



Tariff Reform in the Port of Piraeus: a Practical Approach

HARILAOS N PSARAFTIS¹

¹School of Naval Architecture and Marine Engineering, Iroon Polytechniou 9, 15773 Zografou, Greece.
E-mail: hnpsar@deslab.ntua.gr

This paper gives an overview of the main elements of the tariff reform that took place in the port of Piraeus during the last decade. The process of 'structural' revisions in many of the port's tariffs took place mainly between 1996 and 2001, which is the period during which, among other developments, container traffic through Piraeus more than doubled. Focusing on the above period and on container tariffs, the paper highlights the motivation for the changes and some of the practical difficulties associated with the process of port rate making in this major Mediterranean port. The tariff reform in some eight other categories that took place in that period is also briefly outlined, and some success and failure stories are described.

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INTRODUCTION

The port of Piraeus is part of the Athens greater metropolitan area (population about 5 million, about half of Greece). Each year about 20 million passengers go through the port, which is by far the largest in Greece (Thessaloniki is a distant second). The port is one of the most important in the Mediterranean, being located at the crossroads of three continents: Europe, Asia and Africa. In addition to passenger traffic, it also has a substantial volume of cargo traffic, in areas such as drybulk, general cargo, vehicles, and (most important) containers.

All business dealing with the port is administered by the Piraeus Port Authority (in Greek known as Organismos Limenos Pireos (OLP)). OLP was



founded in 1930 and until 1999 was 'a public law undertaking', being ruled according to the general regulatory regime of many public entities in Greece, such as universities, hospitals, and other agencies and organisations. In 1999, OLP became a corporation, at that time wholly owned by the Greek State. In 2003, OLP was listed on the Athens Stock Exchange and since then the State's stake is of the order of 74.14%.

OLP is independent from the City of Piraeus and is managed by a CEO who reports to a Board of Directors, chaired by the President. OLP's revenues are on the order of 145 million euros a year and come from charges to port users for services rendered to them. Expenditures go to salaries of OLP personnel, construction and maintenance of port infrastructure, purchase of equipment, and other port operating expenses. OLP functions like a traditional 'service port', with all of its services provided by the port's personnel. These services do not include pilotage (provided by a separate service of the Ministry of Merchant Marine) and towing (provided by private companies), but they include cargo handling, berthing, storage, and rental of port's facilities to various private enterprises and public agencies. The port includes a comprehensive ship repair base, run by private yards and shops, and also manages two floating docks, two drydocks and a large Exhibition Centre.

The port's container terminal 'Eleftherios Venizelos', located at the Neon Ikonion area, is responsible for roughly 65% of the annual port revenues. Historically, OLP has never received any funding from the Greek State, but is legally obliged to financially support the City of Piraeus and four other adjacent municipalities. After corporatisation, OLP pays taxes to the State and dividends to its shareholders. As of 2002, it also pays a concession fee to the State for the exclusive use and exploitation of its facilities. Some of the port's infrastructure development has been financed in part from the European Union's Cohesion Fund and by a long-term loan from the European Investment Bank.

As the port of Piraeus offers a broad variety of services, its tariff structure is comprehensive and extensive. OLP itself has over 25 so-called 'regulations', each being a document governing a specific aspect of its operation, internal or external. Of these regulations, 10 have tariffs embedded within them, collectively displaying the prices for all of the port's services. As the port is a monopoly in the Piraeus area, all of its regulations and tariffs are mandatory by law to clients using the port's services. With the exception of confidential rates that are embedded into contracts between OLP and shipping lines (and this is an exception rather than a rule), all tariffs of the port are public and are published in the Greek government's official journal. The rates go into minute detail for every conceivable service rendered by the port. The law stipulates that the process of rate approval is first by the port's Board of Directors, and then by the



Ministry of National Economy. An exception concerns rate decreases, which do not need Ministerial approval.

The purpose of this paper is to provide an overview of the main elements of the tariff reform that took place in the port of Piraeus during the last decade. The paper is actually a 'positive' historical account of this reform, based on the experience of the author and his role in that reform, and an attempt to explain the rationale behind it. The paper does not attempt to provide a 'normative' account of what should have happened instead, although this is alluded to in a few cases. As will be seen, the approach that was used was practical, that is, void of sophisticated pricing or other models. This was by necessity rather than choice, as many of the necessary tools and data for such an approach were lacking. Still, the need for tariff reform was very pressing, and had to go on. The paper highlights the motivation for the tariff changes and some of the practical difficulties associated with it.

Whereas, it is not the purpose of this paper to survey the literature on port pricing, the reader is referred to Arnold (1988), EC (1997), Haralambides *et al* (2001, 2002), Kumar (2002) and Meersman *et al* (2002) for a sample of work outlining the most important issues. From a practitioner's perspective, the usual challenge is to find ways to bridge the gap between what is established at the state-of-the-art level and what can be accomplished in practice. As the reader will have an opportunity to see in the rest of the paper, for the port of Piraeus the gap was significant.

THE FIRST TARIFF REFORM PRIORITIES

With a major share of the port's revenues, it has been always clear that OLP's container terminal is critical for the profitability of the port. In that light, in mid-1996 the decision of container lines Evergreen and Lloyd Triestino to switch their transshipment hub to Gioia Tauro in southern Italy was certainly bad news. And indeed, after several years of growth, 1996 saw the volume of container traffic through Piraeus decline by approximately 4% *vis-à-vis* that of 1995 (575,000 *versus* 600,000 TEU). This reduction was mainly due to a 25% reduction of transshipment traffic through the port, as local traffic of imported and exported containers continued to grow as in previous years.

The market for container transshipment is one of the most dynamic ones in liner shipping. With the economies of scale realised by large (up to 10,000 TEU) container vessels deployed on trunk routes worldwide, it is not cost effective for these vessels to make direct calls in many ports. For this reason, lines develop 'hub and spoke' systems, in which smaller 'feeder' vessels distribute containers to and from smaller ports, whereas larger 'mother' vessels connect only to



larger ports (hub ports). A comprehensive analysis of the decision process of container lines to select a hub port has been reported by Lirn *et al* (2004).

Which ports establish themselves as hub ports worldwide is always very fluid, and the Mediterranean is no exception. The main trunk route of the Mediterranean is the one connecting the Far East with Northern Europe, through the Suez Canal and Gibraltar. Some of the traffic on this route makes no Mediterranean port calls. However, some of the traffic comes from (or is destined to) markets on the Mediterranean (or close to Mediterranean ports) or markets in the Black Sea, and therefore has to pass through a Mediterranean port, either as local traffic or as transshipment traffic. Terminals such as those of Maersk/Sea Land (Algeciras), MCT (Gioia Tauro) and Marsaxlokk (Malta) have traditionally been hub ports in the Med.

In Piraeus, the question was whether the 1996 decline was a 'statistical glitch' or something more serious. Actually, transshipment had never accounted for more than 25% of the volume of container traffic through Piraeus, the bulk of the latter being local (mainly import) traffic. However, with the completion of a new 700-m length, 16.5-m depth quay and the delivery of four new Post-Panamax gantry cranes (all of which were targeted for completion by mid-1997), the box throughput capacity of Piraeus would about double. The question was, who would bring in enough traffic to fill in the new capacity? A related but central question was, what should be done with respect to port tariffs to attract such traffic?

After a uniform, across-the-board tariff increase of 6%, proposed in late 1996 and effective in March of 1997, it became clear that OLP could no longer proceed with this method. Uniform rate increases were traditional every year and were computed as the necessary increases that would offset increases in the port's running costs from year to year. They were an easy, but certainly not an inspiring way to revise the myriads of rates in the port. In fact, a uniform increase was certainly not considered a reform, for it maintained the same proportions among all rates, and thus proliferated any distortions or anomalies that might exist before the increase.

The first striking reason for the necessity to reform the port's rates had nothing to do with containers, and in fact it came from the passenger port. As an example, a 500-foot domestic ferry paid the sum of 12.32 euros¹ per day for parking at the Piraeus passenger port. This was a ridiculously low price by any standard (how much does parking a private car cost?). In fact, in 1995 the revenue generated from berthing fees of domestic ferries was just 0.7% of the port's annual revenues! Berthing fees for cruise vessels and 'port fees' that passengers and vehicles paid through their ferry tickets raised the contribution of the passenger port to the OLP's overall revenues to about 5.5%, but this was a very low figure too, especially considering that something like 35% of the



port's investment funds had gone into the passenger port in recent years. The apparent rationale for this situation seemed to be the idea that due to societal cohesion reasons the port should subsidise maritime transport to and from the Greek coastal archipelago. However, this policy resulted in very low revenues for the passenger port. In fact, in the hypothetical case OLP land-reclaimed a section of its passenger port water area and built a large automobile parking garage, a facility in great demand for the city of Piraeus, the port's annual revenues would soar. But this was not an option.

In parallel with the passenger port, the strategic decision of OLP to enter aggressively into the Mediterranean transshipment market necessitated making the rates for container transshipment more competitive. The new capacity coming on line certainly provided a prime opportunity for such a strategic move. Clearly however, and with two lines having just left Piraeus to Gioia Tauro, the new transshipment traffic would not come by itself. For reasons that will become apparent below, it became clear that tariff reform was necessary, among several other things that were needed.

So the first tariff reform priority circa 1996–1997 was simple and two-fold: (a) to produce a more competitive tariff structure for containers to be transhipped, and (b) to correct the ridiculously low berthing rates for domestic ferries.

The action as regards (b) will be described later in the paper. Regarding (a), and with about 4 million TEU annually transhipped within the Mediterranean at the time (a figure that would soar in later years), the pressing question was, can OLP at least grab some of the action? It was clear that Piraeus enjoyed several advantages over rivals such as Malta or Gioia Tauro, none of which had a serious local market potential, or was close to the expanding Black Sea market. For a shipping line interested in transshipment, having a local market was an incentive, so that costs could be spread over more traffic. Of course, with the fluid situation in the container scene and with the cut-throat competition among carriers globally, it was realised that it would take more than wishful thinking to lure box traffic to Piraeus. It was clear that having a good geographical location, some local potential and some spare capacity were not enough. Something had to be done on prices.

COMPLEXITIES OF THE CONTAINER TARIFF STRUCTURE

The first problem that was immediately brought forward was that cargo handling charges for containers were rather cumbersome. To compute the charges to unload a container from ship to dock or load it from dock to ship



using the gantry cranes of the terminal, the following steps had to be carried out:

- Step 1: Begin with the container's 'basic rate';
- Step 2: Apply appropriate discount, if applicable;
- Step 3: Add the so-called 'employees overtime' surcharge, as specified by a separate rate;
- Step 4: To the subtotal of Step 2, add the so-called 3% surcharge for 'work on holidays and weekends'.

Basic rates in Step 1 were 65.24 euros for 20-ft boxes and 105.48 euros for 40-ft boxes. These rates were valid for standard, non-IMO-class containers. IMO-class containers (for inflammables, explosives, and other dangerous goods) had higher rates.

In Step 2, there was a wide variety of discounts. Import-laden containers had no discounts. Empties, whether import or export, enjoyed a 30% discount *versus* the equivalent laden boxes, and export-laden containers had a 35% discount *versus* the equivalent import-laden ones. Containers to be transhipped had a special discount scale, as will be seen in the next section.

In Step 3, a separate set of rates was used for the so-called 'employees overtime' surcharge. This was a mechanism to collect money spent on overtime pay to port personnel. Overtime pay was a necessity due to fluctuations in workload and due to the fact that hiring part-time port personnel to cope with unforeseen workload was a rather cumbersome process. In that sense, 4.87 euros per box was charged for each 20-ft laden container, 2.17 euros for a 20-ft empty, 10.28 euros for a 40-ft laden, and 4.16 euros for a 40-ft empty. These charges were applied separately from cargo handling rates.

In Step 4, an additional 3% surcharge was slapped onto the previous subtotal, to collect money for additional labour expenses incurred for work on holidays and weekends. In prior years, OLP charged higher rates on holidays and weekends, but after extensive consultation with port users, it changed that system to a 'flat rate', the same for all days. The 3% surcharge was thus a system to collect from all users money to be spent on work during days of higher pay. A law actually stipulated that these additional expenses could not exceed what was collected by the 3% surcharge. This stipulation created a problem, for the 3% was not enough, and some very creative accounting was devised to circumvent this problem.²

The above algorithm was certainly complicated for the port's client. For one thing, the client received a rather complex bill instead of one price. The algorithm also led to some less-than-sensical charges, as can be seen from Table 1.



Table 1: ‘Ship-dock’ cargo handling charges for local (import or export containers)

	20-ft			40-ft		
	Laden		Empty	Laden		Empty
	Import	Export	(Import-export)	Import	Export	(Import-export)
Basic rate			65.24			105.48
Discount (%)	0	35	30	0	35	30
After discount	65.24	42.41	45.67	105.48	68.56	73.84
Employee overtime surcharge	4.87	4.87	2.17	10.28	10.28	4.16
Subtotal	70.11	47.28	47.84	115.76	78.84	78.00
3% surcharge	2.10	1.42	1.44	3.47	2.37	2.34
Total	72.21	48.69	49.27	119.23	81.21	80.34

All prices are in euros.

The fact that the above algorithm led a 20-ft laden container for export being charged less than a 20-ft empty was certainly a paradox, at least to this author, and something that was difficult to justify. One would actually expect the opposite to be the case, and a correction of this anomaly was warranted. The anomaly was mainly due to the discount factors that were used (30% and 35%). These factors appeared arbitrary, and even though one could justify the rationale for each of them individually (charge less for empties and charge less for exports), if applied in combination they led to apparent distortions such as the above.

The adjustment to correct the above anomaly, together with the decision to abandon the above 4-step algorithm altogether and consolidate all charges of Steps 1–4 above into one rate (per box category) sounded as the obvious thing to do. However, due to bureaucratic problems this was not implemented until the spring of 1999, together with a broader restructuring of several other of the port’s tariffs. In the meantime, the tariff reform that was very pressing regarded transshipment.

NON-COMPETITIVE TRANSHIPMENT RATES

Things in the transshipment department were more tricky. Circa 1997, laden containers to be transhipped from ship to ship had the scale of discounts shown in Table 2.

In Table 2, a ‘move’ was defined as one loading operation (from dock to ship) or as one unloading operation (from ship to dock). A complete transshipment ship-to-ship operation involved two moves. In this table, the



Table 2: Scale of discounts for laden containers

Moves/year	Discount (%)
1–3,500	35
3,501–5,000	45
5,001–7,000	50
7,001–30,000	60
> 30,000	65

total transshipment moves of a shipping line within a year were to be computed separately for each box size, and then the appropriate discount was to be applied. These discounts were to be applied ‘incrementally’, so that if a company had (say) 6,000 moves of 20-ft containers during a year, it would get a 35% discount on the first 3,500 moves, a 45% discount on the next 1,500 moves (3,501–5,000) and a 50% discount on the remaining 1,000 moves. A similar procedure would apply for the 40-ft boxes, possibly resulting in a different discount.

Since the port had no way of predicting what transshipment traffic a line would achieve in a given year, let alone how that traffic would split among the various categories, the line settled its bills throughout the year by initially assuming a ‘default’ 35% discount for all categories of transshipment traffic, and after the end of the year it received a cash refund only for those categories for which traffic exceeded 3,500 moves. The cash refund was estimated *a posteriori*, by calculating what the line ought to have paid according to the discount scale and subtracting this amount from what the line had actually pre-paid, assuming the ‘default’ 35% discount. What was worse, no interest was included in this calculation (at that time, inflation was on the order of 9%).

Such a system was not only cumbersome to the client, but, as proven by the drop of transshipment traffic in 1996 *versus* 1995, not very competitive either. At the low end of the scale, the rate was clearly not competitive. The average transshipment rate for a 40-ft laden container was between 42 and 78 euros per move (84–154 per box), depending on the line’s traffic. At the high end of the scale, and even if a line considered the rate competitive, it would have to pre-pay a considerable amount to the port throughout the year, at a substantially higher rate, before being able to claim the low rate afterwards. In addition, the company would only receive a refund if its transshipment volume per box category was sufficiently high. By comparison, it was common knowledge that other competitive container terminals in the region offered ‘flat’ rates in the neighbourhood of 40 euros per move (80 per box), or even below that level, offering such rates straight away and not after a year’s activity.



TOWARDS A NEW TRANSHIPMENT SCALE

Coming up with a more competitive scale that was simultaneously profitable to the port was no easy task. At the medium term level, a study of the transshipment market in the Mediterranean was commissioned. Such a study was completed in late 1997 by the Athens University of Economics and Business and by MDS Transmodal in the UK, which were retained by OLP for that purpose. The study provided a useful overview of the market, along with possible opportunities and risks (Magirou *et al*, 1997).

However, things could not wait for the completion of the study, as several lines were engaged in talks with the port as early as end of 1996. To negotiate properly with the lines, one would have to compute, among other things, the marginal cost of the container terminal. This was easier said than done. The absence of appropriate cost accounting tools was the main reason for that difficulty. The port's accounting system was structured in a 'horizontal' way, making cost and even revenue calculations very difficult. In addition, the terminal's computerisation, a substantial project, was only at its infancy at the time (it was completed in 2001).

One could not wait for these developments. Tariffs had to be reformed and one had to find a plausible way of doing so. OLP thus engaged in such a task from first principles, by going over the following rudimentary sequence of steps:

- Step 0: Go over Steps 1–9 for two scenarios: (a) current traffic, including local traffic, (b) scenario with increased transshipment traffic;
- Step 1: Assume a traffic scenario (expressed in TEUs, broken down by box type, and pattern of port calls in Piraeus for mother ships and feeders);
- Step 2: Assume number of available gantry cranes;
- Step 3: Assume an average gantry crane productivity (number of moves per hour, or per shift);
- Step 4: Assume an average gantry crane down-time percentage;
- Step 5: Compute number of crane moves needed to handle total traffic;
- Step 6: Compute number of shifts needed for number of moves of Step 5;
- Step 7: Compute labour costs;
- Step 8: Compute other running costs;
- Step 9: Compute total costs;
- Step 10: Compute difference in total costs between the two scenarios;
- Step 11: Divide by number of additional transshipment moves, to get marginal cost per move.

The purpose of this crude model was to compute the marginal cost of transshipment and examine 'what if' scenarios that would be useful in OLP's negotiation with lines that would express an interest in using Piraeus as a hub.



Each of these scenarios was described by a specific volume of transshipment traffic, a specific mix of 20/40 boxes, and a specific pattern of port calls in Piraeus for both mother and feeder vessels (Step 1).

In Step 2, the number of available gantry cranes was five or six in early 1997 (one of them was usually down), but would go to nine or 10 in mid-1997, with the arrival of the new cranes.³ In Step 3, the base crane productivity was 110 moves per shift, but might vary widely on a case by case basis. There were three shifts around the clock, each averaging about $7\frac{1}{2}$ h. In Step 7, labour costs depended on the composition of dockers gangs, and there was a parallel negotiation with the dockers unions to reduce them (negotiation that proved by and large unsuccessful).

It was clear that the pricing scheme (X euros per move) had a completely different structure from the cost scheme. The latter, at least as far as its labour component was concerned, was a function of the compensation structure of the port's personnel, which, especially for dockers, was rigid and cumbersome, being a function of time spent working on the ship and other parameters. This meant that the terminal's profitability depended critically on one parameter, the one assumed in Step 3, the average crane productivity. If that was high, cost was contained and the transshipment operation could be profitable. If it was low, the opposite was the case. High productivity was essential for container transshipment anyway, since lines demanded that in order to use Piraeus as a hub. However, it was also important for the profitability of the operation, especially given that transshipment rates were squeezed downwards.

Many scenarios were run, and different pricing schemes were tested on them. What turned out impossible to estimate was the elasticity of demand, that is, how much transshipment traffic (if any) would come to Piraeus as a function of price. That was the reason transshipment traffic was assumed as an exogenous user input in Step 2. It was realised that the actual volume of transshipment traffic would reveal itself only in reality, assuming of course that such a traffic would appear in the first place.

At the end, and after considerable analysis, discussion and negotiation, a 'sliding' scale was established, as shown in Table 3. The rate was in US dollars, and was flat, the same for a 20- or 40-ft container, laden or empty.

Moves in this table were total moves, for all categories of transhipped containers.⁴ For reasons that certainly cannot be defended on any scientific basis, this scale was decided to be 'sliding' in the following sense: For a user who had A moves per year, the total charge was simply A times the rate corresponding to the range of traffic that bracketed A . For instance, for 3,000 moves the charge was $3,000 \times 72.5$, while for 7,000 moves the charge was $7,000 \times 59$. For 25,000 moves the charge was $25,000 \times 50.5$ and for 110,000



Table 3: New dollar scale for transshipment

Moves/year	Price (USD per move)
1–5,000	72.50
5,001–20,000	59.00
20,001–100,000	50.50
> 100,000	43.50

moves the charge was $110,000 \times 43.5$. This meant that the rate was uniform for all boxes, and only depended on which ‘traffic bracket’ the traffic fell into.

The way this scale would be applied was the following. In the beginning of the year the line would start with the highest rate (USD72.5 per move) and pay that rate until 5,000 moves were reached. If the moves were higher, the charge would be recalculated for the next lower rate (USD59 per move), until 20,000 moves were reached. And so on.

Given the above way of charging, it is clear that the above scale had certain anomalies, or ‘kinks’. For instance, if a line had between 5,001 and 6,144 moves, the line would pay less than if it had exactly 5,000 moves, by suddenly falling in the next lower rate bracket. Similar anomalies existed if traffic was between 20,001 and 23,366 moves and between 100,001 and 116,091 moves. Fortunately, no occurrences of such kinks were ever observed.

ADDITIONAL PROVISIONS FOR TRANSHIPMENT

The above sliding scale was put into effect in November 1997. In parallel, a new clause was introduced into the appropriate OLP ‘regulation’, that lines could team up as ‘alliances’ to handle each other’s transshipment traffic together and be charged as a single entity. At the same time, strict provisions were also introduced to set common rules for such alliances and also avoid ‘bogus alliances’, that is, lines that had no operating link whatsoever with one another, but wanted to benefit from the new scale by pooling their traffic and pretending they had formed a transshipment alliance.

These provisions were the following:

1. Any line or multi-line alliance would have to include at least one trunk line calling at the port with ‘mother ships’ at regular time intervals.
2. All mother and feeder ships of the line or alliance are declared to the port in advance.
3. All transshipment traffic of the alliance is pooled together and charged as a single entity.
4. Minimum number of transshipment moves 60,000 per year.



5. Minimum number of transshipment moves within any 3 consecutive months, 10,000.
6. Minimum number of transshipment moves within any 10 consecutive mother ship calls, 4,000.
7. Lower bounds in provisions no. 5 and 6 above to be pro-rated upwards if minimum number of annual transshipment moves is agreed to in advance to be more than 60,000 (by signature of a contract).

Of the above, the ‘anti-bogus’ provisions were essentially provisions no. 1 and 6, which essentially precluded the possibility that several lines might pool their disconnected feeder traffic and claim that they were working together as a transshipment alliance, just to get a lower rate. Provision no. 5 provided an early warning that the line or alliance might not meet its annual minimum obligations. Note that the lower bound of 10,000 moves in 3 months was on purpose more loose than 60,000 moves divided by 4 (= 15,000 moves in 3 months), to account for possible seasonal fluctuations in traffic.

As mentioned earlier, the Ministry of National Economy had no business approving the new transshipment scale, as it essentially involved a rate decrease. That is why the new scale became effective immediately upon its approval by OLP’s Board (November 1997).

OLP however, submitted to the Ministry the new domestic ferry berthing rates, which were approved by the Board around the same time and definitely needed Ministerial approval. For these rates, an increase of up to 200% was decided, amid screams of protest from domestic ferry operators. Even though an even higher increase was warranted, the Ministry of National Economy was shocked with the 200% figure, worrying about the possible impact of this increase on inflation. However, they agreed to them after it was explained that since even the new rates were very low, their effect on inflation was negligible.

The new ferry rates became effective in the spring of 1998, and have not changed ever since (actually their value in euros has decreased, as the conversion rate of the GRD to the euro increased from 1998 to 2002). OLP tried to reform them again in year 2000 but failed, as will be seen later.

PIRAEUS BECOMES A HUB PORT

Container lines Mediterranean Shipping Company (MSC) and Norasia signed a contract to tranship containers in the port of Piraeus in November 1997. This contract lasted until the summer of 1999, when a new contract was signed only with MSC, Norasia having left Piraeus in 1998. The latter contract was renegotiated several times in later years, and MSC became (and still is) the



terminal's major client. In general, terms of transshipment contracts included the rates (which might not necessarily follow the transshipment scale), the minimum transshipment traffic obligation of the lines and performance standards for the terminal, to the extent applicable.

It is interesting to note that the 1997 scale was initially not applicable to the transshipment of containers for which the port of origin or destination was another port in Greece! For a move to count as a transshipment move, both origin and destination ports had to be *foreign ports*. The reason for this was that containers to be transhipped were initially identified as containers 'in transit' *in the customs sense of the word* (coming from a foreign country and going to a foreign country). Thus, a line wishing to use Piraeus to tranship boxes with an ultimate destination the port of Thessaloniki, could not benefit from that scale. This anomaly was eventually identified, but not fixed until some years later.

These developments certainly contributed to the eventual emergence of Piraeus as a major transshipment hub in the Eastern Mediterranean. With a significant increase of container traffic since late 1997, Piraeus made Containerisation International's list of 50 busiest container ports in the world in 1998 (with slot no. 41) and broke the 1 million TEU mark in 2000.

The 1997 transshipment scale lasted until year 2000, when it was replaced by another one, which was 'incremental' and had none of the 'kinks' of the previous scale. It was applicable also to boxes that had as origins or destinations other ports in Greece and was as in Table 4 that follows (flat rate, for 20- or 40-ft containers, laden or empty).

Again, there was nothing scientific about this new scale. But the rationale of it, established after talks with the port users, was to provide incentives for a line to increase its transshipment traffic, and, be competitive with other terminals. The word 'incremental' meant that if a line had 11,000 moves, the first 5,000 would be charged at 60 euros, the next 5,000 would be charged at 54 euros, and the remaining 1,000 moves at 51 euros. The new scale was considered more competitive than the old one, and it was stipulated that a line or alliance could enter into a contract with OLP if they could guarantee at least 40,000 transshipment moves per year.

Table 4: New transshipment scale (as of 2000)

Moves/year	Price (euros per move)
1-5,000	60
5,001-10,000	54
10,001-20,000	51
> 20,001	48



The 2000 transshipment scale is still operational. In addition to MSC, China Shipping Container Line (CSCL) had a contract with OLP, during calendar years 2000 and 2001.

REFORM OF LOCAL CONTAINER RATES – CARGO HANDLING

The reform of local (import–export) container cargo handling rates presented a different set of difficulties than those for transshipment. For one thing, the rate scale circa 1998 looked as in Table 5 (overtime and 3% charges included – all prices in euros per move):

The ‘ship-dock’ part of this table concerned charges from the ship to the dock or *vice versa*, using the terminal’s gantry cranes. These charges were borne by the shipping line. The ‘dock-gate’ part concerned charges from the dock to the terminal’s gate or *vice versa*, and were borne by the owner of the cargo. No storage charges were included in this table (of which more in a section that follows).

Looking at this table, the following peculiarities can be observed:

1. In general, export container charges were lower than the equivalent import ones, with an overall discount of about 35% (the exception being empties for which there was no difference);
2. As stated earlier, the ship-dock charge for an export laden 20-ft container was lower than that for a 20-ft empty one.

Of course, a differentiation of rates with respect to the direction of traffic (import *versus* export) could not be justified on any cost or legal basis. Only two possible rationales could justify it, the one being noble and the other rather cunning. The ‘noble’ rationale was that the rate differentiation could be viewed (or perhaps was designed) as a way to support Greek exports. The ‘cunning’ rationale was that this was yet another application of the ‘charge what the traffic can bear’ doctrine, a doctrine most prevalent in liner shipping and in other forms of monopoly or cartelised services.

Table 5: Local container cargo handling original rate scale

Type	Ship-dock			Dock-gate		
	Laden		Empty	Laden		Empty
	Import	Export		Import	Export	
20-ft	72.21	48.69	49.27	22.40	15.82	14.70
40-ft	119.23	81.21	80.34	38.56	27.54	29.94



Both the above two rationales had deficiencies. On the one hand, the ‘support-containerised-exports’ rationale was considered absurd, at least by this author, to be implemented by OLP, while other, more relevant public authorities (such as the Ministry of Trade, the Ministry of National Economy, the Ministry of Industry, or the Ministry of Agriculture) had no such policy, at least for container exports. On the other hand, some port users claimed that the ‘charge-what-the-traffic-can-bear’ rationale did not seem in line with the fair application of the ‘user pays’ principle, at the time just been adopted in the context of the European Commission’s Green Paper (EC, 1997). According to these port users, if the Commission ever inquired, OLP would have a hard time arguing why it charged more to an inbound user than to an outbound one, all costs being exactly the same, and it might be accused of violating Community law and/or of abusing its dominant position.

Given the above, and as a basis for discussion, the following alternative rate table was proposed (see Table 6).

In that table, import–export rates were equal, and flat rates were introduced for the empties (same for 20 and 40 ft). This meant that the 12 prior rates were replaced by only six. In proposing the rates, calculations were made so as to ensure that revenues would not decrease (assuming constant demand and box size mix).

The proposal failed miserably, after a heated and time-consuming discussion with the port users, who up to 1999 had three seats on OLP’s 14-member Board.⁵ Some accused port management of discrimination in favour of carriers with a high 40-ft box mix, as the new table reduced rates for 40-ft imports and empties. However, what seemed to bother them the most was the equalisation of import–export rates. ‘If you want to equalise them, go ahead, but do so by lowering all rates to the minimum’, was the suggestion. That was rejected outright for it would lead to serious loss of revenue, and the analysis went back to square one.

At the end, the following compromise table was adopted, replacing the 12 rates with 10, and equalising only the dock-gate import-export rates (see Table 7).

Table 6: Proposed new cargo handling rates (euros per move)

Type	Ship-dock		Dock-gate	
	Laden	Empty	Laden	Empty
20-ft	79.23	64.56	26.41	20.54
40-ft	105.65		35.22	



Table 7: Adopted new cargo handling rates (euros per move)

Type	Ship-dock			Dock-gate	
	Laden		Empty	Laden	Empty
	Import	Export			
20-ft	76.30	58.69	52.82	23.48	16.14
40-ft	117.39	88.04	58.69	35.21	23.48

Although import and export rates were not equalised, the new table had a smaller gap between them (at most 25% *versus* 35% before) and did not exhibit the anomaly of the previous scheme regarding the 20-ft export containers. At the time it was adopted, it was considered as the first step for the eventual equalisation between export and import rates (something that has not happened thus far).

The new rates were implemented in the spring of 1999, even though the discussion on them started in 1998 and lasted close to 9 months. These rates are still in place. To the best of our knowledge, there has not been any discussion to move from this table to a scheme in which rates are equal in both directions, much less to an all-round flat rate regime.

ABUSE OF DOMINANT POSITION?

An issue raised by several port users was the wide gap between local and transshipment rates. Their argument was tenable. OLP charged as low as USD 43.5 for a transshipment move,⁶ and as high as 117.39 euros for a local move. Both moves had exactly the same cost, but one was priced about three times as much as the other. So the users argued, ‘Either OLP loses money on the transshipment move, or abuses its dominant position on the local move, or both. Which of these is true?’

There was an easy way to counter this argument, albeit evasive. OLP’s pricing practice was perhaps the most direct manifestation of the ‘charge-what-the-traffic-can-bear’ principle, a principle pioneered and widely practised by container lines and conferences on a world-wide basis. However, for an industry that charged its customers three times as much on the Far East to Europe route than it charged them on the opposite direction (and this was not the only example), it was hard to accuse OLP for doing something very similar with its terminal operations. So the lines got a taste of their own medicine in that regard, even though the reasons for such large price differences were not the same.



Another, perhaps more direct, counter argument was that OLP had provided significant funding for building a highway linking the commercial port with the passenger port. Many of the local cargoes would use that highway on their way to or from the terminal. One could then argue that the difference in price between transshipment cargoes and local cargoes reflected the principle that the latter should pay for the infrastructure costs of the highway.

Of course, it was not clear to what extent any of the above arguments would satisfy the European Commission, if it ever investigated whether OLP abused its dominant position with respect to pricing for local containers. Much of the money for the highway was provided by the EU Cohesion Fund anyway. Also, there was a widespread (yet generally not well documented) belief that the steep price difference was a mechanism for OLP to cross-subsidise other port operations that were not profitable. At the same time, OLP's management was very aware that rates that were deemed excessive would increase the lines' appetite to find or establish an alternative cheaper terminal near Piraeus, something that would have drastic repercussions for OLP. Thus far nothing of the sort has happened, but this is a possibility that cannot be excluded in the future, particularly if or when the Greek port market is liberalised.

HOW INELASTIC IS LOCAL TRAFFIC?

Another idea that was tried upon OLP by some major lines in their quest for cheaper local rates was the request to enjoy discounts for local traffic in exchange for more such traffic. The request was rejected, as its most likely effect would be the redistribution of a quasi-inelastic local traffic in favour of the lines that received such discounts and against those that did not. If there were a way for the lines to document that the additional traffic they would bring would be 'new traffic', additional to what the port as a whole was already getting, then their request could be discussed. They were unable to do so and the issue was tabled.

Even so, this last issue has merit in the sense that an appropriate pricing policy might generate new local traffic, for cargoes that would prefer to enter Greece onboard containers *via* Piraeus instead of coming (say) onboard a ro-ro vessel in the port of Patra or *via* Bulgaria onboard trucks. In that sense, the uncontested assumption that demand for local traffic in Piraeus is quasi-inelastic is not true, but the issue of exactly what is the elasticity is still open. Industry circles estimate the non-containerised cargo between Italy and Greece across the Adriatic on board ro-ro ferries as the equivalent of 1,400,000 TEU/year, as compared to about 460,000 TEU/year of local containerised cargo



through Piraeus. So the potential is there, although the way to lure some of this traffic to Piraeus is still elusive.

REFORM OF CONTAINER STORAGE RATES

Cargo handling rates were not the only object of container rate reform in Piraeus. Storage rate reform was very pressing too, as can be seen from the following table of storage rates (Table 8).

Although the rationale of the table was clear (increasingly high rates as a function of time in storage), there were several problems with it. First, it was not very clear why a 40-ft container would not be charged per day exactly twice as its 20-ft equivalent, as the former held exactly the space of two 20-ft boxes. Second, in an era of ‘just-in-time’ systems, a table that even acknowledged that a box could reside more than 3 months in the terminal sounded outdated. Third, some charges were just ridiculously low, as epitomised by the 21 cents of the euro per day (or about 6 euros per month) charged for a 20-ft empty! What could one buy with 21 cents? Not even a chocolate bar!

Storage pricing policy is a prime tool for flow control in a terminal. Very low prices are tantamount to a ‘*stuff the terminal with boxes*’ policy, one that could create a lot of problems, increase congestion costs, and reduce profitability. It was decided that this should be put to an end, and OLP’s Board adopted a new rate table, replacing the original 24 rates with 12 (Table 9):

No charges would be levied for the first two storage days (or 5 days for export-laden containers). Again, no scientific analysis was used to formulate the new rates. However, the rationale for them was three-fold: (a) simplification, (b) rationalisation, and (c) elimination of very low rates that would induce congestion. Indeed, one can observe that in this table, storage charges for 40-ft boxes are exactly twice those of 20-ft boxes. Empties are considerably more

Table 8: Storage rates in force circa 2000 (euros per day)

Time in storage	Laden				Empty	
	Import		Export		20-ft	40-ft
	20-ft	40-ft	20-ft	40-ft		
1–30 days	4.05	5.63	2.11	2.87	0.21	0.40
31–60 days	15.15	21.04	6.76	9.20	0.73	1.43
61–90 days	23.75	33.02	10.59	14.41	1.14	2.25
above 90 days	27.09	37.65	12.08	16.43	1.29	2.57



Table 9: New storage rates (euros per day)

Time in storage	Laden		Empty	
	20-ft	40-ft	20-ft	40-ft
3–10 days (6–10 days for laden exports)	5.87	11.74	0.88	1.76
11–30 days	8.80	17.60	2.35	4.70
Above 30 days	17.60	35.20	5.87	11.74

expensive to store than before, although still much cheaper than laden containers.

There were screams of protest from the port users when such a table was introduced (and its initial version was much harsher). Their argument was that with such prices, the terminal would be emptied immediately, as it would be cheaper for users to store their containers in private yards outside it. The users also warned that this might drop the port's storage revenues. The port responded that its primary goal for introducing such a scheme was not to make money, but expedite the passage of containers through the terminal so that its throughput capacity would increase. The port was prepared to lose storage revenue to achieve this higher goal, but if, in the process of doing that, the port also made some money because some cargoes were left in the terminal, so much the better.

These rates remain in place ever since 2001. The port has earned considerable revenue from them, although in 2004 there have been protests from several users that they were forced by severe port congestion to store their containers more time than they wanted to, and therefore part of these charges were unfair and should not be paid. The legal dispute on this issue is still on going.

Interestingly enough, no restructuring whatsoever was introduced for storage rates of transhipped containers. The last recorded change was their uniform 6% increase in early 1997, together with all other port tariffs. These rates provide a period of free storage for 15 days, and gradual increases for longer times.

REFORM OF DELAYS AND CANCELLATION CHARGES

Another category of charges that seemed unnecessarily complex were the charges levied on a containership that would arrive with a delay from its pre-announced time, or depart with a delay from its scheduled departure time. The



Table 10: Delays charges (euros per hour of delay)

Time period	Monday–Saturday (non-holiday)	Monday–Saturday (holiday)
07.30–22.10	337.78	591.10
22.10–06.00	624.95	878.28
06.00–07.30	506.67	759.99
Time period		Sunday
08.00–21.00		492.73
22.00–06.00		732.03
21.00–22.00 and 06.00–08.00		475.08

Table 11: Cancellation charges (euros)

Monday–Saturday (non-holiday)	Monday–Saturday (holiday)	Sunday
2,296.51	3,309.73	2,758.12

port would then levy the following charges, depending upon the time of arrival of the ship (Table 10).

What was really the rationale for these nine different charges? (which, by the way, involved seven different time periods, one of which was actually only 1 h!). The rationale had to do with the different rates paid to dockers in different time periods. As docker gangs would come to serve the ship and stay idle (but be paid nonetheless), the port really incurred a cost if the ship came late. Similarly if the ship would depart late, the port would incur a cost. However, from the port user’s perspective, the rate system looked Machiavellian, not to mention that it was difficult to apply.

In parallel, penalties existed for a cancellation of a ship call altogether and were as follows (Table 11).

The rationale for this penalty was similar. ‘You did not come, we mobilised the gang, you pay’. But three different rates made no sense to the user, who was used to a flat rate for cargo handling and storage.

This complex system was restructured in 1999 when a flat rate of 586.94 euros per hour of delay, and a flat rate of 2,934.70 euros per cancellation of call were introduced, thus replacing 12 different rates with just two.

OVERALL PICTURE

There have been no changes in any of the container rates since 2001. Figure 1 shows the evolution of OLP’s container traffic from 1978 to 2004, broken down

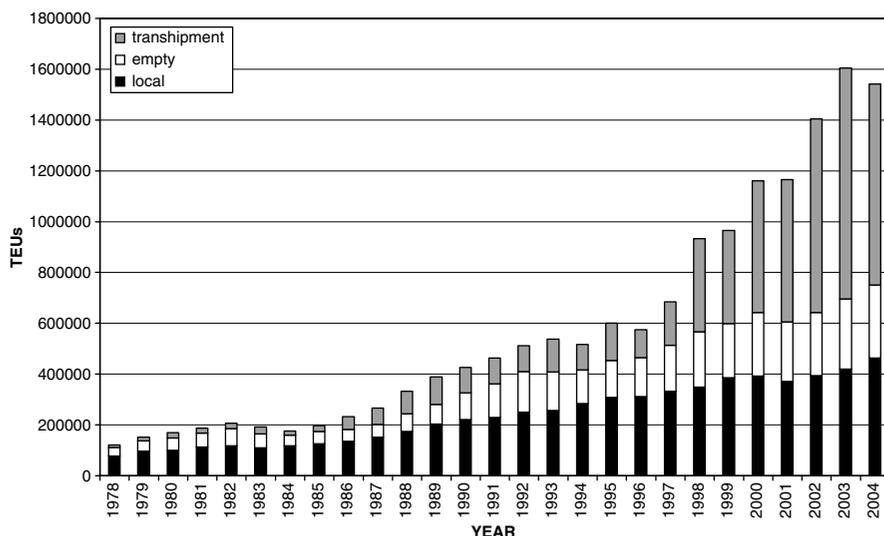


Figure 1: Piraeus container traffic, 1978–2004

by local traffic (laden import and export), empties and transshipment (laden). The strong growth of transshipment traffic can be seen, particularly after 1997, even though there was a reduction of it in 2004.

Even more revealing is Figure 2, showing the dramatic shift in traffic mix through the terminal. Being less than 25% in years prior to 1998, transshipment traffic surged afterwards, and in fact after 2001 it went above 50% of the port's total TEU traffic. There are currently concerns that although Piraeus should remain a hub port in the East Med, too much of transshipment activity may be counter-productive and not necessarily profitable, particularly in case there is congestion and low productivity in the terminal. In fact, some users complained of congestion problems in years 2003 and 2004.

It was reported that terminal revenues increased in 2004 *vis-à-vis* 2003, even though overall TEU traffic dropped. This can be explained by the fact that local traffic increased in 2004 *versus* 2003, and per box revenues of local traffic are higher than those of transshipment, whose traffic registered a decline. OLP remained financially healthy and profitable at least since corporatisation, registering a before taxes profit margin of 24.5% on turnover in 2001, 23% in 2002, 21.4% in 2003 and 15.4% in 2004. OLP's IPO in 2003 was oversubscribed more than 16 times. However, the gradual reduction of profitability (especially in 2004, and, as it seems, in 2005) is a concern and measures to reverse it are contemplated.

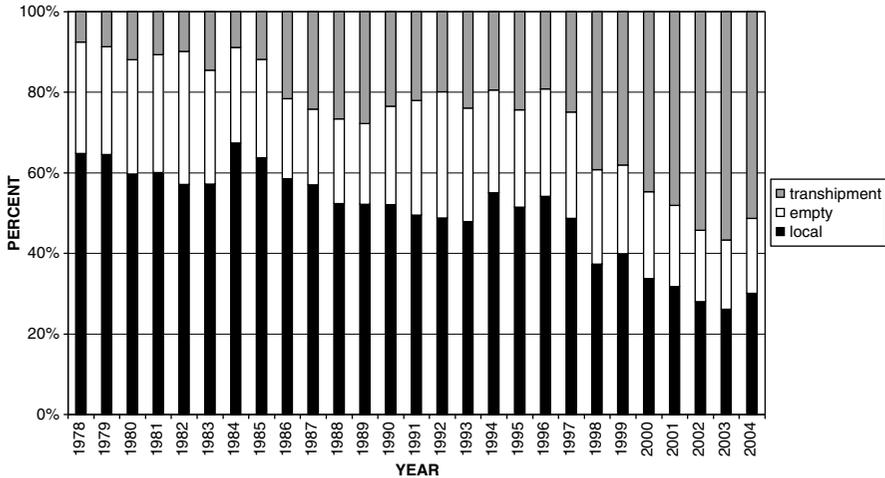


Figure 2: Traffic mix, 1978–2004

OTHER TARIFF REFORMS

In the period to 2001, there were several additional tariff reforms in Piraeus. These were extensive but focused. They covered the following areas:

- Ships, vehicles and passengers;
- Ship repair zone;
- Port exhibition centre;
- Car terminal;
- Rental of various spaces in the port area;
- Grain silos;
- Dry docks, floating docks;
- Water supply.

It would be beyond the scope of this paper to cover all these reforms. But it is worth mentioning the following:

1. OLP operated (and still does) four ship repair docks, two floating docks and two drydocks. The daily rate for the use of each of these docks was a complex function of ship tonnage and dock residence time. This meant that two different ships (one small and one large) would pay a different price if they used the same dock for the same duration, even though the cost to the port was the same. It was decided to scrap this system and adopt a flat rate, different for each of the four docks, but independent of ship size, on a



constant price per day basis. So long as the ship could enter the dock, the daily rate was fixed. The new rates became operational in 1999.

2. Even after the 200% increase of domestic ferry rates of 1998, a serious distortion existed between these rates and the equivalent rates for ships going to destinations abroad, which were higher, even for two identical ships. This was a clear violation of EC Regulation 4055/1986, according to which no discrimination with respect to destination can exist. This represented a golden opportunity for OLP to fix the discrepancy, by equalising the domestic berthing rates to the level of the 'international' rates.
3. To that effect, two comprehensive packages that completely restructured the framework of charges for ships, passengers and vehicles were approved by OLP's Board in year 2000. However, both packages were rejected by the Ministry of National Economy a few years later, on fears that higher rates would have an impact on inflation. OLP did not come back on this issue and in fact the port is still in violation of EC law in that regard. Some other ports in Greece that had the same problem fixed it in reverse, by lowering the international rates to the domestic level, raising of course questions as to how the loss of revenue would be recouped. To date, ferries pay to OLP the same berthing fees as in 1998, even though the Government has allowed ferry operators to raise their ticket prices several times since then. In fact, since 1 November 2002 (the effective date of cabotage deregulation in Greece) many of the coastal shipping services have no price restrictions.
4. There were all sorts of other distortions that warranted attention. For instance, a TIR truck coming to Piraeus on a ro-ro ship would be charged much less than a 40-ft container being unloaded onto a truck from a ro-ro ship. As the two cargo units had approximately the same volume, the question was, why would the one category of cargo be charged so much less than the other? Was the shell of the package really the defining factor? Wasn't this unfair competition against containers unloaded by ro-ros? OLP fixed this discrepancy sometime in year 2000.
5. The restructuring of the tariffs of the ship repair zone took some time and was quite extensive. Rates concerned berthing fees for ships that docked specifically for repairs. They had a very complex structure, being a function of ship size, type and time. After considerable analysis and discussion, the 'Machiavellian perversion' structure of 86 or so different such rates that existed was reduced to just 12, and an incentive scheme for large-scale repair work was provided for. The new system became operational in 2001.

To date, there has been no further reform of tariffs at OLP, except for the 3 weeks of the Olympics in August 2004, when special rates were applied for services rendered to cruise ships parked at the passenger port as floating hotels.



In the spring of 2005, OLP's management hinted that some rates would have to increase. In fact, it seems that a new tariff reform is being contemplated, however, it is not clear whether this would be done by a uniform increase or by a targeted restructuring.

CONCLUSIONS

In the seminal 'Green paper on ports and maritime infrastructure' (EC, 1997), recommendations on possible port pricing policies were issued, and principles such as 'user pays' and transparency received prominent attention. Relevant EC Projects such as 'Atenco' have further provided more insights on what can be practically achieved and what not (Haralambides *et al.*, 2001). In this author's opinion, there can be a wide gap between what can be expected scientifically, and what can be applied in practice. The latter is many times dictated by things as mundane as the design of accounting systems, the degree of computerisation, and the availability of cost data. While this author believes that this statement is true in many cases, none epitomises this better than the tariff reform exercise in the port of Piraeus. By necessity, this was a reform that was carried out in the absence of sophisticated accounting or other scientific tools, but with a view to make tariffs simpler, more competitive and more rational. The effort that was put forward was significant and targeted, and even though it probably produced only a small dent in the myriad of the port's tariffs, it also produced results that framed the economic development of the port in recent years, ensuring profitability and growth. Of course, tariff reform has been only one within the active set of tools used in the development of the port. However, in this author's opinion, it has been a significant tool.

Years ahead may involve new challenges. The most serious of these is if or when the domestic port market is liberalised. This may be the result of a new EU 'port package' or it may be the strategic decision by the Greek government. Whatever the reason, if something like this happens, OLP would have to drastically reform its rates, otherwise much of the local traffic demand that is currently captive will escape, with unpredictable consequences. Nowhere is this more true than in the container terminal, and in fact OLP has already witnessed a similar 'cargo drain' before, when most of its conventional cargo fled to the nearby port of Elefsina in the late 1980s and early 1990s. The reason for this loss has been OLP's inability to offer competitive rates, and the main reason for this has been the intransigence of dockers to reform their work regulations for conventional cargo. By the same token, a drastic reform of container tariffs to cope with domestic competition would necessitate similar reforms in dockers work regulations within the terminal.



It is also obvious (to this author at least) that domestic port market liberalisation, whenever it occurs, has to go hand in hand with OLP's ability to set tariffs in sectors that are currently in the red, or do not achieve an acceptable return on investment. A prime example of such a sector is the passenger port. By refusing to approve requested increases in low domestic ferry berthing rates, the Government is essentially providing a subsidy to private coastal shipping companies, many of which are listed in the Athens Stock Exchange. Ironically, this subsidy is provided *via* a public company also listed in the Athens Stock Exchange. Arguments that this is a 'social' policy to subsidise the travel of people to and from the islands of the Greek archipelago are really not valid, as it would be more efficient to provide such subsidy to these people directly, rather than through coastal shipping lines, or *a fortiori* through OLP. However, if the Government wants to apply such subsidy through OLP, OLP is surely entitled to some compensation.

Whatever happens, and in view of the challenges in the years ahead, it is clear that more work will need to be carried out in the tariff area so that the port of Piraeus can continue to use tariff reform policy as one of its prime strategic instruments.

Acknowledgements

This paper is based on my experiences as CEO of the Port of Piraeus from August 1996 to March 2002. I am indebted to Mrs Ioanna Dimitreli-Liakopoulou, Head of OLP's Department for Regulations and Tariffs during my tenure there, for her significant contribution to what seemed like the most extensive tariff reform of the port in recent years. Thanks are also due to Michael Sarlis of Sarlis Container Services for some useful comments on the manuscript, even though as port user he disagreed on all container tariffs. Last but not least, I want to thank the Editor in Chief and an anonymous referee for their important comments on a previous version of this paper.

ENDNOTES

- ¹ All prices in euros have been converted from Greek drachmas (GRD) using the central conversion rate of 340.75 GRD per euro (2002). In earlier years, the GRD to euro (or ECU) rate was higher.
- ² This actually happened in the middle of serious labour unrest when government audit authorities insisted that the law had to be applied.
- ³ There were 14 such cranes in early 2005.
- ⁴ This number of moves should not be confused with TEUs. An average value of 1.4 TEU per move was typical, but that could vary, depending on the mix between 20- and 40-ft boxes.
- ⁵ With OLP's corporatisation in 1999, OLP's Board was reduced to nine members, with zero port users represented on it, much to their consternation.
- ⁶ Or in principle even less in contracts that guaranteed a prescribed minimum number of transshipment moves per year.



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