



A global evaluation of the Brazilian shipbuilding industry

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Abstract

The article aims at providing adequate answers for basic questions concerning the Brazilian shipbuilding industry such as its viability and potential as an economic lever as well as the possibilities for the establishment of a self-sustained growth basis out of the existing and future home and world demand. The work describes the industry evolution considering the underlying conception from its creation within the mid-50's target plan, the two national development plans under military rule up to recent governmental and entrepreneurial moves by approaching market tendencies and the present institutional models.

1 Introduction

The Brazilian shipbuilding industry has been facing a serious crisis since 1985: many enterprises have been bankrupted, orders have fallen to a very low level, the state agency's financings for the construction of new ships have been interrupted for many years, the level of direct jobs has fallen to less than a third of the potential posts. Nowadays the evidence says that the crisis has been overcome and the situation comes back to a certain stability, although the shipyards still claim for a governmental policy for the sector that might offer them a safer, more stable horizon. Facts indicate that, within present conditions, the crisis has been overcome and the moment seems, therefore, very adequate for a global evaluation of the sector that might point out what the objective effects of the crisis are and the ways to get more efficiency and quality. Our starting point will be the qualification of the crisis, the identification of its essential elements and characteristics, the unveiling of its causes and the proposition of solutions for each of the problems being faced.

The Brazilian shipbuilding industry was settled and would develop based on an economic policy conceived in the fifties having as a main goal the



overcoming of handicaps and difficulties, previously identified, in a clear way. The Juscelino Kubitschek government's Targets Plan - 1956 to 1960 - and the two Development Plans of the authoritarian period had basically the same basic underlying economic conception and reached for the same goals, approximately. So, shipbuilding has not spontaneously developed either by the action of 'Market Forces', or by the gradual and systematic accumulation of factors such as technological competence, availability of inputs or electrical energy, potentialized or catalyzed by particular circumstances or a short run government action. The shipbuilding industry was implanted in the mid-fifties and would consolidate in the seventies because of a political decision of the government, which considered the sector a potential lever for the Brazilian industry and a solution to provide the country with a modern, efficient merchant fleet by enabling it to take part in the world market with sovereignty and efficiency. Therefore, there aren't any technical criteria that can be established without the adequate evaluation of the political matters, without the clear identification of the political references, that can be summarized by the definition of the objectives to be reached and the segments benefitted by both the choices of such objectives and the resources mobilized to reach them.

For the proposition of a new project, in the case of the shipbuilding industry, it's necessary to firstly check whether the existing conditions by the time those plans were formulated still remain or not, and if the expected results have been achieved or not, before suggesting that the instruments and relations that were established in the period of the I and II PCNs be kept. The technological and financial capability of builders' and shipping companies would outstand among the many goals established.

All the discussion in Brazil has centered on the hypothesis that there should be a certain degree of state intervention that materializes, at least, in keeping a tribute over import cargoes - The AFRMM (Freight Overhead for the Merchant Marine Renewal - the main source of resources to FMM - Merchant Marine Fund) and in a program with these funds to finance construction with rates and terms favorable to the shipowners interested in ordering ships from Brazilian shipyards. Therefore, we are talking about maintaining a tax to finance a private activity with terms a lot longer than the ones in use in the international market. With the consolidation of Democracy in our country, it will be very difficult to overcome the impasse that was created about the administration of public funds - formed by taxes and compulsory contributions - simply with lobbying groups acting in the higher spheres of state institutions. Without a strong political and social support for a consistent program aiming at wider political and economic goals, nothing that may depend on the approval of the Congress will be solved.

2 An Evaluation of the Shipbuilding Plans for the Modern Brazilian Shipbuilding Industry

It was in the period that covers the I and II Shipbuilding Plans that the Brazilian industry would consolidate in the sector, with a large expansion of the installed capacity and its entrance, from the technological point-of-view in its mature phase [3]. Between 1975 and 1982 around 8.2 billions dollars were invested, which represented 15% of total investment in capital goods. The main sources for this sum were the AFRMM and the Treasure, with a large parcel of the resources obtained with foreign loans.

The most important fruit of this investment was a great leap forward in the Brazilian merchant fleet: from 201 ships in 1970, totaling 1.211.700 GRT, to 321 in 1982, with 5.327.400 GRT. In the same period, the average age of the fleet would fall from 11.8 years to 7.3. The greater participation of the Brazilian flag represented the obtention of a superavit in the freight account from the mid seventies, although a deficit had remained in the payments balance [1].

The fleet resulting from the two shipbuilding programs was, however, inferior in average size to the world trend, when economies of scale were sought by the use of ships with a larger cargo capacity and showed a higher consumption level compared to the world standards of that time. Its composition also reveals a lack of balance between the offer and the demand for shipped in the international market: in the II PCN, 255 of the fleet built corresponded to liners, 20% to bulk carriers, and 55% to tankers. The demand would require, however, a distribution of 6%, 16% and 78%, respectively. For the II PCN, the numbers for the fleet built were, for the same kinds of ships, 11%, 42% and 63% respectively (in dwt) [1].

In the end of the two plans the shipyards could dispose of a steel processing capacity 5.6 higher and a general growth in the productivity rates.

In main shipyards the level of indirect costs overcome 40% of the total, similar to the industry average in the period. Profits, however, kept twice higher than the national industry average and around 4 times higher than the international average of sector. The labour and raw materials and components costs placed around 10% as Araujo points out [6].

SUNAMAM - The National Merchant Marine Superindency - a federal authority which simultaneously played the role of the unique planner, financier, and controler of all navigation and shipbuilding activities in the country, would define the orders for the I and II shipbuilding plans and choose the consolidation of the shipbuilding industry as a priority, and this partially explains the unbalancing mentioned in the paragraphs above. The targets for the II PCN were overdimensioned in relation to the shipyards effective production capacity. This fact is confirmed by the frequent long delays - up to



6 years in some cases - in the deliveries of ships in most shipyards except ISHIBRAS [6].

The delay in deliveries ended up by causing serious financial problems to SUNAMAM, mostly in what concerned to the payment of foreign loans and the scandals, in the early eighties, involving the orders' financing. The crisis was solved by the extinction of the organ and the transfer of the FMM to another agency, BNDES - National Bank for the Economic and Social Development. The FMM would be administered from then on, by the Merchant Marine Fund Directive Council.

The shipbuilding productive chain starts by the mineral extracting activity, ranging from steel making, foundries and drawing, electrical materials and components, metallic structures and equipment, boilers, engines, motors and accessories up to shipbuilding itself, which uses products from almost all the intermediate phases. All this represents around 60% of the final cost for the production of a ship. The activity's intersector connections also involve an important forward connection, that is the navigation activity. In 1975, 1.75% of the industrial salary came from shipbuilding, that used to pay salaries higher than the national average. To direct jobs generated at that time - 25000 to 30000, around 0.5 % to 0.7% of the industry total - other 40000 to 45000 could be added, what implied in a multiplier of 2.42.

In what concerns production itself, the multiplying effect was around 2, a little higher than the national average, and 29% of inputs came from the metallurgical sector. In the II PND period, the total steel production reached 13.1 million tons of plan plates and heavy profiles and 8.3 million tons of non plan laminated plates and special steels. In the same year 252 thousand of steel would be processed in shipbuilding, in the construction of hulls - equivalent to 1.14 million dwt.

The most meaningful chain for the sector, however, was the set of benefits generated for the country by the presence of a national merchant fleet, basically represented by the volume of freights obtained and savings in affreightments besides the guarantee of access for Brazilian products to the importing markets. The Brazilian flag generated freights of 1.572 million dollars in 1989 in the long course navigation, 850 million of which coming from affreighted ships. In 1981, the Brazilian flag freights reached 1.986 million dollars out of which 1.006 million from affreighted ships.

Foreign flags contributed with 2.683 million dollars in 1989 and 2.130 million in 1981, respectively. The participation of Brazilian flag is, therefore, meaningful, but it can still increase in the Brazilian foreign trade. The fall observed in the utilization of the Brazilian flag has certainly occurred due to the measures adopted during the collar government (1990-1992). Another interesting aspect to mention is that additional gains of around 700 million dollars in the balance of payments could be obtained, although the affreightment of ships apparently produce a superavit of around 150 million dollars, if there were a policy aiming at reducing the level of affreightment.

The offer of jobs in maritime transportation activities, on the other hand, was estimated to be equivalent to that of shipbuilding. This means that the expansion of the national fleet will have a stronger effect in this segment in what regards the creation of new jobs.

The plans aimed at very ambitious goals, which were usually formulated without a more global articulation with the industrial policy or without a more consistent evaluation of the benefits it could bring to the country and to the sector itself. Out of these objectives, the idea of reaching a 100% nationalization rate for all components clearly outstanding. However, this goal was formulated without a consistent evaluation of the production scales that could be reached in the internal market, even if some protection and quotas were guaranteed. Moreover, no attention was given to the evaluation of technology associated to the production of certain components and technologically outdated products, always produced under licensing. The effective technology transfer was very low, if there was any. But the shipyards have developed a remarkable capability to build hulls, and dispose of different comparative advantages such as cheap electrical energy, plenty of cheap labor and high quality steel with costs inferior to world market level.

The crisis has undoubtedly brought, as a positive aspect, an increasing attention to quality and a remarkable growth in productivity, due to evolution and maturity achieved in production management. These aspects, within the frame of a more favorable economic conjuncture where the return of economic growth and a new standard of inflationary stability outstand, have provided the necessary conditions for the solution of the crisis.

3 New Ships Demand Scenario

The scenario for the following fifteen years in terms of demand for the construction of new ships is quite favorable to Brazil. Other benefits, however, can be reached with a shipbuilding policy, and these enclose the reduction of hard currencies transfers in freight and affreightment payments.

The reduction of expenses in freight and affreightment depends on complex measures which involve private national and foreign companies, freight conferences and the review of commercial agreements with many countries. Such measures have a long maturation process and don't directly depend on the acquisition of ships by Brazilian shipowners. The affreightments could be drastically reduced with orders for new ships, mainly because affreightment contractors are basically state companies. Therefore, the political decision of building new ships in the country to replace the affreighted ones would not only affect the agents directly involved in the construction and operation of new ships but would also produce a benefit, on the long run, by reducing service imports.

The national fleet has also problems due to its high average age and to the technological obsolescence of many ships. So, there is a demand for the

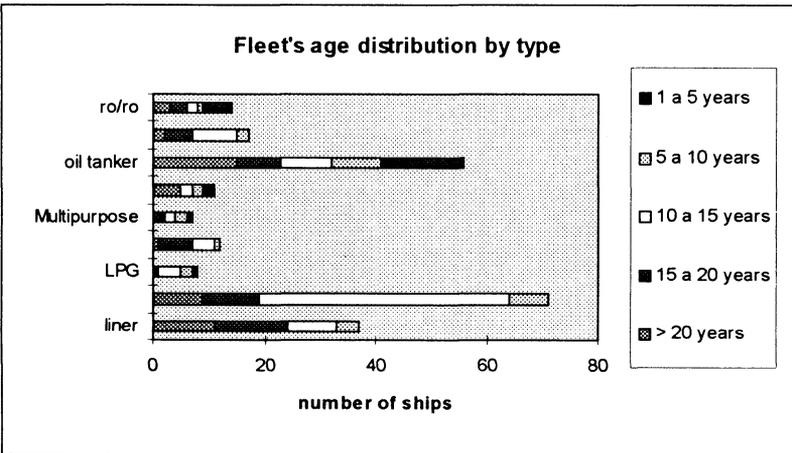


substitution of operating ships, which increases as time goes by without the proposition of any plan or permanent program to finance the constructions necessary to the renewal and expansion of the national merchant fleet [see Table 1].

There are also good perspectives in the world market. The adoption of environment protection measures, fully valid since July 1993, has solved a IMPASSE that had been lasting since 1974, when IMO - International Maritime Organization (IMCO by that time) edited its first important prevention rule about oil pollution. This fact has motivated lots of orders for new tankers - and the world tankers fleet has a high average age. This aspect may favor the exports of new ships as the example of ISHIBRAS proves: the enterprize has received orders for six.250.000 dwt units and other six for ships with lower capacity [see Table 2].

In the period 1985/1994 the production of oil has meanfully increased in brazil, what has set about a vertical reduction of imports. Although still far from self sufficiency - the projected imports for the next 15 years is stable at little more than 4 million tons a year -, the demand for coastal transportation of oil has increased proportionally to the imports reduction. PETROBRAS, which owns more than a half of the national fleet, did not order any large ship for the long course routes, but signed many contracts for coastal navigation ships, both for oil and for products in this period. These contracts have guaranteed a reasonable level of activity in some of our main shipyards along the most critical years of the sector crisis.

Table 1



Source [7]

The general cargo segment also offers good perspectives. All analysts converge to the point that almost all general cargo sea transportation will be carried out by containerships before the beginning of the next decade, and this implies meaningful renewal of ships operating the general cargo services, especially the conferenciated lines. Although the participation of the Brazilian flag has fallen a lot in the latest three years, mainly in exports, the Brazilian shipowners will need to renew their fleets to achieve efficiency standards that may ensure the necessary conditions to widen the Brazilian participation both in the Brazilian and in the international market.

The shipbuilding construction facilities of Brazil can deliver from 1 to 3 million dwt a year, depending on the composition of orders. With efforts in organization to increase productivity these limits can be widened to 1.5 and 4.0 million dwt without any investment in fixed capital.

Brazil disposes of a 9.881.132 dwt own fleet with an average age higher than 12 years and many ships in an accelerated process of obsolescence due to various factors among which their small size - compared to the most efficient standards used in each service - an outdated conception and obsolete engines with high operational and maintenance costs can be cited. A 5 million dwt program for the renewal of the fleet would be necessary for the operational efficiency of the fleet to be recovered.

Table 2. Brazilian merchant fleet's composition

Source [2]

	number of ships	DWT	average dwt
liner	40	394642	9866,05
frigorífico	1	7665	7665
bulk carrier	77	3042981	39519,2338
LPG	8	88162	11020,25
ore-oil	12	1608900	134075
multipurpose	7	256672	36667,4286
container	11	226957	20632,4545
oil tanker	55	3787968	68872,1455
chemical	16	324640	20290
ro/ro	13	142545	10965
sum	240	9881132	41171,3833

The expansion of the national fleet, aiming at reducing affreightment expenses and at meeting the demand for maritime transportation created by the growth of the Brazilian foreign trade could imply in orders totaling 3.5 million dwt.



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The conquer of a segment of the world market may offer optimistic perspectives too. Brazilian Government studies show that orders have been continuously increasing since the beginning of the decade at the present level - 40 million dwt a year. This market tends to stabilize at 45 million tons a year in the near future. If the Brazilian shipbuilding enterprises are able to conquer and keep 1% of this market, this could materialize in a total of 500 thousands tdw a year in orders, a reasonably modest target if the role of Brazil in the international economy is considered [see 7].

These hypotheses project a demand that may stabilize, in a self-sustained way, at around 1.3 million dwt a year, 800 thousand of which devoted to the renewal and expansion of the fleet, in ten years, and the rest reserved for exports.

So, the installed capacity is perfectly compatible to the dimension of our merchant fleet and its renewal and expansion needs, and the building enterprises can also respond to export orders within the historic volume of 15% of their maximum capacity.

But the international trade is not the only element that creates good perspectives for maritime transportation: a favorable scenario is being drawn in terms of intraregional commerce, especially between north and northeast and southeast, and from the latter to the southern region and Mercosur, in the coastal navigation.

The roads mesh is saturated and in a precarious state of conservation and there is no expectation for the reversion of this state on the short and middle long run. This situation will inevitably lead to a reformulation of the modal equilibrium in interregional transportation, with excellent opportunities for maritime transportation, since this demand does not need large scale investments in port facilities and may begin with the existing fleet, generating, therefore, demand for the construction of new ships only after the new services are consolidated.

The deregulation performed in the beginning of the Collor Government created a set of doubts. If, on the one hand, the opening of coastal navigation rules for long course shipping companies is interesting, the question is whether this measure will reinforce or not, on the long run, the monopoly of international shipowners, creating another flux of hard-currencies evasion. In the long run general cargo transportation, the Brazilian flag participation has decreased since the deregulation act. In coastal navigation the general cargo participation has been quite low, and more than 90% of the cargoes remain with other modalities, particularly with the road transportation mode.

It is evident that a country may have an efficient merchant fleet without a very developed shipbuilding industry. Many industrialized countries can be placed within this frame, such as the USA, Canada, etc. However there are other examples of countries which have a shipbuilding industry dimensioned to meet the needs imposed by foreign trade - in terms of an efficient merchant marine - that still plays an outstanding role in their industrial policies. Japan,



France and Germany can be cited as examples. These countries have, however, economies which are much more developed, with much higher scales. The examples of Spain, Finland and Denmark are much more illustrative of this situation for the Brazilian case.

4 Conclusions

The simple observation of the results obtained by the various shipbuilding programs show that those were not able to create a stable system for the renewal and expansion of the national fleet, nor were they able to stimulate the shipbuilding and the subsidiary components industry and the capital goods one.

Subsidies, associated to other financial mechanisms which existed at that time have created a system that would guarantee high profits with no compromises in what respects the search for efficiency or technological capability. So, in this phase - a conjuncture of recession and economic crisis - the model of financial support to these industrial activities could be thought as one of the elements responsible for the present stagnation, since it still guarantees a good profit level without overcoming the main obstacles and difficulties in terms of technological capability.

There is doubtlessly a reasonable potential that justifies a stimuli policy for the sector. However, the goals to be reached are frequently poorly defined, and many times they are decided in a mistaken way. Firstly, it seems clear that shipbuilding does not have the power to push industry forward as it did in the past. The effect it produces in the production chain do not express much, taking industry as a whole as a parameter. If present productivity standards are kept and production reaches shipyards full capacity, the demand for steel will represent little more than 1% of plain slates and heavy profiles. The job offer growth - which will only meet the seventies' standards with lots of investment in the steel processing capacity - will not affect the whole industry very much, although it still has a greater effect only in the Rio de Janeiro State. One must be careful when using arguments such as the ones above to defend the shipbuilding activity since there are more efficient alternatives in what counts for the generation of jobs, with the same social costs or the same mobilization of public funds.

Nevertheless, the forwards enchainned effects are extremely meaningful, mainly in what regards the stimuli for maritime transportation. The freights generated on the long course routes by Brazilian companies reach more than 1.5 billion dollars and may increase a lot because the total obtain foreign flags has already outnumbered the 2.5 billion dollar barrier.



It seems evident to us that financial instruments are necessary to implement a policy of incentives for the sector. But any decision related to subsidies - direct or indirect ones - is to be very carefully negotiated with all sectors involved. It is also necessary to search for new forms to attract private capitals, since the availability of financial resources in the country permits that this possibility be taken into account.

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