

Chapter 1: The Economics of Shipping in Mid-Sixteenth Century Bristol

This chapter will examine the nature of the costs, risks and returns of the Bristol shipping industry during the 1530s and 40s. The purpose of the examination will be to reveal the business environment in which Bristol's shipowners operated and thus the key problems that they had to address in making a success of their shipping concerns.

ventures could be examined. Many such accounts have survived from later centuries and some shipping accounts survive for the period under study, other records throw light on the basic economic conditions of the industry. Of these by far the most useful is *The Ledger of John Smythe*, which details the activities of one of Bristol's merchant-shipowners during the late 1530s and 1540s.¹ His ledger records some of the charges he faced in maintaining his ship and it provides a great deal of information about how freight space was sold, how much it cost and how it was paid for. Besides Smyth's ledger, a number of other sources, such as surviving charter parties, customs accounts and state papers provide additional information about the costs, risks and returns of shipping. These aspects of the industry will all be studied in the following sections, in order to gain as complete a picture as possible of the economics of shipping at this time.

The Costs of Shipping

In general, the documents that have survived provide little information about expenditure on shipping. This is because the only people who were interested in such matters were shipowners and in the case of Smyth's ledger, the cost of goods or services purchased for his ship were only noted if he bought them from someone with whom he maintained a

¹ J. Vanes (ed.), *The Ledger of John Smythe 1538-1550* (London, 1974). Use was also made of the computerised version of the ledger produced by Ian Blanchard and Jenny Newman for the E.S.R.C. financed project 'The Anglo-Netherlands Bill Market and English Export Finance 1440-1740' (8205/1-B 23/2), University of Edinburgh, 1982-5.

personal credit account.² So, any payments made in cash, or by way of a direct exchange, are not recorded in the ledger. This includes crew pay, maintenance charges in foreign ports and the provision of victuals other than biscuit and beer. Although it is not possible to determine Smyth's total level of costs, or to make an exact breakdown of his expenditure on his shipping ventures, some insight can nevertheless be gained into where the balance of shipping costs lay. It is also possible to determine the level of financial commitment required to enter the Continental shipping market.

Cost structure – Sea vs. Port costs

When a ship was at sea a shipowner was subject to a number of charges. These included running costs such as crew pay, victuals and repairs, and fixed costs such as the interest on the capital invested, depreciation and insurance.³ When a ship was in port, the costs to which a shipowner was subject depended on whether the ship was at home or abroad. If the ship was at home, shipowners could substantially reduce their outlay by laying-off most of their crew.⁴ While in a home port there would also be little risk of the ship being lost and the ship would deteriorate more slowly than it would at sea. However, even at home the interest on the capital, depreciation and some repairs would still need to be covered, while if a ship were in a foreign port the crew would have to be fed and paid.

Although it is not possible to provide a break-down of expenditure on shipping from the records available at Bristol, it is possible to illuminate the extent to which a shipowner's overall costs were the result of keeping a ship at sea. The key to this determination lies in the relationship between the price of freight and the length of a journey. This is because if a shipowner's expenditure were dominated by the cost of running a ship at sea, then the price of freight should be proportional to the length of the journey – for doubling the length of a

² App. 6, 'The *Trinity* of Bristol'.

³ These are the categories that Davis applied. Although insurance was rarely, if ever, taken out on ships in the period under study, the percentage risk of loss per annum can be considered a fixed cost: Davis, *The Rise of the English Shipping Industry*, pp. 87, 365.

⁴ Crews were normally hired by the voyage and were then either paid by the month, or more frequently, at an agreed initial rate for the complete voyage: D. Burwash, *English Merchant Shipping* (Toronto, 1947), p. 48; P. Croft, 'English mariners trading to Spain and Portugal, 1558-1625', *Mariner's Mirror*, LXIX (1983), p. 253. Davis's study of the 17th century industry and Hanham's study of the *Margaret Cely* in the late 15th century suggest that crew pay and victuals accounted for as much as half of total expenditure: Davis, *The Rise of the English Shipping Industry*, p. 371; Hanham, *The Celys and their World*, pp. 389-93.

journey would double the costs. However, if port-time costs predominated, the cost of freight per ton/mile should fall as the length of journey increased. To determine which predominated, the following paragraphs will examine how the price of transporting particular goods varied as the length of journeys increased. This will involve an examination of freight rates at both Bristol and London.

The document that throws most light on freight rates at Bristol is John Smyth's ledger. This contains numerous references to the price of freight on his own ship and to that bought on other ships. Unfortunately, the ledger contains almost no information about the cost of freight on journeys from Bristol to the Continent and it does not deal with the Irish trade. Nevertheless, it does contain about seventy references to the cost of transporting goods from the Continent to Bristol over the years 1539-45. For the present study, the most valuable references are those that deal with the transport of wine from Bordeaux and Southern Iberia during the years 1539-43. This data is useful because it enables a direct comparison to be made of the cost of transporting the same good at the same time on two journeys of radically different length. The formation of a comparison for this period is aided by the fact that during these years the price of freight was fairly stable. Indeed, until the outbreak of maritime hostilities against France in February 1543, the price of wine freight on Bristol ships was generally fixed at 20s. per tun for Bordeaux and 25s. per tun for Andalusia / Southern Portugal. For the non-Bristol ships the rates were not fixed and the price of freight was generally lower. However, the differential between the cost of wine freight is roughly the same for the two routes, as the average of the prices on non-Bristol ships comes to 16s. 3d. for Bordeaux wine and 21s. 7d. for South Iberian wine. These results are summarised below.

Table 1.1 – Freight Prices for Wine Transported to Bristol, Based on John Smyth’s Ledger: 1539-1542

Ref.*	Date	Ship	Sailing from	Rate/ton
App. 6	4 December 1539	<i>Trinity</i> of Bristol	Bordeaux	20s.
App. 6	December 1540	<i>Primrose</i> of Bristol	Bordeaux	20s.
App. 6	6 November 1540	<i>Trinity</i> of Bristol	Bordeaux	20s.
App. 6	15 November 1540	<i>Primrose</i> of Bristol	Bordeaux	20s.
App. 6	14 November 1541	<i>Margaret</i> of Bristol	Bordeaux	20s.
App. 6	25 November 1539	<i>Mary Bride</i> of Bristol	S. Iberia	25s.
App. 6	23 December 1539	<i>Mary Christopher</i> of Bristol	S. Iberia	25s.
App. 6	19 January 1540	<i>Saviour</i> of Bristol	S. Iberia	25s.
App. 6	November 1540	<i>Briton</i> of Bristol	S. Iberia	15s.
App. 6	24 November 1540	<i>Margaret</i> of Bristol	S. Iberia	25s.
App. 6	December 1540	<i>Harry</i> of Bristol	S. Iberia	25s.
App. 6	4 December 1540	<i>Jesus</i> of Bristol	S. Iberia	25s.
App. 6	20 December 1540	<i>Mary Christopher</i> of Bristol	S. Iberia	25s.
App. 6	22 November 1541	<i>Trinity</i> of Bristol	S. Iberia	25s.
App. 6	5 December 1541	<i>Mary Bonaventure</i> of Bristol	S. Iberia	25s.
App. 6	12 December 1541	<i>Harry</i> of Bristol	S. Iberia	25s.
S.108	15 December 1540	<i>Christopher</i> of Dartmouth	Bordeaux	13s. 4d.
S.108	15 December 1540	<i>Jesus</i> of Torres	Bordeaux	13s.
S.108	15 November 1541	<i>Margaret Bonaventure</i> of Plymouth	Bordeaux	15s.
App. 6	16 November 1541	<i>Mary Fortune</i> of Gloucester	Bordeaux	20s.
S.144	6 December 1541	<i>Ann</i> of London	Bordeaux	20s.
S.96	4 February 1540	<i>Margaret of Minehead</i>	S. Iberia	22s.
S.79	14 February 1540	<i>Katherine</i> of Barnstaple	S. Iberia	21s.
S.114	15 November 1540	<i>Jesus</i> of Bideford	S. Iberia	25s.
App. 6	28 November 1541	<i>Trinity</i> of Caerleon	S. Iberia	25s.
S.145	7 December 1541	<i>Mary</i> of Penmarch	S. Iberia	15s.

* ‘S.’ refers to *Smyth’s Ledger*; ‘App. 6’ refers to the Ship’s Histories, Appendix 6.

The key feature of this table is that regardless of whether Bristol or foreign ships were employed, the price of transporting wine from South Iberia was only about 25-30% higher than the price of transporting wine from Bordeaux. This was despite the fact that Andalusia was more than twice the distance and contemporary documents indicate that, while the

journey from SE Biscay to Bristol could be achieved in not much more than a week, that from Andalusia took about three weeks.⁵

Turning from Bristol to London, information on freight rates can be obtained from the 1540 Act for the maintenance of the Navy.⁶ This Act included provisions for fixing an upper limit on freight rates for English ships sailing to or from London. This was done because the statute gave English shipowners a virtual monopoly over English trade and thereby the potential to exploit the limited supply of shipping by raising their freight rates. Since the Act aimed to prevent such price increases, it seems probable that the very complex system of freight rates specified in the statute merely served to formalise pre-existing charging practices. For the current study, the interesting thing about the specified rates is that, as at Bristol, the cost per mile of freight fell as the length of journeys increased. For instance while the cost of transporting a tun of wine from Bordeaux to London was set at 18s., the cost from Seville was 23s.

The pattern of freight charging was thus similar for the English vessels sailing to or from London and for English and foreign vessels that sailed to Bristol. In all instances it appears that the amount charged per ton/mile fell dramatically as the length of journeys increased. Taking the prices charged by Bristol ships as an example, it has been noted that the freight of a tun of wine was 20s. from Bordeaux and 25s. from Andalusia. Since it was more than twice the distance from Andalusia to Bristol than from Bordeaux to Bristol, the low differential between the price of the journeys indicates that the expense of sailing the extra distance was not very high. Indeed, it would appear that the costs involved in sailing a ship the additional distance was not more than 5s. per tun. This implies that the cost of actually sailing the ship all the way from Andalusia to Bristol was not more than 10s. In other words, the sailing cost accounted for a maximum of 40% of the freight charge. Yet, in

⁵ The journey from Biscay to Plymouth could be covered in less than a week: G. Connell-Smith, *Forerunners of Drake: A study of English trade with Spain in the early Tudor period* (Plymouth, 1954), p. 11. Anecdotal accounts from this period seem to indicate that the journey to Bristol took a little longer. On 20 November 1536 the *Primrose* took on a crew at Bordeaux. It was customed in Bristol on 2 December, indicating a journey of not more than twelve days. On 27 July 1537 the *Mary Bride* left Renteria with a cargo of iron. It was customed in Bristol on 7 August, so the voyage could not have taken more than eleven days. By contrast, a model account of a voyage from Bristol to Andalusia in the later 16th century gives a sailing time of twenty-one days from the Kingsroad (the mouth of the Avon) to San Lucar: App. 6; John Brown, *The Marchants Avizo*, (London, 1589).

⁶ *Statutes of the Realm* Vol. III (London, 1817), Ch. XIV 'An Act for the maintenance of the Navy of England' pp. 760-63.

reality the sailing cost was likely to have been considerably less than this, for the additional cost of the Andalusian voyages must be partly attributed to the longer time ships seem to have spent in foreign ports when engaged in the Andalusia trade.⁷

That the shipowners spent more money on keeping a ship in port than in sailing it should not be surprising, since even the most efficiently run Bristol ships made only two or three voyages a year and would rarely have spent more than eighty days a year under sail.⁸ In charging for freight shipowners thus had to make sure they covered the costs of buying and maintaining a vessel that spent more time in port than at sea. They also had to pay the costs of keeping a crew who would have spent more time awaiting cargoes in foreign ports than in actually sailing their vessel on any given voyage. This domination of ‘port’ costs is significant for the current study, because it meant that success in the industry would have depended on either reducing the turn-around times in port, so that more voyages could be made in a year, or on maximising the returns on particular voyages.

The Level of Costs in the Continental trade

Having examined the structure of shipping costs, attention needs to be given to the level of expenditure involved in shipping and in particular the cost of entry into the shipping market. For Bristol in the period under study there are two inventories of Bristol ships that provide fairly reliable indicators of the cost of buying a ship. The first of these is an inventory and

⁷ The ‘Ship’s Histories’ detail eleven voyages of Bristol ships where the dates of departure and arrival are provided by the customs accounts and where it is possible to be certain about the destination of the ship. The average length of the five Biscay voyages was 97 days and that of the six southern Iberian voyages 153 days. Since the extra sailing time for the round-trip voyage to Andalusia was only about 20 days more than for the Biscay trade, much of the extra time must have been spent in acquiring cargoes in Iberian ports. The departure dates, destinations and durations of the voyages are as follows: *Mary Conception*, 13 February 1542 (Lisbon, 154 days), 30 September 1542 (Andalusia, 139 days), 7 January 1544 (Andalusia, 184 days); *Mary James*, 2 October 1542 (Lisbon, 136 days), 8 January 1544 (Lisbon, 162 days); *Primrose*, 28 November 1541 (Biscay, 161 days); *Trinity*, 1 June 1537 (Biscay, 67 days), 13 January 1542 (Biscay, 80 days), 19 May 1542 (Biscay, 97 days), 22 September 1542 (Andalusia, 144 days), 5 January 1544 (Biscay, 78 days): App. 6.

⁸ Bristol ships never made more than three Continental voyages a year, with three voyages to Biscay or two to Andalusia being the best achievement: App. 6, The *Trinity* of Bristol in 1539-1540; The *Mary Bonaventure of Bristol*, 1542. Given twenty days sailing time for a voyage to Biscay and forty to Andalusia, this would suggest a total sailing time of less than three months in the year. That two or three voyages was the best that could be expected of a Continental merchantman, is confirmed from a petition made c.1543. This bemoaned the decline of Bristol’s shipping from a golden age in which ‘our great shippis used to make ii or iii viages in the yere’: J. Vanes (ed.), *Documents Illustrating the Overseas Trade of Bristol in the Sixteenth Century* (B.R.S. Publications, XXXI, 1979), p. 31.

valuation of John Smyth's ship, the *Trinity* of Bristol. Smyth conducted the inventory in 1539 and the valuation was entered in his own ledger. Since this inventory was for Smyth's personal use it seems likely that it would be accurate. In his ledger Smyth values the fully equipped *Trinity* at £250.⁹ This was for a vessel of about 115 tons burden. The second inventory is of the *Great Nicholas* of Bristol. Crown agents conducted this when they considered its purchase in 1539. Although these agents had reservations about the amount of water the ship drew, they suggested that it was worth £700.¹⁰ From its price and their description of the vessel it can be deduced that it must have been a very large ship.

The valuations of these two vessels indicate that a fully equipped ship could cost a considerable amount of money. Even the cheaper *Trinity* cost the equivalent of a naval mariner's pay for 80 years.¹¹ The purchase of such a ship thus required a large capital commitment. Nevertheless, what needs to be determined is how typical such a ship was of those operating at Bristol and whether such a large-scale expenditure was required to enter the shipping market. In the absence of accurate figures relating to the cost of other Bristol ships, the first step towards doing this is to compare the *Trinity* with the other ships engaged in Bristol's shipping market.

During the 1530s and 40s information is available on fifteen voyages made by the *Trinity* of Bristol.¹² All of these were to either Biscay or Southern Iberia. Since there is no evidence that it ever sailed into the Mediterranean or Ireland, it can be described as a specialised Continental trader. To assess whether the *Trinity* was typical of a Bristol vessel engaged in such activities, the following table will rank vessels by estimated capacity in tons burden and note the trades in which they were involved.¹³

⁹ App. 6, *Trinity* of Bristol, 1539.

¹⁰ App. 6, *Great Nicholas* of Bristol, 5 September 1539.

¹¹ Until 1545 naval mariners were paid 5s. per month, after that their wages were raised to 6s.8d. per month: P. L. Hughes and J. F. Larkin (eds.), *Tudor Royal Proclamations*, I, (Yale, 1964), pp. 347-48.

¹² App. 6, *Trinity* of Bristol.

¹³ The size of merchantmen was normally determined by their 'tons burden' i.e. the number of tuns of Bordeaux wine that could be laded on them: Burwash, *English Merchant Shipping*, pp. 89-90. For details of how the size of ships was determined, see the introduction to App. 6.

Table 1.2: Size Ranking of Bristol Vessels operating 1539-1546 *

Name	Size (tons burden)	Market area (no. of voyages) **
<i>Saviour</i> of Bristol	255	Continent (2), Levant (?)
<i>Harry</i> of Bristol	135	Continent (7)
<i>Margaret</i> (1) of Bristol	135	Continent (5)
<i>Mary Bride</i> of Bristol	120	Continent (3)
<i>Jesus</i> of Bristol	115	Continent (4)
<i>Trinity</i> of Bristol	115	Continent (12)
<i>Mary James</i> of Bristol	105	Continent (3)
<i>Mary Conception</i> of Bristol	105	Continent (8), Ireland (1)
<i>Mary Bonaventure</i> of Bristol	90	Continent (3)
<i>Primrose</i> of Bristol	75	Continent (8)
<i>Julian</i> of Bristol	60	Continent (3)
<i>Magdalen</i> of Bristol	55	Continent (4)
<i>Little Trinity</i> of Bristol	45	Continent (2), Ireland (2)
<i>Trinity More</i> of Bristol	40	Continent (3), Ireland (6)
<i>Jesus</i> (2) of Bristol	35	Continent (2), Ireland (2)
<i>Trinity Gorney</i> of Bristol	30	Continent (2)
<i>Michael</i> of Bristol	30	Continent (3), Ireland (2)
<i>Mary George</i> (1) of Bristol	25	Ireland (6)
<i>Trinity George</i> of Bristol	20	Ireland (4)
<i>Margaret</i> (2) of Bristol	20	Ireland (3)
<i>Sunday</i> of Bristol	15	Continent (1), Ireland (18)
<i>Nicholas</i> (2) of Bristol	15	Ireland (8)

* This table only includes those Bristol ships which made at least two voyages during this years and where sufficient data exists to estimate the size of a ship. Only commercial voyages conducted during this period are included.

** For full details of these voyages see, Appendix 6.

Table 1.2 illustrates that there was a very direct correlation between the sizes of ships and the routes on which they were employed. The largest vessel, the 255 ton *Saviour*, was employed in the long distance trade to Andalusia and the even longer distance trade to the Levant. After this were twelve vessels of 55-135 tons burden that were engaged full time in

the Continental trade.¹⁴ The *Trinity* was one of these vessels and appears to have been of a typical size for a ship engaged full time in the Continental trade. Below these ships were four vessels of 30-45 tons that serviced both the Continental and the Irish trade. Lastly there were five vessels of 15-25 tons that were almost entirely engaged in the Irish trade, although the *Sunday* did make one atypical voyage to Biscay.

The association of vessels of particular sizes with different trades suggests that there was a relationship between the size of vessels and their level of competitive advantage in different trades. That contemporaries recognised such competitive advantages existed can be illustrated by a document relating to the *Saviour* of Bristol. As has been noted, the *Saviour* was by far the largest vessel in the Bristol marine and was the only one that was known to operate in the very long distance trade to the Levant. Yet, what is interesting about this ship is that its owner, Nicholas Thorn, actually submitted a petition to Henry VIII about the trades in which his ship was involved. In the petition he noted that the *Saviour* was ‘of to gret portage to trad to Bordyas [Bordeaux] or to the mor port of the partys of andolesya in Spayne’ and because of this he had been forced to charter his ship out to merchants involved in the Levantine trade.¹⁵ For Thorn at least, it was apparent that a relationship existed between the size of a ship and its suitability for a particular trade.

The most obvious explanation for the correlation at Bristol between the length of routes and the size of ships employed to service them is that economies of scale favoured ships of particular sizes in particular trades. Although Davis has argued that until the mid-eighteenth century ‘the larger ship was in many trades operated at a cost hardly less per ton than a smaller one’ he accepted that in the European trades costs rose sharply for ships of below 50 tons burden.¹⁶ His estimate of minimum efficiency tallies with the evidence provided above that 50 tons marks the division at Bristol between those engaged full time in the Continental trade and those engaged, at least partly, in the Irish trade. It is also supported by the evidence of Wirral shipping in the sixteenth century, where the ships, which were generally of 20-30 tons burden, specialised on the Irish trade and very rarely ventured into the

¹⁴ The only exception to this is the *Mary Conception*'s voyage to Ireland on 18 March 1546: App. 6.

¹⁵ App. 6, *Saviour* of Bristol, c.1535.

¹⁶ Davis, *The Rise of the English Shipping Industry*, p. 73.

Continental trade.¹⁷ The Wirral evidence is particularly interesting because when ships did venture into the Continental trade they had to take on such a large crew that their tons per man ratio could fall to 3:1. Such a ratio is much lower than the 5:1 ratio that was said by the Elizabethan shipwright Matthew Baker to be normal for most merchantmen and thus appears to confirm Davis's view that small ships were not efficient in the Continental trades.¹⁸

The above discussion goes some way to explaining why larger ships were favoured in the long distance trade to the Continent. However, it does not explain why most of Bristol's specialised Continental merchantmen were much larger than the 50 ton minimum margin of efficiency. This is an important issue to address, since large ships were more expensive to build than small ones and by building one large ship of 120 tons, rather than two of 60 tons, a shipowner was forgoing the opportunity of diversifying risks.¹⁹ To understand why larger ships were favoured will require an examination of three issues: defensibility, the provision of royal bounties and prisage.

In explaining the prevalence of very large ships in the later middle ages Braudel has argued that before the advances in naval artillery in the sixteenth century the high sides of the great ships meant that these 'floating fortresses spelt security'.²⁰ Although he accepts that the average size of ships shrank after 1450, it is still likely that until the late sixteenth century large ships were considered more defensible than small ones. This may help to explain why so many of Bristol's Continental ships were over 100 tons and why the 250 ton *Trinity* was considered particularly suitable for the dangerous sea-lanes of the Levantine trade.

Royal bounties were a significant factor in the commissioning of large ships because, from the fifteenth century, the Crown tried to encourage English shipowners to build ships that could be employed for naval service in time of war. Such bounties were generally provided to ships of over 100 tons burden and consisted of a set payment per ton of capacity. In the latter years of Henry VIII's reign a number were handed out to English shipowners,

¹⁷ D. Woodward, 'Ships, masters and shipowners of the Wirral 1550-1650', *Mariner's Mirror*, LXIII (1977), pp. 235-6.

¹⁸ W. Salisbury, 'Early tonnage measurement in England', *Mariner's Mirror*, LII (1966), p. 46.

¹⁹ R. Davis 'Earnings of capital in the English Shipping Industry, 1670-1730', *Journal of Economic History*, XVII (1957), p. 410.

²⁰ F. Braudel, *The Mediterranean and the Mediterranean World*, Vol. I (London, 1972), p. 298.

including those from Bristol.²¹ Since these bounties could cover as much as 10% of the building costs of a ship, they must have provided some incentive to build large ships.²² However, until the late sixteenth century the granting of bounties was a very *ad hoc* affair and since only twenty bounties are known to have been granted in the reign of Henry VIII, it is unlikely that many of the owners of Bristol's larger ships benefited from them.

The last and probably most important factor behind the decision to build large ships related to operation of prisage. Prisage is the term used for the right of the Crown to take wine from ships entering England in return for an established price. At Bristol, the Crown was permitted to take one tun of wine from any ship that entered with more than ten tuns of wine on board and two tuns from any ship with more than twenty tuns. Compensation of 15s. per tun was paid by the Crown.²³ By the early 1540s French wine cost about £5 per tun in Bristol and Spanish wine £7 per tun so, in effect, prisage amounted to a tax of between £8 10s. and £12 10s. on any vessel entering port with more than twenty tuns of wine.²⁴ This directly affected shipowners since Smyth's ledger indicates that they had to compensate merchants for any wine lost.²⁵ In the Spanish trades this compensation would amount to about 50% of gross freight receipts from a ship of 20 tons, 20% from one of 50 tons and 10% from one of 100 tons.²⁶ This would have given the owners of Bristol's larger ships a considerable advantage in a trade that was responsible for almost half of all freight imported from the Continent.²⁷

For the current analysis, the conclusion of the foregoing examination of the sizes of ships employed on different routes is that full-time engagement in the Continental shipping

²¹ At least two Bristol ships, the *Saviour* (1535-7) and the *Mary Bride* (1536) received crown subsidies connected with their construction or reconstruction: App. 6.

²² B. Dietz 'The royal bounty and English merchant shipping in the Sixteenth and seventeenth centuries', *Mariner's Mirror*, LXXVII (1991), p. 9.

²³ N. S. B. Gras, *The Early English Customs System* (Harvard University Press, 1918), p. 41.

²⁴ Vanes (ed.), *The Ledger of John Smythe*, p. 324.

²⁵ For instance, when Smyth freighted wine on the *Mary Conception* in 1546 he recorded the wine lost to prise as a sale. This was because the shipowner, Thomas Harris, paid for the wine. Similarly, when Smyth freighted wine on the *Hart* in 1549, he credited its owner, George Wynter, for the freight of 33.5 tuns, but then debited him for the cost of a butt (half-a-tun) of wine taken to prise: *Smyth's Ledger*, fos. 67, 189, 255.

²⁶ Based on a ship importing wine valued at £7 per tun and receiving freight receipts of 25s. per tun. The loss in the French trades would be slightly less, amounting to 8.5% of freight receipts from a ship carrying 100 tuns and receiving 20s. per tun for freight.

²⁷ See Table 2.18.

market appears to have required a ship of at least 50 tons burden and those who bought larger ships would have operated to considerable advantage in the all important wine trade. In theory shipowners could have saved money by buying a lower quality ship or by equipping it less lavishly than the *Trinity* or *Great Nicholas*. For instance, shipowners could have made considerable savings if they spent less money on armament.²⁸ However, if a ship were not seaworthy or defensible, it would be unlikely that any merchant would have considered putting a valuable cargo on it. This would have been especially true in an age when it was uncommon for merchants to insure their goods. As a result it seems likely that engagement in the Continental trade, which generally involved high value produce, would have required the purchase of a ship that was not only large, but also sea and battle worthy.

Conclusion on the costs of shipping

The above discussion has demonstrated that shipowners spent more on keeping their ships in port than they spent on sailing them. For this reason, the maximisation of profits would have depended on minimising port times or achieving the highest possible returns from individual voyages. Since the specific conditions of Bristol's Continental trade meant that large ships operated at considerable advantage over small ones, entrance into the Continental shipping market required a considerable capital outlay. Having established the factors that influenced entry into the Continental shipping market and mercantile decision making in the choice and management of their vessels, the following section will consider the risks involved in the shipping industry and the implication of these risks for participation in that industry.

²⁸ In the 1539 inventory of the *Trinity* of Bristol, Smyth noted that on his ship, were 19 pieces of ordnance, in addition to bows and hand-arms. The *Great Nicholas* carried 21 guns: App. 6.

The Risks of Shipping

A study of risk in the shipping industry needs to take account of two factors – the risk to the ships themselves and the extent to which capital invested in the industry could be protected.

Risks to Ships

In the period under study there were many dangers involved in shipping. Ships could be lost to storms, piracy, privateering, seizure by hostile governments and impounding by judiciaries in foreign ports. Such dangers were a general feature of shipping until recent times and even in the second quarter of the nineteenth century, 4-5% of ships were lost each year to such hazards.²⁹ However, during the politically turbulent years covered by this thesis there were some particularly large scale losses of English shipping resulting from piracy, privateering and government seizure. The loss rate at this time may therefore have been as high as it was at Bristol between 1610-20, when a high incidence of piracy drove the loss rates up to about 10% pa.³⁰ The greatest seizures of shipping were events of note in the state politics of the time. As a result of their political significance, the events and circumstances pertaining to some seizures were well documented and these records have been preserved.³¹ However, the failure to keep systematic records of the loss of all shipping means that, in many other cases, the capture or sinking of a ship has only been recorded because a legal dispute resulted from the damage or because a chance surviving document refers to the loss.

The absence of complete records of losses, or precise estimates of the risks faced by shipping, unfortunately makes it impossible to quantify the risk that a Bristol ship faced when it left port. Nevertheless, the anecdotal references to ship losses in this period indicate that Bristol's ships were not immune to the general conditions of their times. John Smyth's ledger records the loss of both the *Jesus* of Bristol and the *Briton* of Bristol in 1541.³² Since the *Jesus* was sunk at Byttbay and the *Briton* at Barnstaple it seems likely that storms were

²⁹ Davis, *The Rise of the English Shipping Industry*, p. 87.

³⁰ Between 1610 and c.1620 Bristol lost forty-four ships – fourteen to wreck, one to fire and the rest to piracy. Since a survey of 1626 indicated that the fleet consisted of forty-two ships, the loss rate of the second decade was probably in the region of 10% per annum: P. V. McGrath, 'Merchant venturers and Bristol shipping in the early seventeenth century', *Mariner's Mirror*, XXXVI (1950), pp. 79-81.

³¹ For instance: *L&P*, XVIII, i, no. 91.

³² App. 6, *Jesus* (1) of Bristol, 20 December 1541; *Briton* of Bristol, November 1541.

responsible for their destruction. At least two Bristol ships were captured or severely damaged by acts of piracy / privateering in this period. A legal case at the High Court of Admiralty records that in 1539 Spanish pirates attacked the *Margaret* and the *Matthew* of Bristol off La Rochelle and did damage to the *Margaret* amounting to £300.³³ Smyth's ledger records the capture of the *Trinity Gorney* of Bristol by Scottish pirates in 1548.³⁴ Apart from such acts of piracy, ships could also be lost to government seizure. There were two major examples of this in the period under study. In February 1543 all English ships in French waters were seized by France and effectively became the first casualties of the Anglo-French war and in 1545/6 there were also some large-scale arrests of English shipping by the Empire.³⁵ It is not clear whether any Bristol ships were lost from the French seizure, but at least one Bristol privateer was seized at San Sebastian during 1545.³⁶ On the basis of these, almost certainly incomplete, accounts of losses it is at least apparent that Bristol's shipping was not a risk free business during this period and shipowners would have had to accept that there was a reasonable chance that they could lose their ships on any given voyage. This would have been true especially during periods of political instability, for the high fixed costs involved in shipping would have made it impractical for shipowners to reduce their risk by laying their ships up during crises.³⁷ However, for shipowners the really important issue was not one of how much risk there was of ships being lost, but how much money they would actually lose if a ship was seized or sunk. A consideration of risk in Bristol's shipping industry thus needs to consider the extent to which capital invested in shipping was protected.

³³ App. 6, *Margaret* (1) of Bristol, Spring 1539; *Matthew* of Bristol, Spring 1539.

³⁴ App. 6, *Trinity Gorney*, 18 April 1548.

³⁵ The stay on English shipping was issued in France on 4 February 1543. The English followed suit two days later: *L&P*, XVIII, i, nos. 114, 122. The arrest in the Low Countries was on all English goods, ships and merchants. It was imposed in response to acts of piracy committed by Englishmen against Imperial vessels and lasted from 5 January 1545 (*L&P*, XX, i, no. 21) to 6 April: *L&P*, XX, i, no. 494. The arrests in Spain were confined to Andalusia and were aimed at getting restitution for Imperial treasure seized by the English privateer, Robert Renegar. These arrests began on 31 March 1545 (*L&P*, XX, i, no. 459) and lasted till 8 November 1546: *L&P*, XXI, ii, no. 371.

³⁶ *A.P.C.*, I, 26 November 1545, p. 275.

³⁷ The high fixed costs of shipping and the expense of laying a ship up during a war are noted by Davis, *The Rise of the English Shipping Industry*, pp. 329-30, 379. During the sixteenth century the deterioration that ships underwent while laid-up was most often noted in the case of Crown vessels. For instance an 'Account of the State of the King's ships' in November 1526 noted the severe decline in the fleet in the year it had been laid up and suggested that at least some of them be hired out as merchant ships: *L&P*, IV, ii, no. 2635.

Risks to Capital

There were potentially two ways in which shipowners could protect their capital. The first was to take out insurance; the second to diversify their risk by buying shares in a number of ships rather than investing all their capital in a single one. By taking out insurance, the risk involved in shipping could be spread. However, although marine insurance became available from Italian merchants in London from the fifteenth century, English underwriters did not engage in the practice before the mid-sixteenth century. Even after this time, the marine insurance market in England was very much an *ad hoc* affair until the development of Lloyds in the eighteenth century, so that even in the seventeenth century it was unusual for shipowners to insure their vessels.³⁸ Since the English market did not develop until after the period under consideration, and even then was focused on the insurance of merchandise rather than ships, it is not surprising that there is no evidence that Bristol shipowners insured their ships in the period under examination.³⁹

Given that shipping insurance was not available, it might be expected that shipowners would at least have tried to diversify their risk by spreading their investment over a number of vessels. This was a strategy adopted by some English shipowners in the medieval and early modern period and by the mid-seventeenth most shipowners spread their risk by buying small shares in a large number of ships.⁴⁰ However, although risk diversification was possible in earlier centuries, in practice ownership appears to have been much more concentrated before the seventeenth century, with few ships being divided into shares smaller than a half or quarter and many being the property of individual owners.⁴¹ Of the

³⁸ G. Clayton, *British Insurance* (London, 1971), pp. 51-57; Davis, *The Rise of the English Shipping Industry*, p. 87.

³⁹ Smyth did occasionally take out insurance on his merchandise in Spain: *Smyth's Ledger*, fos. 50, 52, 222, 232, 234.

⁴⁰ V. Barbour, 'Marine risks and insurance in the seventeenth century', *Journal of Economic and Business History*, I (1928-29).

⁴¹ G. V. Scammell, 'Shipowning in England c.1450-1550', *Transactions of the Royal Historical Society*, XII (1962), p. 114. The prevalence of sole ownership at Bristol and the concentration of shipping ownership among the city's merchant elite appears to have lasted from at least the fifteenth to the early seventeenth century. In the 1470s William Canynges was the sole owner of a fleet of ten ships and in 1486, six years after Canynges' death, it was reported that Thomas Strange owned twelve of Bristol's ships and several more belonged to one John Goodman: E. M. Carus Wilson, 'The Overseas Trade of Bristol' in E. Power & M. M. Postan (eds.), *Studies in English Trade in the Fifteenth Century* (London, 1933), pp. 238-41. A survey of 1513 indicated that of Bristol's eighteen ships, ten had one owner, two had two owners, four had three owners, and two had four owners: P.R.O. S.P.1 3 fo. 87. Official documents concerning twenty-six Bristol vessels operating in the Spanish war of 1585-1604 indicate that twelve had sole owners and eight had two owners: J. W. D.

Bristol ships operating between 1539-46, it is possible to identify the owners, with some certainty, in sixteen cases. Of these ships, twelve had just one owner, two had two owners, and two had three owners.⁴² Apart from the Bristol registered ships, it is also possible to determine that two other ships, which were owned by Bristol merchants or by men who had close connections to the city's commercial community, also appear to have had just one owner.⁴³ Although it is possible that some of the owners of the above ships did possess other ships that have not been noted here, the pattern of ownership that has been observed offers little indication that Bristol's shipowners sought to diversify their risks during this period. The most likely explanation for this is that the city's shipowners were more concerned about maintaining a tight control over their vessels than they were in spreading risks. The reason it was important for them to maintain a close control over their ships will become clear in Chapter 3.

Conclusion

Shipping, and particularly long distance shipping, was an expensive and high-risk activity. The combination of high costs, lack of insurance and the apparent unwillingness of Bristol men to spread risk through shared ownership, in practice restricted investment in shipping to Bristol's wealthiest merchants. Such individuals could afford to enter the shipping market, not just because they could afford to buy a ship outright, but because they could survive financially if a ship was lost. Yet, if shipowning was a high-cost and high-risk activity, the returns on shipping must also have been considerable to make its pursuit worthwhile. The last section of this chapter will thus consider what the potential benefits of shipowning were.

Powell, *Bristol Privateers and Ships of War* (Bristol, 1930), pp. 40-48. By 1626, shared ownership had become more common but, even then, nineteen of Bristol's forty-four ships had just one owner and the vast majority of the shipping was in the hands of a small group of the city's merchants: P. V. McGrath, 'Merchant venturers and Bristol shipping in the early seventeenth century', *Mariner's Mirror*, XXXVI (1950), pp. 74-75, 80.

⁴² The ships with one owner were the *Briton*, *Great Nicholas*, *Hart*, *Jesus* (1), *Margaret* (1), *Mary Bonaventure*, *Mary Bride*, *Mary Conception*, *Mary George*, *Primrose*, *Saviour* and *Trinity*. The ships with two owners were the *John Baptist* and *Little Trinity*. The ships with three owners were the *Harry* and *Mary James*. See the introduction to App. 6 and the individual histories.

⁴³ App. 6, *Mary Fortune* of Gloucester and the *Trinity* of Caerleon.

The Benefits of Shipowning

The types and levels of benefit that were achieved from shipowning depended on the way ships were deployed. As will be seen in the following chapters, although the principal activity of Bristol's great ships was commerce, during the period under study they were also involved in crown service and privateering. This was because ships at this time were not highly specialised and all those used in the Continental trade were suitable for naval as well as commercial purposes. Over the following paragraphs the benefits that could be achieved by engagement in these different activities will be considered.

When ships were involved in commercial activities their owners could benefit from them in three basic ways: they could retain control of the ship and sell freight space to individual merchants; they could charter out the whole ship to an individual or group for an agreed sum; or they could use the ship for carrying their own merchandise. From both John Smyth's ledger and the surviving charter parties of the period it appears that the most common practice was for charter parties to be drawn-up for specified legs of particular voyages. These agreements were registered just before a journey was to begin and detailed the journey that was to be undertaken, the level of the freight charged and the time of payment.⁴⁴ They also listed the merchants who were lading on the ship and what each was sending. This level of detail was necessary because the merchants were individually, rather than collectively, responsible to the owner for payment.⁴⁵ Such contracts ensured that Bristol's shipowners maintained a great deal of control over the running of their ships. In order to protect their interests, the merchants buying freight were able to nominate a capemerchant, or supercargo, to accompany the ship and ensure that the cargo was looked after and delivered as quickly as possible.

Apart from selling freight space shipowners could of course also benefit from using their ships to carry their own goods. All of Bristol's sixteenth century shipowners were also

⁴⁴ For a full transcription of one of the *Trinity* of Bristol's charter parties and details of a number of other charter parties of this period see, Vanes, *Overseas Trade*, pp. 82-84

⁴⁵ Smyth's ledger makes it clear that he always paid individual shipowners, rather than a charterer, for freight dues and that individual merchants likewise paid freight dues for the *Trinity* directly to him. Smyth occasionally makes reference to the breaking of his seal from a charter party after his payment had been made. This suggests that each merchant attached their seal to the charter party and thus accepted individual responsibility for payment: App. 6, *Mary Bonaventure* of Bristol (5 December 1541), *Mary George* of Bristol (28 March 1548).

merchants in their own right and by employing their own ship they could cut down on transaction costs and increase their level of control over their merchandise. As will be seen in chapter 3, the vertical integration of merchandising and transportation appears to have been particularly advantageous when engaged in illegal trading activities. However, when involved in legal trading, shipowners frequently decided to split their cargoes and lade a large portion of their goods on other people's ships. This appears to have been done to diversify risk, suggesting that they normally preferred to protect their investments by splitting their cargoes rather than by splitting the ownership of their vessels.

When ships were engaged in crown service, the most direct benefit the shipowners received came in the form of a payment by the Crown of 1s. per ton of capacity for each month a ship was employed.⁴⁶ Beside this the Crown also paid for any repairs that were necessary while the ships were in service and provided compensation to the owners if a ship was lost.⁴⁷ These payments and guarantees would no doubt have been important to shipowners, yet when ships were employed in crown service, shipowners could also benefit in less tangible ways. As will be seen in Chapter 4, during the 1543-46 war with France, the city's shipowners could also become the recipients of royal patronage, by being co-operative and indeed pro-active in their pursuit of the Crown's interests.

The last major form of activity in which Bristol's shipowners were involved in was privateering. When engaged in privateering shipowners customarily received a third of any prizes taken. If they also provided supplies for a venture, they would receive two-thirds of all prizes.⁴⁸ Like crown service, privateering could also win shipowners political patronage from the Crown if they acted in a way that furthered the interests of the Crown or its representatives.

From the above, it should be clear that Bristol ships were involved in a number of different activities during the period under study and the rewards for them were not just financial. Although the activities and benefits that have been mentioned above have been dealt with separately, it was also sometimes possible to combine activities, for instance by engaging in

⁴⁶ *L&P*, XIX, i, nos. 477, 643.

⁴⁷ For references to compensation for ships lost in the 1543-46 war see: *L&P*, XX, ii, no. 69; XXI, i, no. 352.

⁴⁸ K. R. Andrews, *Elizabethan Privateering* (Cambridge University, 1964), p. 46.

privateering during an essentially commercial voyage.⁴⁹ Vessels engaged in such activity are defined by David Starkey as ‘armed trading vessels’ in his studies of eighteenth century privateering and Andrews suggests that this sort of combined activity was probably the most profitable form of privateering in the late sixteenth century.⁵⁰

Conclusion

This chapter has attempted to illuminate the basic economic conditions of the Bristol shipping industry. It has been shown that it was more expensive for shipowners to keep their ships in port than at sea and therefore success in shipowning depended on the maximisation of returns from voyages and the minimisation of port times. For this reason chapters 3 and 4 of this thesis will concentrate on the strategies Bristol’s shipowners adopted to address these issues. Since a major component of a shipowner’s costs throughout the medieval and early modern period were the high fixed costs of the industry, it was expensive to lay ships up for any period of time. As a result it was incumbent on shipowners to try and ensure that their ship was in regular, if not constant, employment. The analysis of the costs of shipping further indicated that only large, and consequently expensive ships, were able to compete effectively in the Continental shipping market.

The section on the risks of shipping revealed that ships were frequently lost through natural disasters or political upheavals and that if this happened shipowners normally had to bear the cost themselves, for shipping insurance was not available. Although it might appear desirable to diversify risk through shared ownership, Bristol shippers clearly did not view this as a viable option and preferred to hedge their bets by dividing their cargoes over a number of ships. Since ships were expensive items, this meant that only Bristol’s richest merchants engaged in the Continental shipping market. This may have limited aggregate investment but, as will be seen, it had important implications for the ability of Bristol’s shipowners to organise collectively to achieve their mutual interests.

⁴⁹ Such a combined venture was made by the Bristol shipowner, John Wynter, in 1537. For one voyage to La Rochelle Wynter placed 50 soldiers on board his ship in the hope of their being able to capture any of the Breton pirates that were troubling the Bristol trade: *L&P*, XII, ii, no. 208.

⁵⁰ D. Starkey, *British Privateering and Enterprise in the Eighteenth Century*, (Exeter, 1990), pp. 51-52; Andrews, *Elizabethan Privateering*, p. 135.

Finally, consideration was given to the returns for engagement in this high-cost and high-risk activity. It was noted that Bristol's ships could be used for military as well as commercial purposes. Given that the high fixed costs of shipping made it expensive to lay ships up during war, the military activity of Bristol ships, and the political and financial rewards that could accrue from such activity, will have to be considered to achieve a complete understanding of the industry.

On the basis of the foregoing analysis it will be possible to examine and interpret the strategies Bristol's shipowners employed to maximise the return on their investments. However, since their behaviour can only be understood in the context of a thorough understanding of the market environment in which they were operating, it will first be necessary to undertake a detailed examination of the nature and development of Bristol's shipping market during the years under study.