# The Organization of Merchant Empires: A Case Study of Portugal and England

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**Abstract**

The paper provides a model of organizational choice that explains the emergence of different market structures in the Portuguese and English merchant empires. Faced with the same technology and sharing the same objective, the two monarchs chose different alternatives: the Portuguese monarch opted by a crown monopoly whereas the English franchised monopoly rights to private agents. The model predicts that variation in organizational choice stems from variation in the distribution of bargaining power between the king and the merchants. The rest of the paper investigates the application of the model's predictions to historical events.

## 1   Introduction

The choice of how to organize overseas expansion arose when Europeans first began to venture across the seas in the fifteenth century. Adam Smith (1965) noted that the discovery of the passage to the East through the Cape of Good Hope in 1487 was one of "the two greatest and most important

events recorded in the history of mankind."[1] From then, sailing technology allowed Europe to engage in direct contact with the East, halting the long standing reliance on business intermediaries. Monarchs had similar goals for their overseas possessions: revenue and glory.[2]

Even though the technology and the objective were the same, methods of extracting profit differed radically across countries. England and Portugal, the pioneers in each organizational form, offer a classic "case study:" the Portuguese king opted for a crown monopoly, but the English queen chartered monopoly rights to private merchants. The duration of the enterprises and the consequent long term economic performance of the two countries were very diverse. Why did two countries with similar initial conditions chose different market organizations that performed so differently?

This paper provides a simple economic model that explains the variation of organizational choice by differences in the distribution of bargaining power between the king and the merchants. If the king is flush with capital (relative to the scale of investment) he chooses to maintain control but, if not, he "franchises" out the adventure. The model draws on Grossman and Hart (1986), Hart and Moore (1990), Baker, Gibbons and Murphy (2006) and Legros and Newman (2006), who discuss residual control rights and the consequences on firm ownership. Legros and Newman (2006) show that equilibrium outcomes need not be efficient, but their choice is justified by differences in bargaining power.

Starting with the work of Davis and North (1970), and later North (1991) and Greif (1993), economists and economic historians have investigated the impact of institutions on economic performance. More recently, Acemoglu, Johnson and Robinson (2005) hint that organizational forms may have mattered in early modern Europe, by noting that private merchant interests did not develop in Portugal and Spain in the post-1500 era because the crowns were the main beneficiaries of the profits from long-distance trade.

The literature on merchant empires (Heeren 1834, Hunter 1919, Hamilton 1948, Coornaert 1967, Braudel 1972, Davis 1973, Steensgaard 1974, Furber 1976, Chaudhuri 1978, Hart 2003) is abundant in the characterization of the two organizational forms: on the one hand Portugal and Spain where long-distance trade was directly dependent on departments of state and commercial privileges reverted to the crown; and on the other England and the Netherlands (later entrants) with state-independent companies or-

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[1] The other event being the Discovery of America.

[2] Enlarging the number of subjects and the territory under crown control, has always been attractive for any royal sovereign.

ganizing long-distance trade according to the interests of private merchants.

The fates of their merchant enterprises were very different. Portugal's engagement in Eastern trade started in 1498 but by 1580, when the Spanish king joined the two Iberian crowns, revenues were already in decline. By contrast, England's success was more long lasting: the East India Company was launched in 1600 and although its official demise occurred in 1858, the English engagement in the Eastern trade endured long after then.

The narrative history offers two main and non-exclusive explanations on the Portuguese decline as opposed to the English success: (1) increased competition in the spice trade from chartered companies from other countries (Disney 1978, Godinho 1969) and (2) the corruption of the Portuguese officials lowering the crown's profits (Hamilton 1948, Boxer 1969, Steensgaard 1974).

The literature, however vast in the characterization and consequences of different organizational forms, is silent on the reasons behind their emergence. By examining the different economic conditions in place in the Portuguese and English merchant empires, I show that each country's decision was economically justified at the time it was taken. The conquest of Ceuta in North Africa in 1415 marked the entry of Portugal in long-distance trade and was relatively inexpensive for the standards of the time, which enabled the Portuguese monarch to opt for a crown monopoly. The continuous access to further trade sources along the African coast allowed the Portuguese monarch to maintain the same structure after Da Gama's arrival in India in 1498. By contrast, England's entry with the foundation of the East India Company in 1600 was a far more expensive matter. By then, the volume of trade was far larger than that existing two centuries earlier. The English monarch was not financially able to support such costs and chose instead to charter a monopoly, give up full profits in lieu and tax on the proceeds.

## 2   Historical Background

The fifteenth century marks the beginning of European overseas expansion. The Portuguese first ventured across the seas in 1415 in a military expedition to conquer the city of Ceuta (see map in the appendix), a point of passage of the Northern African trade caravans.

[TABLE 1 HERE]

Table 1 shows the progress of the Portuguese discoveries and conquests throughout the fifteenth century: not only did the Portuguese seize territo-

rial control over other Northern African strongholds, they also invested in purely ocean going voyages down the African coast and the Atlantic islands.

Europeans, in particular Italians, had been seafaring in the Mediterranean for a long time. Oceanic ventures, however, required a whole new set of navigation and cartography skills developed by the Portuguese and the Spanish. They also invented or adapted new ships and maritime instruments proper for open sea navigation in previously unknown regions.[3] Such technological developments demanded considerable investment (of time, people and money) in a project that initially offered highly dubious success.

Prince Henry the Navigator (of Portugal) sent a ship every year with the intent of going beyond Cape Bojador – a fifteenth century mark between known and unknown land in today's Western Sahara – only rounded in 1434 (Hamilton 1948). Such persistence contrasted with previous attempts to sail south of that Cape, all ended in failure with the disappearance of numerous vessels or the return before the dreaded point. Prominent scholars and navigators of the time had successfully convinced Christian and Arab sailors that navigation beyond the landmark was impossible (Russell 2000).[4]

Even though the objective of trade was present from the start, it was met with very little success. After the death of Henry n 1460 the discovery process entered a standstill and was only revived in 1469 when the Portuguese king leased the exploration of the African coast to a wealthy Lisbon merchant. Royal rights in the trade off of Guinea were farmed out for five years upon the conditions of payment of a fixed rent to the crown and the delivery of 100 leagues of new coast per year from the last point reached (Renault 1959). In 1471, with the discovery of gold in Mina, the African exploratory voyages started paying off (Vogt 1979). At the time of renewal of the contract in 1474, the king resumed control of the discovered territory and established a royal monopoly for trade in gold of the Guinea coast.[5]

Guaranteed the finance of such an expensive project, exploration of the West African coast continued in the search for the maritime passage to the

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[3] Portugal and Spain did not develop most of the techniques or instruments – the compass, gunpowder and the triangular sail were all non-European in origin – but these were the countries able to put them together to the use of exploration (Rei 2002).

[4] The statement has to be understood in the context of Pre-Copernican times, when the world map was yet to be drawn. Nicolaus Copernicus's (1473-1543) heliocentric theory of the solar system becomes prominent only in the sixteenth century as does Galileo Galilei's (1564-1642).

[5] Anyone caught sailing to Mina without the necessary licenses would be sentenced to death (Vogt 1979, p. 11). This measure was also applicable to foreigners based on the papal bull (*Romanus pontifex*) of 1455 that granted exclusive rights to use of the Guinea Coast of Africa to Prince Henry's Order of Christ (Parry 1968, p. 14).

east. In 1487 the Cape of Good Hope was turned and in 1498 Da Gama leads the first successful maritime voyage from Europe to India.

The sixteenth century marked the settlement of the Portuguese empire in the East. The spice trade was organized as a crown monopoly based on the all-sea-route to India, diplomatic agreements with local kings from the Eastern coast of Africa to the Spice Islands and the establishment of fortresses in strategic geographical locations – "a jagged semi-circle of over 15,000 miles" (Hunter 1919, p. 134). The ultimate goal was to control all the spice trade in the Indian Ocean by exacting taxes on all ships, thereby blocking the Levant trade and becoming the unique middleman between Europe and Asia in an extremely profitable business.

In the very elements that explain the initial successful move of the Portuguese we can also find the seeds for the decline of its Eastern Empire in the late sixteenth century. The necessary initial bulk investment for such an ambitious project was sponsored by the crown giving the monarch a central role in the expansion process, and later, in actual trade. The enormous early successes down the African coast enforced the monarch's strategy and a strong monarch stifled private initiative.

Even though the Eastern trade was open to all Portuguese citizens, in reality traders had to obtain "government permission to which was entrusted the arrangement as well as protection and navigation" (Heeren 1834, p. 42; Morris 1904). Adding to this restriction, trade in selected products was reserved to the crown.[6] Treaties with local rulers of key cities in the Indian Ocean, established that all spices (pepper, cinnamon, ginger, cloves and nutmeg) should be sold to the Portuguese government and quantities above those that guaranteed maximum revenue should be destroyed (Biker 1881-5, Heeren 1834, Hunter 1919).

The organizational structure in the East facilitated corruption: viceroys and higher officials were subject to three year terms "lest, by a longer term, he might become too powerful and consequently insubordinate to the Crown" (Morris 1904, p. 222). Many authors have argued that the biggest enemy of the Portuguese crown monopoly was private trading by Portuguese officials in the form of smuggling – high prices of spices and low salaries made smuggling attractive. Such illegal trade generated more losses than the English and Dutch pirates operating in Atlantic waters upon returning ships (Heeren 1834, Hamilton 1948, Hunter 1919, Steensgaard 1974).[7] The monarch realized the dimension of the phenomenon when losses started to

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[6] Pepper trade in India, cinnamon trade in Ceylon, and Gold trade off the African coast.

[7] Steensgaard defines it as the first "constitutionally determined corruption" (p. 93).

occur and attempted to turn the enterprise into private ownership twice but failed in both occasions.[8] The inherited bureaucracy of officials in Asia put every obstacle in the way of the private institution by fear of loss of illicit gains (Hunter 1919, p. 181).

In Europe, the Portuguese did not distribute eastern products as the Genoese and Venetians did before them and the Dutch and English after; the monarch "proclaimed Lisbon the sole European port to which their ships might resort and at which they might discharge their cargoes. (. . . ) Whoever wished to buy must come to Lisbon, and foreign craft must carry merchandise thence" (Morris 1904, p. 221). Distribution was left to the Dutch who had therefore an incentive to develop their own fleet that would in due time become a credible rival of the Portuguese maritime power (Morris 1904, Heeren 1834).

The English and the Dutch had a trade policy that was similar to that of the Portuguese. Both exerted territory control through agreements with local rulers, which established trade exclusivity and that spice surpluses would be destroyed, enabling price control (Hamilton 1948, Morris 1904).

In other aspects however, newcomers could not have been more different. The English (EIC) and the Dutch (Verenigde Oost-Indische Compagnie – VOC) East India Companies were chartered monopolies, that is, they belonged to a group of private merchants that formed the first joint stock companies in history. The English monarch had no share in the company other than the natural return on customs duties due to an increase in English trade. Each company had the monopoly of trade of eastern products in the country (the VOC was the only entity in the Netherlands that could send ships to India through the Cape route and sell spices at home and the same was valid for the EIC in England) but did not have the monopoly of trade in Europe, where again there was competition for distribution. Finally neither of the countries had the religious motive shared by the Iberian nations – the schism between the Church of England and the Roman Catholic Church dated from 1534 back in the reign of Henry VIII, while the Dutch were eager to differentiate themselves from the former Spanish dominators in every single area of daily life.

More than a weak monarch and the resulting market structure, the English and the Dutch benefited from the advantage of later entry. By the seventeenth century when the EIC (1600) and the VOC (1602) were char-

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[8] In 1587 the Royal Monopoly of the spice trade was sold to a body of capitalists under the name of *Companhia Portugueza das Indias Orientaes* (Hunter 1919, p. 181). And in 1697 *Companhia do Commercio da India*, received a charter in return for a yearly subvention of 2,763l. to the Crown (Da Fonseca 1878, p. 24).

tered, the age of discovery was practically complete: geographical knowledge of unknown territories had already been unveiled, sailing techniques and instruments were established and being improved. Storms, pirates, wars and further elements of risk were still present and never fully disappeared, but the uncertainty of Eastern business via Cape Route was smaller in a world where the learning process had passed its peak.

## 3   A Model of Organizational Choice

There are two parties that can cooperate in long distance trade (production): the merchants and the king. Each party holds a necessary, yet non-contractible and non-transferable effort type: the merchants provide management skills, whereas the king provides protection against pirates. Efforts are complementary in production and for trade to occur, a third asset is necessary – capital, which is assumed to be non-transferable for simplicity.[9]

Consider a production function of the form:

$$y = f(e_K, e_M, C) = C(\alpha e_K + \beta e_M),$$

where $y$ is the level of trade, $C$ capital, $e_K$ the protection level by the king, $e_M$ the management effort by the merchant and $e_K, e_M \in [0, 1]$.

Output $y$ depends on a convex combination of the two efforts, that is $\alpha + \beta = 1$ and $\alpha < \beta$, that is, the king's effort contributes less to production than the merchant's: though important, protection against pirates should not have been the main contribution in running the business. Both $e_K$ and $e_M$ are non-contractible: the merchant's effort cannot be defined ex-ante, nor can the king's effort to guarantee protection (there are always pirates in the high seas).

There are also transferable, though non-contractible decisions, such as the geographical area where to conduct trade, or the choice of trading partners. Even though these decisions are non-contractible, the right to make them is. The contract consists of a control structure $q$ and a contractible sharing rule $0 < s < 1$.[10] The two parties Nash bargaining over $(q, s)$ and capital ownership affects the process.

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[9]Relaxing this assumption does not change the results but further complicates calculations since cash transfers between parties would be possible. It can be shown however, that cash transfers from the party with capital ownership to the other party are strictly dominated (both in terms of output and surplus produced) by the adjustment of the sharing rule: not only would a transfer reduce the level of output (and surplus), it would also increase the incentive to shirk.

[10]If the sharing rule were not contractible and renegotiation were allowed at the end

Each party cares for its own share of surplus but has disutility or utility of effort depending on the control variable. The king likes to protect when in control (high $e_K$ when $q = 1$), but when not in control ($q = -1$) the king has few opportunities to show off his military power, which will bring him less glory and therefore he will shirk ($e_K$ low). The merchant likes to use his management skills to improve business under his control (high $e_M$ when $q = -1$), but if the king is in charge ($q = 1$), the objectives of the enterprise are dominated by royal glory, in which case the merchant gets negative utility of putting more effort, therefore exerting low $e_M$. Utility functions are of the form:

$$u_M = s.y - q\frac{1}{2}\gamma e_M^2, \text{ and } u_K = (1 - s).y + q\frac{1}{2}\gamma e_K^2$$

for the merchants and the king respectively. The marginal cost or benefit of effort $\gamma$ is assumed to be positive and identical for both parties.

The setting implies that the party with control always exerts maximum effort. Because the party with less control will shirk, the sharing rule $s$ has to be determined in a way that provides incentive for this party to put enough effort.

The game has two stages if parties cooperate: (1) design a contract defining the sharing rule $s$ and the control structure $q$; and (2) utility maximization to define the optimal effort levels $e_K^*$ and $e_M^*$.

Using backward induction the optimal effort levels are defined by utility maximization resulting in the following:

| King control: $q = 1$ | Merchant control: $q = -1$ |
|:---:|:---:|
| $e_K^* = 1$ | $e_K^* = \frac{(1-s)\alpha C}{\gamma} \leq 1$ |
| $e_M^* = \frac{s\beta C}{\gamma} \leq 1$ | $e_M^* = 1$ |

If we vary the output share $s$, the varying optimal effort levels give us utility pairs $(u_M, u_K)$ – frontiers – with concave shape. The binding condition for an interior solution is $C \leq \frac{\gamma}{\beta}$ under maximum incentives, that is the merchant gets the maximum share ($s = 1$) under KC.[11] There are two cases to consider:

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of each period, we would get two points and not two frontiers corresponding to different ownership of control rights. This would not affect the conclusion. Therefore I analyze the one shot game only.

[11] The other condition for an interior solution is $C \leq \frac{\gamma}{\alpha}$, when the king has maximum incentives under MC ($1 - s = 1$). This condition is not binding because $\alpha < \beta$ and therefore $C \leq \frac{\gamma}{\beta} < \frac{\gamma}{\alpha}$.

1) King control (KC): $q = 1$ – utilities for merchant and king will be:

$$\{sC(\alpha + \frac{s\beta^2 C}{\gamma}) - \frac{(s\beta C)^2}{2\gamma}, (1-s)C(\alpha + \frac{s\beta^2 C}{\gamma}) + \frac{\gamma}{2}\}$$

and the social surplus:[12] $C(\alpha + \frac{s\beta^2 C}{\gamma}) + \frac{1}{2}[\gamma - \frac{(s\beta C)^2}{\gamma}]$.

2) Merchant control (MC) or Franchise out: $q = -1$ – utilities for merchant and king will be:

$$\{sC[\frac{(1-s)\alpha^2 C}{\gamma} + \beta] + \frac{\gamma}{2}, (1-s)C[\frac{(1-s)\alpha^2 C}{\gamma} + \beta] - \frac{[(1-s)\alpha C]^2}{2\gamma}\}$$

and the social surplus: $C[\frac{(1-s)\alpha^2 C}{\gamma} + \beta] + \frac{1}{2}\{\gamma - \frac{[(1-s)\alpha C]^2}{\gamma}\}$.

With the frontiers defined we can now move to the first stage of the game, when the parties Nash bargain over the sharing rule.

Capital can be fully or partially owned by either party ($C = C_M + C_K$) and can be used for non-trade purposes in case of failed cooperation.

The outside options for merchants and king are $(xC_M, xC_K)$ with $0 < x < 1$ indicating that trade is a profitable business. If the merchant (king) owns all the capital in the economy, that is $C = C_M$ ($C = C_K$), the threat point upon which bargaining starts is $(xC, 0)$ $((0, xC))$. The merchant (king) will only cooperate if trade provides a higher payoff $u_M(e_k, e_M, C) > u_M(0, 0, C) = xC$ ($u_K(e_K, e_M, C) > u_K(0, 0, C) = xC$). If the merchant (king) owns no capital he will cooperate trade so long as the payoff is positive $u_M(e_K, e_M, C) > u_M(0, 0, 0) = 0$ ($u_K(e_K, e_M, C) > u_K(0, 0, 0) = 0$).

Bargaining will take place to the northeast of every threat point on the segment $[(xC, 0), (0, xC)]$ in Figure 1.

[FIGURE 1 HERE]

Nash bargaining requires that the solution to the bargaining problem is increasing in the outside option, i.e. no party can be worse off if engaging in trade.[13]

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[12] Sum of utilities for both parties.

[13] **Proof** Let the frontier be represented by the decreasing function $u_M = G(u_K)$, and let the disagreement point be $(u_{M0}, u_{K0})$. The first order condition for the problem:

$$Max \ (u_M - u_{M0}).(u_K - u_{K0})$$

$$s.t. \ u_M = G(u_K)$$

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Regardless of who has more bargaining power, a unique equilibrium will be reached on the frontier. If the king has control, bargaining starts from point $(0, xC)$ and the equilibrium will be reached on the frontier biased toward the $yy$ axis (KC). If, on the other hand, the merchant has control, bargaining starts from point $(xC, 0)$ and the equilibrium will be on the frontier biased toward the $xx$ axis (MC). The two equilibria differ in terms of social efficiency.

**Proposition** *MC generates a higher surplus than KC.*

**Proof** Let the LHS represent the maximum $surplus_{MC}$ ($s = 0$, king has maximum incentives) and the RHS the maximum $surplus_{KC}$ ($s = 1$, merchant has maximum incentives):

$$
\begin{aligned}
C(\frac{C\alpha^2}{\gamma} + \beta) + \frac{1}{2}(\gamma - \frac{C^2\alpha^2}{\gamma}) &\gtrless C(\alpha + \frac{C\beta^2}{\gamma}) + \frac{1}{2}(\gamma - \frac{C^2\beta^2}{\gamma}) \\
\frac{1}{2}(\frac{C^2\beta^2}{\gamma} - \frac{C^2\alpha^2}{\gamma}) &\gtrless C(\alpha + \frac{C\beta^2}{\gamma} - \frac{C\alpha^2}{\gamma} - \beta) \\
\frac{C^2}{2\gamma}(\beta^2 - \alpha^2) + C(\beta - \alpha) &\gtrless \frac{C^2}{\gamma}(\beta^2 - \alpha^2) \\
\frac{C}{2\gamma} + 1 &\gtrless \frac{C}{\gamma} \\
2\gamma &\gtrless C, \text{ because } \alpha + \beta = 1 \\
\text{for } C &< 2\gamma, surplus_{MC} > surplus_{KC}
\end{aligned}
$$

the interior solution condition $C \leq \frac{\gamma}{\beta}$ guarantees that $C < 2\gamma$ because $\beta > \frac{1}{2}$, therefore $surplus_{KC} < surplus_{MC}$ $\therefore$.

To summarize, the relationship between the two parties is endogenous and depends on their bargaining power: if the king owns the capital, he hires the merchants to run the royal business in which he contributes by offering protection (KC); if, on the other hand, the merchants control the capital they gather in the form of joint stock (MC) and force the king to concede them monopoly rights over trade (or franchise out), while offering protection against pirates. The model generates equilibrium outcomes that may not

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is $G'(u_K)(u_K - u_{K0}) = -(u_M - u_{M0})$ or $u_{M0} - G'(u_{K0}).(u_K - u_{K0}) = u_M$. Now, since $G$ is concave ($G' < 0$ and $G'' < 0$), the left side of this equality is increasing in $u_K$, so if $u_{M0}$ increases, $u_K$ decreases, which implies $u_M$ increases. Since the solution is on the frontier (Pareto axiom) we can substitute $G(u_K)$ for $u_M$ or $H(u_M)$ for $u_K$ where $H = G^{-1}$, $H$ is also decreasing and concave. So this analysis is also valid for $u_K$ $\therefore$.

be surplus maximizing: the choice of the less efficient organizational form is still economically justified.

The next sections compare the predictions of the model with the historical evidence on the Portuguese and English empires.

# 4   Early Entry and No Capital Constraint: the Portuguese Case

In section 2 we have seen that Portugal started venturing overseas in 1415[14] much earlier than England that officially expanded with the establishment of the East India Company in 1600. In this section I am concerned with the profitability of the strategy followed by the Portuguese crown.

Because data on the early fifteenth century expansion are scarce and spotty, I first present indirect evidence on the costs and revenues of the Portuguese strategy. Later in this section I estimate costs and revenues based on data available for other locations.

## 4.1   Indirect Evidence

On the cost side we can look at the effort employed on a military expedition to Northern Africa, such as Ceuta's in 1415. Chronicles of the time are imprecise about the numbers involved in the Ceuta conquest. Serrão (1980, p. 22), for example, reports 225 ships, and 45,000 men, which would give an average of 200 men per ship – possibly more since some ships must have been used for food storage, which was quite common in long trips or large crews. However, two hundred men per ship is likely to be an overstatement for two reasons:

a) Shipping technology: caravels, very much used in the 1400s, had modest crews of 20 to 40 men (Martinez-Hidalgo 1966). It can be argued, however, that this lower crew size may have been rule in discovery voyages, but not necessarily in military ventures such as that of Ceuta.

b) Other battles: Hunter (1919, pp. 159-161) provides numbers for military operations in the Indian Ocean in the sixteenth century. By then ships had increased in size and crews could be as large as 700 men per ship in larger vessels (Marsden 2003). For the battles that Hunter provides numbers for ships as well as men, we get an average of 50 to 75 men per ship.[15]

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[14]For a detailed discussion of the religious, political and economic motivations behind the conquest of Ceuta please refer to Marques (1982) and Serrão (1980).

[15]1516 – failed capture of Aden involved 3,000 men and 40 ships.

Evidence from shipping technology and other battles seems to dismiss the idea of a large army of 45,000 men involved in the conquest of Ceuta. Taking the upper bound of the caravel crew size (40 men) and multiplying it by the number of ships reported in the chronicle (225 - probably also overstated) we reach a total of 9,000 men involved in this particular venture, which surpasses all but one of the numbers provided by Hunter. Nevertheless, it is of interest to see how "costly" the mobilization of 9,000 men in 1415 was. To answer this question we have to estimate Portugal's male labor force at this time.[16]

[TABLE 2 HERE]

Table 2 shows the estimated frequency of the number of men involved in the battle of Ceuta in the population of active men in 1415. The chronicler's number gives a ratio of 14.5%, while my estimate of 9,000 men represents just 2.9% of the population of active men. This rather small ratio (still likely to be overstated) confirms that Ceuta did not represent a costly effort for the Portuguese monarch at the time, which legitimates the choice to own the monopoly of trade.

The lack of hard numbers for revenues until the last two decades of the fifteenth century, prompts the search of indirect evidence. The choice of royal monopoly was maintained since 1415 and throughout the fifteenth century discoveries and conquests shown in Table 1, which hints that the revenues achieved with African trade must have been high. Gold was first found in West Africa in 1436, the first slaves were brought to Lisbon in 1441, and trade in Guinean pepper started around 1450 (Serrão 1980). The near monopoly position of the Portuguese monarch in these markets granted a fair amount of revenue. The king's political and financial independence can be gleaned from the records of *cortes*.

The *cortes* were assemblies of the three social groups (nobility, clergy and general estates) called by the king, who generally presided (Caetano 1965). The purposes of these meetings were mainly legislative, fiscal and

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1530 – failed capture of Aden involved 20,060 men and 400 ships.

1535 – battle at Goa where the preparation to meet the "great Turkish armament" involved 7,000 men and 120 ships.

Hunter further provides numbers of men (but not ships) involved in several battles across the Indian Ocean from 1504 to 1569. The highest unreported here number is 2,800 men for a battle in the Red Sea in 1516.

[16]Labor force is taken as the "number of active men" as defined in the 1890 Portuguese census: men between ages fifteen and sixty-nine.

political (De Sousa 1990).[17] The frequency of the assemblies provides useful information on the monarch's financial status.

Table 3 shows the average number of years between the assemblies in the pre-expansion period (late fourteenth and early fifteenth centuries), the early expansion period (fifteenth century) and the late expansion period (sixteenth century). If the *cortes* were a constraint on the king, or if the king was financially dependent on taxes raised at this level, then there should be no significant change in the average time between meetings.

[TABLE 3 HERE]

Between 1385 and 1415, *before* the start of maritime expansion, the *cortes* met on average every 1.5 years, whereas in the period of expansion down the African coast (1415-1498), Atlantic Islands and Northern Africa, they met every 3 years and after reaching India there was a meeting every 9.1 years. The increasing time between meetings is revealing of the revenue independence of the monarch, who could take important decisions for the kingdom without the advice, consent, or funding of his subjects. Since the monarch did not face a capital constraint that could prevent him from supporting the costs of the enterprise, there was no need for a change in the organization of the merchant empire.

For the third time period in Table 3 there are numbers for crown revenues. The net profit rate on Indian pepper imported to Lisbon was between 89 to 152 percent in 1558 (Phillips 1990). Although this was the most traded spice, others (cinnamon, cloves, nutmeg and ginger) could achieve even higher profit rates. Moreover, the Portuguese were not just involved in the spice trade from India to Europe but also explored the East-Asian routes (previously controlled by the Genoese) selling the far Eastern spices (nutmeg and cloves from Indonesia and cinnamon from Ceylon among others) in India, West Africa and the Middle East for as much as six times the price of purchase (Phillips 1990).

During the sixteenth century, the king was becoming even more financially independent, which allowed him not only to continue owning the trade monopoly but also to enlarge its scale.[18]

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[17]De Sousa (1990) argues that the meetings could never assume an established periodicity even though there was a push in this direction by the general estates (those who paid taxes) since this was the only opportunity to voice their complaints. In 1371, the general estates proposed a three-year interval for the assemblies, to which the monarch replied that parliament would be called "whenever he understood necessary to his service and good of the land" (De Sousa 1990, p. 111).

[18]A detailed table of the sixteenth century Portuguese expansion in Asia is available

## 4.2  Estimated Costs and Revenues

In this section I measure the profitability of the early Portuguese expansion. Since complete wage series for fifteenth century Portugal are not available, I rely on wages for other locations in the same time period. Using these and the scattered information about the numbers of men involved in battles and exploration voyages (henceforth events), I am able to estimate costs and revenues for each event in Table 1, and evaluate the monarch's capital constraint. Preliminary results are shown in Table 4.

[TABLE 4 HERE]

To estimate labor costs of each event $(wL_i)$ I used a weighted average of daily wages for craftsmen (20%) and laborers (80%) in silver grams for all cities with available wages for the year of the event in question from Allen's (2001) database. For instance, to estimate $wL_{1415}$ for the Ceuta conquest, I used daily wages of Antwerp, Florence, Krakow, London, Oxford, Paris Strasbourg, and Valencia in the same year.[19] I then multiplied this daily wage by the number of men involved in each event and by the number of days the event lasted.[20]

It is relevant to distinguish between military expeditions to Northern Africa and exploration or trade voyages down the African coast and the East. The first were usually much more demanding in terms of the mobilization of men (usually in the thousands) and ships (hundreds). On the other hand, Da Gama's exploration voyage to India in 1498, for instance, counted with only 170 men and four ships (Sanceau 1967). Because the narrative history of the Portuguese early expansion does not always provide numbers for each of the events, I assume that all military expeditions were of the size of Ceuta's, that is employing 9,000 men, using 225 ships and with duration of 28 days.[21]

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from the author upon request.

[19] Each city was weighted by its population: in 1415, Florence was much bigger than Krakow and therefore should weight more in the calculation (population estimates from DeVries 1984).

[20] When information about the duration of the event was not available, I calculated the number of days based on the distance from Lisbon to the destination. Because these were maritime voyages, it was necessary to approximate the sea routes by straight lines, therefore, in addition to the latitude and longitude of origin and destination, I also used those of intermediate points in the ocean.

[21] The assumption of equal duration is not implausible given that all military operations of the fifteenth century occurred in the same area of Northern Africa (now Northern Morocco).

For the exploration voyages I have only the number and type of ships. For instance the Madeira islands were accidentally discovered by one single ship – the *barca* – sent to explore the African coast from the last point reached (Barros 1988), but there is no information on the number of men involved in this expedition. Because *barcas* were larger than caravels (Gardiner 1994), I assume a crew size of 60 (40 for caravels) and use that as the labor requirement $L$.

I divide the voyages with no information on the numbers involved in two groups: those before the gulf of Guinea that I consider of pure exploration with very uncertain return, for which the monarch would send one *barca* only; and those after the Gulf of Guinea that were directly engaged in the search of the passage to India, in which case I assume they were of the same size as Da Gama's 1498 voyage (170 men and four ships).

Finally, the conversion of silver into gold was based on the gold-silver rate for the year closest to the event in question.[22]

Capital costs for each event ($rK_i$) are calculated in recursive form using the labor share for a later date and applying it to the labor costs previously calculated. The detailed calculus is as follows:

a) Falcão (1859) gives the value of a new ship (11,150$000 *reis*) for the India trip and the associated cost of wages and victuals (2,100$000 *reis* for four months, that is 525$000 *reis* a month) for the crew of 123 men in 1615 (p. 205).

b) assuming each voyage to India had a fleet of four ships (as it was the case of Da Gama's first voyage in 1498) I multiply the value of the ship by four to get total capital cost. Accordingly, I multiply the monthly value of the cost of labor for 123 men by four to get total labor cost per month.[23]

c) assuming each round-trip to India lasted twenty-four months (Steens-

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[22] The conversion of silver into gold is necessary in order to have a comparable measure with revenues for the early period, which are in gold. At the moment I have only three gold-silver ratios: for 1410 (0.1080 from Wee 1963, p. 127), for 1457-64 (0.0895 from Munro 1994, pp. 674-5) and for 1489 (0.0897 from Munro 1994, pp. 674-5). The first one is used in all events until 1457, the second between 1458 and 1488 and the latter after 1489.

[23] At the moment I am working on the average size of a Portuguese fleet to India based on Falcão's detailed database of the ships sent to India from 1497 to 1612. As soon as I have this number I will substitute by the assumed size of the fleet - four.

gaard 1965)[24] I then multiply the monthly value of wages for the crews of the four ships by 24 months and get total labor cost $wL_{1615}$ for the India trip.

d) assuming each ship to India made only four round trips (Steensgaard 1965) to India I divide the original value of the ship by four and get the capital cost $rK_{1615}$ for the India trip.

e) assuming a Cobb-Douglas production function $Y = AL^\alpha K^{1-\alpha}$ and that each factor of production is paid at its marginal product $w = \alpha(\frac{K}{L})^{1-\alpha}$ and $r = (1-\alpha)(\frac{L}{K})^\alpha$, I then calculate the labor share as follows:

$$\frac{wL_{1615}}{rK_{1615}} = \frac{\alpha Y}{(1-\alpha)Y} \Leftrightarrow wL_{1615} = \alpha(rK_{1615} + wL_{1615}) \Leftrightarrow \alpha = \frac{1}{1 + \frac{rK_{1615}}{wL_{1615}}}$$

The calculation yields $\alpha_{1615} = 0.8188$.

f) assuming a constant labor share over time, I then calculate capital cost for each event using the previously calculated value of labor costs $(wL_i)$:

$$rK_i = \frac{(1-\alpha)}{\alpha} wL_i$$

By keeping $\alpha$ constant I am not ruling out technological progress, which could be captured by the residual $A$. Moreover, maintaining a constant labor share (at the 1615 level) does not reduce the estimates of $rK_i$. On the contrary, capital costs during the period of interest are overestimated because if $\alpha$ changed over time, it could only have dropped (and therefore $\frac{(1-\alpha)}{\alpha}$ would be lower in 1415 than 1615), for two reasons:

1. The fifteenth and sixteenth centuries witnessed dramatic technological changes in shipping: both the move from oars to sails in the early fifteenth century (lower $L$) and the later increase in vessel size (higher $K$) increased the ratio $K/L$, which would bring $\alpha$ down if labor were cheaper than capital $(\frac{r}{w} > 1)$.

---

[24] In theory, the round-trip to India could take less than two years given that the outward trip to Asia lasted 6-8 months and 7-9 months home (Steensgaard 1965). The weather conditions, however, dictated the optimal times of departure (from Europe in April, and from India in December) to avoid winters on the Cape and monsoons in the Indian Ocean. The time of absence of the ships was also affected by political issues such as the need of fleets to fight in the Indian Ocean. Steensgaard (1965) notes a decline (below 24 months) in the time of absence of Dutch ships only after 1640.

2. Allen's data on wages shows that even though nominal wages went up in almost all cities, real wages fell everywhere but Antwerp both for laborers and craftsmen. This is consistent with the specie inflow in Europe since the late fifteenth century, which caused generalized inflation, therefore $r$ is likely to have risen more than $w$ over the time period in analysis, which confirms $\frac{r}{w} > 1$.

The same procedure for the estimation of $\alpha$ can be applied to other episodes of maritime ventures for which we have data on labor and capital costs. Such is the case of the American whaling industry of the nineteenth century, which yields $\alpha_{1859} = 0.4559$.[25] The significantly lower labor share (even in today's terms) can be understood not only in terms of technological improvements in shipping (over more than two centuries), but also in terms of the different objective of this enterprise: whaling ships required higher excess capacity (that is, high $K/L$) because of the large volume of products (whale bone and oil) carried on the homebound trips.[26] This lower value of $\alpha$ is used to reestimate capital costs (third column on Table 4), which are likely to be an upper bound, due to the exceedingly low value of $\alpha$.

On the revenue side I consider three possibilities according to location:

a) Locations conquered through military expeditions (Ceuta and other Northern African cities) gave the immediate revenue of looting and eventually some annual revenue in taxes, which is assumed to be negligible.

b) Inhabited locations reached for the first time by Europeans (such as the Gold Coast) suitable for trade, offered an annual flow of revenue.

c) The discovery of some remote deserted islands in the Atlantic, such as the Azores, represented the cost of the exploration voyage and the addition of new territory, but no revenue.

Table 4 shows estimates of nominal costs and revenues of the Portuguese expansion in the fifteenth century. The computed ratio of Revenues to total Costs $(wL + rK)$ shows in the last column for the years when both values are available. I present lower and upper bounds according to the value of $\alpha$ ($\alpha_{1615}$ and $\alpha_{1859}$ respectively) used in the calculation of $rK$. Revenues always exceed costs by a magnitude of at least three, indicating a very profitable enterprise for the Portuguese monarch.

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[25] Calculation based on labor and capital costs for the whaling industry in Davis, Gallman and Gleiter (1997). Detailed steps in Appendix II.

[26] The average India ship in the early seventeenth century had 550 tons and a crew of 123 men, which gives a ratio of 0.224 men per ton. The average whaling ship in the mid nineteenth century had 350 tons for a crew of 28 men, yielding a ratio of 0.079 men per ton, almost three times lower than the former ratio.

17

Both the indirect evidence and the constructed estimates indicate that the early expansion process was a very profitable one. The choice of the crown to own the monopoly of trade follows therefore the prediction of the model that a non-capital constrained monarch could opt to take charge of the organization.

# 5 Late Entry and Capital Constraint: the English Case

The addition of new sources of trade in the Far East in the sixteenth century caused a sharp increase in the volume of trade, which was also facilitated by technological evolution in navigation. Between 1500 and 1635 about seven ships left Lisbon to India on a yearly basis. Moreover, during this period, the size and tonnage of ships increased greatly from 400 tons in the early sixteenth century to 2,000 tons by the end of the century (Boxer 1969).

Godinho's (1981) estimates of the volume of trade of the Portuguese Eastern empire indicate that the total production of spices in the first two decades of the sixteenth century was between 9,500 and 10,500 tons, whereas one century later the number was between 18,000 and 19,000 tons. This latter figure is likely to be a lower bound, since the estimates only accounted for the increase in the commerce of pepper and cinnamon, taking all other spices constant when these are likely to have increased as well.

Running this enterprise was a very expensive task. To transport this immense volume of products, fleets had to have large cargo capacities. The number of ships rose substantially and so did the associated costs of building, manning, and maintaining these ships. Could the English monarch support these costs around 1600?

Financial needs of rulers have always been dictated by wars. The fifteenth century was no different: with no social obligations, the sole concern of monarchs was war, for which taxes were raised. Therefore, the financial situation of monarchs varied considerably according to their participation in armed conflicts. Table 5 indicates the trends of public finance during the second half of Elizabeth I's reign.

[TABLE 5 HERE]

Elizabeth's predecessors were somewhat successful in raising government revenue. Henry VII was very successful in raising taxes, turning to parliament for taxation only once during his reign (1485-1509). His successor

Henry VIII (1509-1547) also improved the crown's financial condition by the seizing of lands to the monasteries as a result of the split from the Roman Church in 1534 (Pollard 1910). The wars with France and Scotland, however, constituted a drain of crown's funds and it is estimated that by the end of Edward VI's reign (1547-1553) seven-eights of those gains were gone (Goldsmith 1987). In 1558 when Elizabeth became queen of England she "could not hope to live on her own" (Ferguson 2001).

At the date of her ascension Elizabeth inherited a debt of about £200,000, which was repaid by 1574. The second half of the reign, however, was characterized by increasing wars (the Anglo-Spanish war from 1585 to 1604 and the Irish rebellion, or the Nine-Years war, from 1594 to 1603) and therefore more demanding financial needs. Government expenditures increased sharply from one-fifth before 1585 to three-fourths of total expenditures after that date. Government revenues also rose from £250,000 in 1560-1562 to an average of £340,000 in the early 1590s, staying at that level till the end of the reign. Rather than an increase in the efficiency of tax collection or an increase in the tax base, this rise reflected an increase in the price level, which was almost twice as high as it had been forty years later, causing a decline of the crown's revenue in real terms (Goldsmith 1987, p. 190).

From a surplus situation before 1585 the royal accounts switched to deficit by the end of the century, due not only to wars, but also to the sharp increase in prices during the sixteenth century.

The deficit *per se* would not necessarily be a reason not to engage in the exploitation overseas markets via crown monopoly, provided there was scope for government borrowing and debt issuing. This was not the case in the sixteenth century when the financial system was characterized by the absence of specialized lenders. As a result, government borrowing was at the time a rare event, only to occur sporadically in emergency situations in the form of "forced loans," usually secured under threat, with highly unpredictable repayment and never in the initial terms (North and Weingast 1989).

[TABLE 6 HERE]

Table 6 shows the history of forced loans for the late sixteenth and early seventeenth centuries. We now need to see if the amounts attained in this form were sufficient for the crown to undertake the East India trade. For this we turn to the expenses of the East India Company during its first fifteen years – the initial period of renewal of the charter.[27]

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[27]The East India trade was not a one-voyage business, but one with a longer time

[TABLE 7 HERE]

The last column on Table 7 shows the discounted value of the cost of ships and victuals in 1601 pounds sterling. The total discounted (at a 10% annual rate) value sums to £227,062, a value higher than any amount obtained by the monarch in the form of forced loans.

Only after the financial revolution of the 1680s, was tradable public debt created, together with a considerable number of other factors that allowed for long-term government borrowing to unprecedented levels (Dickson 1967).

With public finance in difficulties and no borrowing possibilities, the English crown had to franchise out monopoly rights to the East India Company in 1600, as predicted in the model. The presence of a weak (financially dependent) monarch resulted in the growth of the power of Parliament, the only entity able to check and monitor the chartered monopoly.

## 6   Other Countries

Portugal and England were hardly the only European nations to embark on overseas expansion of trade. Between the fifteenth and eighteenth centuries Denmark, France, the Netherlands, Spain and Sweden all entered the overseas expansion sweepstakes.[28] In this section I analyze the situation of trade expansion into Asia for these other countries to further explore the relevance of my model.[29]

### 6.1   Denmark

Chartered in 1616, the Danish East India Company had very limited trade within Asia, when compared to the English or the Dutch counterparts, since it was centered mainly in the south coast of India and Ceylon.

Similar to the EIC, the Danish company was chartered after a proposal was brought before the King Christian IV by two Dutch merchants, with

horizon where repeated voyages were necessary, not only to recover the initial capital put down, but also to establish stable trade relations with local sovereigns in India.

[28] The period of analysis starts at the dawn of European maritime expansion in the early fifteenth century and ends with the emergence of the last trade companies in the eighteenth century. I am deliberately leaving out the colonial era (when many other countries took part, for example Italy and Belgium) when overseas territorial control was assumed by all states. By then trade was not the main motive behind territorial expansion.

[29] Spain is dropped from the analysis as it did not expand to Asia, which was at the time a continent with known profitable trade sources. This was not the case of any location on the Western Hemisphere at the beginning of trade expansion.

the objective of competing with the EIC and the VOC. The company faced capital problems from the start and royal pressure had to be exerted to furnish the first share of capital (180,000 rd.), which was subscribed by about 300 shareholders. The royal family contributed with 12.5%, the nobility with 15.5%, citizens of Copenhagen and the university with 35%, citizens of other towns of Denmark with 29.5% and foreign capital 7.5% (Feldbaek 1981, pp. 139-140). The monopoly of trade between Denmark and Asia was chartered to the Company for a period of twelve years.

The initial company was very much influenced by its Dutch counterpart as opposed to the English: intra-Asian (not Euro-Asian) trade dominated the administration of the company (Subrahmanyam 1989). The king's role was decisive in maintaining the company alive in the 1630s-40s, when after the ruinous Danish participation in the Thirty Years' War that constituted a major disturbance in the company's operations. By 1630 the king owned half of the shared capital and effectively controlled the company: not only did the board of directors function practically as a group of civil servants, but also the original shareholders withdrew and were substituted by others on whom the king could exert investment pressure (Feldbaek 1981). With the reorganization (according to the French model) of the company in 1670, again the king was the chief supplier of capital, while insisting on the support of Copenhagen merchants (Furber 1976).

The Danish case offers a hybrid situation. The financial constraint of the king is evident as he encouraged or forced private investment in the company. Therefore, according to the model, he franchises out long-distance trade. However, he is still able to effectively control the company for periods of time.

## 6.2   France

The French Company was planned by Colbert and chartered in 1664 with the purpose of trade with the Eastern Hemisphere. The government not only took part in the foundation (sometimes the initiative), but also recruited members, named directors and procured needed capital (Coornaert 1967). The company had a different organizational form from the other chartered companies: there was never a body of directors and high ranked officials were appointed by the ministries. The initial capital stock of 15 million livres was in reality a forced loan launched by the royal subscription of 3 million – total subscriptions amounted only to 8,179,885 livres, in which merchants were a feeble minority – only 650,000 livres subscribed by the Parisian mercantile community (Furber 1976, p. 203).

The Company's monopoly of French trade to the East was leased to groups of merchants, whose contracts were initially valid for single voyages and later on for periods of three and ten years, whereas the company's charter was valid for a period of fifty years (Manning 1996).

The king was such a central figure on the private company that this organizational form is somewhere in the middle of the two extreme cases of private and crown monopoly. Private merchants were allowed to freight goods from the Indies on the company's ships or on their own, which proved to be a successful fund-raising method for the company.

The continuous mixture of private and royal interests can also be seen in other episodes of the history of the company, such as the case of the drained finances due to the participation in the war of Spanish succession when the company turned to the crown for a loan. The king agreed with the conditions that the directors each put up a certain amount and the stockholders 50% of the value of their holdings (Furber 1976, p. 207).

France offered special conditions that allowed for this hybrid case to persist overtime: on the one hand, private merchants were reluctant to invest in a company that they could never control (no shareholder meetings); on the other, the French state was sufficiently decentralized, which inhibited the merge of the company into a department of state as in the Portuguese case (Manning 1996, p. 24).

The fact that the king was involved in the private enterprise is unusual from the standpoint of the franchised structure. Similarly to the Danish case where the king could not initially supply all the necessary capital for the enterprise, but had to raise the rest through forced loans demonstrates that the French monarch was also indeed capital constrained. As a result long-distance trade was franchised out. France offers another hybrid result because the king was able to exert some control over the destinies of the company even if not owning the monopoly.

## 6.3   The Netherlands

Since 1595, Dutch merchants organized themselves in small companies and started sending ships to the East in order to break the Portuguese 100-year monopoly of the Indian spice trade in Europe. Even though the first voyage was not a commercial success, it showed that Dutch shipping to Asia via the Portuguese route was possible, which was a big achievement in contrast to the failed attempts of other merchants in the search for the passage to Asia via the North Arctic Ocean (Jacobs 1991). Between 1595 to 1601 eight different companies dispatched fleets to the East, some being

extremely successful, whereas others complete failures. The success soon turned against Dutch entrepreneurs in two fronts: competition among Dutch ships was effectively rising Asian spice prices, while in Europe prices were falling due to too much quantity available. The small companies came to a merger agreement encouraged by the government of the Dutch republic – the States-General.

Founded in 1602 the VOC offered an organization slightly different form the EIC's as there was no body of company shareholders distinct from the chambers' shareholders, which would give no power to smaller shareholders. The main contributions of capital came from the chambers of Amsterdam (57.2%) and Zeeland (20.2%) and therefore these two chambers dominated the decisions of the company (Furber 1976, p. 188).

The VOC had a central management unit of seventeen delegates, coming from the six chambers. These delegates effectively governed the company. According to the 1602 charter, if the assembly (of the chambers) did not come to an agreement as to a question, this was to be decided by the States General (Glamann 1981).

The 1602 charter was conceded for a period of twenty-one years. A renewal was granted in 1623 for another twenty-one years, but afterwards the renewal periods were extended: in 1647 the charter was renewed for twenty-five years and in 1696 for forty years. With the exception of 1623, each renewal of the charter corresponded to a payment to the Government, which was considered the price for the monopoly of the India trade even though the Company paid an annual amount to the Government in the form of convoy and license money for the protection it enjoyed in times of war by convoying (Glamann 1981, pp. 6-7). The initial payment of 25,000 fl. (0.4% of the initial capital stock) was waived by the Government as the state's modest contribution to the assets of the company (Glamann 1981, p. 6).

The very small participation of the Government in the initial venture may be indicative of its capital constraint, which is not surprising in light of the Eighty Years War (1566-1648) between Spain and the United Provinces, from which the independent Netherlands emerged. The subsequent payments to the Government for the renewal of the charter (1.5 million fl. in 1647 and 3 million fl. in 1696) continue to indicate a constrained central power. Therefore the model implication of franchise follows naturally in the Dutch case.

## 6.4  Sweden

From its start the Swedish East India venture was pressed by financial constraints. As early as 1626 a merchant (Willem Usselinx) obtained a charter that allowed him to trade with the East for a period of twelve years. But just as Usselinx was able to gather interested parties and capital, Sweden entered the Thirty Years' War in 1630, which consumed all available resources. After the peace treaty of Westphalia in 1648 new attempts were made to re-launch the Swedish Asian trade, but again armament was given priority over trade (Hermansson 2004, p. 9). The constant participation of Sweden in armed conflicts over the late seventeenth and early eighteenth centuries (coinciding with the belligerent reign of Charles XII, 1697-1718), made it difficult to engage in peaceful overseas trade.

A few petitions for charters of Eastern trade were filed by merchants in the decade after Charles' death, but all were refused by the Parliament because capital was still missing (Hermansson 2004, p. 10). Only in 1731 was a petition successful, when a number of financiers shifted their money away from the discharged Ostende Company dissolved in that same year.

The charter was valid for a period of fifteen years and granted the company the sole right to carry on trade and shipping to the east of Cape of Good Hope. Six months after arrival to the home port of Gothenburg, each vessel was to pay a fee of one hundred Swedish silver crowns per last (2,448 kg.) and furthermore two silver crowns per last of imported goods to the treasury. The charter was subsequently renewed four times for periods of twenty years (Koninckx 1999).

There were no restrictions on foreign capital financing the company, but board members were required to be "Swedish citizens of Protestant faith" (Hermansson 2004, p. 30).[30] The board was constituted by 4 directors (two of French and Scottish origin), one of which had previously worked for the Ostende Company, showing that capital was in fact very much circulating throughout Europe at this time: even a capital constrained kingdom like Sweden could attract foreign capital with the purpose of Eastern trade.

The fact that the Swedish Company was only launched in the eighteenth century (when all its counterparts emerged in the seventeenth) and that there was willingness to overlook necessary requirements (such as citizenship) in the higher interest of attracting capital, seem to indicate that the whole kingdom was capital constrained and therefore franchising long-distance trade was the best option for the Swedish monarch.

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[30]Swedish citizenship could be arranged if the person resided in Sweden, was interested, had the sufficient requisite knowledge and capital.

# 7   Concluding Remarks

When European overseas expansion began monarchs were faced with a choice of how to organize it – keep control or franchise out. Portugal, the first European power to venture across the seas, chose the first strategy while England chose the second.

I presented a model of the decision problem faced by monarchs where the choice of organizational form is determined by surplus division rather than maximization, so that bargaining power matters. If the monarch was not capital constrained (as was the Portuguese case in 1415 and 1498) ownership was the best alternative. Otherwise, the financially constrained monarch would chart away monopoly rights (this was the case of England in 1600, and Portugal in 1587 and 1697). The divergence in market structure choice of the Portuguese and the English merchant empires was therefore economically justified at different points in time.

Some preliminary evidence in favor of the model was presented; in particular, I showed that, in the case of the Portuguese expansion, the necessary investment costs were relatively small compared with the expected returns. But conditions were far different in England. Financially pressed by heavy borrowing used to fight wars, the English monarch franchised out overseas expansion.

The analysis of other countries' overseas expansions to the East, provides some hybrid cases. In Denmark and France, monarchs were financially constrained at start and according to the model franchised the venture to private agents. The monarchs were however, able to exert royal control over the franchised companies for periods of time. The Netherlands and Sweden offer a unambiguous cases of franchise.

The success of the model in rationalizing the choice of organizational form should not be overstated. In particular, when exploring trade from Brazil in the eighteenth century, the Portuguese monarch again chose to keep control. By then, the Portuguese monarch already knew about the success of the European chartered companies and also about the two failed privatizing attempts of Portuguese Eastern trade in 1587 and 1697. A possible explanation is the following: allowing a private monopoly in Portugal would create an alternative source of power, which could eventually challenge the monarch's. To avoid such possibility the monarch may have stuck to the relatively less efficient institution and still secure some revenue. This interesting question is left for future research.

# Appendix I

*Figure 1 – Efficiency Analysis*
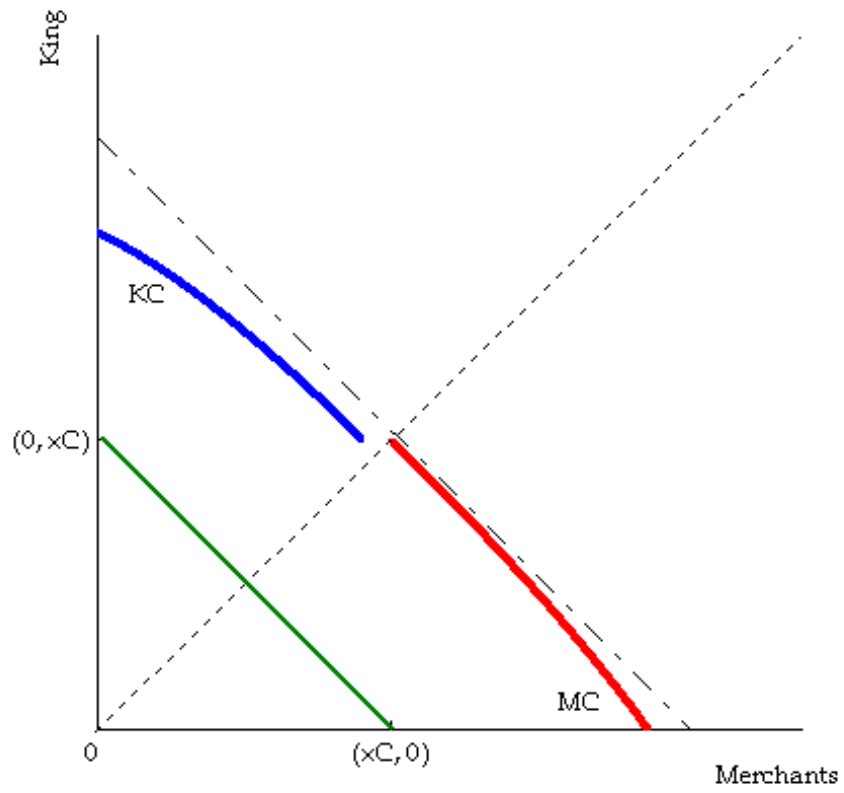
*Table 1—Portuguese Discoveries and Conquests in the Fifteenth Century*

| Year | Location | Region |
|---|---|---|
| 1415 | Ceuta | Northern Africa |
| 1419 | Madeira Islands | Atlantic Islands |
| 1421 | Cape Não | West African coast |
| 1427 | Azores Islands | Atlantic Islands |
| 1434 | Cape Bojador | West African coast |
| 1436 | Gold River | West African coast |
| 1442 | Cape Branco | West African coast |
| 1443 | Cape Verde – Senegal | West African coast |
| 1446 | Grande River | West African coast |
| 1446 | Guinea | West African coast |
| 1458 | El Qsar es Seghir | Northern Africa |
| 1460 | Cape Verde Islands and Sierra Leone | West African coast |
| 1471 | Asilah and Tangier | Northern Africa |
| 1471 | Gulf of Guinea | West African coast |
| 1474 | Cape of Saint Catherine | West African coast |
| 1481 | Mina – Ghana | West African coast |
| 1482 | Congo River | West African coast |
| 1487 | Cape of Good Hope | Southern African coast |
| 1489 | Sofala – Mozambique | East African coast |
| 1498 | Calicut – India | East |

Source: Serrão (1980, p.175).

*Table 2—Estimated Human Cost of the Military Operation of Ceuta, 1415*

| Years | Chronicle | My estimate |
|---|---|---|
| $\frac{\text{Ceuta's men}}{\text{Active men}}$ | 14.5% | 2.9% |

Calculation steps:

1) Calculate population for 1415 by interpolation of the values for 1300 and 1500 – 1,121,809 (Marques 1982, pp. 157 and 286);

2) Apply the 27.58% ratio (Lobo 1904, p.326) to the estimation of the population for 1415 to get the male labor force in 1415 (assumed the ratio was the same over the 200-year period) – 309,432.

3) Calculate the weight of 45,000 men and 9,000 men in the estimated male labor force.

*Table 3—Frequency of Assembly of Cortes from 1385 to 1580*

| Time Period | Average interval (years) between meetings |
|---|---|
| 1385–1414 | 1.5 |
| 1417–1495 | 3.0 |
| 1498–1580 | 9.1 |

Source: Serrão (1977).

Note: Serrão lists all the years in which the meetings of the cortes were held. I then calculated the average interval between one meeting and the next in the three sub-periods.

*Table 4—Estimated Costs and Revenues of the Early Portuguese Expansion (in kg of gold)*

| | Cost | | | Revenue | Rev. / Cost |
|---|---|---|---|---|---|
| | $wL$ | $rK - \alpha_{1615}$ | $rK - \alpha_{1859}$ | | |
| 1415* | 97.3 | 21.5 | 116.1 | - | - |
| 1419 | 1.4 | 0.3 | 1.8 | - | - |
| 1421 | 1.5 | 0.3 | 1.8 | - | - |
| 1427 | 2.2 | 0.5 | 2.6 | - | - |
| 1434 | 2.4 | 0.5 | 2.9 | - | - |
| 1436 | 2.6 | 0.6 | 3.1 | - | - |
| 1442 | 3.5 | 0.8 | 4.2 | - | - |
| 1443 | 4.7 | 1.0 | 5.6 | - | - |
| 1446 | 6.2 | 1.4 | 7.4 | - | - |
| 1458* | 75.1 | 16.6 | 89.6 | - | - |
| 1460 | 3.0 | 0.7 | 3.6 | - | - |
| 1471* | 139.5 | 30.9 | 166.5 | 3,620[a] | 11.8-21.2 |
| 1471 | 4.2 | 0.9 | 5.0 | - | - |
| 1474 | 12.7 | 2.8 | 15.2 | - | - |
| 1481 | 6.1 | 1.3 | 7.3 | - | - |
| 1482 | 14.6 | 3.2 | 17.4 | - | - |
| ... | ... | ... | ... | ... | ... |
| 1487 | 21.7 | 4.8 | 25.9 | 226.3[b] | 4.8-8.5 |
| 1488 | - | - | - | 226.3[b] | - |
| 1489 | 28.7 | 6.3 | 34.2 | 226.3[b] | 3.6-6.5 |
| ... | ... | ... | ... | ... | ... |
| 1494 | - | - | - | 649.7[b] | - |
| 1495 | - | - | - | 649.7[b] | - |
| 1496 | - | - | - | 649.7[b] | - |
| 1497 | - | - | - | 372.6[b] | - |
| 1498 | 29.7 | 6.6 | 35.4 | 372.6[b] | 5.7-10.3 |
| 1499 | - | - | - | 372.6[b] | - |
| 1500 | - | - | - | 372.6[b] | - |

$\alpha_{1615} = 0.8188$ and $\alpha_{1859} = 0.4559$

* Military expeditions

[a] Loot for Asilah (Renault 1959, p. 71)

[b] Entries of gold in the Lisbon mint from the Gold Coast only (Vogt 1979, pp. 217-9). Vogt's series goes from 1481 to 1572 and is more precise for later years. The early years (shown table 4) are calculated by averaging the total quantity of gold that the head of the Lisbon mint received over his mandate (3-4 years).

*Table 5—Per Year Government Expenditures and Revenues in England*
*(in £1,000)*

|  | Government Expenditure | Government Revenue | Balance |
|---|---|---|---|
| 1583–1585 | 190 | 250 | 60 |
| 1592–1595 | 315 | 339 | 24 |
| 1597–1600 | 419 | 382 | -37 |

Source: Goldsmith (1987, pp. 190 and 194).

*Table 6—Forced Loans by the late Tudors and early Stuarts*

|  | Amount | Interest rate |
|---|---|---|
| 1598 | £20,000 | ? |
| 1600 | £23,200 | ? |
| 1604-5 | £111,891 | 10 |
| 1611-2 | £116,381 | 10 |
| 1617 | £96,466 | 10 |
| 1625 | £60,000 | 8 |

Sources: North and Weingast (1989, p. 820); Dietz (1964, p. 64).

*Table 7—Cost of the East India Company voyages in the first 15 years*

|  | Voyage # | Ships sent out | Cost of Ships and victuals | Discounted cost (1601) |
|---|---|---|---|---|
| 1601 | 1 | 4 | £39,771 | £39,771 |
| 1604 | 2 | 4 | £48,150 | £36,176 |
| 1607 | 3 | 3 | £28,620 | £16,155 |
| 1608 | 4 | 2 | £14,000 | £7,492 |
| 1609 | 5 | 1 | £6,000 | £2,799 |
| 1610 | 6 | 3 | £32,200 | £13,656 |
| 1611 | 7 | 4 | £42,500 | £16,386 |
| 1612 | 8 | 4 | £48,700 | £17,069 |
| 1612 | 9 | 1 | £5,300 | £1,858 |
| 1613-16* | 10-13 | 29 | £272,544 | £75,700 |
| Totals | 14 | 55 | £538,385 | £227,062 |

* First joint stock (as opposed to the prior system of separate voyages) effective after 1613.

Source: Hunter (1919, p. 291 and p. 307)

*Portuguese Merchant Empire in the Sixteenth Century*
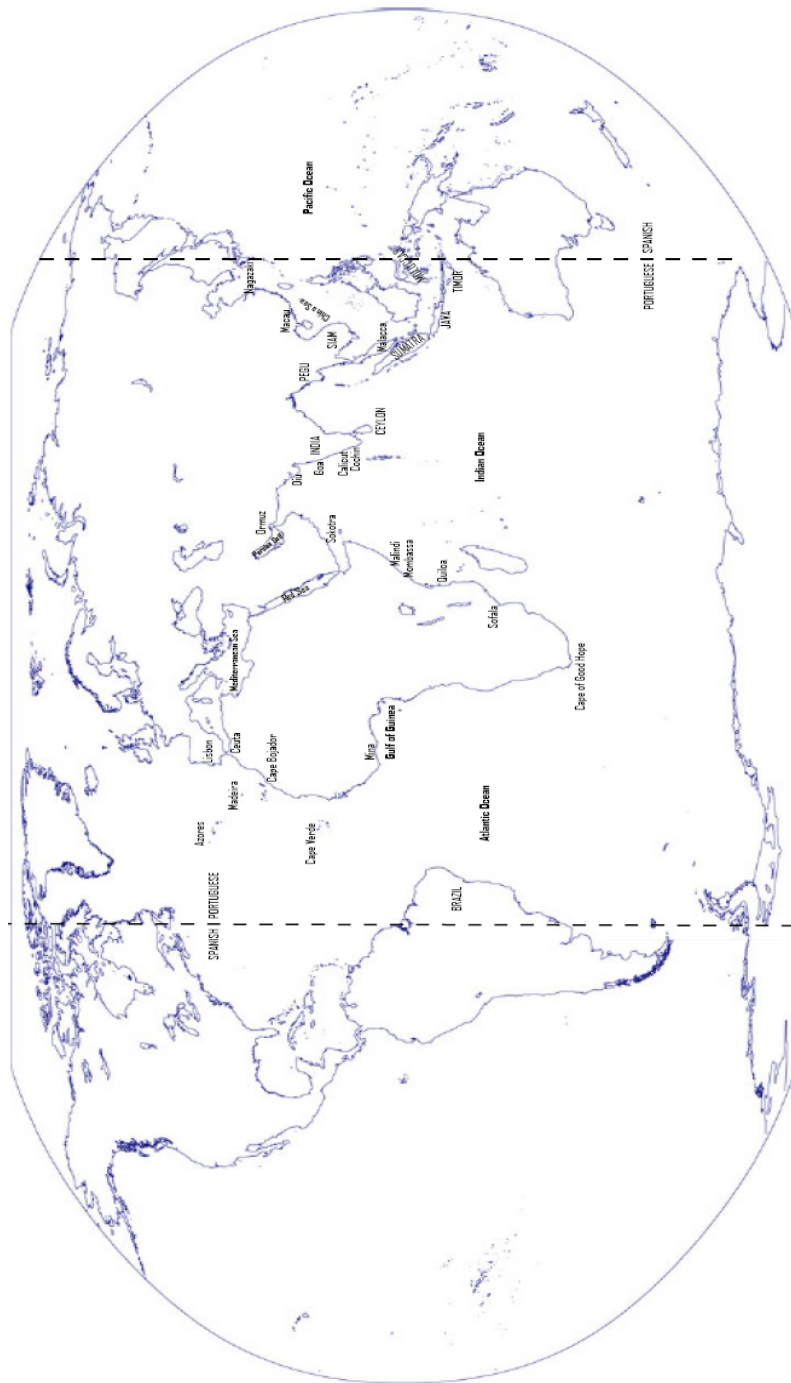
## Appendix II

*Labor cost calculation for 1858-9*

| Occupation | Avg. mo. wage | Avg. crew per ship | Monthly Labor cost | Total (37 mo.) |
|---|---|---|---|---|
| Captain | 104.48 | 1.00 | 104.48 | 3,865.76 |
| 1st mate | 70.92 | 1.07 | 75.88 | 2,807.72 |
| 2nd mate | 42.52 | 1.07 | 45.50 | 1,683.37 |
| 3rd mate | 27.32 | 1.07 | 29.23 | 1,081.60 |
| Boatsteerer | 16.87 | 3.70 | 62.42 | 2,309.50 |
| Cooper | 27.29 | 1.44 | 39.30 | 1,454.01 |
| Carpenter | 8.77 | 0.91 | 7.98 | 295.29 |
| Cook | 10.18 | 1.00 | 10.18 | 376.66 |
| Steward | 10.31 | 0.99 | 10.21 | 377.66 |
| Skilled Seaman | 9.42 | 2.19 | 20.63 | 763.30 |
| Semi-skilled Seaman | 9.24 | 2.55 | 23.56 | 871.79 |
| Unskilled Seaman | 7.49 | 10.78 | 80.74 | 2,987.46 |
| **Totals** | **-** | **27.77** | **$510.11** | **$18,874.12** |

Source: Davis et al (1997) - Average monthly wages on p. 176, average number of crewman by ship on p. 155, average length of a trip on p. 258.

Note: $18,874.12 is the expense in wages to which we need to add the cost of food and provisions for the crew in order to get $wL$.

*Capital cost calculation for 1859*

| | | |
|---|---|---|
| Average outfit expense | 30,500.00 | p. 214 |
| Cost of vessel (per ton) | 74.08 | p. 244 |
| Average vessel size (tons) | 350 | p. 218 |
| Cost of a vessel of 350 tons | 25,928.00 | |
| Average age of a vessel (mo.) | 291.60 | p. 231 |
| Average length of a trip (mo.) | 37 | p. 258 |
| Average number of trips per vessel | 7.88 | |
| Cost of a vessel per trip | 3,289.90 | |
| Food and provisions man/mo. | 5.00 | p. 211 |
| Food and provisions crew (37 mo.) | 5,137.45 | |
| Cost of capital per trip ($rK$) | 28,652.45 | |

Source: Davis et al (1997)

Note: $rK$ per trip = outfit – food and provisions + cost of vessel per trip

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