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An Evaluation of the Economic Impact of an Abandoned Vessel: the Tan Trader Case

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***A*bstract:** The status of the ship "abandoned" is identified with cases where the owner is no longer involved in the management of the ship or its crew, doing so in a way that there are no legal and institutional contacts. The ship not only has an owner, but the same staff lacks any reference, even for simple daily and supplies for any costs of repatriation. First we isolated those cost items directly related to the ship and directly proportional to length of stay in port, and secondly we proceeded with the explicit valuation model of general application to other cases, to possible to assess the estimated average costs of an abandoned ship, including lost revenues for employment of the state property. At the conclusion of the research it has highlighted the best practices identified in the European Union as a basis for preparing a series of joint action at EU level. Finally, it has highlighted the possibilities of integration and expansion of research and, in particular, the limitations of currently available data and the possibilities of integrating the model with similar cases.

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1. Introduction

The status of "abandoned" vessel is identified with those cases when the ship-owner is no longer engaged in the management of the vessel nor of its crew. The phenomenon of an abandoned vessel is verified, in fact, after the ship-owner's bankruptcy, after questionable fleet organizational strategies, or after a serious accident of the vessel reaching a point where the management of the vessel, the crew and its duties encounters a lack of contact legal (Athanassiou 1996).

Worldwide there are hundreds of abandoned vessels after their distraint in the ports for security reasons (Longo et al. 2002; Bloor and Datta, 2004; L'Observatoire des Droits des Marins, 2007), or due to a contractual misconduct of the ship-owner (Kahveci, 2003). According to data by IMO-ILO, the number of seafarers involved were 1.780; while in July 2009 the ITF[1] reported that only in the port of Istanbul there were hundreds of means in state of abandonment, while in Italy the more recent figures for 2009 report 15 abandoned vessels, 4 of which in the port of Genoa (Apostolato del Mare, 2008). The existence of an inadequate regulation leads to a situation where the crew is left

[1] International Transport Workers' Federation.

onboard with no rights, not even that of getting away from the vessel. This is a consequence of two reasons, first the new port security procedures (Sampson, 2004) and secondly because the seaman that gets away from the vessel risks losing all his salary back-pays. In theory the seaman should not have circulating problems if he is in possession of a Seafarer's ID book that only allows him to reach an airport or to reach the vessel with the scope of repatriating. One step forward has been made with the ratification of the Seafarers Identity Documents Convention (Revised) 2003 (n°185) that facilitates the concession of an ashore leave and also the admission in a territory for professional scopes that are considered essential for seamen, establishing a secure and uniform identity document released and to them and monitored at international level.

Abandoning the vessel without the consent of the unfulfilling ship-owner could mean losing the right to the matured salary (Fortinopoulou Basurko, 2008) – even before the downright abandonment- and becoming an illegal immigrant in the country where the vessel has been abandoned. The seafarers keep those rights only if they have not abandoned their working place, i.e. the vessel, or if they have not obtained a judicial attachment. As a consequence of this judicial paradox, from the management, normative and bureaucratic difficulties that often make it very difficult to help the seafarers in state of abandonment, the workers found themselves constrained not to abandon the vessel. The plurality of normative sources and subjects involved, among which the ship-owner, the diplomatic representation of the flag state (Alderton and Winchester, 2002a), the diplomatic representation of the seafarers and the Italian State, make the judicial resolving time of the abandoned vessels quite long. In average, the resolution of these cases require a bureaucratic, administrative and judicial procedure that goes from 2 to 4 years; a case of abandonment is considered solved once the ILO receives clear communications from the member state or organization that has initially supplied the information that the totality of the crew has been repatriated successfully and all the due salaries paid (Librando G., 2010). During this period a series of criticalities linked to the vessel management arise, including that of the quay occupation, but specially that of the crew linked to the everyday survival- from the fuel supply to the contacts with the country of origin.

Analyzing the costs derived from the presence o fan abandoned vessel with onboard crew, it is possible to provide a first distinction subdividing the voices into two macro categories:

1) Direct costs, ascribable to the presence of onboard crew

2) Different costs sustained or borne by the community

The first one includes the expenses linked to the crew, their maintenance, the repatriation and are essentially ascribable to voluntary interventions while the second refers to the expenses related to the functioning of the vessel (heating, etc), drinkable water supply, mooring costs, surveillance and towing costs.

Of the above mentioned costs, only a part is directly linked to the abandonment of the vessel (i.e. the repatriation of the crew), while others are costs faced by the community as a consequence of the ship-owners unfulfilled duties (i.e. from the maintenance of the crew to the port expenses).

Only a part of the attributed costs could be later on make up for after a judicial sell, that could occur, as it was already stated, after a noticeably long time. Other costs must be added, such as the occupation of the quay by the abandoned vessel and eventually those linked to the removal of the vessel and its unloading, that in many cases exceed the amount derived from the sale, something that occurs, for example, if there's a need to remove the unusable load due to its deterioration.

Also different factors can influence the personnel's needs and the economic and non economic consequences on the port territory. First of all there should be a control on whether the vessel is registered in the Flags of convenience list or maritime registries that do not provide a full coverage to the onboard seafarers. There are in fact States that even if not formally included by the ITF in the list of the Flags of convenience due to the National legislation in terms of work and welfare, the

onboard working conditions are close to a life-and-death struggle. In the second place, if considering the vessel from the perspective of a future sale, its age and load are key factors. The presence of foreign seafarers onboard could make the management of their needs, usually carried out by nonprofit associations that assure a more efficient support, more difficult considering also the need to manage the state of infrastructures and services. It should be highlighted though, that not only the presence of onboard crew in vessels with flags of convenience in clearly one of the main factors of complication in the case of an abandoned vessel (Leanza 1984) but often the origin of the seafarers themselves is a source of problem. The repatriation expenses are only rarely sustained by the foreign seafarer's diplomatic representation altogether with the payment of due salaries (Fortinopoulou Basurko 2010). In the specific case of abandonment there are three States involved in the situation: the flag State- the first responsible, the State where the vessel is physically present (responsible in the case the first one does not respect his obligations) and finally the State of origin of the seafarers (Charbonneau 2008). In relation with the last category it can be noticed how often some countries that are traditionally suppliers of workforce tend to provide less support to the seafarers of their own country.

The economic crisis of the last years, has indeed worsen this phenomenon. In the previous years the market had reached the highest levels and this had lead to a considerable rise in the price of the vessels, that has influences the ship owner's decision in the pre-crisis period to carry on investments in such direction. Since the last months of 2008 the freight rates' crisis- that became worse during that period- has had an impact on the maritime transport. In the moment of this quick and sudden market crisis, the ship-owner that does not enjoy a solid and efficient economic and financial situation could be unable to bear the trip and fuel costs or even go bankrupt. It should also be taken into consideration how the fluctuation of the raw oil prices has an impact on the fuel prices, representing another critical issue for the ship-owner. Those operators working in precarious conditions or without a solid base, could build vessels that don't have appropriate security conditions- intended as safety[2], and could therefore encounter a navigation ban by the authorities.

Having said this, it should be observed how it is not possible to provide an overall estimation of the annual economic impact of the phenomenon for its future evaluation, but it is possible however to analyze the cost chapters and their behaviour, the structuring of a model that, applied to a concrete case, could provide a series of reference values of the impact an abandoned vessel has for the community.

2. Materials and Methods [3]

2.1 Analysis of Costs

In the first place it is necessary to evidence the cost of the abandoned vessel and of the onboard crew. Such expense chapters are subdivided into three macro-categories, or fixed costs- that are present independently from the fact that the vessel is operative or not- variable costs- that depend on the state of navigation- and the crew costs.

[2] Includes all the measures, instruments, regulations and indications to prevent incidents due to fraudulent acts, especially for terroristic goals.

[3] In this work the attention is concentrated on the economic evaluation of all the costs of the abandoned vessel, but those that even if linked to the vessel, are not directly ascribable to it.

2.1.1 FIXED COSTS:[4]

- *Administrative expenses*: all the costs that imply the management of bureaucratic and administrative practices, linked for example to the port security procedures (ISPS), the presence of foreign seafarers, the management of the vessel- ordinary and extraordinary-. These aspects are easily quantifiable and carried on by a groups of different subjects.
- *Insurance*: The vessel must be fully insured to assure the navigability conditions.

2.1.2 VARIABLE (or operative) COSTS

- *Management costs*: all the costs that at the net personnel costs, must be borne for the management of the everyday operation of the vessel. They include: consumption material, expenses for the load treatment, lubricants, component substitution, reparations and maintenance, agency.
- *Port Costs:* all those costs linked to the port operations, first of which the quay occupancy (that in the case of an abandoned vessel becomes a source of missing incomes for the Port Authority) and all related operations.
- *Fuel consumption:* within this category is included the fuel consumption of the operative vessel.

2.1.3 POTENTIAL SPECIAL COSTS DURING THE ABANDONMENT PERIOD

- *Vessel displacement costs:* they include all the costs related to the displacement of the vessel from the initial quay to other areas.
- *Unloading cost*: they include all the expenses linked to the unloading of the vessel. This activity can be carried out before selling the load or because it is no longer usable. In this second scenario the unloading costs can be higher than the income of a possible sale, especially in the case of vessels transporting chemical goods or cement.
- *Electrical Energy*: even when the vessel is no longer navigating, the supply of electrical energy could be necessary for the seafarers' survival onboard, and due to the fact that the ship-owner is no longer responsible it has an impact on the community. In general when it comes from land it is called *cold ironing* and it is less expensive than the diesel especially in the long term. Due to the fact that not all the quays are endowed to supply electrical energy, specific connections are needed.
- *Fuel:* it is possible to use fuel instead of cold ironing for the functioning of most of the onboard systems[5].

2.1.4 CREW COSTS

- *Personnel costs:* This voice includes the seafarer's unpaid salaries. It can be observed that usually the abandoned vessels with onboard crew are those with flags of convenience (Winchester 2003). The ship-owners that register in this kind of registry are often not subject to a series of expenses specially those linked to the crew costs, therefore even before the state of abandonment the ship-owners undergoing financial difficulties could decide not to pay the seafarers' salaries.

[4] In the fixed cost category must also be included a series of expenses like the financial burden faced by the ship-owner. In this case it was decided not to analyze these expenses because it is extremely difficult to have an estimation of their impact on the single means and in the case of abandoned vessels such costs do not have an impact on the territory where the vessel is moored.

[5] In the examined case such consumption was assumed to be of 400 daily litres.

- *Seafarers maintenance:* the presence of personnel in state of abandonment on the vessel- that as has been already stated cannot/does not want to leave the vessel because that could imply losing the right to receive due salaries makes it necessary to supply them with those goods and services that are vital for their survival, such as foodstuffs and drinkable water. Altogether with this basic goods, the importance of other secondary goods should not be taken lightly because they can reduce the risks of depression, suicide and alcoholism and other pathologies- that are already quite frequent in many seafarers inboard- that present a higher risk for those in state of abandonment (Kahveci 2003). It is therefore necessary to supply them with telephone cards so they can keep the contact with their families, and also newspapers and other goods that could assure a minimum entertainment.
- *Medical expenses*: in those cases when the seafarers- or members of their families that are onboard- undergo difficult health conditions, it is necessary to make the doctor come onboard to supply medical treatment or proceed with the patient's recovery. Apart from the medicine's purchase, it should be also taken into consideration the bureaucratic and administrative difficulties that must be faced if external personnel must come onboard.
- *Repatriation*: in case of abandonment there's the need to repatriate the seafarer. Such costs are often onerous, like the flight tickets that can easily go beyond a thousand Euros per person. In theory such expenses should be faced by the diplomatic representations of the countries of origin yet this does not occur therefore the repatriation expenses altogether with the administrative practices to do so are faced by the local communities.
- *Legal assistance:* the status of abandoned seafarer and that of abandoned vessels imply a series of legal and administrative consequences, the request of unpaid salaries and the legal prosecution of the ship-owner, the sale of the vessel and its load. All these require legal assistance on behalf of experts, which can usually last for months deriving in additional costs.

The above mentioned costs can be re-classified according to table 1 Sub-division of cost categories:

1. *Financial Expression*: cost categories that might provoke a cash flow that can be contextual or delayed. A typical voice that does not have a financial expression is the lack of revenues derived from the quay occupancy of the vessel.
2. *Nature of the Cost category:* if they are costs linked to the conditions of the vessel and its crew or missing revenues, i.e. incomes that do not occur due to the vessels state of abandonment. An example of this type of cost is the expenses for the load removal and the missing incomes are those linked to the quay occupation.
3. *Imputability*: depending if these are costs linked or not to the state of abandonment. In the second case these are costs borne by the ship-owner and once he does not fulfil this obligation rely on the community. An example is payments of salaries, while the costs of repatriation are directly derived from the state of abandonment.
4. *Cost object*: some cost chapters are directly linked to the vessel- for example the unloading expenses- others are referred to the seafarers- like the salaries and contributions.
5. *Presence*: those costs that occur, from the moment the vessel is abandoned, like the administrative expenses for the management of the vessel and its crew. On the contrary, some costs like medical expenses or unloading are not always present.
6. *Generalizability:* intended as the possibility to generalize or not the cost elements to any other vessel. For example, the crew and bunker expenses can be hypothesised with a good approximation while the same thing cannot be done with the the medical expenses, the repatriation costs and the maintenance that tend to vary considerably from case to case.

Table 1. Sub division of the cost categories

COST	FINANCIAL EXPRESSION	NATURE (COST/MISSING REVENUE)	DIRECTLY LINKED TO THE ABADONMENT STATUS	ASCRIVABLE TO THE SEAFARER OR VESSEL	PRESENCE	GENERALIZABILITY
CREW COSTS	YES	COST	NO	SEAFARER	YES	YES
MANAGEMENT COSTS	YES	COST	NO	VESSEL	YES	YES
DISPLACEMENT COSTS	YES	COST	YES	VESSEL	NO	NO
UNLOADING COSTS	YES	COST	YES	VESSEL	NO	NO
ELECTRICAL ENERGY	YES	COST	NO	VESSEL	YES	YES
QUAY OCCUPATION	NO	MISSING REVENUE	YES	VESSEL	YES	YES
FUEL	YES	COST	NO	VESSEL	YES	YES
SEAFARERS MAINTENANCE	YES	COST	NO	SEAFARER	YES	NO
MEDICAL EXPENSES	YES	COST	NO	SEAFARER	NO	NO
REPATRIATION	YES	COST	YES	SEAFARER	YES	NO
LEGAL ASSISTENCE	YES	COST	YES	VESSEL	YES	NO
INSURANCE	YES	COST	NO	VESSEL	NO	NO
ADMNINISTRATIVE EXPENSES	YES	COST	YES	VESSEL	YES	NO

2.2 Methodology

First steps were taken to identify all items of cost and lack of revenue caused by the presence of a ship has been abandoned in a commercial port. For each of these items, as highlighted in the previous paragraph, it is identified on the basis of what factor could vary, or the ship and the presence and quantity of abandoned seafarers.

The cost analysis must be seen before a new light overall, it is therefore possible formalized in a model that highlights the overall costs of a vessel's abandonment.

$$C_A = C_P + C_N$$

Where: C_A = Overall cost of the abandoned vessel; C_P = seafarers costs; C_N= vessel costs; and

$$C_P = \left(\sum_{i=1}^{n} x_i M \; gg \right) + \lambda$$

Where: x_i = seafarer costs; M = number of seafarers; gg = days in which the vessel remains in state of abandonment; λ= repatriation, legal, medical and administrative costs, and

$$C_N = \left(\sum_{i=1}^{n} y_i \; gg \right) + \delta$$

Where: y_i = costs referred to the abandoned vessel; gg = days in which the vessel remains in state of abandonment; δ = additional expenses linked to the towing or to the unloading activities.

Through the application of this model to a concrete case it is possible to provide an estimation of the overall cost of a vessel in state of abandonment, yet it is obviously not possible to provide a definite amount that quantifies the economic impact in terms of costs for the community of any

abandoned vessel. The variation of the value of some cost categories can in fact be quite heterogeneous due to different conditions of the vessel, of the presence of onboard crew, of their composition, nationality and health conditions, all variables that directly influence the expenses of maintenance, repatriation, due salaries and eventually health expenses. Other factors that could influence the costs borne by the community and that vary from vessel to vessel are – as a non exhaustive example- the ship-owners behaviour, the duration of the abandonment, the conditions of the port where the vessel is staying, the eventual support of the diplomatic representations involved.

Even if it is not possible to make an estimation of the overall cost of an abandoned vessel, it is possible, on the basis of a concrete case- i.e. the Tan Trade vessel- to highlight what are the cost factors that generate an impact on the community and also provide an estimation of the magnitude upon which further reflections on the subject could be based on.

The application of the chosen model to this specific case would allow to provide the following evaluations:

- Estimation of the overall cost of the abandoned vessel.
- Estimation of the personnel costs for each single member of the crew.
- Estimation of the costs linked to the vessel and crew status of abandonment and also those where the subject that bares the costs is different.

3. The Tan Trader Case

The standard costs of the Tan Trader vessel are examined with the scope of providing a series of elements that could become the basis for the estimation of the average costs caused by the presence of an abandoned vessel in a port structure.

Tan Trader is a vessel sailing under Maltese flag that arrived to the port of Genoa by the end of 2008 departing from Novorossiysk (in the Black Sea) with a load of 2500 tons of zinc ingots. The vessel was blocked by the Genoese port authorities due to a lack of security conditions. Apart from this, the crew was awaiting the payment of due salaries and suffering a scarcity of essential goods. After the intractability of the Turkish ship-owner, and after being in the port for some months, the vessel was indeed in state of abandonment and the survival of the crew and part of the repatriation expenses was borne by the local office of Apostolato del Mare. It can be observed that for the application of the model, the costs are considered from the moment they manifest, i.e., the moment in which they have been borne by the community, through different bodies such as ITF, voluntary organizations, Port Authorities and other local bodies. This example does obviously take into consideration a multiplicity of elements that can make the estimation vary considerably such as crew's composition and health conditions, the type of vessel, the duration of the abandonment, the ship-owners behaviour, the type of load and its consequences.

With the scope of carrying on a punctual estimation of the costs derived from the presence of a vessel- and its crew- in state of abandonment Table 2 presents all the different categories. For each of these, a cost estimation has been done for the normal operation of the vessel, highlighting the overall cost differentiations and those for each single category. This has been done for the overall cost and for each cost category.

Table 2. Crew costs

	Operative vessel	Abandoned vessel	Abandoned vessel/ Operative vessel (%)
Crew Cost	€ 17.961	€ 17.961	100%
Manning General	€ 4.401	€ 0	0%
Monthly Total	€ 22.362	€ 17.961	80%
Daily Total	**€ 745**	**€ 599**	**80%**

Table 3 shows the daily totals regarding the crew unitary costs.

The same thing was done for the consumption goods (Table 4).

Table 3. Crew Unitary cost

	Operative vessel	Abandoned vessel
Crew Cost	€ 2.566	€ 2.566
Manning General	€ 629	€ 0
Monthly Total	€ 3.195	€ 2.566
Daily Total	**€ 106**	**€ 86**

Table 4. Consumption Goods

	Operative vessel	Abandoned vessel	Difference % (Abandoned vessel/Operative vessel)
Deck and Hull	€ 900	€ 450	50%
Safety	€ 1.100	€ 0	0%
Accomodation	€ 400	€ 0	0%
Communications	€ 500	€ 250	50%
Chemicals	€ 700	€ 350	50%
Charts & Publications	€ 600	€ 0	0%
Paint	€ 900	€ 0	0%
Welding	€ 400	€ 0	0%
Engine General	€ 900	€ 720	80%
Refrigerant	€ 100	€ 80	80%
Cargo Gear Wires	€ 300	€ 0	0%
Monthly total	€ 6.800	€ 1.850	27%
Daily Total	**€ 226,60**	**€ 61,60**	**27%**

And for those linked to logistics (Table 5).

Table 5. Port Logistics expenses

	Operative vessel	Abandoned vessel	Difference % (Abandoned vessel/ Operative vessel)
Freight & Pack & Hand[6]	€ 600	€ 50	10%
Daily Total	**€ 20**	**€1.6**	**10%**

[6] Equal to the monthly total.

Table 6 provides details regarding the lubricants.

Table 6. Lubricants

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/operative vessel)
Oils & Greases etc[7]	€ 2.000	€ 1.600	80%
Daily Total	**€ 66,60**	**€ 53,30**	**80%**

The expenditures linked to the replacements and reserves are pointed out in Table 7.

Table 7. Spares part

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/ operative vessel)
Deck and Hull Spares	€ 800	€ 240	30%
Cargo & Ballast Spares	€ 800	€ 0	0%
Accomodation Spares	€ 300	€ 0	0%
ME & Propulsion Spares	€ 2.000	€ 0	0%
Purifiers & Air Compressors	€ 500	€ 250	50%
Auxiliary Spares	€ 800	€ 400	50%
Electrical & Electronic Spares	€ 500	€ 350	70%
Electrical Generating Spares	€ 500	€ 500	100%
Monthly Total	€ 6.200	€ 1.740	28%
Daily Total	**€ 206,60**	**€ 58**	**28%**

Table 8 highlights the costs linked to maintenance and reparations.

Table 8. Maintenance and Reparations

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/ operative vessel)
Survey Fees	€ 800	€ 0	0%
Deck & Hull Repair	€ 700	€ 210	30%
Cargo & Ballast Repair	€ 800	€ 0	0%
Accomodation Repair	€ 300	€ 90	30%
ME & Propulsion Repair	€ 1.000	€ 0	0%
Purifiers & Air Compressors Repair	€ 400	€ 200	50%
Auxiliary Machinery	€ 500	€ 250	50%
Electrical & Electrical	€ 500	€ 350	70%
Electrical Generating Plant	€ 500	€ 500	100%
Totale Mensile	€ 5.500	€ 1.600	30%
Daily Total	**€ 183,30**	**€ 53,30**	**30%**

[7] Equal to the monthly total.

Table 9 includes the Agency fees that in the Tan Trader case were limited to a partial water supply.

Table 9. Agency

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/ operative vessel)
Misc. Port Expenses[8]	€ 200	€ 0	0%
Fresh Water	€ 200	€ 200	100%
Totale Mensile	€ 400	€ 200	50%
Daily Total	**€ 13,30**	**€6.6**	**50%**

Table 10 expresses the Administrative expenditures that in the case of an abandoned vessel do not subsist.

Table 10. Administration

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/ operative vessel)
Superintendent Trav. / admin.	€ 600	€ 0	0%
SEP/ISM	€ 300	€ 0	0%
Vessel Security	€ 300	€ 0	0%
Management Expenses	€ 5.600	€ 0	0%
Monthly Total	€ 6.800	€ 0	0%
Daily Total	**€ 226,60**	**€ 0**	**0%**

Table 11 indicates the insurance expenses[9]

Table 11. Insurance

	Operative vessel	Abandoned vessel	Difference % (abandoned vessel/operative vessel)
Hull & Machinery	€ 4.200	€ 4.200	100%
P&I	€ 3.500	€ 3.500	100%
Freight & Demurrage & Defence	€ 0	€ 0	100%
Monthly Total	€ 7.700	€ 7.700	100%
Daily total	**€ 256,60**	**€ 256,60**	**100%**

Table 12 reports a summary of the total segmentation of the daily costs both in case of a fully operative vessel and of an abandoned vessel.

[8] The port expenses in the case of an operative vessel are expressed in average because they tend to vary on the basis of a series of different factors, like the trips, number of stops, ports of call, use, etc.

[9] The table for the insurance expenses takes into consideration the costs linked to an insured vessel, though it is evident that in the moment the vessel is abandoned these costs cease to exist.

Table 12. Overall costs

Cost Voices	Daily Total Operative Vessel	Daily Total Abandoned Vessel	Difference % (Abandoned Vessel/Operative Vessel)
Crew costs	€ 599	€ 599	100%
Manning	€ 146	€ 0	0%
Consumption goods	€ 226,6	€ 61,6	27%
Port logistics	€ 20	€ 10	10%
Lubricants	€ 66,6	€ 53,3	80%
Spare parts	€ 206,6	€ 58	28%
Maintenance and reparations	€ 183,3	€ 53,3	30%
Agency	€ 13,3	€ 6,6	50%
General administration	€ 226,6	€ 0	0%
Insurance	€ 256,6	€ 256,6	100%
Daily Management Total (net of bunker, port taxes and quay occupation)	**€ 1.944,6**	**€ 1.098,4**	**56%**

As it can be observed in the confrontation between the operative and abandoned vessel, how the costs of this last one equal a half of those regarding the first one. This comparison does not take into consideration the costs of bunkering, port taxes and those linked to the quay occupation that are obviously different in the case of an operative and an abandoned vessel.

Regarding the bunker expenses, two different kinds of supplies have been identified: the first one linked to the fuel costs of the foreign State regarding the Genoese call updated to March 23rd 2010 (IFO: 470$ per ton and MDO: 710$ per ton with a total daily consumption of 284$), and the second one dealing with the stay of the vessel in the port and calculated with a nationalized price of approximately 450 Euros per day.

Considering the overall consumption and the abovementioned tariffs the daily average costs has been calculated to be of approximately 400 Euros.

Finally dealing with the quay occupation, it should be observed that a vessel that has been abandoned usually remains moored where it has first started its stay, even if in order to cut expenses, some ports can decide to move the vessel to less commercial areas[10].

In the case in which the vessel is abandoned in an operative quay- a situation that usually takes place- the port costs can be quantified in average around 500 and 600 Euros per day, and in this case an average value of 550 Euros has been used. This cost voice includes a series of expenses linked to all the services that are necessary for the stay of the vessel in the port such as surveillance and waste disposal management.

In the Tan Trader case the towing costs must be added reaching a total of 6.900 Euros for three different towing operations with a unitary cost of 2.300 Euros.

Considering then a 9-month stay (270 days) in the port, the overall costs are as stated in Table 13.

[10] In the case of Genoa the abandoned vessels can be moored by the internal area of the seawall.

Because

$$C_N = \left(\sum_{i=1}^{n} y_i \ gg \right) + \delta$$

C_N = (16.632+2.700+14.391+15.660+14.391+1.782+ +69.282+148.500+108.000) + (6.900)

C_N = (391.228) + (6.900) = 398.238 €

Regarding the personnel expenses, and considering that the repatriations took place in different periods- from March to July- regarding the due salaries, the result is 129.000 Euros.

For all the other costs related to the personnel, and borne by the Apostolato del Mare, i.e. purchase of foodstuffs, telephone expenses, crew repatriation[11], administrative and secretariat expenses, the overall estimation is of 3.656 euro.

Table 13. Overall vessel costs

Vessel Costs	**Total**
Consumption goods	€ 16.632
Port logistics	€ 2.700
Lubrificants	€ 14.391
Spare parts	€ 15.660
Maintenance and reparations	€ 14.391
Agency	€ 1.782
General administration	-
Insurance Bonus	€ 69.282
Quay occupation	€ 148.500
Bunker	€ 108.000
Total (Net of Towing Expenses)	**€ 391.338**
Towing expenses	€ 6.900
Total	**€ 398.238**

What has been stated is summarized below in Table 14:

Table 14. Summary of crew costs

Voice	**Total expense**
Crew costs	€ 129.000
Maintenance and repatriation	€ 3.656
TOTAL	**€ 132.656**

$$C_P = \left(\sum_{i=1}^{n} x_i M \ gg \right) + \lambda$$

C_P = (129.000) + (3.656) = 132.656

Therefore, $C_A = C_P + C_N$, C_p = 132.656 + 398.238 = € 530.894.

Taking into consideration all the calculations that have been made, the overall cost of the Tan Trader vessel in state of abandonment is 530.894 Euro.

4. Discussions and Conclusions

The economic recession, that has implicated different productive sectors worldwide during the last months, has had an immediate effect on maritime transportation and has consequently affected the less stable economic subjects. They were often long-time operative small-sized vessels that in the current situation of low freight rates, don't see and economic advantage in carrying on their activity. It should be observed, however, that the current situation creates more damages to the seafarers onboard of the abandoned vessels. This situation is even more difficult due to the fact that the ship-owner, who is in fact the responsible for all the costs borne by the community in a more or less direct way, and of the status of illegality of the foreign seafarers, is very often not punished nor prosecuted.

[11] A part of the repatriation costs has been covered by the Diplomatic Bodies of the country of origin, this information is not available.

This occurs for a variety of causes, the difficulty of managing the procedures at International level, the protection derived from the adoption of flags of convenience, the difficulty of reaching the physical ship-owner's figure that often uses and off shore firm or is inscribed in the so-called tax heavens, that quite often correspond to the same flags of convenience.

The management difficulties of this kind of emergencies that require at least 24 months, do not find efficient solutions in the Italian territory. For such reason the ITF union and other associations involved on the seafarers welfare have identified some necessary interventions:

1. Modification of the current legislation in a way the repatriation of the crew becomes immediate, therefore supplying them with documents that allow maintaining their patrimonial and legal rights.
2. Institution of an organization devoted to this phenomenon capable of managing it effectively in collaboration with the Harbour Offices.
3. Creation of an economic fund at EU level, or at least partially, to allow a reimbursement of the lost retributions.
4. Adoption of normative and legislative instruments that allow a faster seizing and subsequent sell on by the State of the vessels in state of abandonment.

Considering the International nature and the plurality of actors involved, there's a clear need of a common management that should take into account the adoption of efficient normative instruments for a quick resolution of these emergency conditions. At EU level common solutions are foreseen, even if the problem does not arise only from the awareness of the EU government bodies, but is directly linked to the member states. One example is the ILO-MLC Convention (Marine Labour Convention 2006) adopted in 2006 that in order to be operative must be ratified by at least 30 members that represent at least a 33% of the world tonnage. By April 2010 only eight member states have ratified the convention, among which Spain. The MLC is in charge of the minimum requisites necessary to work as a seafarer, working conditions, accommodation, recreational structures, medical attention, health protection, wellbeing, social security and responsibility of the flag state and port state in the control application and towards the seafarer's labour supplier, including the intervention power (Doumbia Henry 2010). Through this convention, the States should institute welfare committees at regional and National level offering coordination, sharing of information and assuring financing for structures and social services (Harris 2010).

The flag State is asked to certify through an appropriate document its respect for the conditions indicated in the MLC, while the port State can verify once the vessel arrives to the port. Modifications of the Convention are also foreseen, and so far two different proposals have been presented, that if approved, will include the obligation of the ship-owner to endow himself with insurance linked to the possible repatriation and eventually the abandonment of the seafarers. Once the convention will be fully operative, altogether with those of the SOLAS (International Convention for the Safety of Life at Sea 1974) normative, MARPOL (International Convention for the Prevention of Pollution from Ships 1978) (Belcher 2003), STCW (International Convention on Standards of Training, Certification and Watch keeping for Seafarers 1978) (Obando-Rojas 2001), it will become one of the fundamental International rules of maritime law (Holmer 2010).

It should be observed however, that even though this one is undoubtedly an initiative that will improve the seafarers conditions, its coming into force would not solve in definitive terms the problem for two reasons: in the first place, the problem of the vessels using flags of convenience should be taken into consideration altogether with all the above mentioned problems individuated dealing with the exploitation of the seafarers work and the application of the working and salary conditions individuated by the ITF (Bergantino and Marlow 1997). In the second place there is a problem dictated by the timing that runs between the approval and the adoption of the Convention

on behalf of the member States, a time that is usually quite articulated, especially when the adoption require the issuing of ad hoc laws at National level.

For the purposes of a proposed resolution of a problem can be taken as the solutions adopted in some EU member states, as best practices to be adopted. This is the case of Spain, tank to the 28/48 law of 2003 where the Port Authority can decide what to do with the abandoned vessel only after six months. Moreover, according to the 30/1992 lay of November 26th, and especially due to article 59, that states that when a proceeding is started towards an identified or unknown owner the notification will be made through the *"tablon de edictos*" of the involved municipality and in the "*Boletin Oficial del Estado*" of the appropriate Comunidad Autonoma. Once the state of abandonment is declared by the Board of the Port Authority, a sale in the form of a public auction is organized. A vessel is declared in state of abandonment after remaining on the same spot of the port without any relevant activity and without paying port fees for more than six months. Unlike the Italian pre emption right, not only the debts towards the Port Authority come before the public treasure, but also the seafarers are privileged creditors of the incomes derived from the vessel's sale. Moreover, in the Spanish legislation once the vessel they are onboard of is confiscated, the seafarers are considered employees that maintain the vessel in good shape and therefore their right to a daily salary is recognized, that will be paid once the vessel has been sold (Casanova and Brignardello 2004). It should be also notices that even though that abandoned seafarers in Spain tend to be unwilling to leave the vessel, not even in cases of possible repatriation because they are afraid of losing the due salaries.

In France the *Ministere de l'Equipment ed des Transports* has established a special budget devoted to the management of the abandoned seafarers and has passed a convention with the AGISM (*Association pour la Gestion des Institutions Sociales Marins*), in charge of seafarers welfare since 1945. Such convention allows the body proceed with the repatriation with a reimbursement of about 2.000 dollars per person, and after that eventually intervene for the sale of the vessel. Since 2006 the *Office Fran çais de l'Immigration et de l'Int égration* also deals with these topics because in France there are a serie of instruments that favour the repatriation of foreign seafarers and immigrants in general.

Regarding the Italian reality, on the basis of these first French and Spanish initiatives, it can be observed how it would be useful, for a correct management of the phenomenon of abandoned vessels and seafarers, that the existing voluntary bodies would be able to properly plan and manage the different operations, providing adequate economic and infrastructural aid. It is evident that this kind of aid there's a need of adequate regulations capable of unlocking very long bureaucratic procedures that generate useless costs, that make the whole thing even less remunerative in case of sale, and surely aggravating the onboard seafarers wellbeing. To do so it is necessary to have an adequate budget that allows a partial reimbursement of unpaid salaries and makes a quick repatriation possible, without aggravating the seafarers rights. Lastly it is necessary to officially qualify the recognized bodies with a higher autonomy and legal recognition towards third parties so they can manage the situation, and not only through the valuable voluntary contribution of individuals.

All these must occur at two different levels: at National level, so that the seafarers welfare becomes recognized and at EU level, so as to use the *best practices* of the single European countries could be used as a basis for a modern, efficient and International legislation for the seafarers rights.

The research can be integrated deepening the level of analysis, or, in more detail by examining the impact of a ship abandoned by traffic type, type of port and flag, with particular regard to the evolution of events in the individual flags of convenience.

A further level of detail can be made by analyzing the evolution and segmentation cost in different EU member states, thus focusing on the positive economic impact of the previously identified best practices.

However, the currently available data allow only a first rough estimate of the phenomenon, partly because of deficit a complete literature, due to the absence of a unique database that will identify and classify, at least at EU level.

The methodology proposed in this research is applicable to other cases of ships abandoned, also if integration with more detailed data in quality and larger in quantity is deemed appropriate.

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