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Transport system charging - Brindisi port fares

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Miss Rossella Murgolo
Department of Economic Sciences
Faculty of Economics
email.: rmurgolo@libero.it
University of Bari

Abstract

Setting fees in transport service has always been particularly important in economy both under a theoretical point of view and for the aims economic policies have to achieve by means of this instrument.

In this view, the issue of the European Commission Green Book in 1997 - on ports and sea infrastructures - and that of the White Book in 1998 - referring to a fair set of fees to exploit infrastructures with an approach in stages in an UE context - led again to the debate on criteria to set transport infrastructures fees, particularly for ports.

This paper aims to find a motion to review taxation on shipped and unloaded goods (art. 13, paragraph 1, letter c), act of 28th January 1994, no. 84) effective in the Brindisi port, Apulia, determined with ordinance no. 1/1999.

Tax revision will occur referring to last years ISTAT indexes and considering the possibility of a higher levy to Harbour Authority necessary to improve services for passengers and goods movement.

Variables of port fees will be set both for passengers and goods handling.

Moreover, estimating transport demand elasticity in relation to price (fee) is essential to set fees variation.

To set fees other ports taxes – comparable and/or competitor with the Brindisi port - will be taken into account together with the increase in management operational costs expected in 2004.

Introduction

Transport service charging has always been a crucial issue in economics both under a theoretical and an economic point of view.

In this work, we make an analysis of different ways of charging in port infrastructures and particularly all fares applied by the Brindisi Port Authority in goods' handling; our goal is bringing them into line with the ISTAT indexes and with new needs to assure a higher revenue to the Port Authority necessary to improve services for goods and passengers' handling.

Therefore, we will set the variables on which port fares level depends. Price – fares - estimations on transport demand elasticity represent essential elements to set fare variations.

For charging it is necessary to consider fares applied by other ports – comparable with that of Brindisi – together with the increase in management operational costs expected for the year 2004-

1. Transport services charging

Over the last few years, the European Union has much stressed both the increasing efficiency of passengers and goods' mobility systems and ports representing crucial links in the whole transport network. Recent documents by the European Commission have largely dealt with European policies on transports trying to find the means to guarantee a free and fair competition both among different ports and for different competitor transport modes to match management and charging in European ports.

The issue by the European Commission of the Green Book in 1997 – dealing with ports and sea infrastructures - and of the White Book in 1998 – a fair charging of infrastructures by steps in view of transport infrastructures charging in the E.U. – re-opened the debate on criteria to establish tariffs on transport facilities and particularly port facilities.

Much importance is addressed to specific public services due to their nature; these are destined to meet normal needs of people according to a common attained or potentially attainable welfare.

Charging is related to features of public services like regulation that allows to conform to the concept of social justice demanding the State to supervise the service supply. This control can be carried out in two ways and at different levels (e.g. by means of a direct service supply, setting more or less severe criteria to establish fares and any change to overcome possible obstacles to a better and wider service use).

As follows, you find different methods to charge..

- Average cost charging;
- Marginal cost charging;
- Double tariff.
- Average cost charging concerns fixed and variable costs with the aim to cover production costs. The problem of this type of evaluation comes out in setting that part of price covering fixed costs and the remaining part that covers variable costs.
- In marginal cost charging, fares are obtained with the cross between the demand curve and the marginal cost curve. Investigators like Dupuit and Hotelling are among the first supporters of this charging criterion. Hotelling offers a mathematic formalization of the principle according to which the social surplus is at its maximum level if price is equal to marginal cost even though the break-even point is on the decreasing part of average costs. Any possible loss is covered by taxation. These theories have been largely criticised (e.g. Coase and Clemens).
- In the double tariff there is a fixed part – destined to cover fixed costs – and a variable part established together with the marginal cost. According to this fare, users pay the whole cost of the service and the market 'chooses' how to use resources to avoid redistribution among users and taxpayers. This fare has two aims; on the one hand, there is a redistribution and on the other hand, a price being on line with production costs is required. (Li Donni, V., 1991). In this case, it is necessary to chose a fare that does not discourage minimal social consumptions to avoid wastes in the high income users segment.

According to the European Commission, the average cost criterion would impose too high port taxes characterised by unused ability and may turn inefficient 'since there is no economic reason why to ask for current users to pay sunk costs related to past investments considered as irrecoverable.

By means of social marginal cost charging, the Commission wants to address to users (if you use, you pay) operational costs, costs of new investments and external costs. Because this lays on a rather strange concept of marginal cost it is partly corrected in the White Book (1998) where a charging system in two parts and a system of crossed benefits are analysed.

The Commission says that the 'if you use, you pay' principle must be applied only to infrastructures

of the port; it would not be temporary applied to sea infrastructures placed out of the port area - for the dredging entry canals to ports - because these facilities have some characteristics of 'public good'.
It is necessary to notice that the analysed documents of the Commission do not represent any advance in showing methods and criteria to calculate external costs; practical difficulties are well known and they are certainly one of the reason why it is difficult to pass from putting forward a principle to implement real measures.
Particularly, both the hypothesis of forms to cover costs and that of *marginal cost pricing* in the port sector have several further technical or political problems in their application.
Firstly, there are practical difficulties in the calculation of marginal costs. Even this aspect has been largely dealt with in specialized literature (Talley – 1994 – underlines how inadequate accountancy is for this aim in ports). The Commission recognizes the problem and defers it to a future deeper technical analysis.
Once difficulties in the evaluation of charging are clear thanks to one of the aforesaid methods and once the different needs of the Brindisi Port Authority are known it is possible to detect the approach used to set port tariffs.

2. Port tariffs referring to section of goods

To establish the level of tariffs on goods it is necessary to start from their adjustment to the ISTAT(Central Statistical Office) indexes from 1999.
The ordinance no. 3/1998 establishes that fares to be applied to traffics of goods starting from 10th February 1998 are organized as follows:

a) The fixed part is equal to Euro 2.582,28;
b) The variable part is the following:

1) Cereals and flours	euro 0.04/ton
2) Coal	euro 0.05/ton
3) Fluid and assimilable products in bulks	euro 0.03/ton
4) Other items in bulk.	euro 0.04/ton

5) Steel and iron industry products and semiproducts in items euro 0.04/tonn

6) Miscellaneous goods in items euro 0.10/tonn

7) Exceptional items euro 0.15/ton

8) Containers euro 0.26/piece

9) Rolling stock euro 0.36/piece

In next paragraph, there will be a comparison with fares applied to different categories of goods related to the port of Taranto, Bari and Venice[1] after having shown the adjustment of fares to ISTAT indexes[1].

3. Variation of goods' tariffs after the adjustment to Consumer Price Indexes

The establishment of port tariffs related to different commodity sectors requires to find their value after the adjustment to ISTAT indexes.

The review has been carried out starting from February 1999 until February 2004 on the basis of the National Consumer Price Indexes for the family of workers and clerks according table no.2

Tab. no. 1: Port tariffs review on goods according ISTAT indexes

TARIFFS	YEARS					
	1999	2000	2001	2002	2003	2004
Cereals and flours	0.040	0.041	0.042	0.043	0.044	0.045
Coal	0.051	0.052	0.053	0.054	0.055	0.056
Assimilable and fluid products in bulk	0.030	0.031	0.032	0.033	0.034	0.035
Other items in bulk	0.040	0.041	0.042	0.043	0.044	0.045
Steel and iron industry products and semiproducts	0.040	0.041	0.042	0.043	0.044	0.045
Miscellaneous goods in items	0.101	0.103	0.106	0.108	0.111	0.113
Exceptional items	0.152	0.156	0.161	0.165	0.169	0.173
Container	0.263	0.269	0.277	0.283	0.290	0.296
Rolling stock	0.364	0.373	0.384	0.393	0.403	0.412

Source: our processing on ISTAT data

As underlined on the table, any fare variations must take into account their adjustment to the IPC; the variation in 1998-2004 is the following:

Tab. no. 2: Value of tariffs related to goods in 1998 and in 2004

TARIFFS		
	1998	2004
Cereals and flours	0.04	0.05
Coal	0.05	0.06
Assimilable and fluid products in bulk	0.03	0.04
Other items in bulk	0.04	0.05
Steel and iron industry products and semiproducts	0.04	0.05
Miscellaneous goods in items	0.10	0.11
Exceptional items	0.15	0.17
Container	0.26	0.30
Rolling stock	0.36	0.41

Source: our processing on ISTAT data

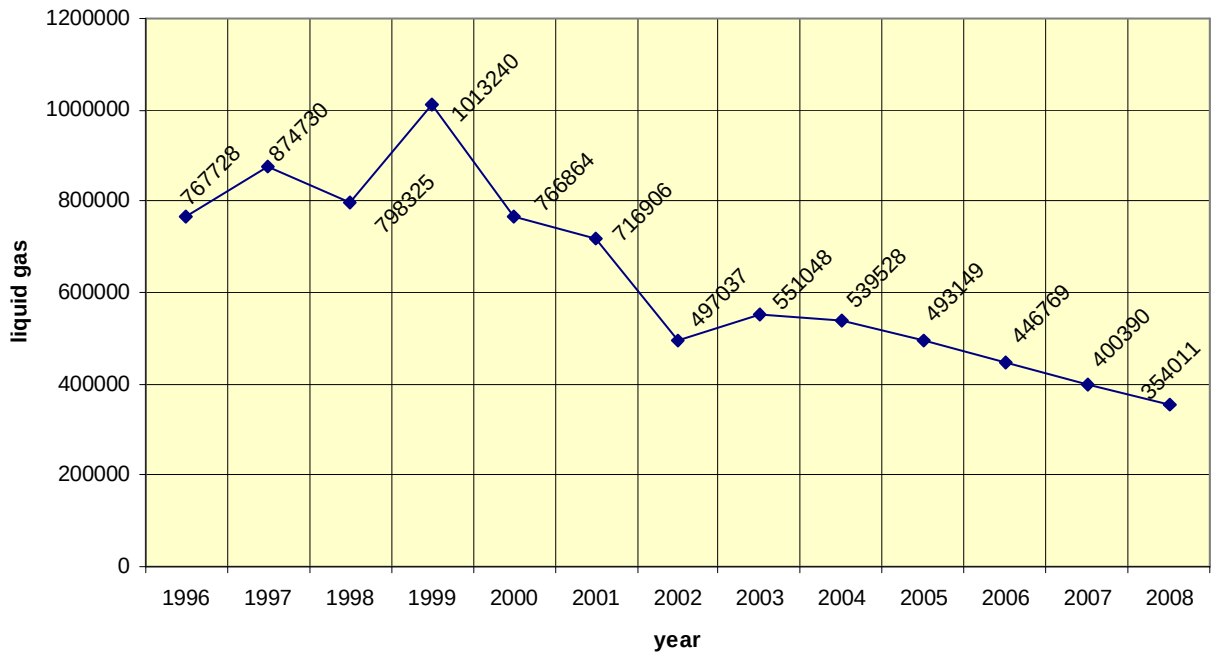
4. Goods' handling as an essential factor in choosing tariffs level

Charging goods asks for the analysis of goods flows recorded from 1996 to 2004.

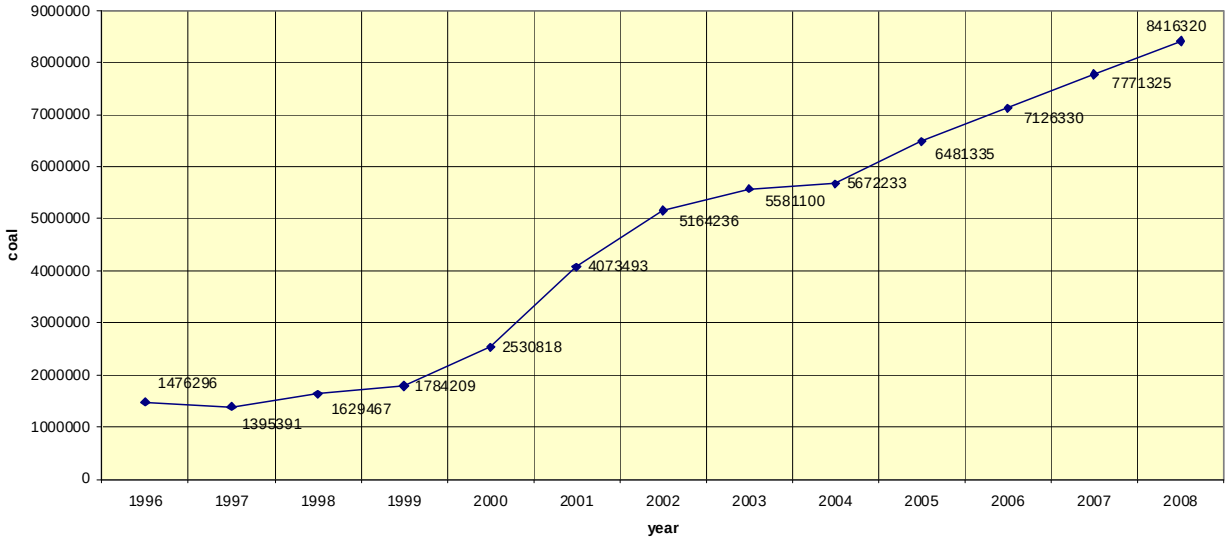
It is also important to establish the flow of goods detected by a 'digression analysis' from 2005 to 2008.

This check has been carried out to be able to forecast any possible increase being higher for goods and having a growing handling trend.

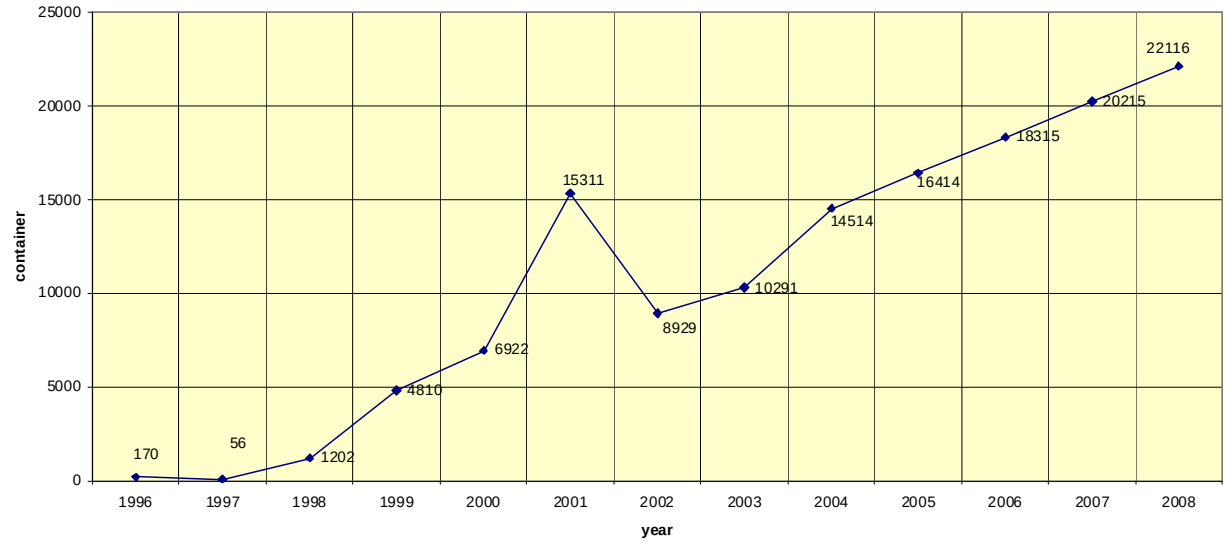
Graphic 1. Liquid gas (anni 1996-2003)
Trend 2004-2008



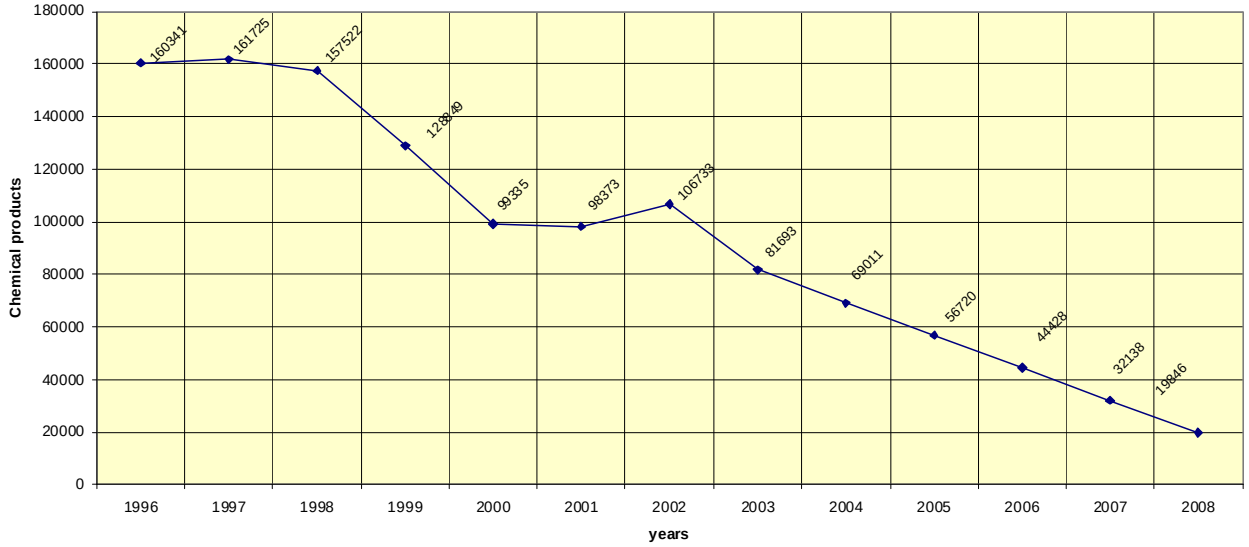
Graphic 2. Coal (year 1996-2004)
Trend (year 2005-2008)
(tons)



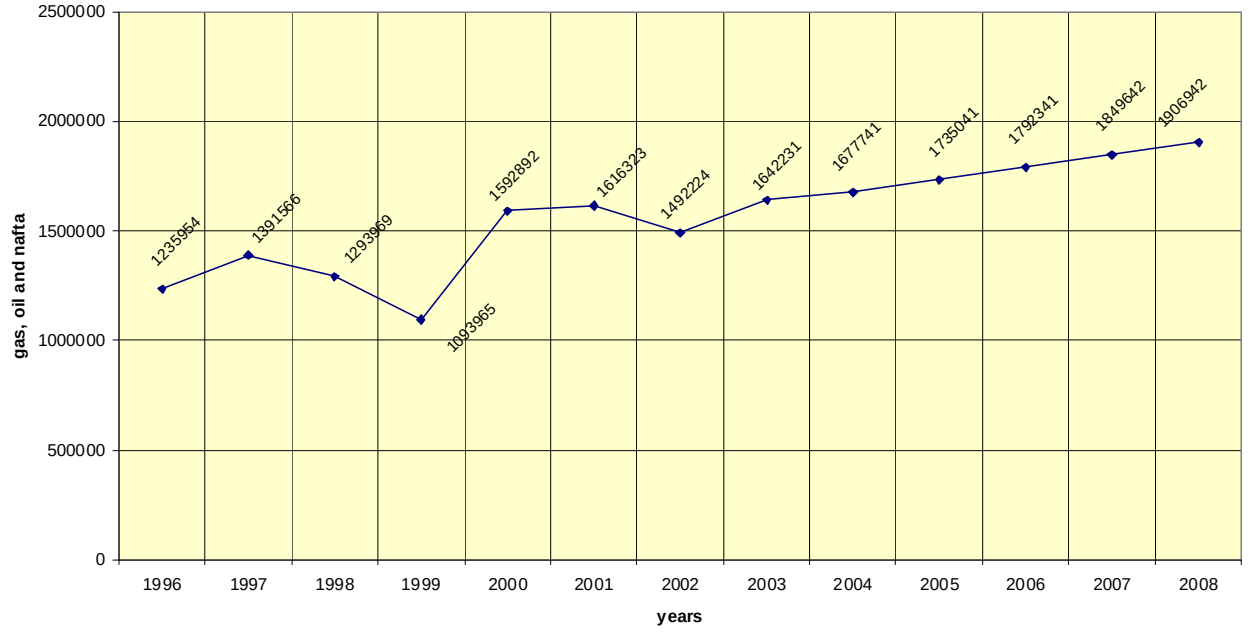
Graphic 3. Container (year1996-2004)
Trend (Year 2004-2008)
(TEU)



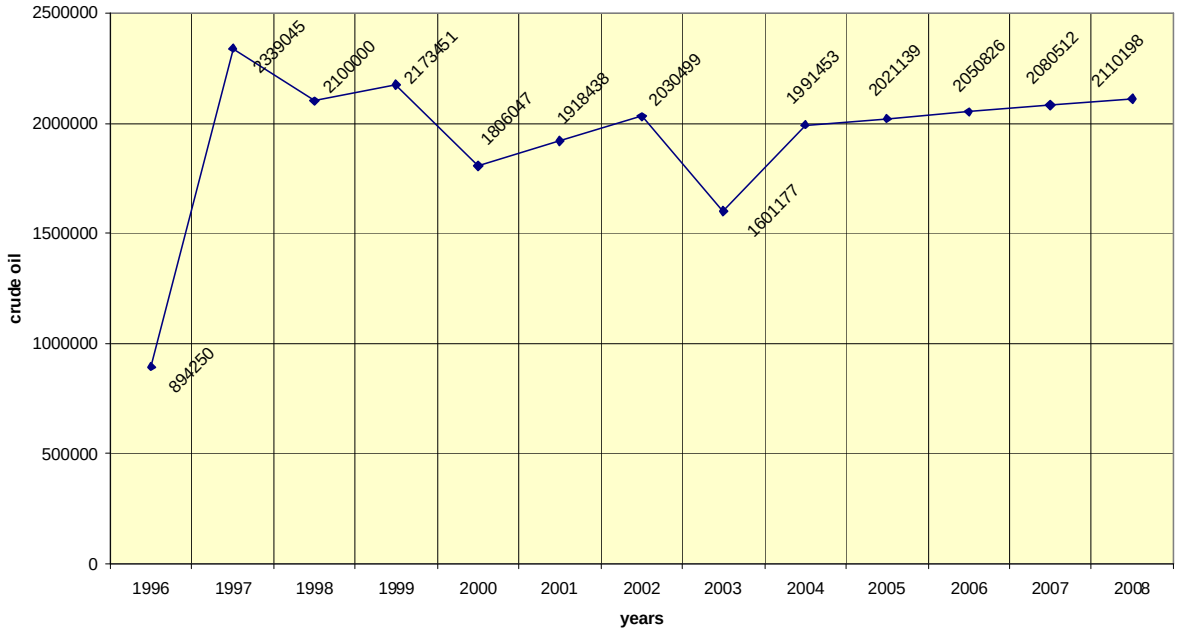
Graphic 4. Chemical products (years 1996-2004)
Trend (years 20052008)
(tons)



Graphic 5. Gas oil and nafta (years1996-2004)
Trend (years 2005-2008)
(tons)



Graphic 6. Crude oil (years 1996-2004)
Trend (years 2005-2008)
(tons)



5. Fares on goods in ports and comparison with the charging in Taranto, Bari and Venice

Any increase in fares is influenced by the two important elements:

1 Traffic trend over the past years until 2004 with forecasts for 2005 and 2008;

2 Value of fares applied by the other comparable ports.

An increase in fares on goods is clear on the graphic found on last paragraph showing forecasts on handlings until 2008 and underlining the *trend*. A decrease in liquid gas is also shown in the data referring to 2004 and in those expected for 2008; coal handling is increasing with a value equal to 5.672.233 in 2004 against a value of 8.416.320 (+48,4%) in 2008.

The graphics on different types of goods show further changes like an increase in the expectations on containers' handling equal to 52,4% in 2008 compared to 2004, as well as a steady trend of fuel oil handling; petrol, gas and naphtha show only a little increase against a decrease of chemicals' handling..

An analysis of the port of Taranto shows the following data:

Tab. no.3: Fares applied from the Taranto port related to goods in 2004

TYPE OF GOODS	FARE
PHOSPHATES AND ASSIMILATED PRODUCTS, NITRATES EXCEPTED FOR SODE NITRATE.	0.09136
SAND, GRAVEL AND POZZOLANA, CLAY AND REFRACTORY EARTH, NON-MINCED KAOLIN AND QUARTZITE, LIME, QUICK AND SLAKED LIME, CEMENT STONE AND STONE AGGLOMERATES, BUILDING STONES AND SODA NITRATE.	0.04518
CEREALS, COAL, MINERAL OILS IN BULK AND BRICKS	0.1162
ARTICLES OF CLOTHIING, CACAO, COFFEES, COLOPHONY AND RESIN, DRUGS AND GROCERIES,	0.23240
OTHER GOODS	0.155

Tab. no. 4: Tariffs applied on goods by the port of Bari in 2004

TYPE OF GOODS	TARIFF
SOLID PRODUCTS IN BULK	0.031
FLUID PRODUCTS IN BULK	0.039
OTHER GOODS IN GENERAL	0.077

Source: Our processing on data provided from the Port Authority of Bari

Tab. no. 5: Comparison among fares on goods in the ports of Brindisi, Taranto and Bari - 2004

GOODS	FARES TA	FARES BA	FARES BR
Cereals and flours	0,1162	0.031	0,04
Coal	0,1162	0.031	0,05
Assimilable and fluid products in bulk	0,04518	0.039	0,03
Steal and iron industry products	0,04518		0,04
Miscellaneous goods	0,155	0.077	0,1
Exceptional items*			0.15
Container*			0,26
Rolling stock*			0,36

Source: Our processing on data provided from the Port Authority of Taranto, Bari and Brindisi

Conclusions

The possibility to increase fares has been studied considering goods handling detected by means of the OLS (Ordinary Less Square) method, the analysis of historic series from 199to 2004 and underlining the evolutin trend in 2005 and 2008 by applying the regression-prevision function.

A comparison between fares in Brindisi port and those of Taranto, Bari and Venice has been carried out.

A strong disproportion among fares applied in the Brindisi port and in Taranto port has come out(graph. no. 15).

The '*differential of fares'* is found in the following resumptive scheme:

Tab. no. 6: Differential of fares between the ports of Taranto and Brindisi

GOODS	FARE DIFFERENTIAL BETWEEN THE PORT OF TARANTO AND BRINDISI (percentage)
Cereals and flour	190.5
Coal	132.4
Assimilable and fluid products in bulk	52.6
Iron and steel industry products	12
Miscellaneous goods	55

It is possible to forecast an increase in tariffs applied on goods in the Brindisi port included in an average value compared to the fares applied in the aforesaid ports.

If we ma analyze only coal handling – representing one of the most important traffics in the Brindisi port – it is clear that this type of goods are unlike to be subject to changes in price of boarding/unloading because these are used as mere 'instruments'.

Therefore, it is necessary to review fares to cover costs coming directly from coal handling.

Fare adjustments have been carried out on the basis of handling average values of the trend detected in 2001-2004. The Port Authority showed the need to pay additional costs of continuative surveillance – 24 hours a day and 365 days a year – on the Costa Morena east pasage for 200.000 Euro; there are also additional costs equal to 250.000 Euro of ordinary mainteinance of free state-owned areas undergoing

to degradation as a consequence of coal handling and refluent prodsucts coming from energy productions.

The choice to attribute total additional costs – 450.000 Euro- to the average handling of historic series comes from the need to make cautious evaluiations on coal handling.

The same analysis on the trend of future handling (2004-2008) shows that the average handling values are higher than those coming from the analysis of the historic series by means of the OLS method.

In this view, the attribution to additional costs has been done on an average value equal to 4.939.609 tons of coal.

Covering the mentioned costs is likely to lead to an increase in fares equal to 0.091 Euro. Following the fare adjustment, the applicable fare is of 0.123 Euro.