by foreign interests, does not mean the large-scale creation of employment opportunities for non-citizens or a smaller inflow of foreign exchange. Ports are site- and customer-specific, and purchasers or concession-holders invest in those sites and in those customers, to earn a return on their investment. Dock workers continue to be recruited locally, as most countries have immigration laws which allow the employment of foreigners only when the skills required cannot be obtained from among their own citizens. In addition, Article 2 of the United Nations Charter of Economic Rights and Duties of States proclaims, among other things, that every State has the right:

- "a) To regulate and exercise authority over foreign investment within its national jurisdiction in accordance with its laws and regulations and in conformity with its national objectives and priorities. No State shall be compelled to grant preferential treatment to foreign investment;"
- "c) To nationalize, expropriate or transfer ownership of foreign property, in which case appropriate compensation should be paid by the State adopting such measures, taking into account its relevant law and regulations and all circumstances that the State considers pertinent. In any case where the question of compensation gives rise to controversy, it shall be settled under the domestic law of the nationalizing State and by its tribunals..."

3. Social results

It is true that market-based employment systems introduced by the private sector initially usually reveal the existence of superfluous staff in public-sector ports, and a State hiring policy that pays no attention to commercial aspects. Many Governments believe the social costs of private participation in public-sector ports to be so high in terms of unemployment, exclusion and worker poverty, that they would be hurt in future elections. Governments must be sensitive to workers' concerns and take care of their interests by including provisions in agreements with private firms requiring these to offer jobs to workers at nationally competitive wages, together with early retirement benefits and compensation for workers made redundant. The following two examples illustrate this point:

1) Compensation paid to workers laid off in Chilean ports as a result of the deregulation of dock labour in 1981, amounted to a total of US\$ 30 million. Payments per worker averaged US\$ 14,300 and ranged between US\$ 10,000 and US\$ 200,000. By 1982 the increased productivity had generated savings of US\$ 40 million, and these economies benefited port operators as well as exporters, importers and carriers. In 1995, the economies achieved in public-sector ports in Chile had increased to US\$ 140 million.

2) The restructuring of Venezuelan ports in 1991 led to the lay-off of 10,279 dock workers and 2,000 officials in the National Ports Institute (INP). All received double compensation from the Government of Venezuela, amounting to US\$ 182 million overall, or US\$ 14,822 per person. By comparison, in the

United Kingdom, the Government made redundancy payments of up to US\$ 58,000 per worker.

3) In 1991 the Government of Colombia provided US\$ 50 million to compensate 8,000 Colombian dock workers for the loss of acquired rights. The Government of Mexico spent about US\$ 30 million in 1994 to pay off collective agreements that gave dock workers exclusive cargo-handling rights in ten ports. The unions were dissolved but were allowed to reorganize themselves into profit-making companies and compete for concessions with private terminal operators.

4) The Government of New Zealand paid US\$ 28 million to compensate workers made redundant, and by the end of 1990 the direct savings to port customers in that country amounted to US\$ 56 million. For every job lost in New Zealand's docks, the Government estimated that 10 were generated in other sectors by eliminating cost and productivity bottlenecks caused by the ports.

E. CONCLUSIONS

The public agencies in charge of administering and running public-sector ports do not have a profit motive, and as they cannot go bankrupt they carry out their tasks with their eye on budgetary allocations. State-run ports can be justified if the managers of public-sector ports are relieved of sociopolitical obligations and if the market system of penalties and rewards is applied throughout the port sector. Efforts by public port administrators to control costs are usually ineffective because they cannot demand commercial standards of behavior from pressure groups such as unions, for Governments ignore competition.

Competition alters this situation, enabling costs to be reduced and the quality of goods and services improved, by compelling firms to face commercial risks, the possibility of financial loss and the threat of bankruptcy. Governments should eliminate bureaucratic obstacles that hinder competition throughout the port community and make sure antimonopoly regimes are applicable to cargo owners, port investors and dock workers alike. Successful port modernization requires one thing: private participation.

When Government authorities in developing countries became aware of the serious deficiencies in their ports (scant competitiveness, high costs and an overstaffed workforce), they saw private-sector involvement as fundamental for putting the ports in order. Consequently, they have designed frameworks for facilitating private-sector participation in the ports, generating benefits for producers, consumers, workers and carriers alike. Private-sector participation in public-sector ports aims to respond to competition.

III. Third module: MARKET-BASED PORT LABOUR REFORM

For the last four or five decades, many developing country Governments have established labour regimes which support the desire of dock workers for job and income security. However, such regimes isolate them from market signals and give them monopoly control of port services. These measures have

Were there conflicts between capital and labour in the past? Are there still grounds for this conflict?

created a highly politicized environment which encourages inefficient work practices, labour disputes, overstaffing and high costs, and makes it difficult to give clear definition to the functions of government-appointed administrators. In collective bargaining, dock-worker unions adopt a social approach whereas port administrations have a commercial outlook generally formalized by rules. The difference acts as a seedbed for labour disputes.

With private-sector participation and the exposure of dock workers to market mechanisms, traditional collective bargaining has undergone a profound change. In the new commercial environment, the business aims of private terminal operators and the social goals of dock workers have become complementary and interdependent, and the aims of negotiations should now focus on dock workers' professional capacities. Private operators need to recognize that to ensure commercial success ports need a highly qualified and motivated workforce, and that collaboration between employer and workers in decision-making is essential to employee motivation and dedication.

Capital and labour can no longer be considered in terms of means and ends and, as such, irreconcilably and destructively opposed to one another, because they are two measures of the same reality. If both are subject to market mechanisms, given these provide an independent, unbiased standard by which the commercial and social objectives of capital and labour can be reconciled, the disputes between between them should tend to dissipate.

Market forces are an independent and impartial mechanism for reconciling the commercial and social goals of capital and port labour. Dock workers operate in a commercial environment determined by customers' needs, and only by responding to these needs can they guarantee their jobs and incomes, and strengthen the union movement. It needs to be recognized that the requirements of the global economy have changed Governments' role towards dock workers. For example, Governments can (i) respond to dock workers' job insecurity by establishing periods of notice for the dismissal of superfluous

workers, drawing up redundancy schemes and requiring their approval for large-scale lay-offs; (ii) redesign policies, regulations and port legislation, to take account of the fact that they do not have preeminence over market mechanisms; and (iii) foster collective bargaining and the solution of labour disputes between private terminal operators and the unions, so as to establish a basis of mutual trust leading to the provision of more productive and lower cost services.

A. THE NEED FOR MARKET-BASED PORT LABOUR REFORM

Most Governments in developing countries have adopted laws, regulations and policies which firmly support the demands of pressure groups. Originally, the aims of these measures were to (i) establish the basis for industrial peace; yet disputes have been fomented and their solution obstructed; (ii) facilitate the acceptance and use of new technologies; yet their adoption has been delayed or they have proved ineffective; and (iii) ensure greater social justice; yet this has been administered with such partiality that it would not be so easily accepted if it was fully understood beyond the port environment. The way these laws, regulations and policies have been applied over many years has shown that when Governments administer and operate ports they are unable to separate political objectives from commercial goals, the acquisition of new technologies or collective bargaining.

It is widely accepted that collective bargaining in ports is tripartite (Governments, unions and employers). Nevertheless, port labour unions negotiate collective agreements with the Government (represented by the port administration, in its capacity as employer). In these negotiations and in many other situations conflicts arise between dock workers and the State (here again, the port administration, in its capacity as employer). In solving such disputes, both parties also turn to the Government (in this case represented by the Ministry of Labour of the Courts). Disputes usually arise because customers require port administrations, as employers, to oblige workers to accept modern technologies and institutional arrangements that enable productivity to be increased and costs to be lowered, but which generate job insecurity.

Who are the participants in tripartite negotiations and what are their objectives?

Unions require Governments to participate so as to protect their jobs, wages and benefits from employers. Public-sector ports are Government agencies, dock workers are public-sector employees, and collective bargaining is bipartite (Government-unions), rather than tripartite (unions-Government-employers), as in this case unions negotiate with Governments acting as employers and utilize

Governments to protect them from employers at one and the same time. As collective bargaining was bipartite (Government-workers), labour disputes began to be resolved at a political level. Governments in the form of Ministers of Labour, Justice and sometimes Presidents themselves, intervene to resolve disputes, usually deciding not to introduce certain technological advances, or if this could not be avoided they would be introduced applying labour-intensive practices.

The following factors mandate commercially oriented port labour reform: (i) **technological progress**, which leads to the acquisition of labour-saving cargo-handling equipment, (ii) **macroeconomic policies** and the incorporation of public-sector ports into the **global economy**, and (iii) **private participation** in public-sector ports.

1. Technological progress

Technological progress has altered port functions and led to a significant reduction in the demand for port labour. The most notable technological advances have been continuous loading and dispatch systems, specialized ships; unitized cargo systems, two-tier railway wagons that can carry containers one on top of another; computers and electronic communications systems. These and other technologies have intensified competition between ports by eliminating monopoly situations as regards customers, hinterlands and cargoes, and by increasing the commercial pressure on ports to improve productivity and bring down labour costs.

As was mentioned earlier, one of the technological inventions of the last century that had very far-reaching effects on the work of ports was the large-scale bulk handling of liquid cargoes, which began with the *Gluckhauf* and then extended to dry-bulk cargoes. In the early 1950s, the handling of dry-bulk cargoes required 20 men for each of a vessel's cargo holds, but 20 years later these cargoes were being handled at specialized terminals, and much larger bulk carriers could be dispatched using three men for the entire vessel. In our century the most import advances have been the container, the computer and telecommunications. A container vessel of 2,500 TEU is loaded in slightly under two days using two gantry cranes and 15 workers per shift.

What has been the main impact of technological progress on the demand for dock workers, and what will the trend be in the near future?

Each group of the port community responds differently to these technical changes: unions seek to maintain high levels of employment and benefits, carriers seek to utilize them to reduce vessel times in port, port managers seek to achieve a reasonable return on investments, and port-customer groups seek to reduce charges and eliminate unnecessary delays.

The evolution towards capital-intensive cargo-handling systems represents a shift from speciality services, or the handling and stowage of individual cargo units, to process services in which large volumes of homogeneous cargoes or standard-size cargo units are handled in an identical fashion. Over the years, Governments in many countries have supported labour in the name of job security, and sought to hold back technological change. For example, over two centuries ago the introduction of printing in Paris was delayed as much as twenty years by the bitter opposition of the guild of scribes and copyists. This delay had a direct impact on the education system in that city and required many years to overcome. The scribes and copyists were interested in preserving their jobs and divorced the printing press from its wider purposes of informing, communicating and educating. Investments in new technologies are necessary conditions for making ports attractive to customers, but they have to be accepted and used by highly skilled workers to be sufficient.

The following table shows that since 1960 modern containerization technologies have increased container-handling productivity twelvefold in the ports on the US west coast. The impact on labour demand of these and other technologies is far reaching. For example, the assistant director of the port of Mumbai, India, which has a labour force of 12,000, recently stated that if two workers are all that is needed for a task where 20 have been assigned, all the advantages of modern technologies will be lost. The implications of larger cargo volumes being handled by ever fewer dock workers raises the question: will ports be operated in the future by just one man accompanied by his trusty dog and a computer?

| IMPACT OF CONTAINERIZATION ON PORT-WORKER PRODUCTIVITY | | | |
|---|--------------------------------------|--|--|
| YEAR | MAN-HOURS WORKED (million) | CARGO TONS HANDLED (million) | PRODUCTIVITY (tons/man-hour) |
| 1960 | 29.1 | 28.5 | 0.98 |
| 1980 | 18.5 | 113.7 | 6.15 |
| 1987 | 17.1 | 157.8 | 9.23 |
| 1993 | 15.7 | 183.6 | 11.69 |
| 1994 | 17.0 | 198.8 | 11.69 |
| 1995 | 17.9 | 220.2 | 12.30 |
| 1996 | 18.0 | 215.5 | 11.97 |

Note: Tonnage figures refer to revenue tons, equivalent to 17 short tons (2,000 lbs) per TEU, or 15.5 metric tons.

Source: Pacific Maritime Association.

2. The role of macroeconomic policies and the advent of the global economy

Some developing countries made use of import substitution policies from the end of the Second World War up to the 1980s. By reserving domestic markets for national producers, these policies led to:

- inefficient production of many goods;
- anti-export bias;
- overvaluation of domestic currencies;
- the imposition of export and import duties; and
- the adoption of currency controls.

Many costly port labour practices became institutionalized - such as cargo-handling monopolies and inefficient two-shift operations - and these continue to exert a negative influence on the international competitiveness of many developing countries' exports.

The high cost and low productivity of port services was accorded little relevance at that time, as they merely reinforced import-substitution policies by making imports more expensive in national markets. These policies created structural inefficiencies which affected the competitiveness not only of the shipping lines but also of the goods of exported and imported. The introduction of export-led growth policies may seem a simple process, but in fact it involves a profound shift which involves the restructuring of nearly all economic activity.

What role did port costs play in import substitution policies?

The monopolies that domestic manufacturers used to enjoy were eliminated by tariff reductions that allowed goods from other countries to compete in local markets. This situation compelled domestic producers to meet the demands of international markets locally, while also preparing them to compete beyond national borders. The parallel measure that would encourage dock workers to give greater support to export-led policies, would be the adoption of port labour regimes that expose them to market mechanisms.

Ports were unsupportive of such policies in the sense that they were inefficient, grossly overstaffed, under the monopoly control of port labour unions and unnecessarily expensive. Such costs and inefficiencies had a negative impact on the prices of both exports and imports. For example, around 1995 the cost of producing Brazilian soybeans was US\$ 165 per ton and the cost of loading them aboard ship was US\$ 65 per ton, making a total of US\$ 230, whereas soybeans in the US during the same period were produced at US\$ 195 per ton and loaded at only US\$ 20 per ton, for a total of US\$ 215.

Today, most Governments' economic policies are firmly aimed at integrating their countries into the global economy, with finished and unfinished goods and services being purchased wherever total costs including transport are lowest. Ports must be part of cost-efficient intermodal distribution systems that contribute to the competitiveness of goods on world markets. This means that ports need productive dock workers who earn competitive wages, along with buildings, machinery and modern cargo-handling facilities, adequate transport access, electronic information systems and simplified documentation.

3. Private participation in public-sector ports

Governments are non-profit sociopolitical institutions and are not subject to the threat of bankruptcy. The predominant role of Governments as owners, operators and administrators of public-sector ports has created an extensive network of sociopolitical commitments that all but preclude the achievement of

commercial goals. For that reason Governments see private-sector participation as a way of establishing the necessary commercial discipline. The continuing regulatory presence of Governments and antimonopoly laws, together with the natural desire of private terminal operators to safeguard their firms' profitability, will combine to ensure that there is no abuse of market mechanisms by private investors.

Companies which have purchased a port, or obtained a concession, mostly operate in a commercial and competitive environment and have to respond to market signals. Labour is one of private terminal operators' biggest costs, and the possibility of controlling its productivity in a competitive situation is often decisive for profitability. Governments cannot exclude one sector of port operations - labour, for example - from these market mechanisms, because workers would be free to demand "political" (not market-determined) wages and benefits. If other terminals work 24 hours a day without charging excessive rates, they also have to do so, and if the technology to save man-hours is available they have to use it. Insofar as labour regimes fail to subject port workers to market mechanisms, or impede their response to them, they need to be reformed.

Is it possible to create a basis for private participation without reforming labour regimes?

4. Mandate

The port labour movement is well aware that the *advent of the global economy, private participation and technological progress*, have shown that its work practices, collective agreements and labour regimes hinder the achievement of commercial and social goals. Workers know that these three factors increase competition and mandate greater productivity and cost reductions. They also recognize the need for market-based labour reform and realize this could result in lay-offs or job losses, despite increases in cargo volumes. For that reason, the problem of over-staffing in public-sector ports needs to be solved rather than just shifted to another sector of the economy.

Port labour unions believe (or so they claim) that public infrastructure investment, and not private participation or market-based labour reform, will improve productivity, reduce costs and make customers more competitive. The reality is different: port pressure groups must be prevented from obtaining non-market benefits that create a port which is commercially unattractive for customers and less competitive in the global economy. To

What alternatives do unions offer to private participation?

resolve the dilemma between private participation, Government investment and excess labour, the concept of social equity needs to be altered: instead of job and income security, what needs to be guaranteed are retraining opportunities and possibilities for compensation and early retirement.

B. STRUCTURE OF MARKET BASED PORT LABOUR REFORM

Market mechanisms and antimonopoly laws are able to balance the supply and demand for labour by providing an independent, unbiased standard applicable to dock workers and private terminal operators alike, to control the size of the workforce without expanding public spending or enlarging the role of Governments, except for initial training, retraining and redundancy expenses. Competition restrains the natural desire of both sides to obtain non-market privileges, and compels them to steadily raise productivity, cut costs and make the necessary innovations and investments.

The crucial factor is the avoidance of monopoly control of port services, whether by dock workers, private terminal operators or Governments, in order to preserve a competitive environment. Without a market-oriented port labour regime, no commercial basis for private participation can be established. Without private participation, the port labour movement will have little incentive to accept market-based reform of their regulatory regime.

1. Objectives

For nations that create the basis for private participation in their public-sector ports, the main aims of market-based port labour reform are to i) **expose** labour sector to market mechanisms, so that performance is governed by the same system of rewards and sanctions as the other members of the port community; ii) **modify** labour regimes, collective agreements and work practices so as to adapt them as quickly as possible to market mechanisms; iii) **collaborate** with private terminal operators in decision-taking on operational problems. For those nations which corporatize or commercialize their ports without private-sector participation, Governments must also devise a means to distinguish between civil servants concerned with bureaucratic matters and those employed in profit-oriented activities.

What are the main aims of port labour reform?

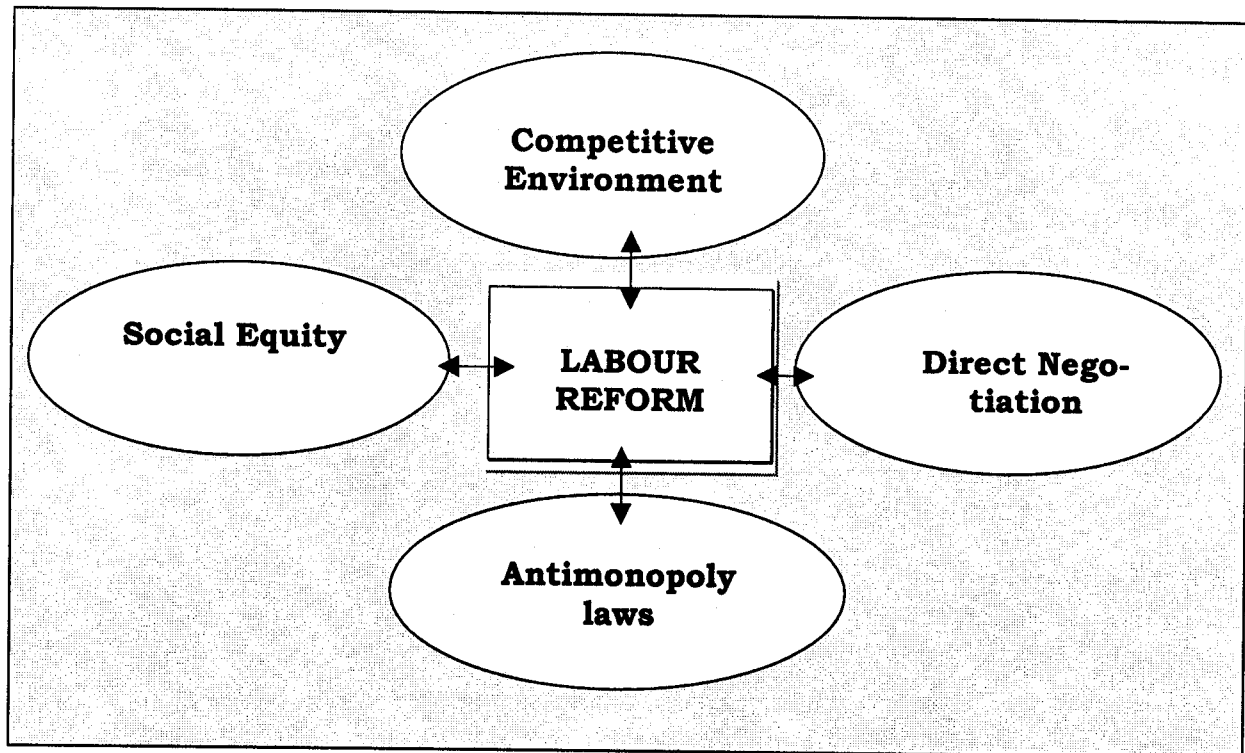
The following arguments are used to provide total or partial justification for port labour regimes that distort market signals:

- (i) Governments have to intervene in labour relations because the interests of unions and private terminal operators are irreconcilably and destructively opposed to each other.
- (ii) The services provided by dock workers possessing cargo-handling monopolies can be just as efficient and productive as those provided by the private sector in a competitive environment.
- (iii) Neither Governments nor the port labour movement need to respond to market mechanisms.
- (iv) It is socially irresponsible for public-sector ports to use labour-saving technologies.
- (v) Only with monetary incentives will dock workers make an effort to improve port efficiency.
- (vi) The existence of port labour monopolies, registration systems, political alliances and Government subsidies will not lead to an excess supply of dock workers nor to the payment of unearned benefits.
- (vii) The social costs of port labour reform are so high that Governments cannot incorporate market mechanisms into labour regimes so as to commercially balance the interests of exporters, importers, carriers, dock workers and private terminal operators.

These arguments were developed and used for many years in developing countries, in some cases from 1930 to 1980, and they allowed Governments to alter market outcomes through the use of dock-worker registration systems, cargo-handling and warehousing monopolies, and direct and cross subsidies. Now however they lost much of their legitimacy, with the advent of a global economy and the introduction of export-led growth policies.

**Are these arguments
valid?**

The commercial goals of exporters, importers, carriers and employers and the social goals of dock workers have become interdependent, and cannot be achieved without a collaborative effort. Nonetheless, the various interest groups continue to deploy these arguments, at times spuriously, in order to influence Governments and preserve their non-commercial privileges.



2. The Institutional Framework

From the beginnings of the labour movement up to the Second World War, port labour unions had a social-political orientation based on the doctrine of "social betterment through labour", and managed to consolidate their position after the war to become a major political force in many countries. Governments relied on this doctrine to establish cargo-handling monopolies, grant subsidies and restrict the supply of dock workers through registration schemes. In view of the high cost of this doctrine in terms of making full use of economic policies for export development, together with low port productivity and an inability to exploit commercial opportunities, the doctrine could be replaced by one of "social betterment through trade".

However, this new doctrine will be no more successful than its earlier counterpart unless Governments adopt a port labour regime which ensures that dock workers add value to customers' goods and services and profitability to their employer's activities. Private terminal operators need to recognize that workers' problem-solving capacities are an under-used asset, and that sharing workplace decision authority, making sacrifices to train workers and keep

them, are some of the ways to take advantage of this. Private terminal operators and dock workers must join forces to provide services that are innovative, productive and efficient, and be willing to make changes in their functions to respond to customers' needs.

To develop market-based labour regimes, Governments should set up teams like those suggested for privatisation processes, made up of officials from the Ministries of Finance, Trade, Transport, Public Works and Labour, together with customers, port unions, private terminal operators and port administrations. Their mandate should include market-based reform of labour regimes. To achieve port labour reform based on consensus, the teams must listen to customers and private terminal operators and not just to the unions.

The teams should have the authority to i) undertake studies or have them carried out; ii) organise seminars and use social communications media to convince the union movement that market-based port labour reform is inevitable, that compensation will be paid and that in the end the country will benefit; iii) encourage the formation of joint committees between unions and private terminal operators to resolve operational problems and disputes without official intervention; and iv) give Governments a regulatory and promotional role in the ports. The teams should also draw up and explain programmes for redundancy pay, early retirement and training. To fulfil this responsibility, the teams should:

i) Create a commercial environment: deregulate and decentralize collective negotiations to establish a basis for interport, intraport, interunion, intraunion and non-union competition.

(ii) Give priority to commercial goals: eliminate direct Government involvement in port operations, collective negotiations and informal dispute resolution.

iii) Protect competition: adopt antimonopoly laws that are applied to terminal operators and dock labour alike, to ensure that market mechanisms are used only to compete, and not to create cartels;

iv) Redefine the concept of social equity:

the current concept of equity was developed with the introduction of import substitution policies and the establishment of economic integration schemes between developing

countries. The aim of these policies among other things was to insulate developing countries' exports from the ups and downs of international markets, reserve the domestic market for national entrepreneurs and create broader

Can employment be guaranteed in a global economy?

markets through multilateral trade agreements. Dock workers thus had their jobs guaranteed and adequate purchasing power and benefits assured, without acquiring new technology, cutting costs or improving productivity, but this definition of social equity raises the prices of imported products in national markets.

With the advent of the global economy and the introduction of export-oriented economic policies, current social equity policies can no longer guarantee employment, still less a given level of income, benefits and purchasing power. A new concept of social equity that takes account of this commercial environment needs to be formulated, enabling the commercial aspects of labour reform to be reconciled with dock workers' social goals through market mechanisms. Such a definition would create a labour force that is highly motivated by participation in management decisions, training programmes, placement services for dock workers laid off due to over-staffing, redundancy payments and early retirement plans. The payment of redundancy should be linked to a worker's successful completion of training programmes leading to jobs either in or outside the port sector elsewhere.

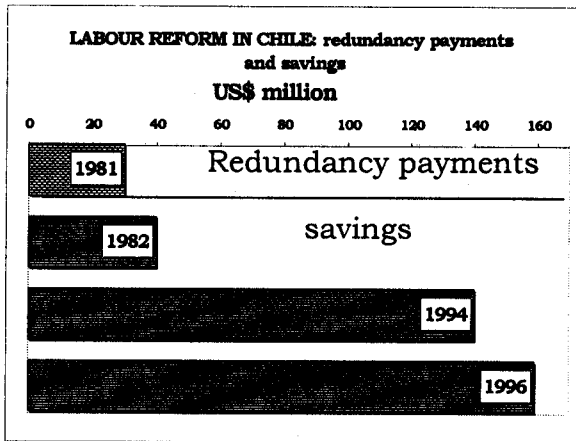
C. CONSEQUENCES OF MARKET-BASED PORT LABOUR REFORM

1. Economic

Governments' labour market goals and functions no longer occupy the predominant position they once had, because developing countries have begun the transition from a closed economy ("we produce what we consume") to a global economy. Ports will be transformed from sites where dock workers' wages and benefits are given priority by Governments, to sites where port labour gives preference to customers' commercial goals. Governments will no longer have to absorb low dock-worker productivity and their inability to control costs through measures that distort market outcomes.

The adoption of market-oriented port labour regimes will expose dock workers to the borderless competition of a global economy, where the demand for their services is derived from the demand for the goods being handled. Port labour will be recognized as private shipping terminal operators' most valuable tool for creating an interesting commercial environment for customers. The operators, for their part, will have real authority to affect a wide range of operational and investment decisions. In this context, they will not have to pay dock workers for the "political" value of their services, but will pay market-determined wages, no more and no less.

Dock workers will be motivated to respond to customers' needs in order to preserve their own incomes and jobs.



The working of market mechanisms will also prevent the use of Government-influenced formulas which, for example, restrict wage increases to a maximum percentage that private terminal operators can pass on to their customers in higher charges. Collective bargaining and strikes will become less important or even replaced by ongoing collaboration and informal dispute resolution procedures, and work practices will be continuously adjusted to reflect customers' demands, new technologies and a much

broader competitive framework.

2. Political

In very general terms it can be said that the trade environment in the nineteenth century was virtually unregulated, with labour and capital irreconcilably and destructively opposed to one another. The twentieth century has been one of progressive regulation aimed at containing any conflict. Perhaps the characteristic attribute of the world economy in the twenty-first century will be the coming together of workers and capital in a collaborative effort to achieve both commercial and social goals. In this context, disputes between the port union movement and private terminal operators ought to diminish, as the resources available to each side to resolve disputes are no longer political, but commercial and social, and neither side wants to waste its assets. The main political consequence of the reform will be for the new regime to enable commercial and social goals to be reconciled in favour of port customers.

Governments will abstain from interfering in port labour relations, except in their capacity as regulators, owners and investment promoters; nor will they participate directly in relations between port labour and private terminal operators. Such a framework would transform unions from political actors that use Government processes for the exclusive benefit of their members, into innovative labour-management "joint ventures" which help to improve their own wages, benefits and job security while also helping customers to achieve their commercial goals. This means that Governments are trying to abandon former practices because by encouraging private participation and labour reform they are allowing a commercial approach to be established through market mecha-

nisms. Consequently, a steady and highly positive convergence is taking place between employers' commercial objectives and workers' social goals.

Collective bargaining will be bipartite (employers - unions) rather than tripartite (unions - Government - employers), due to the new relation between employers and workers that arises from the global economy, private participation and market-based labour reform. In this context, the regulatory functions of Governments are confined to establishing, strengthening and protecting competition, and to intervening to help resolve regulatory disputes. Port administrations (Governments) will no longer yield to the demands of port unions, as they will not be participating in port activities as operators and employers. For example, to remove political influence from the ports, the Government of Singapore requires union members and private terminal operators to give up their links with the port industry when seeking election to public office.

With ever fewer political restrictions on market access, the capacity to respond to competition will become the main way to achieve commercial and social goals. For example, the vicious circle will be broken whereby Ministries of Labour (Governments) seek higher subsidies from the public purse (Governments) to meet bigger labour costs resulting from collective agreements negotiated with practically no consideration of customers' commercial needs. In this commercial scenario, collaboration and trust between port unions and private terminal operators will be fostered, and political alliances between the Government made unnecessary.

3. Social

The implementation of a commercial-type labour regime does not mean that the union movement will lose its bargaining power with employers, the private terminal operators, but rather the source of this power will change. The bargaining power of port unions has stemmed from their political alliances and their location at the crossroads of trade, finance and jobs. Today, it derives from their capacity to respond to market mechanisms which reconcile business and social goals and generate greater value-added for port employers and customers. Private-terminal operators and customers will see the port labour force as a commercial tool that can contribute to enhancing their profits and competitive position. The port labour force, for its part, will see its fortunes as linked to theirs.

Due to the overwhelming importance of human resources in achieving competitive and technologically adequate services, private terminal operators

will recognize that they stand to gain by providing training to dock workers. They will also understand that improving efficiency requires collaboration between workers and employers, and that their own commercial success is closely linked to dock workers' loyalty and welfare. Private terminal operators and the labour sector will try to resolve their disputes informally, and avoid intensifying them through arbitration and tribunal processes, for afterwards they both have to work together, without resentment, to achieve goals that require intangibles such as consensus, hard work and goodwill. Decision-making authority derives from the principle of ownership, but workers have a baggage of valuable experience that could help to improve productivity and bring down costs, and operators will be willing to share this power in the workplace.

The global economy compels private port operators to look beyond their firms' efficiency and revenue, and collaborate with employees and guarantee their welfare. Modern technologies can be applied in any port, but what determines success or failure is the way in which port labour is used. Consequently, dock workers must collaborate with Governments, customers and employers, not only to improve productivity and cut costs, but also to increase their own incomes and benefits. In an open and competitive port environment, dock workers will end up accepting that the security of their benefits and jobs depends on the commercial success achieved by port customers and private terminal operators, and not on monopolies, registration systems or Government subsidies.

CONCLUSION

Port labour reform will be successful only if it is market-based, and if Governments abstain from using political means to solve the problems that arise from the process. On the contrary, the decisive factors in port labour reform are linked to technological progress, which assumes the intensive use of machinery and modern installations and, consequently, the abandoning of intensive labour use; the formulation of export-led macroeconomic growth policies and their integration into the global economy; and the participation of private interests in public-sector ports. These changes call for a new definition of equity to minimize the human costs deriving from higher unemployment, port labour marginalization and poverty among workers who are laid off.