A contractor empire : public-private partnerships and overseas expansion in Habsburg Portugal (1580-1640)

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Chapter 1: Building and Fitting-out Ships: Logistics under Contract for the India Run

Every year, in March or April, an armada left Lisbon to undergo a more than a half a year long journey to the Western coast of India, setting anchor at either Cochin or Goa (and prior to 1641, at times at Malacca too). These were the designated ports of arrival for the outward-bound India Run voyage, known in Portuguese as the *Carreira da Índia*. The annual oceanic voyage was officially established in 1503, when the Cape of Good Hope route pioneered by Vasco da Gama in 1498 started being used on a regular basis to reach and trade along the Indian Ocean.[83]

While the Portuguese spread across the Indian Ocean and set up a political and administrative apparatus to oversee the export trade with the motherland and their intra-Asian economic, military and missionary endeavors, the annual voyage remained one of the foundations on which the Portuguese ambitions east of the Cape of Good Hope rested.[84] The importance of this shipping and commercial artery linking Europe and Asia was felt at different levels. The *Carreira* allowed for specie to be remitted to lubricate the trade conducted by the king's factors in Asia (and private merchants too), and likewise to bankroll administrative actions of the government of the *Estado da Índia*. It also made possible for troops, officials, missionaries and the average immigrant to travel from the Portuguese kingdom to Asia. On the returning leg of the voyage, the Crown's naval squadrons brought passengers and their respective belongings back to Portugal, as well as the coveted riches from the Asian trade, which included the assets of investors who traded with Asia but who never actually travelled there.

Despite the Crown's best attempts, at the start of the seventeenth century, the *Carreira's* best days were behind it and the Portuguese 'pepper empire' was fast approaching its twilight.[85] One of the most glaring problems experienced by the Crown's inter-oceanic trade and military expansion was the alarming increase in ship losses at high sea. These were caused less by enemy plunder than by an unprecedented degree of exposure to the risks of long distance travelling at sea and by technical problems with shipbuilding.[86] The growing number of unsuccessful intercontinental voyages had serious consequences for the political and financial welfare of the Portuguese Crown and to the social and economic aspirations of its subjects.[87] For the private merchants, inadequate shipping in the Cape Route could put

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[83] Paulo Guinote, 'Ascensão e Declínio Da Carreira Da Índia (Séculos XV-XVIII)', in *Vasco Da Gama e a Índia* (Lisbon: Fundação Calouste Gulbenkian, 1999), 7–39; T. Bently Duncan, 'Navigation between Portugal and Asia in the Sixteenth and Seventeenth Centuries', in *Asia and the West: Encounters and Exchanges from the Age of Explorations*, ed. E. J. Van Kley and C. K. Pullapilly (Notre Dame: Cross Cultural Publications, 1986), 3–25; Charles R. Boxer, 'The Carreira Da Índia (Ships, Men, Cargoes, Voyages)', in *From Lisbon to Goa, 1500-1750. Studies in Portuguese Maritime Enterprise* (London: Variorum Reprint, 1984).

[84] Bethencourt, 'Political Configurations and Local Powers'; Francisco Bethencourt, 'A Administração Da Coroa', in *História Da Expansão Portuguesa. A Formação Do Império (1415-1570)*, ed. Francisco Bethencourt and Kirti Chaudhuri, vol. 1 (Lisbon: Círculo de Leitores, 1998), 340–411; Luís Filipe Thomaz, 'Estrutura Política e Administrativa do Estado da Índia no século XVI', in *De Ceuta a Timor* (Carnaxide: Difel, 1994), 207–43.

[85] Disney, *Twilight of the Pepper Empire*.

[86] André Murteira, 'A Navegação Portuguesa Na Ásia e Na Rota Do Cabo e o Corso Neerlandês, 1595-1625' (Unpublished PhD Dissertation, Lisbon, Universidade Nova de Lisboa-Faculdade de Ciências Sociais e Humanas, 2016), 206.

[87] It must be pointed out that the decline of Portuguese *Carreira* shipping was not immediately ushered in by the Union of the Crowns. While the Portuguese naval forces suffered major losses in the disastrous 'Invincible Armada' of 1588, the 1580s and the 1601-1610 period were the decades when more tonnage was allocated to the inter-oceanic artery. According to Duncan, close to 77,000 tons of shipping were launched from Lisbon, representing an increase of nearly 40% from the second busiest period in *Carreira's* history, the 1580s. These figures show the Crown making a significant effort to keep up with the English and Dutch ventures in the Cape

them on the brink of bankruptcy because, although the rich trades of Asia generated handsome returns, they demanded high levels of capital and left investors highly exposed to risks at high-sea: shipwreck, damaged cargo and plunder.[88] As far as the interests of the Crown were concerned, a dysfunctional *Carreira da India* jeopardized its monopoly over Lisbon's imports of pepper[89] and the levying of tariffs on the cargoes brought from the Orient by private investors, the two main sources of revenue it derived from the India Run. If the outward-bound voyage was not launched or if the ocean-going ships were lost at sea on their way to India, along with the bullion they carried, the cherished Asian trades would be encumbered by the lack of means of payment.

While the sale of Southwest Indian pepper in Europe and the duties levied on the merchandises imported from Asia by private investors[90] brought wealth and prosperity to the Portuguese kings during the 1500s, at the start of the seventeenth century the dwindling returns from this trade[91] were almost entirely spent on the preparation of the next year's follow-up voyage.[92] These sources of revenue were by that point earmarked to service the government contracts underwritten for the construction, delivery and fitting-out of ships, as well as for the supplying of the soldiers and seafarers on board. These contracts were often negotiated against the king's pepper, either by handing-out the commodity itself or the proceeds of its sale by royal officials, or against receipts generated by taxing the merchandises imported from Asia. While the golden age of the pepper empire had certainly come to an end by 1600, taxing the trade between Lisbon and Asia still ranked among the most

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Route, only to collapse under the weight of its deteriorating financial position and of imperial overstretch. The irreversible downfall of royal shipping occurred in the following decade, and was compounded by the frequent losses at sea, on both legs of the annual voyage. A 21% loss rate on the outward-bound voyage was surpassed by a nearly 40% loss rate on the return voyage in the period between 1591 and 1630. Duncan, 'Navigation between Portugal and Asia in the Sixteenth and Seventeenth Centuries', 10, 16–18.

[88] On the changing composition of the cargoes during the period under consideration, and the growth in market value of textiles and non-monopolized cargoes: Boyajian, *Portuguese Trade in Asia under the Habsburgs, 1580-1640*; Subrahmanyam and Thomaz, 'Evolution of Empire: The Portuguese in the Indian Ocean during the Sixteenth Century', 308–10; Niels Steensgaard, 'The Return Cargoes of the Carreira Da India in the Sixteenth Century', in *Indo-Portuguese History: Old Issues, New Questions*, ed. Teotónio R. de Souza (New Dehli: Concept Publishing House, 1984), 13–31.

[89] The average batch of pepper shipped from Cochin to Lisbon rarely exceeded 30,000 *quintais* between 1570 and 1595. This amounted to a mere 1/8 or 1/10 of the combined output of the three main producing regions, Malabar, Kanara and South East Asia. This import average was a decrease from 35-40,000 *quintais* per annum of the first half of the sixteenth century. On the last quarter of the 1500s, the average yearly batch had dropped to 15,000 *quintais*. From 1595 to 1617, the average of safely arrived pepper batches into Lisbon oscillated from 7,500 to 10,000 *quintais*. Sanjay Subrahmanyam, *The Portuguese Empire in Asia, 1500-1700: A Political and Economic History*, 2nd ed. (Oxford: Wiley-Blackwell, 2012), 106; Vitorino Magalhães Godinho, 'A "revolução Dos Preços" e as Flutações Económicas No Século XVI', in *Ensaios. Sobre História de Portugal*, 2nd ed., vol. 2 (Lisbon: Sá da Costa, 1978), 244.

[90] The price differentials between purchase outlets in Asia and the European consumption markets for non-monopolized goods were so staggering they kept private investors engaged in the Cape trade. The freights and duties they paid upon arrival of these goods in Lisbon, provided the Crown much needed financial resources to sustain the annual voyages, albeit in an undoubtedly diminished capacity.

[91] Considering pepper alone, although paling in comparison to the two most successful periods of the *Carreira trade* in the sixteenth century, the 1510s and the 1540s, when cargoes of the monopolized luxury import were valued between 258 and 265,000,000 *réis* respectively, in the first decade of Habsburg rule shipments still amounted to 234,000,000 *réis*. However, with the entrance of the English and Dutch in the Cape Route and not excluding the much discussed end of century revival of the Levant import circuits, the value of pepper batches in Lisbon plummeted to 136,000,000 *réis*. Leonor Freire Costa, Pedro Lains, and Susana Münch Miranda, *An Economic History of Portugal, 1143-2010* (Cambridge: Cambridge University Press, 2016), 82–83. The authors summarize data gathered by Godinho and Boyajian.

[92] The fact that the receipts generated by the trade of Asian goods were earmarked to the outfitting of future *Carreira voyages* was not a novelty, since the *Casa da Índia'* revenues covered between 75 and 92% of the works carried out at Lisbon's royal shipyard in the heyday of the Portugal's trade with Asia. Costa, *Naus e galeões na ribeira de Lisboa*, 298.

formidable sources of income of the Portuguese Exchequer, even if not the most secure due to increasing risks and uncertainties surrounding the Cape Route.[93]

If the royal treasury, Lisbon merchants and international business syndicates suffered heavy losses as a result of the increasing unreliability of the India Run journey, and due to the decreasing numbers of galleons and carracks dispatched to the South Asian seaboard, there was equally a lot at stake east of the Cape of Good Hope. Notwithstanding the local sources of income at the disposal of the Exchequer of the *Estado da Índia*, including taxing the lucrative intra-Asian trade and the possibility to borrow from affluent local merchants and the municipal councils of Portuguese towns,[94] the government of the Portuguese East Indies was could do without the material support and financial input of the metropole. As the commercial and military rivalry with the Dutch and English chartered companies and equally with enemy Asian states ramped up, the financial situation of the *Estado da Índia* became more precarious. At a juncture when the revenues from the intra-Asian trade shrank and local expenses skyrocketed, Goa and the other official Portuguese settlements were bound to grow increasingly dependent on monetary remittances and dispatches of men and military means from Lisbon. Without enough ready funds or means to service debt contracted locally the *Estado da Índia* inevitably, but often to no avail, looked west, towards Lisbon and Madrid, in search of the financial, material and human resources it so desperately needed.[95]

This chapter elaborates on some of the main logistical problems affecting the up keeping of the *Carreira* and demonstrates how, despite them, the goal of launching an armada from Lisbon every year was pursued tenaciously. Already during the 1500s, a century when the Portuguese did not face the competition of the chartered trading companies in the Cape Route, the organization of the armadas depended on complex logistics and required a considerable financial effort.[96] In the period under study, those halcyon days were over, meaning that the challenges of sustaining intercontinental fully-rigged shipping was much harder to overcome. As the revenues that could be used to bankroll state-sponsored shipping and military aid to Asia plummeted, expenses grew exponentially and became increasingly harder to bear. Moreover, the fleets themselves became financially harder to assemble, partially due to the rising costs of construction materials and naval wares. The inflation was felt both domestically (particularly in the case of wood, as a result of deforestation) and internationally because of the Habsburg embargos against the Dutch skippers and traders.

Despite the formidable yields that both the state and merchants could still secure when the *Carreira da Índia* armadas returned safely from Asian waters, the navigation between Lisbon and Goa or Cochin was increasingly becoming a drain on the royal treasury. The dispatching of armed fleets and the maintenance of a fiscal-military apparatus in the Indian Ocean were no longer subordinated to the prospect of reaping the economic benefits from the export of bullion to Asia and the import of spices and luxury goods in the opposite direction. Instead, by the first quarter of the century these roles had been reversed. The yields that the *Estado da Índia* still provided to the kingdom were mainly used to sustain the mounting costs of the *Carreira*'s logistics, as well as the dispatching of reinforcements and material aid to the Asian offshoots. It will be argued in this chapter that public-private

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[93] Boyajian, *Portuguese Trade in Asia under the Habsburgs, 1580-1640*, 8–10.

[94] George Bryan de Souza, 'Iberian Cities and Colonial Cities in the Tropics: Imperial Defense and Finance and the Senado Da Câmara de Cochin, 1587-1598', in *Portuguese, Dutch and Chinese in Maritime Asia, c. 1585-1800: Merchants, Commodities and Commerce*, ed. George Bryan de Souza (Farnham (Surrey) & Burlington: Ashgate, 2014), 1–27.

[95] Susana Münch Miranda, 'Fiscal System and Private Interests in Portuguese Asia under the Habsburgs, 1580-1640', *Journal of the Economic and Social History of the Orient* 60, no. 3 (2017): 202–232.

[96] Costa, *Naus e galeões na ribeira de Lisboa*; Carlos Alberto Caldeira Geraldes, 'Casa Da Índia - Um Estudo de Estrutura e Funcionalidade (1509-1630)' (Unpublished MA Dissertation, Lisbon, Faculdadade de Letras da Universidade de Lisboa, 1997); Godinho, *Os Descobrimentos e a Economia Mundial.*

partnerships became a major tool in the Habsburg authorities' ill-fated attempts to jettison the Northwestern chartered companies (the EIC and especially the VOC) from Asian waters and reinstate Portuguese leadership in the navigation and trade through the Cape Route. Although these objectives were at no point close to being achieved, the entanglement of state and private interests allowed for Portugal to stay in the race as a commercial and settlement power in the Asia.

1.1 Shipbuilding

The hybrid character of the Portuguese Asian enterprise, half commercial-half military, was epitomized by its ships. The two main ships of the India Run, the carracks (*naus*) and the galleons (*galeões)* borrowed as much from the cargo-carrying merchantmen as they did from the cannon-yielding warmen.

A lot has been written by naval historians on the differences and similarities between the carracks and galleons. Both were sizeable ships, great in length and height, with high castles fore and aft, and with holds deep and wide enough to accommodate voluminous cargoes. It was their superstructures, the towering castles, one set up at the front of the ship and the other at the back, that gave the Portuguese Indiamen their distinctive appearance from other fully-rigged ships of the period, setting them apart, for instance, from the lighter Spanish galleons employed in the trade and waterborne defense of Spanish America. In the castles fore and aft, a multitude of liberty-chests were piled up for the inbound-ward voyage due to the policy of allowing officials and recipients of royal grants to carry their own merchandises (pepper included) free of charge in the *Carreira's* ships (*agasalhados* or *quintaladas*).[97]

As far as the differences between the two ships are concerned, naval specialists agree that the galleon was nominally a war-vessel, whereas the carrack was primarily a storage and goods-transportation ship.[98] The carrack tended to have a slightly greater tonnage than the galleon (600 to 500 tons on average), which had in turn a narrower hull, as a result of having at same time a longer keel and lower quarterdecks. The galleon had also better sailing capabilities than the carrack, and was not employed exclusively for the India Run. More often than not this type of sea-craft made up the naval contingents that patrolled the Portuguese coast and sailed westwards into open sea to escort incoming vessels from the overseas offshoots.[99] Although primarily a war vessel, employed to protect other vessels and engage in battle, the galleon could also serve commercial purposes when needed. In turn, it had less cargo carrying capacity that the carrack.[100] This is, however, mostly a theoretical distinction, since the Portuguese Indiamen often combined both functions. Even when a ship was launched with a specific purpose (to serve as cargo carrier, for instance), it could be re-assigned the other functions in a subsequent voyage.

This lack of functional specialization of its fully-rigged ships, put Portugal's Cape route marine out of step with the evolving trends of Western European shipping of the

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[97] Boyajian, *Portuguese Trade in Asia under the Habsburgs, 1580-1640*, 38–40; Boxer, 'The Carreira Da Índia (Ships, Men, Cargoes, Voyages)', 53–54.

[98] Francisco Contente Domingues, *Os Navios do Mar Oceano: teoria e empiria na arquitectura naval portuguesa dos séculos XVI e XVII* (Centro de História da Universidade de Lisboa, 2004), 243–59; Costa, *Naus e galeões na ribeira de Lisboa*, 42–47.

[99] Augusto Alves Salgado, *Portugal e o Atlântico. Organização Militar e Acções Navais Durante o Período Filipino (1580-1640)* (Lisbon: Unpublished PhD Dissertation, Faculdade de Letras - Universidade de Lisboa, 2009).

[100] Francisco Contente Domingues, 'The State of Portuguese Naval Forces in the Sixteenth Century', in *War at Sea in the Middle Ages and the Renaissance*, ed. John B. Hattendorf and Richard W. Unger (Woodbridge: The Boydell Press, 2003), 189, 193.

sixteenth century. Contrary to the *Carreira da India's* crafts, large ocean-going vessels elsewhere in Europe were slowly but steadily becoming more specialized, resulting in the distinction between the cargo-carrying merchantmen and the warmen becoming clearer as time went on.[101] While the Portuguese Indiamen might not have excelled as merchant-carriers nor as warships, for one century at least, these seagoing ships were able to strike an at least appropriate balance between the two functions.[102]

Regardless of the blurred-lines between the two main ocean-going vessels, the *Carreira da* Índia's large and voluminous ships were theoretically better able to withstand the many months spent at high-sea, whereas, at least until the 1600s, their height and size increased both the offensive and defensive capabilities of the crafts. More heavy guns could be brought onboard, as well as a greater number of soldiers to fight on the upper decks and towers against boarding attempts by enemy forces.[103] But despite their robustness, heavier firepower and their merchandise carrying capabilities, a fully-rigged Portuguese Indiamen was sluggish and hard to maneuver, and hence prone to steering accidents, leakages, not to mention easily pursuable by enemy vessels.

In the first decades of the *Carreira da Índia,* ships built in the royal shipyards, the *Ribeira das Naus,* weighted in at 300 and 400 tons on average, but as the sixteenth century drew to a close, larger vessels of more than 600 tons became the norm, while even bulkier ships above 1,000 tons were often employed.[104] The steady increase in the size of ships and their overstuffing, when the dispatching of a greater number ships with a smaller tonnage would have been preferable, has been blamed for the growing number of losses at sea. According to this perspective, popular in some courtly circles at the time, the rapaciousness of Crown officials and the greed of a myriad private investors led to ships being overloaded on the inward-bound voyage.[105] Leaving aside these moral considerations, it seems clear that the addition of new decks (without expanding the framework of the hull), while allowing for the transportation of more passengers and soldiers and for economies of scale in commercial shipping, came at a cost. The reliance on the 'floating fortresses' meant the Portuguese were sailing the Cape Route in slower (hence more easily perusable by enemies), and less maneuverable cruisers.[106] These shortcomings ultimately outweighed the gains in fire-power that employing larger ships allowed for, since the precision and stopping power of the artillery mounted on board was still far from ideal at the turn of the sixteenth century and the early decades of the seventeenth.[107] The Crown acknowledged these problems and several laws were passed in an attempt to reel-in the size increase of the inter-oceanic ships. For example, a law from the reign of King Sebastian, issued in 1570, set up a 450 tons cap on the

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[101] The transition towards functional specialization was kicked into gear by the use of heavy artillery on the broadside, which lead to cargo space being sacrificed for added firepower. This shift was encouraged by governments in Western Europe, who began to favour military capabilities over commercial ones as a response to a more bellicose international context. Richard W. Unger, 'Warships and Cargo Ships in Medieval Europe', *Technology and Culture* 22, no. 2 (1981): 233–52; Richard W. Unger, *The Ship in the Medieval Economy, 600-1600* (Croom Helm, London: McGill-Queen's University Press, 1980), 21, 251–78.

[102] Carla Rahn Phillips, *Six Galleons for the King of Spain: Imperial Defense in the Early Seventeenth Century* (Johns Hopkins University Press, 2007), 40; John F. Guilmartin Jr, *Galleons and Galleys* (London: Cassell & Co, 2002), 87–88; Unger, *The Ship in the Medieval Economy, 600-1600*, 259.

[103] Louis Sicking, 'Naval Warfare in Europe, c. 1330-c. 1680', in *European Warfare, 1350-1750*, ed. Frank Tallett and D. J. B. Trim (Cambridge: Cambridge University Press, 2010), 248; Jan Glete, *Warfare at Sea, 1500-1650: Maritime Conflicts and the Transformation of Europe* (London: Routledge, 2000), 25–26.

[104] Domingues, 'The State of Portuguese Naval Forces in the Sixteenth Century', 193; Duncan, 'Navigation between Portugal and Asia in the Sixteenth and Seventeenth Centuries', 7–8.

[105] Costa, 'Portuguese Resilience in Global War', 49.

[106] Costa, Lains, and Miranda, *An Economic History of Portugal, 1143-2010*, 84; Carlo M. Cipolla, *Guns, Sails and Empires: Technological Innovation and the Early Phases of European Expansion, 1400-1700* (New York: Minerva Press, 1965), 83.

[107] Francisco Contente Domingues, 'A Arte Da Guerra. A Guerra No Mar', in *Nova História Militar de Portugal*, ed. António Manuel Hespanha (Lisbon: Círculo de Leitores, 2004), 151–69.

maximum tonnage of the Indiamen, but the higher-relative cost of smaller ships coupled with the military imperatives and the need to make available as much cargo space as necessary for a broad spectrum of investors meant that this law was never truly enforced.[108]

When, during the Dual Monarchy, the Crown found it necessary to add new fully-rigged ships to the India Run, it could theoretically alternate between building its own ships or outsource construction to private shipwrights.[109] This clear-cut dichotomy between contracting and direct administration does, however, obfuscate more than it illuminates the true range of options the Crown had at its disposal. The main issue was not whether or not contracts with private shipwrights and providers of naval services were underwritten, but rather which tasks would be performed and by whom. As far as direct handling of construction was concerned, the most comprehensive approach saw the royal officials procuring the necessary construction materials and equipment, pay the work force who built the ship and overseeing themselves the construction works. On the other hand, when contracts were underwritten for shipbuilding, they could involve several different operations, some very specific, others all-encompassing. For instance, public-private partnerships could merely concern the disbursement of funds to the royal shipyards, or the procurement of specific raw and semi-transformed materials, leaving it to the Crown's own shipwrights to assemble the hull and furnish the future ship. On the other extreme, they could encompass all the functions at the same time, sometimes for years in a row. In any case, whenever a contract was underwritten, royal officials were expected to monitor the progress, keeping a watchful eye for infringements to the contract provisions.[110]

The authorities were faced with this dilemma in 1613, as they realised the India-bound fleet needed renewal. In June that same year, the Council of Exchequer and the Council of India appraised a tender by Duarte Gomes and Francisco Lopes Carrasco, who proposed building six new carracks in his majesty's shipyards.[111] Despite the jurisdictional feud between the two councils, both agreed that the proposal should be declined. The Council of the Exchequer, acquainted with Duarte Gomes, considered him a man "lacking in [financial] substance and talent",[112] and therefore unfit for an enterprise of that magnitude. But more importantly, given the state of the royal finances at the time, the state could not possibly service such a costly contract. The price asked by the two men was considered too high and both councils were of the opinion that compared to the offer that was on the table, the Crown would save money by building the ships itself. According to the Council of the Exchequer, in this case direct administration would be 25% cheaper than putting construction out on contract, and if the Crown decided to build those ships in the *Estado da Índia* they would cost two thirds less than Carrasco and Gomes's proposal.

This was an instance when direct administration was preferred over contractual outsourcing, not because the direct handling of this task was preferable in principle, but simply because it was thought to be cheaper. In reality, however, there was much less room to choose between the two approaches and the sheer weight of the circumstances ended up

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[108] Costa, *Naus e galeões na ribeira de Lisboa*, 83–84, 145.

[109] Despite the Crown's *de jure* monopoly over Euro-Asian shipping, the reliance on the expertise of private shipwrights, who were themselves merchants and part owners of ships, to build the India Run crafts to the Portuguese king stretched back to the early days of the *Carreira da Índia*. Costa, 137, 196.

[110] There was still another option, which will not be covered in this chapter as it was rarely pursued during the period under consideration: the resort to privately owned merchantmen. With minor alterations (adding of defensive apparatus typical of the battle ships) and under the proviso they would transport Crown personnel and means, such vessels were allowed to take part in the royal fleet and return with their holds filled with the coveted Eastern goods. This reliance of public authorities on the ships of merchants and private investors for the launching of naval expeditions was a key feature of late medieval warfare at sea, but remained instrumental into the 1600s in many parts of Western Europe, and Portugal was no exception. Sicking, 'Naval Warfare in Europe, c. 1330-c. 1680', 238–39.

[111] AGS, SSP, lib. 1472, fl. 201, 201v.

[112] "*homem falto de substancia e talento*".

forcing the contracting option on the Crown. Moreover, a mixed system was also employed, meaning, for example, that the assembly of the hull was contracted out, while the placing of the masts, sails and ropes was done through direct administration.[113] On the other hand, even when the Crown assigned its own personnel with the responsibility of equipping the ships, the necessary raw materials and semi-transformed goods were often obtained by means of contracts with suppliers from the private sector.

Even though one could argue, as royal officials did from time to time, that putting construction out on contract ended up not being that much cheaper than direct administration, there is no doubt that it made the costs of expanding and renewing the naval squadrons easier to bear.[114] In some instances, public-private partnerships helped dodging (although not altogether solving) the exchequer's liquidity crunches. It was not so much the case that government concessions allowed the Monarchy to incur expenses it could not afford otherwise, but rather that in some cases (but not in all) contracts bought the cash strapped royal treasury valuable time, as contractors absorbed some of the initial costs of purchase and transportation. The contract putting-out formula allowed, therefore, for the risks of procuring naval stores and building ships to be transferred to the contractor, and in some cases also (a share of) the initial investment required to set the construction procedures in motion.

As with other government concessions involving supplying, be it of monetary funds, commodities or, in this case, ocean-going ships, the Crown partially downpaid the tasks performed by the recipients. This was the case when the contractor was allowed to start collecting the revenue streams earmarked for their contract even before his first delivery deadline. One of the implications of this type of arrangement was that if the royal exchequer lagged behind in paying the stipulated tranches it was depriving the contractor of means to carry out the agreed-upon tasks, even if he could (and it was expected he would) resort to his own capital. The conclusion to draw is that more than the inability to put forward the necessary funds to undertake the construction or repairing works, the rationale behind contracting was the authorities' belief that contractors ensured, at that particular juncture, more efficient construction works, cheaper acquisition and transportation of construction materials and better monitoring of the work force.

There is evidence that a well-informed deliberation on whether to contract out shipbuilding or to directly administer the process could be compromised. One obvious mistake was the miscalculation of the comparative costs of outsourcing and self-administration, or the misjudgment of the financial means available to cover the costs of each option. The same can be said about the barrage of contradictory opinions that so often paralyzed decision-making. The unreliable information provided by Crown officials could be just as detrimental to the outcome of the fleet preparations, as the most ill-intended or incompetent contractor, or the oversight of royal shipwrights.

However, ascertaining the cost-benefit of each approach was no easy task for the royal apparatus, as shown by an example from 1638. On that year the officials of the *Ribeira das Naus* were asked to calculate the costs of building a new vessel, to which the carpenters and caulkers confidently replied that for 8,000,000 *réis* they could build a ship of small dimensions (*naveta*). Their optimism was, tempered by the purveyor of the Castilian fleets in Lisbon, the Monarchy's specialist for all naval matters in the Portuguese kingdom, the *vedor* (inspector) Tomás Ibio de Calderon. Ibio de Calderon claimed that 8,000,000 *réis* was a gross underestimation as, in his expert opinion, a new *naveta* would never cost less than 12,000,000

[113] Costa, *Naus e galeões na ribeira de Lisboa*, 172.

[114] When preceded by a public auctioning, contracting should ensure diminishing construction costs for the Crown.

*ré*s, and he was still leaving out possible unexpected expenses.[115] Whether the carpenters and the caulkers simply miscalculated the construction costs or whether they knowingly did so to increase their chances of the new ship being commissioned to them it is uncertain, but there is no doubt that they were an interested party in the decision making process.

A close monitoring of the construction works by royal officials and controllers was critical to ensure that the contracts' specifications were followed and potential irregularities detected before it was too late. As David Goodman as argued for Spain's naval forces, the Crown's difficulties to monitor its own administrative personnel help explaining why contracts were normally favoured over direct administration of construction and provisioning of ship-building materials.[116] In Goodman's view, royal shipwrights lacked incentives to deliver ships on time, while the Crown struggled to monitor construction works under direct administration and reel-in their mismanagement of funds by its own shipyard officials.[117] Plus, while their judgement on how to build the ocean going-ships as cost-effectively as possible often left to be desired and the quality of the work was not always adequate, unlike with contractors, the state could not reject ships delivered by their own shipwrights and abstain from meeting the construction expenses. Contractors, and this was true for Portugal and any other European state of the period, were only paid if the service they performed was considered satisfactory.[118] In extreme cases, such as when serious deficiencies were detected, the contractor could even be arrested under charges of gross misconduct and of compromising the Monarchy's political goals with their incompetence. For instance, in 1607, the Portuguese merchant-banker Manuel Gomes da Costa, a seasoned naval and military purveyor, was in the process of renewing the fleet that patrolled the western façade of the Iberian Peninsula, the *Armada del Mar Oceano*,[119] but ended up in jail, accused of delivering the newly built ships with major deficiencies, and of wasting the Crown's funds on a poor construction job.[120] The fiscal of the Exchequer had to assess whether or not royal officials in Vizcaya, or the chief of the royal warehouses (*provedor dos armazens*) and other officials in Lisbon had been aware of the problems with the delivery and if so, whether or not they had colluded with the contractor to defraud the Crown.[121] As an alternative to a legal suit (and potential imprisonment), the contractor could opt to start over the construction works, except that this time the vessels would be built at his own expense.[122] Unsurprisingly, this option was not often pursued because most contractors were unable to marshal the financial resources and acquire the labour and raw materials needed to start the construction works immediately after the failure of the previous contract.

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115 On this individual and its importance in the Portuguese naval and fiscal matters; Jean-Frédéric Schaub, *Le Portugal au temps du comte-duc d'Olivares (1621-1640) : Le conflit de juridictions comme exercice de la politique*, Bibliothèque de la Casa de Velázquez (Madrid: Casa de Velázquez, 2001), 271–78.

116 Early in the sixteenth century, the *provedor dos armazéns* (the purveyor of the royal stores) had already argued to king Manuel (1495-1521) that outsourcing allowed for savings in the monitoring costs of ship-building. Nearly a century later, this principle still applied. Costa, 'Portuguese Resilience in Global War', 41.

117 Compare Goodman's point of view with that of Thompson, who considered that ships built by private contractors "would not be as seaworthy as those laid down by the king's ministers". David Goodman, *Spanish Naval Power, 1589-1665: Reconstruction and Defeat* (Cambridge University Press, 2003), 30–31, 155; Thompson, *War and Government in Habsburg Spain, 1560-1620*, 189.

118 Gordon Bannerman, *Merchants and the Military in Eighteenth-Century Britain: British Army Contracts and Domestic Supply, 1739-1763* (London: Pickering & Chatto, 2015), 11.

119 Divided in three squadrons, the armada's contingents were based in Lisbon and patrolled the coast from Cape St. Vincent to Finisterra. At times they also sailed to the Azores to escort the inward-bound Castillian *Carrera da Indias* safely back to the Andalusian ports.

120 Salgado, *Portugal e o Atlântico. Organização Militar e Acções Navais Durante o Período Filipino (1580-1640)*, 59–60; Thompson, *War and Government in Habsburg Spain, 1560-1620*, 196–97.

121 AGS, SSP, lib. 1466, fl. 250-251v.

122 Goodman, *Spanish Naval Power, 1589-1665*, 127.

A situation occurring during the last years of the Dual Monarchy illustrates the financial exposure of the Crown to the misjudgement of its shipwrights. In 1638, it came to the attention of the vice-queen, Margarita of Mantua, that the *Nossa Senhora do Rosário,* a sea craft bought from Manuel Maciel Rote, a private ship owner, was being repaired at *Rio da Telha,* one of the naval stores of *Ribeira das Naus,* in the southern bank of the river Tagus. The *Nossa Senhora do Rosário* was, according to reports, in a deplorable condition just three months away from its schedule departure to India. The ship's wood was rotting beyond repair and the careening undertaken had been to no avail. The purveyor of the royal stores, Vasco Fernandes César, the chief shipwright of the *Ribeira das Naus,* and Pedro Ferraz Barreto, master carpenter, were told to inspect the vessel and see it with their own eyes.[123] After thorough inspection, the rumours about the *Nossa Senhora do Rosário* were found to be unfounded and, with the exception of the prow, the ship seemed to be in adequate condition to sail. However, if the rumours were true, the monitoring would have prevented the Crown from dispatching a vessel that was unfit for sailing, and the risk of losing lives, goods and bullion averted. The case of the *Nossa Senhora do Rosário* is telling on three accounts. Firstly, the information on the production costs of a ship was seldom grossly inaccurate; secondly, the Crown feared the oversight, carelessness and collusion not only of contractors, but of its own royal officials; and thirdly, that deciding between contracting and state management was not the most pressing question, but rather the kind of control the Crown held over the procedures, including when construction was outsourced to the private sector, and how effectively it could detect incompetence or fraud.

According to Carla Rahn Phillips, the Spanish monarchy did no entertain long theoretical discussions on the merits and pitfalls of direct administration and contracting, nor did it sort out a general and consistent policy on who built ships for the royal navy, whether private contractors or the Crown's employed shipwrights and carpenters.[124] Instead, the government decided what the best course of action was on a case by case basis. To the state what mattered most was to have the new ships ready when it needed them, preferably costing as little as possible and involving as little uncertainty about the outcome.[125] More fundamentally than the binary choice between building ships through contract or by direct administration, was deciding between different types of public private partnerships, or reaching a conclusion about the specific tasks that should be commissioned to contractors and those that should be entrusted to the royal apparatus. During Habsburg rule, both in Portugal and in present-day Spanish territories, there were numerous permutations and variants to the contractor system, depending on which tasks were entrusted to private actors.[126]

When it was decided that ship-building should be done through contract, the authorities still had to determine how contracts would be financially sustained and to what extend the Crown would aid the contractor financially and materially in fulfilling his obligations. The expectation was that the more resources and means the Crown put at the disposal of the recipient, the lower the final cost of the contract would be for the state, and greater the likelihood of it being completed successfully and on time. For instance, in a contract from 1613, the state put all its infrastructures and personnel at the disposal of the contractor, who covered the costs with the work force and the procurement of raw-materials

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123 AHU_CU_058 (Índia), cx. 22, doc. 111, 126.

124 This did not mean that royal officials and others did not voice complaints against the system of *asientos* for the construction of ships to the royal naval squadrons. During this period under study, in Portugal at least, the criticism against contracting is came from bellow, from the lower echelons of the Crown's chain of command. By comparison, criticism was less audible in the royal councils where the decisions on whether to contract or not were discussed. For some of these criticisms, Costa, *Naus e galeões na ribeira de Lisboa*, 172–74.

125 Phillips, *Six Galleons for the King of Spain*, 26–27.

126 Valdez-Bubnov, 'Shipbuilding Administration under the Spanish Habsburg and Bourbon Regimes (1590–1834)', 108.

and manufactured goods. The construction of a new 600 tons' carrack would be carried out on the *Rio do Seixal,* an ancillary site of Lisbon's royal shipyard, on the southern bank of the Tagus. The facilities, its workers and whatever was left in the Crown's stores was put at the disposal of the person(s) who reaped the contract, whilst the fees of the concessionaire were set at 15,000 *réis* per ton*,* meaning that the Crown would pay a total of 9,000,000 *réis* for the gauging of the hull.[127] The remuneration of the contract was hence calculated on the basis of a flat rate per ton, as was customary whenever shipbuilding was outsourced to private businessmen.

The tradition of putting facilities and means of production at the disposal of contractors was equally set forth in a shipbuilding concession from 1615, although this time the contractor had agreed to acquire the construction materials from the Crown. The contract involved the construction of two new India carracks for 25,500,000 *réis* each. Instead of securing raw materials and equipment and billing the royal exchequer for those costs, contractor Manuel Gomes Galego was given the opportunity to purchase timber and pine lumbers from the Crown's stores. One of the competing bidders for this contract, Cosme Dias, not only put forward a price reduction (which Gomes Galego counterbid and surpassed), but offered to procure the construction materials himself, without needing to obtain them from the Crown's stores. Although the Council of the Exchequer acknowledged the merits of Ferreira's proposal, it ultimately preferred to hand over the materials to Gomes Galego and deduct them from the final price, a recommendation the Monarch agreed with.[128] By doing so, the Crown was ensuring that the contract's final price was reduced, since the contractor would not make any returns on the investment of acquiring construction components, often from foreign and distant markets. This case also raises the question if the state, in moments of more acute financial stringency, constrained contractors to supply themselves from the royal stocks at prices higher than those to be found on the market. Although it seems clear that by handing-over its own ship-building material to contractors, the Crown was also increasing control over the construction process, a contractor who was knowledgeable of prices of these commodities on the domestic market and in the international outlets would certainly quickly realise that the Crown was taking advantage of him and would request a price reduction. If the state was indeed trying to make liquid invested stocks, fostering competition for contracts was key, as it forced applicants to accept more eagerly the Crown's proposed prices out of fear that another bidder might take the contract instead.

This contract from 1615 dealt solely with the construction of new-cruisers and did not entail the acquisition of raw materials, which the Crown had either procured itself[129] or had commissioned to different contractor.[130] Not infrequently, Iberian monarchs were the suppliers of their contractors, assisting them financially to kick-off their shipbuilding contracts by allowing them to start collecting compensatory revenue streams just as the contract was about to begin.[131] To foster efficiency and save costs the Monarchy preferred

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127 AGS, SSP, lib. 1472, fl. 257-259.

128 AHU, CU, cod. 1192, fl. 83v-84. The fact that Cosme Dias had contracted the making of new galleons for the royal fleet and had fallen behind schedule also convinced the authorities he was not to be trusted with new ship-building opportunities.

129 On the other hand, the king was in an ambivalent position, since most of the domestic wood used in the ship-building came from forests that were part of the royal demesne. In this regard, it was in the king's best interest as a patrimonial lord to keep prices as high as possible, restricting imports from Northern Spain, or from Scandinavia and the Baltic. As head of state, however, the monarch was responsible for facilitating the use of his royal preserves as sources of wood for ship-building to the up keeping of the empire and the fight against the enemies of the monarchy and Catholicism. This aspect of the king's personal gain is hardly ever considered in the historiography.

130 AHU, CU, cod. 31, fl. 36V, 37; 107-108v; ibid. cod. 32, fl. 96; ibid. Cod. 35, fl. 102-107; AHU, Reino, cx. 2, pasta 56; Costa, 'Portuguese Resilience in Global War', 54–55.

131 Goodman, *Spanish Naval Power, 1589-1665*, 127.

to entrust private contractors with the financial resources and material resources it still had at its disposal upfront over having its ships built on credit and delaying expenses by paying for ships only after they were fully operational.

Table 1. Construction costs of a brand new carrack (1606)

Operation	Price per Unit (*reins*)	Cost (in *reins*)
Hull		13.200.000
Launching the ship		95.000
Extra Roping		630.000
New roping (650 *quintais*)	3800/*quintal*	2.470.000
Re-used ropping (130 *quintais*) to tie down the cannons	2000/*quintal*	260.000
Labour costs with the assembly of the roping		530.000
Ballast		180.000
Setting up the masts and related appliances		440.000
Daily wages for carpenters (after the hull was gauged)		120.000
Daily wages for caulkers		150.000
Building rooms and chambers		150.000
Flat boat and skiff		80.000
Unspecified costs		35.000
Iron monger		215.000
Unknown		95.000
Additional ropes and mast appliances		1.210.000
Sails		1.030.000
Unspecified cost		145.000
Polisher		130.000
Crow's nest		35.000
6 linen hawsers		653.500
6 anchors		310.500
Wages of the seamen		631.440
Victuals of 125 people	23.600/person	2.950.000
Unknown		120.000
Spare appliances		980
Drugstore		1.289.020
Weaponry		936.000
Total		**28.091.440**

Source: BA, 51-VI-54, 'Papeis varios pertencentes as conquistas da America e India', fl. 2.

As show by table 1, in 1600 the cost of building and outfitting an Indiamen averaged 28,000,000 *réis*. This is in line with James Boyajian's calculations,[132] and just slightly above Freire Costa's (25,000,000 *réis*). According to her, shipbuilding for the Cape Route became costlier in the course of two decades and, by 1620, a carrack of the same tonnage cost nearly 52,000,000 *réis*. The same inflationist trend can be discerned for galleons. An average 500 tons' displacement galleon cost the royal treasuries 13,200,000 *réis* at the start of the century,

[132] Boyajian, *Portuguese Trade in Asia under the Habsburgs, 1580-1640*, 125–26.

and twenty years later the cost had risen to nearly 30,000,000 *réis*. This increase in the cost-per ton of the fully-rigged ships goes a long way to explain the preference for larger ships, which allowed for savings in building and outfitting.[133]

In order to throw some light on the different types of ship-building contracts adjudicated by the Portuguese Crown, it is necessary to revisit the different operations that went into the construction of the Indiamen. The main task of building a ship was to gouge the hull, a procedure that amounted to 68% of the construction costs in the first half of the 1500s.[134] The deployment of the masts, another crucial part of the construction process, was for all intended purposes a separate operation, and amount to less than 10% of the construction costs.[135]

Indiamen were most frequently built in the Lisbon royal shipyards, the *Ribeira das Naus*, the institution expanded and reformed by the Crown early in the sixteenth century to meet the demand for robust high-seas vessels created by the opening of the Cape Route. In the royal shipyards smaller vessels used by the non-royal seaborne transport sector were also built. The facilities and its work force, comprised by the corporately organized guilds of master carpenters and caulkers, were put at the disposal of royal contractors, who ensured the procurement of construction materials, the payment of the workers and the monitoring of the construction works.[136]

Construction works were also carried out in other places in the kingdom and the empire. Since the sixteenth century, Indiamen were regularly built in the Oporto shipyards, the *Ribeira do Ouro,* and then made their way to Lisbon were they were equipped with artillery and other naval wares.[137] This was the case of the vessels commissioned to the company of Brás da Maia and his relatives in 1620.[138] Porto was home to some trading families who got rich and politically influential through ship-building contracts with the state. This was the case of Simão Vaz, a merchant with an extensive network of contacts in Castile*,* namely with the renowned banking house of Simon Ruiz, and in France, from where he was hired to procure naval wares and fitting-out equipment.[139] Simão Vaz was the father of the aforementioned Manuel Gomes da Costa, who was arrested in 1607 for grossly failing to meet the quality requirements of his Atlantic fleets' contract. As their examples show, naval public-private partnerships could remain in a merchant family's portfolio for generations and define, albeit not exclusively, the business trajectory of its different members.[140]

The shipyards of the *Estado da Índia*, in Cochin or at *Ribeira* in Goa produced cheaper vessels and of better quality than those built in the kingdom, thanks to the abundance of high quality of teak from the forests of Southwestern India. Ships arriving in the Western coast of India from Portugal were also repaired in these naval sites, so they could be in the right condition to undertake the returning *Carreira* voyage.[141]

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133 Costa, 'Portuguese Resilience in Global War'.
134 Phillips, *Six Galleons for the King of Spain*, 51–54.
135 Costa, Lains, and Miranda, *An Economic History of Portugal, 1143-2010*, 75.
136 Costa, *Naus e galeões na ribeira de Lisboa*, 166–68, 253–86.
137 Amândio Barros, *Porto: a construção de um espaço marítimo no início dos tempos modernos* (Lisbon: Academia de Marinha, 2016), 218–32.
138 AGS, SSP, lib. 1474, fl. 473.
139 The most extensive study on the business operations of the Burgos merchant-banker Simon Ruiz Embito and the cooperative networks that underpinned them is: Ana Sofia Ribeiro, *Early Modern Trading Networks in Europe: Cooperation and the Case of Simon Ruiz* (Routledge, 2017).
140 Barros, *Porto*, 252–56.
141 Murteira, 'A Navegação Portuguesa Na Ásia e Na Rota Do Cabo e o Corso Neerlandês, 1595-1625', 254–58; Patrícia Catarina Sanches de Carvalho, 'Os Estaleiros Na Índia Portuguesa (1595-1630)' (Unpublished MA Dissertation, Lisbon, Universidade Nova de Lisboa, 2009); René. J. Barendse, 'Shipbuilding in Seventeenth-Century Western India', *Itinerario* 19, no. 3 (November 1995): 175–95; Duncan, 'Navigation between Portugal and Asia in the Sixteenth and Seventeenth Centuries', 8.

The Indiamen, like the deep sea Atlantic ships, were also built outside the Portuguese empire, in foreign European shipyards.[142] Construction orders were placed abroad and ships were deployed at the designated delivery points. For example, in 1607, twelve new vessels were commissioned from Hanseatic shipyards, which agreed to deliver the fleet in Lisbon, fully operational and fit for the ocean-going voyages.[143] Commissioning fully-built ships was sometimes a less costly option for the Crown given that the Low Countries' and Hanseatic shipyards were located closer to the continent's main supplying market for wood, Norway and the Baltic. This meant they could access construction materials cheaply, leading to a decrease in the ship's final price. By comparison, assembling a new ocean-going vessel in the Portuguese shipyards was encumbered by the costly wood imports from Northern Europe.[144]

Aside from building new long-hauled ships, public-private partnership also took up the tasks of careening, replacing old wooden parts for new ones and adapting older vessels to new functions *(see table 3)*. This was also the case with the aforementioned *Nossa Senhora do Rosário*, which had originally been part of the Brazil-bound armada led by the Count of Torre in 1637.[145] Upon its return, after deploying soldiers and military resources for the fight against the WIC in the Northeastern captaincies, the Crown intended to turn this ship into a suitable member of the India Run.[146] The repairing, replacement of certain parts of the ship and its adaptation to its new functions were successfully undertaken and the ship was ultimately ready to sail to the Indian Ocean by 1638.

Table 2. Fitting-out costs for four carracks sailing in the outward-bound voyage of 1620

Items	**Price per unit (*réis*)**	**Total cost (*réis*)**
Victuals for 1600 military personnel	12.400/person	19.840.000
Victuals for 560 seamen	17.000/man	9.520.000
Wages (*soldos*) of 560 seamen	550.000/carrack	2.200.000
6 months of wages for 1600 military personnel, including knights of the royal household and soldiers		7.000.000
Allowances for knights and petty noblemen		1.600.000
Wages of the captain major and other captains + loan made with the captain major		1.300.000

Source: AGS, SSP, lib. 1474, fl. 44-46.

[142] The convenience of acquiring ships made in Low Countries' and Hanseatic shipyards was voiced by prominent Spanish decision-makers, and become a popular opinion in court circles in the 1620s and 1630s. R. A. Stradling, *The Armada of Flanders: Spanish Maritime Policy and European War, 1568–1668* (Cambridge: Cambridge University Press, 2003), 170–71.

[143] BA, 51-VI-54, 'Papeis varios pertencentes as conquistas da America e India', fl. 23, 23v; Salgado, *Portugal e o Atlântico. Organização Militar e Acções Navais Durante o Período Filipino (1580-1640)*, 68.

[144] Unger, *The Ship in the Medieval Economy, 600-1600*, 269.

[145] For further details on this fleet, see chapter 8.

[146] AHU_CU_058 (Índia), cx. 22, docs. 111, 126. The ship was bought from captain Manuel Maciel Rote, after having been requisitioned for the Brazil-bound armada.

Table 3. Assembling Equipment for the galleon São Bento in 1640 (including workforce costs)

Task	Cost (*réis*)
Carpentry work	150.000
Caulking work	360.000
Mast Making	140.000
Nails and tacks	150.000
Assembly of the cordage	150.000
Total	**950.000**

Source: AHU_CU_058 (Índia), cx. 23, doc. 91.

Royal shipyards needed supplies and contractors often took up the task of procuring them, resulting afterwards in the Crown taking direct responsibility in the building of the ships. Aside from being in principle cheaper, or at least easier to service, this type of contract spread the risk inherent to supplying each construction material by turning to different contractors, whereas a single, all-encompassing concession would tie the Crown to one single contractor. However, there might be another reasoning to this contractual option. Concentrating the provisioning of raw materials and manufactured goods in one concession allowed for wholesale buys, which meant savings in the final bill, while at the same time it facilitated the coordination of revenues to servicing the contract. A greater number of contracts meant, on the other hand, that the Crown had to negotiate with and monitor the activities of a greater number of shipbuilders, careeners and timber suppliers, and monitor the activities of a greater number of private entrepreneurs.

In Habsburg Portugal compartmentalizing the provisioning of the naval forces, in different contracts for different specific tasks, and even on a ship by-ship basis, became the most frequent way of contracting as time went on. This was especially clear during the last two decades of the Union of the Crowns, when the economic climate became harsher, the number of capital-strong investors operating in Portugal was reduced, and the Crown's financial position worsened. This trend of breaking tasks apart in separate public private partnerships contrasted with what happened in Spain, particularly in contracts involving strategically sensitive military campaigns. It has been argued that large-scale *asientos* tended to be preferred because they allegedly ensured the desired outcome with less uncertainty, and the debt the monarchy contracted with the suppliers was more easily serviceable. According to David Goodman, in the seventeenth century the Crown preferred to concentrate naval provisioning around a select few agents, under the guise that it reduced the volume of revenues earmarked to the service of the contracts, while it also reinforced the Monarchy's control over the quality of the service and the administrative conduct of its contractors.[147] But it even though bundling provisioning operations together became a more popular option, this did not become the sole or even default approach to mobilizing resources to the naval forces and other branches of the armed forces. For instance, while the purveying of Spain's army garrisons in the Iberian peninsula and in Northern Africa were, in the 1630s, centralized under a variant of the government contract (the *factoría*), in charge of a single business entrepreneur appointed by the Crown,[148] in the first half of the eighteenth century

147 Goodman, *Spanish Naval Power, 1589-1665*, 52.

148 Carlos Álvarez Nogal, 'Centralized Funding of the Army in Spain: The Garrison Factoría in the Seventeenth Century', in *War, Entrepreneurs, and the State in Europe and the Mediterranean, 1300-1800*, ed. Jeff Fynn-Paul (Leiden ; Boston: Brill, 2014), 239–40.

compartmentalization was still the norm in other supplying operations involving the armed forces, such as the clothing of the armies.[149]

1.1.1 Supplying Timber under contract

It goes without saying that timber was the single most important component of shipbuilding. The planking of the hull normally required heavy oak timber, whereas pine wood was needed for the ships' masts. Large pieces of oak, on the other hand, were used to make the keels and ribs of the bulky Indian ocean-going ships and Portugal had relied on its own domestically grown cork oak for most of the 1500s.[150]

By the turn of the century, and the early decades of the 1600s, the pine demands of the royal navy were met through purchases with several retailers. The provisioning of pine wood was often arranged years in advance. At the start of 1607, when the annual *Carreira da Índia* fleet had not even set sail for Asia, the Crown had already initiated the preparation for the armada of 1608. A royal decree ordered new vessels to be built and instructed the *Junta da Hacienda de Portugal*, to estimate the costs and set aside the necessary revenues.[151] In order to increase the accuracy of the budget, the *Junta* commissioned a comprehensive inventory to Vasco Fernandes César, the purveyor of the Crown's stores (*provedor dos armazéns*). This inventory, which is reproduced on table 4, supposedly contains all the timber that was procured and delivered in Lisbon under both contract and direct administration during the course of that year. This timber was used to build from scratch three new Indiamen and complete two more, whose construction works were still ongoing. The timber needed amounted to more than 15,000,000 *réis*.[152]

[149] Sergio Solbes Ferri, 'The Spanish Monarchy as a Contractor State in the Eighteenth Century: Interaction of Political Power with the Market', *Business History* 60, no. 1 (2018): 72–86.
[150] Costa, Lains, and Miranda, *An Economic History of Portugal, 1143-2010*, 75.
[151] AGS, SSP, lib. 1466, fl. 149-151v.
[152] AGS, SSP, lib. 1466, fl. 152- 156: 'Folha das Madeiras q se contratarao p[era] as tres naos novas e p[era] as duas q se amde comcertar o preso das coais foi menos que te oje se fes'.

Table 4. Wood Procurement Contracts for the India Run, 1606

Manuel Dinis, Duarte Fernandes de Alcácer	**Unspecified wood from Pederneira**	**100 dozens *taboado de costado***	**9.900/dozen**	**1.605.000**
		100 *d'aliaixa*	**5.500/unit**	
		100 *calimes de costado*	**400/unit**	
		100 *calimes de foros*	**250/unit**	
Tomé Antunes	**Different assortments (to be delivered at *Ribeira das Naus* in Lisbon)**	**40 dozens *taboado de costado***	**10.900/dozen**	**696.000**
		40 dozens de liana	**6.500/dozen**	
Baltazar Jorge	**Pine wood (*pinho marco*)**	***Cintas* and *virotes* (undisclosed amounts)**	**727** **407**	**?**
Simão Roiz, Manuel Roiz da Costa Brandão, António Delgado	**Cork oak wood *("Paos de Sobrero de toda a sorte")***	**6.600 *paos d'armacao***	**836/per wood?**	**6.712.200**
		1.400 new pieces of wood	**671**	
		200 pieces for tamboretes 1.276?	**1.276**	
Diogo Lobo, João Fernandes Lobo	**Different assortments of wood *"Madeiras da Pederneira"***	**200 dozens – *taboado de costado***	**9.900?**	**3.506.000**
		100 dozens *de leames*	**5.500**	
		300 dozens *de folho*	**2.420**	
		15 wood pieces for rudders	**16.666**	
Duarte Araújo (factor of the royal pine forests)	**Different assortments of wood (pine)**	**1.900? *Latas***	**627/? 627.000**	**2.095.300**
		600 dozens *taboado de cuberta*	**2.310? 1.386.000**	
		24 mensas de guarnicao	**1.320/mesa 31.680?**	
		16 *apresticas?*	**1.320? 21.120**	
		10 *bombas*	**715/unit 7.150**	
		8 *braços* for rudders	**2.750**	
Miguel Afonso	**Different types of woods for repairs (including oak, ash tree and pine)**	**No specification**	**No specification**	**330.000**
António de Freitas Lobo	**Pine wood form the town of Pederneira**	**21 dozens *taboado de costado***	**9.900/dozen**	**1.605.000**
		35 dozens *dalcaixa*	**5.500/dozen**	

Source: AGS, SSP, lib. 1466, fl. 152- 156.

Table 4 shows that seven of the eight contracts dealt with the commission of pine wood. The sole exception was the contract for the supply of oak held by Simão Rodrigues and associates estimated at almost twice as high as the contract with João Fernandes Lobo and Diogo Lobo, the largest of the other seven contracts. All the pine mentioned in table 4 came from the forests of Western Portuguese Estremadura. After being chopped, the wood made its way to the village of Pederneira, in the outskirts of Nazaré, a fishing community with a shipyard specialized in the transhipment of wood. This town served as a gathering centre for timber, given its proximity to the royal pine forest of Leiria, a traditional provider

of timber for royal shipping since the Middle-Ages.[153] In the sixteenth century, pine wood was also brought to the Lisbon shipyards from places like Aldeia Galega and Charneca, in the Northwestern strip of Estremadura, the central region of the country.[154]

As far as the financial settlement of the contracts was concerned, most of them were paid in different instalments, except for António de Freitas Lobo's, whose accounts had already been settled in March of 1606. As Lobo's concession was the cheapest, it is possible that the suppliers were even paid on sight upon delivering the materials. For the Crown, securing an entire year's worth of wood supply through contracts cost the royal treasuries up to 15,000,000 *réis*. In the first trimester, the instalment came up to 5,000,000 réis, to which would later be added what was owed to Baltasar Jorge, because the terms of his contract had not yet been announced. At that point, the payment of the first instalment was already in arrears, as the monarchy had only paid half of the total amount due for the first instalments combined by March 24. Men like Tomé Antunes, supplier of *madeiras de costado,* had not yet received payment by the Crown, whereas the Simão Rodrigues, the largest supplier had only received 2,237,400 *réis* out of the almost 7,000,000 he was owed to for his deliveries. As a matter of fact, besides the full instalment paid to António de Freitas Lobo and Baltazar Jorge, all remaining six contracts suffered from payment delays, demonstrating the recurring difficulties of the Portuguese finances in honouring financial commitments to contractors.[155]

It is worth considering the social profile of the timber suppliers, since they were a group apart from other royal contractors. By comparison to the public-private partnerships for ship-building and wholesale deliveries, the supplying of retail timber was an activity of smaller scope and scale, which could be carried out by contractors of more modest means. With the exception of the factor of the royal pine forests, Duarte de Araújo, an individual of higher social standing and with some political clout, the wood suppliers on tables 4 and 5 were provincial, middle-sized merchants. This was the case of Simão Rodrigues (or Roiz), the head of the consortium Simão Rodrigues and his associates, to which the Crown commissioned wood supplies worth more than 6,000,000 *réis*. Simão Rodrigues was a trader from Chamusca, a small town in the central region of Ribatejo, not far away from the city of Santarém. In turn, indirect evidence identifies the Lobos, a series of merchants who supplied wood as local merchants from the town of Pederneira.[156]

The supply of timber brought into the sphere of royal contracts a different profile of contractors to that of the large merchant bankers that lived in Lisbon and even in Porto. These men were regional traders that operated on a geographically narrower scope, and, doubtless, lacked the international network of contacts and financial muscle of the magnates from the two largest cities in the kingdom. The highest valued contract of table 4 involved the procurement of corkwood, a natural commodity that Portugal had in abundance, meaning that the suppliers did not have to tap into far-flung commodity chains. With the exception of the royal factor Duarte de Araújo, these wood contractors also lacked of political connections in the political centre (or they were at least unfamiliar with the capital's high-councils of government), as they would not figure amongst the recurring bidders for

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153 Koldo Trápaga Monchet, 'El Estudio de Los Bosques Reales de Portugal a Través de La Legislación Forestal En Las Dinastías Avis, Habsburgo y Braganza (ca. 1435-1650)', *Philostrato. Revista de Historia y Arte*, 2017, 5–17; Cristina Joanaz de Melo, *An Analysis of the Royal Preserves in Portugal. Issues of Privilege, Power, Management, and Conflict* (Sheffield: Wildtrack Publishing, 2015); António Rocha Santos, Rosa Varela Gomes, and Mário Varela Gomes, 'Forest Management on Portugal during Early Modern Ages - Analysis of Historical Documents Belonging to the Kingdom of D. Manuel I (15th and 16th Centuries)', in *The Management of Iberian Forest Resources in the Early Modern Shipbuilding: History and Archaeology* (Lisbon: Instituto de Arqueologia e Paleociências-Universidade Nova de Lisboa, 2015), 87–92.

154 Costa, *Naus e galeões na ribeira de Lisboa*, 317–22.

155 AGS, SSP, lib. 1466, fl. 154, 154v.

156 For the social background of these individuals, see the inquisition trial of Pedro Fernandes Lobo, a New Christian wood merchant from Pederneira. ANTT, Santo Ofício, Inquisição de Lisboa, processo no. 03314.

provisioning or revenue farming contracts. These men were thus specialized traders, who made use of their local expertise to perform tasks like cutting and delivering wood to the Crown's naval stores, tasks that were less financially demanding and easier to accomplish than most of tax-farming contracts adjudicated to merchant bankers. Despite not being as financially robust as the merchant elite, the wood retailers were still able to pool their resources together and draw from local and regional creditors to ensure deliveries of wood worth several millions of *réis,* as in the case of Simão Rodrigues and partners. Moreover, it is unthinkable that they would be able to provide services of this magnitude (for middle-sized, regional traders that is), if they did not have the financial security to wait, at times for long periods of time, for the Crown to paid them for their contracts.[157]

Despite the existence of internal sources of supply, during the Dual Monarchy, more so than in the first eighty years of the sixteenth century, Portugal could not rely solely on the construction materials procured within the realm, and imports were often necessary. For instance, fine-quality oak used to assemble the hull of the Ocean-going ships was hard to come by in the domestic market. Fortunately for the Portuguese shipbuilders, oak was abundant elsewhere in the Iberian Peninsula, particularly in Northern Spain, in the forests of the regions of Vizcaya, Quatro Villas de la Mar (more or less equivalent to the present day province of Cantabria) and Portugalete.[158] Next to the use of Northeastern Spanish timber, Portugal had been historically linked with the trade in wood from neighboring Galicia, a business conducted by specialized retailers.[159] André Lopes Franco and Francisco Lopes were two of those specialized buyers living next to Lisbon's *Cais da Madeira,* a royal facility that supervised the wood trade in the capital*,* who bought several hundreds of charts of wood from João de Castrilho and Lanzarote Misia Alfeirão, local suppliers from Santa Marta, Galicia. The original contract signed between the two parties stipulated that the suppliers ensured the transport from Galicia into Lisbon.[160]

As far as pine-wood was concerned, ensuring a steady provisioning to the Portuguese naval stores and to private shipwrights was a more complicated matter. Although pine-wood logs were obtained from the royal preserves in Leiria and other forests in Estremadura, as shown by table 4, the Iberian Peninsula was not particularly well endowed with pine-trees, especially the larger, more robust ones used to make the masts of the India carracks and galleons. Due to this scarcity of large pine timber in the period under study imports from

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[157] There is little information about the participation of provincial elites, both affluent notables and local high-ranked office holders, in Portuguese government contracts. By contrast, the phenomenon is well document for other western European states and the Ottoman Empire. The fact that the kingdom of Portugal was not a composite polity (during this period the kingdom was one among a series of disparate polities sharing a same ruler within the Hispanic Monarchy) or a federal structure like the Dutch Republic, coupled with the over-inflated political and economic importance of Lisbon, where the main government contracts were advertised, might explain the relative absence of these actors. Another possibility is simply that there is a bias in the sources against the middle and provincial tier of the country's merchant class and a greater focus on the capital's merchant-bankers who negotiated public-private partnerships in Lisbon and Madrid. Further research is needed to clarify this issue. Provincial-peripheral contracts in different European states and their recipients are tackled in; Irfan Kokdas, 'Land Ownership, Tax Farming and the Social Structure of Local Credit Markets in the Ottoman Balkans, 1685–1855', *Financial History Review* 24, no. 1 (2017): 53–81; Rafael Torres Sánchez, *Military Entrepreneurs and the Spanish Contractor State in the Eighteenth Century* (Oxford: Oxford University Press, 2016), 57, 78; Pepijn Brandon, *War, Capital, and the Dutch State (1588-1795)* (Leiden: Brill, 2015); White, 'From Privatized to Government-Administered Tax Collection'.

[158] John T. Wing, *Roots of Empire: Forests and State Power in Early Modern Spain, c.1500-1750* (Leiden ; Boston: Brill, 2015); Phillips, *Six Galleons for the King of Spain*, 51–60, 79; Goodman, *Spanish Naval Power, 1589-1665*, 66–67.

[159] María del Carmen Saavedra Vázquez, 'La formación de armadas y sus efectos a nivel territorial: el ejemplo de Galicia 1580-1640', *Cuadernos de Historia Moderna. Anejos*, no. 5 (2006): 55–76.

[160] ANTT, ADL, 1º Cartório Notarial de Lisboa, cx. 1, livro de notas no. 4, fl. 32v-3. For the Galician wood trade to Portugal in the late sixteenth century; Ana Sofia Ribeiro, 'Trans-National Cooperation: An Asset in the Portuguese Overseas Trade. Foreigners Operating in the Portuguese Overseas Trade, 1580-1590', *Storia Economica* Anno XVIII, no. 2 (2015): 431.

Scandinavia and the Baltic were instrumental for the needs of the Iberian naval forces to be met.[161] Supplies of Nordic timber were regularly ensured by Dutch carriers in three distinct periods: before 1605, when a decree by Phillip III closed the Iberian ports to them, again during the truce of 1609-1621, and, despite the resuming of the trade embargo, all through the 1620s and 1630s, albeit by that point in a clandestine capacity.[162] During the periods when embargoes were in effect, merchantmen chartered in the United Provinces continued to visit Portuguese and Spanish ports, for instance by changing their flags to give the idea they had been charged in the Southern Low Countries or the port-cities of the Hansa.[163]

In 1619, the tax-farmer and provision contractor André da Fonseca was hired to procure seventy two pine logs which were to be turned into masts for the Indiamen.[164] Since the Twelve Years' Truce (1609-1621), Iberian ports were open to Dutch merchantmen, and as such the contractor could rely on shipping from Amsterdam to fulfill its contractual obligations. Conversely, at the very end of the Union of the Crowns, when Dutch freightage was officially banned, the Southern Netherlander merchant Luís de Bem supplied, among other products from the Baltic, seventy pine logs for the ships of *Carreira da Índia*.[165] De Bem's business connections to the Northern European outlets still formally open to the Monarchy's contractors, and potentially to the Dutch staple market, proved instrumental in the procurement of timber and other related naval wares.

Political and human barriers, such as the trade embargoes and privateering, were highly detrimental to the steady import of timber into Iberian markets, especially the large amounts needed for the royal armadas. The dependency on these distant markets and on foreign carriers immediately became a problem if war broke out. To provision itself with foreign timber, the Crown could either stockpile its stores with masts during peace time or allow for a selective application of the trade proscriptions targeting enemy states in times of war to account for those needs. David Goodman remarks that despite the more forceful enforcement of the embargos by the *almojarifazgo* officials, in Portugal and elsewhere in Iberia, an exception was made for mast-imports. While other merchandises were effectively banned and any apprehended cargoes were treated as contraband, shipments of large pine logs from the Norwegian, Finish and other Baltic forests were not subjected to as many restrictions at Spanish and Portuguese ports, even if brought in by Dutch vessels.[166] Carmen Sanz-Ayán goes even further, suggesting that the commandeering of masts was outsourced to private businesses precisely so that the Crown would not lose face by importing Nordic and Baltic pine timber from exporters and skippers hailing from an enemy state.[167]

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161 Goodman, *Spanish Naval Power, 1589-1665*, 138–40, 255.

162 The trade between the Northern Low Countries and the Iberian Peninsula during this period is studied in great detail in Kernkamp's classic study. J. H. Kernkamp, *De Handel Op Den Vijand*, 3 vols (Utrecht: Kemink en Zoon, 1934).

163 An example of these imports from late in the sixteenth century, was the shipment of 130 *last* of wood entrusted to Jan Boelsen, skipper of Enkhuizen, who after unloading the merchandise in Lisbon, proceeded to the port of Setúbal to fetch salt for the return voyage to Amsterdam. Cátia Antunes, 'The Commercial Relationship between Amsterdam and the Portuguese Salt-Exporting Ports: Aveiro and Setubal, 1580-1715', *Journal of Early Modern History* 12, no. 1 (2008): 28.

164 AHU_CU_058 (Índia), cx. 15, doc. 204.

165 AHU_CU_058 (Índia), cx. 22, doc. 140.

166 Goodman, *Spanish Naval Power, 1589-1665*, 138.

167 Carmen Sanz Ayán, 'Los Negociadores y Capitales Holandeses En Los Sistemas de Abastecimientos de Petrechos Navales de La Monarquia Hispanica Durante El Siglo XVII', *Hispania* LII, no. 3 (1992): 915–45; The story of a certain Pedro de Capella, who, in 1623, was instructed to secretly acquire a brand new vessel for the Spanish armada of Flanders in Schoonhooven, a port near Rotterdam, illustrates that naval purchases did continue, albeit with the utmost discretion. Not only did the Spanish Monarchy not want it be known it did business with shipwrights from enemy states, but the purchase would not be possible if the Dutch authorities found out that the customer was in fact the Habsburg navy. Stradling, *The Armada of Flanders*, 197–98.

1.2 Fitting-out the *Carreira*'s Ships of the Line

The scale and complexity of fitting out the *Carreira's* fleets forced the administrative and financially overwhelmed Crown to lean heavily on contractors, albeit to different degrees depending on the contract. As with shipbuilding, the Crown alternated comprehensive, larger-in-scope contracts with more specific and circumscribed provisioning operations.[168] Some of these concessions required only the advancement of funds and did not preclude the acquisition of equipment or raw materials, leaving these responsibilities to the royal administration or to another contractor. Certain public-private partnerships referred to the deployment of specific products or services for one or two individual ships in an armada, whereas others encompassed the entire fleet, in some cases, for several years.[169] The Crown decided to promote concentration when it auctioned a few public private partnerships to a small number of magnates, in some cases for several years/voyages, and fragmentation by underwriting a bigger number of contracts, which were individually less costly and easier to operate. On the other hand, fragmentation generated smaller economies of scale and raised the costs of monitoring the activities of the various contractors.

In August 1607, Madrid ratified a contract between the *Junta de la Hacienda de Portugal* and Jorge Rodrigues Solis. This savvy merchant-banker with a long track record of logistic and financial intermediation was chosen to careen and fit-out the carrack *Nossa Senhora da Palma* for the Lisbon-Cochin 1608 voyage.[170] The limited scope of this contract arose because the contract was an extension or a spin-off of a larger, still ongoing contract. Jorge Rodrigues Solis had been, since 1602 the man behind the concession for the outfitting of the India fleets, and by 1607 he was also in charge of repairing and mobilizing resources for the other ships that sailed in that year's expedition. It so happened that on short notice the Crown decided to add one last ship that was not initially scheduled to take part on the voyage.[171] The *Nossa Senhora da Palma* had returned from India and the lengthy journey had obviously taken a toll on the ship. Several officials expressed doubts whether the vessel was seaworthy for two consecutive voyages in the India Run. Rodrigues Solis guaranteed he could have it repaired and fitted out on time. Being of the opinion that all available ships should be dispatched for the relief of the *Estado da Índia,* the *Junta* was inclined to believe in Rodrigues Solis when he said he was able to repair and fit out the *Nossa Senhora da Palma,* and that the risks of dispatching the ship to Asia were minimal.

The contract made with Jorge Rodrigues Solis reveals how public-private partnerships were dynamic bounds between the Crown and concessionaire and not arrangements entirely set in stone. As long as both parties involved were in agreement, the contracts could always be extended, updated and its terms renegotiated. The most important terms of the *Nossa Senhora da Palma* concession included the provision of all necessary equipment for the ship, as well as food-supplies for the seamen. All provisions had to be delivered and ready to be loaded onto the carrack by the last days of February 1608. Although no clause specified the items nor the amounts that had to be delivered, the contract clearly stated the commodities and products that were outside of its scope, singling out weaponry

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168 Thompson, *War and Government in Habsburg Spain, 1560-1620*, 222.
169 Thompson, 223.
170 AGS, SSP, lib. 1466, fl. 272 – 278.
171 AHU, CU, cod. 31, fl. 44-46. For instance, for the 1606 voyage, Rodrigues Solis was expected to fit-out a total of seven Indiamen, five bound for Goa and two for Malacca. BA, 51-VIII-42, fl. 94, 94v.

and munitions, which points at the existence of specific contracts for these supplies with other merchants.[172]

This concession to Rodrigues Solis lays bare the fragmented handling of the logistics that at certain moments defined the India Run. The feeding and payment of troops *en* route to Asia, and the procurement of weaponry and ammunitions had to be arranged separately, as they were not included in this contract. The contract also put forward the penalties that the contractor woul incur in case he was unable to honour his commitments to the state. In case Rodrigues Solis failed to meet all the supplying requirements, he should not expect to receive compensation from the revenue streams that had been specifically assigned to his contract beforehand and he still ran the risk of being fined 8,000,000 *réis*. An exception was made for the delivery of masts, whereby he was exempted from having to acquire them abroad. If lengthy single pieces of pine wood could not be found in Lisbon or in any other port of the realm, and if for that reason the carrack was held back in Lisbon, the contractor would be excused from the fine.

Moreover, Rodrigues Solis was to receive 16,857,143 *réis* for equipping and handling the manning requirements of the *Nossa Senhora da Palma*, the same sum he was to be paid for every Indiaman during his multiple-year concession. Setting the price meant that the contractor and the royal officials had agreed on the costs of the contracted commodities. This was often problematic for while the Crown wished to keep the price as low as possible, the contractor tried to have it at least at market price, preferably above.[173]

Finally, the payments to Rodrigues Solis for his supplies for the *Nossa Senhora da Palma* were to be paid in 1,500 *quintais* of pepper as soon as the spice batches arrived from India. Assuming the inward-bound fleet did in fact reach Lisbon without incidents or delays, the contractor would be paid three months before deliveries were due.

The partnership between the Crown and Jorge Rodrigues Solis follows the template described above, in the sense that it was less about carrying out a certain task (in this case, fitting-out ships) for which the contractor was paid upon completion. Instead, the assumption that underpinned this public-private partnership was that the revenues generated from the sale of the pepper would be enough to pay the contractor. By surrendering funds to Rodrigues Solis as he was just beginning to fulfil his contractual obligations (i.e. acquire the necessary commodities on time for the delivery deadline) rather than afterwards, the Crown was providing him with the financial means to carry out his duties effectively. While the contractor found a way to be the preferential receiver of a batch of pepper, which in the case of Rodrigues Solis, a veteran wholesaler of pepper, represented an added incentive to bid for the contract, the Crown was spared from marketing the commodity to generate enough earnings to pay for the contract. The assignment of the king's exclusive spice was a welcoming prospect for the contractor, since it exempted him from taking part in the public auctions, allowing him to secure the prized commodity at a lower price. For the Crown, the pepper was a ready-made receipt which could be allocated to service the contract, relieving its treasury officials from having to go through all the other revenue streams and see which ones were not already earmarked to the service of the consolidated debt, the payment of salaries, pensions and grants, as well as the settlement of other provisioning contracts. Moreover, by promising part of the pepper consignment to a contractor, the royal Exchequer avoided the potentially disappointing outcome of public tenders, given that by 1608, the interest for pepper among wholesale buyers had waned.

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[172] Notwithstanding the exclusion of masts from the contract, its provisioning was a particularly sensitive issue because the failure to provision them on time would prevent the *Palma* from departing alongside the rest of the armada. With both parties well aware of this risk, the contract specified the contractor was exempted from the heavy fine if delays or if the ship was held back in Lisbon Indiamen because it had not yet received masts.
[173] AGS, SSP, lib. 1466, fl. 279v.

Four months after the last *quintal* of pepper had been paid - assuming the inward-bound armada reached Lisbon by November - the outward bound fleet would depart and then Crown and contractor would settle their accounts. The difference between the market value of the pepper at the time it was surrendered to the contractor and the agreed-upon price of the contract was calculated and bridged. The contractor would either reimburse the Crown in up-front cash, or he received extra funds from the royal treasury, depending on who was running at a loss. In order to ensure a timely implementation of the contract, the Monarchy promised to offer the concession holder all the administrative collaboration necessary for the completion of the tasks at hand. For example, all the timber in the royal warehouses should be surrendered to Rodrigues Solis and its cost would be subtracted from the price of the contract. The expenses with the work force were equally transferred from the royal treasury to the contractor, who hired the carpenters, caulkers and other craftsmen, including the employees of the royal shipyards. This fact notwithstanding, the contract stated that they should be placed at the contractor's disposal (as long as he paid them, of course) along with the public infrastructures. Therefore, by outsourcing ship-building to private entrepreneurs, the Crown was exempted from the payment of salaries of highly specialized workers during long-periods of time, even if these costs were reflected in the final price of the contract.

Even if the contract with Rodrigues Solis only provides a general outline of the clauses, richer evidence on the intricacies of naval public private partnerships exists for other cases. A multi-tasking contract for which there is much more qualitative and quantitative information was signed between the months of July and August 1620 with the Lisbon merchant-banker Antonio Fernandes Pais. In this public-private partnership, the terms for the provisioning of three ships for the 1621 *armada*, as well as the victualing of five thousand seamen and military personnel were settled. The terms of this contract are reproduced on table. 6 bellow. By comparison with the contract of Jorge Rodrigues Solis, this was a comprehensive, all-encompassing partnership.[174] It included not only construction materials and other infrastructural resources, but also weaponry, munitions and rations. The supply of weapons and foodstuffs will be analysed in the next chapter, by looking at other contracts, as I focus here on the fitting-out clauses.

[174] The same could be said about the 1602-1606 contract to rig the India fleets leased out to Rodrigues Solis. On how Rodrigues Solis would be compensated for this multiannual partnership with the Crown; AHU, CU, cod. 31, fl. 44-46.

Table 5. The naval provision contract of António Fernandes Pais (the India fleet of 1621)

Supply	Quantities	Price per unit (*réis*)	Total cost (*réis*)
Victuals	3.760 people (seamen and soldiers)	16.000/person	60.000.000
Iron cast artillery (from England)[175]	6.000 *quintais*	2.000/*quintal*	12.000
Anchors	48	2.700/anchor	129.600
Roping	4.600 *quintais*	3.300/*quintal*	15.180.000
***Pelouros* (two types: *cadea* and round**[176]	1.250 *quintais*		3.000 (*cadea* for 1000 réis; the round ones for 2000)
Murrão	150 *quintais*	2.200/ *quintal*	330.000
Sailing canvas			3.800
Masts	50 masts	23.000/mast	1.150.000
Tin	400 *quintais (300 "q nao seja cabeca de negro";* 100 tin paste	"*q não seja cabeça de negro*" = 1 600 *réis*/quintal Tin paste = 2200 réis/quintal	700.000 (480.000 + 220.000)
Estopazes[177]	200.000	800/1.000 *estopas*	160.000
Pikes	700	300/pike	210.000
Money for additional purchases			800.000
Total cost of the provisions			**78.678.400**

Source: AGS, SSP, lib. 1473, fl. 227-236v.

The contract required Pais to supply victuals for 3,760 people, seamen and soldiers alike, within the period of eight months, for 16,000 *réis* per person or (12,000) per ration. Taking the number of people in the carrack as the variable under consideration, the total costs of feeding the crews would be higher than 60,000 *réis*. The victuals to be provided and the respective amounts were left unspecified in the contracts' general clauses, only to be later discussed by the Council of the Exchequer and the contractor. This was crucial to both parties, since they helped determining how costly the public-private partnership would be for the Crown and the potential returns it could yield the contractor. In addition to foodstuffs, this contract included the procurement of iron cast artillery, rigging and 48 anchors, with different weights, ranging from 12-17 *quintais*. The price was not specified for the different weights, instead it was simply stated that the average cost was set at 2,700 *réis* (at a total cost of 130,000 *réis* approximately for the forty-eight anchors).[178] Next to anchors, the contract also put forward the acquisition of good quality sails. Although the sail canvas used by the Indiamen were made primarily from Flemish and French linen, particularly from Brittany and Rouen, Portugal's own linen production was also employed.[179]

Part of a crop diversification trend that defined the Portuguese agriculture in the sixteenth century, the cultivation of flax picked up steem in several regions but especially in the North-western region of Minho, whose more humid climate and irrigated soils were well

175 "*artelheria de ferro coado da fundição de Inglaterra de cem livras cada quintal*".

176 *Pelouros* were the small metallic piece used to reload firearms. The *vocabulario portuguez & latino* by Rafael Blutheau's defined it as "*Pequeno corpo metallico, & esférico com que se carregaõ mosquetes & outras armas de fogo";* Raphael Bluteau, *Vocabulario Portuguez e Latino,* vol. 6 (Coimbra: Collegio das Artes da Companhia de Jesus, 1712-18), 383-384.

177 Probably a linen cloth used to cover up equipment and appliances on the deck. The word had according to Blutheau English origin Blutheau's dictionary, "Estopa. Derivase de *stoup* palavra Celtica, que significa o mesmo, *cude stuppare,* que na baixa Latinidade quer dizer Tapar, ou de *tupa* (..) He o grosso do linho", Bluteau, *Vocabulario Portuguez e Latino,* vol. 3, 327.

178. AGS, SSP, lib. 1473, fl. 232-232v.

179 Costa, *Naus e galeões na ribeira de Lisboa*, 359–62.

suited to the flex and where there was plenty of man power to spare to work the land.[180] In order to make the canvas with the appropriate length and width, smaller strands of sail cloth were sown together.[181] Vila do Conde, was internationally renowned in the sixteenth century for the quality of its sail canvas and the Crown issued several decrees with the intent of standardizing the final product, ensuring quality control and steady supplies to the royal shipyards. Behind this legislative initiatives was the desire to contain imports and spur domestic production.[182]

Table 6. Fitting out expenses with the India Fleets (1596)

Commodities	**Amounts**	**Price per unit (*réis*)**	**Total cost (*réis*)**
Biscuit	4250 *quintais*	2.400/quintal	10.200.000
Wine	490,5 casks	5.600/pipa	2.746.800
Beef	1.700 *arrobas*	450/arroba	765.000
Bacon	1.909 arrobas	960/arroba	1.832.640
White fish	355 dozens	720/dozen	255.600
Olive oil	93 pitchers	40.716/tonel	446.647
Vinegar	34 casks	4.000/pipa	136.000
Casks	2200	1.200/pipa	2.640.000
Canister	100	700	70.000
Iron Hops	6.000	100/arco de ferro	600.000
Vegetables and green stuffs			505.600
Medicinal drug			384.000
Pine cupboards for storage			380.000
Pantry cabinet			700.000
Weaponry handed over to the provisioning contractor			964.600
Candles, sails, etc.			195.240
Expenses with equipping a small accompanying vessel			123.660
TOTAL			**22.945.787**

Source: BA, 51-VI-54, 'Papeis varios pertencentes as conquistas da America e India', fl. 24-25

[180] Susana Münch Miranda, 'Coping with Europe and the Empire, 1500-1620', in *An Agrarian History of Portugal, 1000-2000 : Economic Development on the European Frontier*, ed. Dulce Freire and Pedro Lains (Leiden-Boston: Brill, 2017), 91.
[181] Phillips, *Six Galleons for the King of Spain*, 82.
[182] Costa, *Naus e galeões na ribeira de Lisboa*, 362–65.

Another key naval store was rigging (in Spanish *jarcia,* in Portuguese *enxárcia*), which like sail cloth was made of vegetable fibres. Rigging was used to bind the masts to the ship by ensuring lateral support, to hoist and lower the sails, to hold the heavy artillery from recoil whenever fire was opened, as well as to moor the ships to the docks upon arriving at a dockyard.[183] Bundled together to make sailing ropes, flax and hemp threads were manufactured in places like Santarém, Golegã or Coimbra. Throughout the sixteenth century, royal officials placed orders with local producers, but at the start of the seventeenth century the Crown took steps towards controlling the production process and better articulate it with the needs of its naval squadrons. In 1617 and 1625, royal factories were set up in Santarém and Coimbra to oversee all stages of production and ensure transportation of the linen-treads to Lisbon where they were finished.[184] Nevertheless, the prime supplier in the kingdom was the Northeastern town of Moncorvo, where a particular linen thread was produced, the so-called *fio de moncorvo*, a product in high demand in the larger shipbuilding centres on the coast. To oversee the growing of hemp and coordinate the putting-out of the raw material to domestic spinners and weavers scattered throughout the vicinities, a royal factory was equally established in Moncorvo.[185] Not infrequently, the exploitation of Torre de Moncorvo's linen-tread cluster was farmed out to private businessmen.[186] Regardless how cultivation and weaving were ran, whether by the royal factor or a contractor, after having been processed in the different Crown factories, the threads were sent to Lisbon's royal rope factory (*cordoaria)* to be braided.[187]

Despite the existence of a capable domestic sector for rope and sail cloth-making, procurement ensued beyond the Pyrenees, particularly from the Eastern Baltic and White seaboards.[188] Table 7 (see bellow) describes such a transaction, the 1,200 *quintais* of hemp fiber supplied by Abrão Estrenicq (Abraham Steenwijck), a merchant from Kampen, in 1609. If in this case, the delivered vegetable fibres still had to be transformed into ropes at the royal factory, on other occasions rigging was imported fully-finished. In June 1620, Luís Cado,[189] a longstanding member of Lisbon's Flemish merchant community, agreed with the Council of the Exchequer to deliver by December an unspecified amount of ropes worth 6,000,000 *réis*, 1,800 *quintais* of shroud[190] (at a rate of 3,400 *réis* per *quintal*), 250 *quintais* of hemp (at 2,700 réis per *quintal*), and an unspecified amount of mooring. To maximize the shipment of imported wares from Scandinavia and the Baltic sea regions, Cado also bid for the procurement of fifty masts, raising the cost of the whole delivery to circa 10,000,000 *réis.*[191] Luís Cado was paid with the revenues of the tariffs and freights levied on the privately owned merchandises brought in the arriving carracks later that year, although this particular revenue

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183 *canhâmo*, *linho canimo* in portuguese. Goodman, *Spanish Naval Power, 1589-1665*, 140–41; Phillips, *Six Galleons for the King of Spain*, 82–84.

184 Costa, *Naus e galeões na ribeira de Lisboa*, 346.

185 A set of general instructions (*regimento*) were issued in 1656. Jorge Pedreira, *Estrutura Industrial e Mercado Colonial. Portugal e Brasil (1780-1830)* (Lisbon: Difel, 1994), 26.

186 Sources on the *Torre de Moncorvo* facility contract do not abound. An exeption are the discussions held at the Council of the Exchequer regarding contractor Diogo Henriques Pereira, who ran the government concession in the 1620s, and Diogo Henriques in the following decade. AHU_CU_Reino, Cx. 4-A, pasta 19, AHU, CU, cod. 35 A, fl. 52v-53, 56v-57v; AHU, CU, cod. 39, 139.

187 Miranda, 'Coping with Europe and the Empire, 1500-1620', 92; Costa, *Naus e galeões na ribeira de Lisboa*, 349–53.

188 Goodman, *Spanish Naval Power, 1589-1665*; Other European navies also relied extensively on imports of Scando-Baltic vegetable fibres; Ralph Davis, *The Rise of the English Shipping Industry: In the Seventeenth and Eighteenth Centuries* (St, John's, Newfoundland: International Maritime Economic History Association, 2012), 204–5, 209, 211.

189 Eddy Stols, *De Spaanse Brabanders of de Handelsbestrekkingen Der Zuidlijke Nederlanden Met Iberische Wereld 1598-1648* (Brussels: Paleis der Academiën, 1971)"Bijlagen": 13.

190 The shrouds were the webs of rigging which held the mast up from side to side.

191 AGS, SSP, lib. 1473, fl. 25-28.

stream did not seem, at the time at least, to garner much interest in the Lisbon business scene.[192]

As far as shroud was concerned, Luís Cado supplied 1,800 *quintais* in 1620, but the contract did not make clear whether it was to be used for the departing India fleet of the next year or for the Atlantic squadrons based in Lisbon. Three ships of the line that were scheduled to depart in 1621 were provisioned with 4,600 *quintais*, courtesy of António Fernandes Pais. That *armada* comprised ten ships, and two separate contracts to deliver cordage accounted for at least 6,400 *quintais*.[193] In the course of the following decade the two vessels that were normally dispatched to Asia every year required about 2,500 *quintais* of cordage.[194]

Rope was often imported via the United Provinces, Europe's main international outlet for naval wares at the time. Numerous semi-finished commodities and equipment ailing from all over Northern Europe, from the British Isles to Russia, were gathered at the Amsterdam staple market and subsequently re-exported to Southern Europe. At times, they were not even brought to ports and storage facilities in the United Provinces, being exported directly from their production outlets to the sale markets on board Dutch merchantmen. Other times, Dutch suppliers resorted to the merchant marine from other countries, namely from England.[195] One such voyage was outlined on May 6, 1621, when Jerónimo Rodrigues de Sousa, from the Portuguese Nation of Amsterdam, and Andries Horlstone from Sandwich, skipper of the 40 last's ship, the *De Ritzer*, agreed to bring to Lisbon by way of Sandwich a cargo of 30 lasts of cordage. The skipper was to report to Bartholomeys Sijmissen, rope-maker in Amsterdam, under the penalty of being fined 15 pounds sterling or 150 guilders, if he failed to do so.[196] The lay-over at Sandwich was probably meant to conceal the origins of the cargo, given that the Twelve Year's Truce (1609-1621) had just ended and the embargo on ships and goods ailing from the United Provinces had been reinstated.

Even the most robust types of rigging, such as those used for mooring the ship to the docks deteriorated from the exposure to water, temperature and humidity during the long months at sea and the sailing across different latitudes. To insulate the different types of cordage and make them more resistant, pitch and tar were used. A mixture of these same greases was also applied to the ships' hull to protect it against shipworms. Tar and pitch were scarce in Iberia and had to be imported from Scandinavia, the Baltic, or Muscovy by Dutch or Hanseatic skippers.[197] In the early 1620s, Robert Garland, an English merchant supplied the Crown stores with tar (and fish oil), a transaction worth 119,400 *réis*.[198] In 1638, Luís de

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192 In 1619 two ships, the *Paraíso* and the *Nossa Senhora da Boa Nova* returned from Goa to the Portuguese capital, but for some reason Lisbon's financiers did not show interest in the tariff and freight collection farms. The lack of interest of Lisbon's businessmen in leasing the collection of tariff and duties was reported by the Council of the Exchequer to Madrid, as the reason why nobody besides Cado had showed interest in the supply. According to the Council, if the contract would be serviced with allotments of pepper there was good reason to believe that others would make a tender for the contract. The resort to pepper was not up for consideration, given previous instructions by the king to not assign pepper or the proceeds from its sale to any further expenses.AGS, SSP, lib. 1473, fl. 26v.

193 AGS, SSP, lib. 1473, fl. 227v.

194 AHU_CU_058 (India), cx. 19, doc. 210.

195 E. M. Koen, "Notarial Records relating to the Portuguese Jews in Amsterdam up to 1639", *Studia Rosenthaliana*, vol. 33, no. 1, 1999, deed 3477.

196 Koen, "Notarial Records," *Studia Rosenthaliana*, vol. XIX, no. 1, May 1985, deed N. 2400.

197 J. T. Kotilaine, *Russia's Foreign Trade and Economic Expansion in the Seventeenth Century: Windows on the World* (Leiden-Boston: Brill, 2005), 64; Glete, *Warfare at Sea, 1500-1650*, 115.

198 AHU, CU, 35-A, fl. 31v; AHU_CU_058 (Índia), cx. 12, doc. 11. For the early seventeenth century English community in Portugal, Pauline Croft, 'English Mariners Trading to Spain and Portugal, 1558–1625', *The Mariner's Mirror* 69, no. 3 (1 January 1983): 251–66; L. M. E. Shaw, *Trade, Inquisition and the English Nation in Portugal, 1650-1690* (Manchester: Carcanet, 1989), 15–25.

Bem delivered tar for the galleon *Santo António* and the *naveta Nossa Senhora do Rosário*, two of the ships enrolled to sail to India in 1639.[199]

Table 7. Some examples of contracts leased out by the Council of the Exchequer for the provisioning of the royal warehouses in Lisbon (1592-1612)

Date of delivery	Contract	Recipient
1598/03/04	15000 harquebuzes + muskets and match	Jacome Fixer
1592/09/30	4000 *quintais* of *cordage*	João de Bois and Juliao de la Court
1598/08/20	2000 *quintais* of cordage	João Baptista Galo and partners
1598/08/20	500 *quintais* of cordage	Anrique Brazadiq
1598/10/03	Construction of two fully equipped and ready to sail caravels weighting between 30 to 100 tons each	Jorge Roiz Solis & André Ximenes
1602/03/15	Fitting-out of seven armadas bound for the Indian Ocean	Jorge Roiz Solis
1604/12/31	Victualing the military en route to Asia	Cosmo Dias
1604/11/15	Victualing the seamen en route to Asia in the 1605 voyage	Cosmo Dias
1607/10/16	Victualing the seamen en route to Asia in the 1608 voyage	António Fernandes Pais
1608/01/26	Careening of the carrack *Palma*	Jorge Rodrigues Solis
1608/02/27	4000 *quintais* of nails and tacks, 10 anchors	António Fernandes Pais
1608/05/29	3,000 *quintais* of cordage	Alonso de Sisneros
1608/05/18	Victualing the crews of the 1609 Armada	António Fernandes Pais
1609/03/28	4 000 *quintais* of nails and tacks, 30 anchors	António Fernandes Pais
1609/04/03	1200 *quintais* of hemp	Abrão Estreniq
1609/09/08	Victualing the seamen en route to Asia in the 1610 voyage	António Fernandes Pais
1609/10/10	2000 *quintais* of cordage	Luís Cado
1609/11/14	137 masts	Luís Cado
1609/11/14	85 masts	Geraldo Ovade
1610/01/12	300 quintais of nails and tacks + and unspecified number of anchors	António Fernandes Pais
1610/06/05	Carpentry works on the Indian Ocean bound galleons *São Filipe, Santiago* and *São João* Evangelista	Frutuoso João
1610/06/05	Mast making for the vessels of the 1611 voyage, as well as the galeons *São Filipe, Santiago* and *São João* Evangelista	Pero Fernandes & Bernardo do Souto & Simão Gomes
1611/03/01	400 *quintais* of nails and thacks, unspecified number of anchors	António Fernandes Pais
1610/12/22	2,000 *quintais* of cordage	Luís Cado
1611/05/20	Carpentry works on two new India carracks	Frutuoso João
1611/07/15	4,000 *quintais* of cordage, 4,000 muskets, 2,000 harquebuses, 500 *quintais* of match	António Fernandes Pais
1612/07/23	3,000 *quintais* of nails and tacks	António Fernandes Pais

Source: AGS, SSP, lib. 1472, fl. 229-234.

[199] AHU_CU_058 (Índia), cx. 22, doc. 140. He also provided masts and an amount of shrouds worth 1,628,330 *réis*.

Along with the vegetable fibers and rigging materials, metal wares were another key part of an Indiamen's equipment. Ventura de Frias was a recurrent supplier of metal wares to the Crown stores between 1572 and 1579. Considering the scope of his contract, which required him to deploy large quantities of this type of goods over the course of several years, Frias can be seen as a specialized supplier, different from others who provided several different raw materials or appliances for shipbuilding purposes. Among the metal wares he was commissioned were iron in bulk, while in nails and other metal spikes alone, Frias was expected to provide more than 1,500 *quintais*.[200] The Crown's purchase chart differentiated between the nails, depending on the size of the ship they would be used in. Between 160 and 800 *quintais* of medium sized and large nails were ordered, whilst smaller sizes were required only 100 *quintais* worth in these materials. Additional nails and tacks were also commissioned for smaller carracks and *galiotas* that the Crown periodically dispatched to the upper Guinea and Gold Coast.[201]

As far as the origin of these wares were concerned, the role of Vizcaya and Guipuzkoa as a purchase centre for the metal wares employed in the Asia bound ships of the line harkened back to the early decades of Cape Route sailing.[202] Moreover, as in halcyon days of the *Carreira da Índia*, during the period under study the Antwerp connection continued to ensure Lisbon and the Portuguese market were supplied with nails and tacks made in the Southern Netherlands and elsewhere in Northern Europe. An example of such imports was the dispatch of three barrels filled with such appliances from Hainaut, in the Southern Netherlands, by the Francês brothers of Antwerp (Nuno and Diogo) to Nuno Monteiro in Lisbon.[203] Although the notarial deed that confirms this transaction does not mention the Portuguese Crown as the ultimate receiver of the cargo, merchants under contract with the government could make use of these provisioning channels before pitching their sale to the Crown.[204]

Unlike nails and tacks, the other metal objects commissioned to Venturas de Frias, were used to moor the ships of the *Carreira da Índia*. For three years this contractor ensured that one hundred moorings of four different weight categories, ranging from ten to sixteen *quintais*, and twenty five anchors were delivered in Lisbon.[205] His contract also included the supply of eighty *quintais* of smaller anchors, harpoons and hooks to fish objects out of the sea.[206]

In January 1614, António Fernandes Pais, placed an order before Pedro (Pieter) Clamaer, a craftsmen and citizen of Hoorn (Dutch Republic) for an unspecified number of iron bars at the bequest of the viceroy Pedro de Castilho.[207] This merchant possessed the contacts and was already procuring the aforementioned merchandises to high-profile customers and could easily do it for the royal institutions as well.[208] For now these references shall suffice to give an idea of the requirements of metal wares for the fitting out of the India Run ships. The importance of the imports of metals in bulk will be further explored in chapter 3, when the use of iron and bronze cast artillery to provide firepower to the Indiamen is addressed.

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[200] "preguos, pernas, cavilhas"
[201] AGS, SSP, lib. 1472, fl. 238-239.
[202] Costa, *Naus e galeões na ribeira de Lisboa*, 341–42; Godinho, *Os Descobrimentos e a Economia Mundial*, 3:204.
[203] Israel Salvator Révah, 'Une Famille de "Noveaux-Chrétiens": Les Bocarro Francês', *Revue Des Études Juives*, no. 16 (1957): 73–87.
[204] Felix Archief (FA), Notariaat (Antwerpen, 1480-1810), N#3623, fl. 203.
[205] AGS, SSP, lib. 1472, fl. 238-239.
[206] The price per each *quintal* was set at 2,300 *réis* and the total package of *fateixas* weighted in at eight *quintais*. In total, the cost with smaller moorings was set at 184,000 *réis*.
[207] "fazer em frandes huas grades de latão fino com almas de ferro".
[208] FA, Notariaat (Antwerpen, 1480-1810), N#3606, fl. 252-253.

1.3 Concluding remarks

In order to prepare the fleets for the Indian Run journey, a series of complicated logistic requirements had to be met. The most important was the building of robust ocean-going ships capable of transporting a great number of people and voluminous cargoes, followed by the provision of all sorts of hardware and instruments necessary to propel and steer them.

This chapter discusses how construction was, for the most part, outsourced to private entrepreneurs and was only rarely bankrolled directly by the royal exchequer and overseen by the state's shipwrights. More often than not, the Crown's naval stores received and stored raw materials, namely timber, and semi-transformed products, such as rigging, canvas, pitch or tar, all of which were procured by private purveyors. Even in the industrial sites set up by the Crown to ensure the transformation of raw material into naval wares, the actual manufacturing labour was frequently ensured by private contractors.

Similarly, to other European countries that sailed the Cape Route, Portugal lacked all the necessary oak to assemble the hull of its carracks and galleons, but unlike them it could fall back on the abundant sources of timber from Northern Spain, taking advantage of the political integration of the Iberian territories under one crowing head. On the other hand, tart, pitch and masts had to be imported from the Northern Sea and the Baltic,[209] while the traditional domestic sectors for the production of canvas and hemp seem to have been insufficient to cover the demand of the royal wharfs. This dependency on imports in itself did not set Portugal apart from its main competitors for the Cape Route trade and overseas ventures in maritime Asia. Where Portugal lagged behind was on the ability to import supplies with its own merchant fleet, leaving supplies in the hands of foreign carriers, some of whom were from enemy states. It is unclear how expensive naval wares became as a result of the trade embargoes and tense diplomatic relations with some of the leading maritime powers of the age.[210] It is however reasonable to assume that both England and the Dutch Republic spent less to build and fit-out Indian Ocean-going ships, since they had easier access to the naval stores' commodity chains and opted for smaller ocean-going vessels, even if the Portuguese by building larger vessels created economies of scale.

The Portuguese were unable to keep-up with the VOC in terms of the ability to mobilize resources for intercontinental trade and naval warfare in Asia. Relief fleets were dispatched in 1601, then for three consecutive years between 1605 and 1608, this in the first decade of the new century alone.[211] As the Twelve Years' Truce drew to a close, the Crown launched new relief fleets every year between 1619 and 1624 (except in 1620). The result of many of these expeditions was not what the Crown intended, as many ran aground while end route to India, whereas others were forced to abort their voyage and sail back to Lisbon. Rather than improving, matters worsened during the 1630s. By this point the Monarchy struggled greatly to assemble even a modest two-ship contingent, as it had to divert financial, men and material resources to the war against the Dutch in Northeastern Brazil and the protection of its territories in the South Atlantic. It certainly did not help that some of the most prominent investors of the Lisbon business scene left the kingdom for the greener pastures of the Spanish court in the mid to late 1620s, depriving the Crown of some of its most skilled contractors.[212]

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[209] Regina Grafe, 'The Strange Tale of the Decline of Spanish Shipping', in *Shipping and Economic Growth, 1350-1850*, ed. Richard W. Unger (Leiden-Boston: Brill, 2011), 95.

[210] Costa, Lains, and Miranda, *An Economic History of Portugal, 1143-2010*, 92–93.

[211] Murteira, 'A Navegação Portuguesa Na Ásia e Na Rota Do Cabo e o Corso Neerlandês, 1595-1625', 205–6.

[212] See chapter 6.

Despite a century-long experience in building ships for inter-oceanic trade and warfare, Portuguese Crown lost a much greater number of ships and had a much lower rate of voyage completions than an up and coming new player in the Cape route, the VOC. The Dutch trading company consistently launched more ships and lost much less than the Portuguese, ensuring a more reliable and efficient shipping service to the commodities in transit, as well as to the men and military tools deployed in Asia. The result was that the Dutch chartered company had at their disposal a much larger naval contingent in Asian waters, which it used to prey on the *Estado da Índia* and sideline the Portuguese from several trading circuits.

In a nutshell, it can be concluded that the annual voyages between Lisbon and the Western coast of India depended upon public-private partnerships to a very large extent. These were malleable arrangements that could take on a number forms depending on what best suited the Crown at a certain juncture and, more importantly so, on its treasury restrictions around the time of negotiating the contract. However, despite the competence of contractors operating in Portugal, as the years went by the Crown was unable to put the full weight of their resources behind the maintenance of an effective inter-oceanic shipping service.