An Engine of Commerce Steam Technology and Global Maritime Trade, 1860-1910 Studies in success and failure

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This lecture examines the relationship between 19th century advances in marine steam propulsion and the parallel growth of Britain's overseas trade. Having first examined general technological and industry developments, it then explores their inter-relationship with the growth of trade through four case studies covering first the carriage of passengers across the North Atlantic, it goes on to look at the uncertain mid-century beginnings of steam services to the Australia, and the successful development of long distance trade between the Antipodes and the UK, built around the carriage of wool and frozen meat. The third case study deals with the impact of steam on the China tea trade, the fourth and final one pulls together the various strands of the inter-relationship between steam and trade through an analysis of tramp shipping.

Technology and the Growth of Steam

While steam technology was first applied to the deep sea carriage of mails and passengers in the 1830s and 40s, the inefficiency of early engines and boilers delayed real progress for several decades. The British sailing fleet actually peaked in size in the 1860s, and was still responsible for more than half of overseas trade until the mid 1870s. Steamships only became economical after the introduction of compound and triple expansion reciprocating engines and exponential increases in boiler pressures. In the period before these advances, investment in steamships often produced limited or even negative returns.

The ultimate triumph of steam was attended by the growth and sometimes the initiation of a developing web of long-distance carrying trades. It was assisted by the opening of the Suez Canal in 1869 and of the Panama Canal in 1914, which drove a contracting sail fleet into very long haul, low margin bulk trades. The steamship industry, however, became more and more vulnerable to the global economic cycle, with over-investment resulting in severe fluctuations in both earnings and asset prices. Individual success stories were counter-balanced by a series of corporate failures; and the overall growth of the industry was attended by long-term contraction in margins and, in many cases, parallel decreases in profitability.

The North Atlantic Passenger Trade

The early development of the North Atlantic passenger steamer was only possible because of government subsidization in the form of mail contracts. Although the trade represented the cutting edge of progress throughout, real profitability only became possible after step gains in steam efficiency and carrying capacity helped stimulate the massive expansion of transatlantic emigration in the third quarter of the 19thcentury. Although these simultaneous advances produced long-term success stories such as Cunard and the Allan Line, the pursuit of speed and size continued to drive asset prices up, and many medium size enterprises such as the State Line did not survive periodic imbalances between investment and market size. The

decade before the First World War saw steam technology reach its apogee with vessels such as Cunard's MAURETANIA, but such 'floating palaces' actually required state support to produce adequate returns for shareholders.

The Antipodes - a Tale of Gold and Sheep

The early history of steam on the long-haul passages to the Antipodes was littered by a series of spectacular business failures. The Australian gold rush of the early 1850s produced a short-term explosion in emigration, but nascent steam technology was neither efficient nor reliable enough to exploit the business opportunity. Steam ventures such as the European & Australian Royal Mail were not viable and rarely survived for more than a decade. The long-term survivors in the trade were companies such as Shaw, Savill & Albion which did not replace their sailing fleets until more efficient steamships arrived in the 1880s. Many of the latter companies achieved real growth through the carriage of frozen animal produce, a business which was itself stimulated by advances and investment in steam technology.

Romance and Ruin in the China Tea Trade

The China tea trade was driven by the beverage's status as a luxury item for the UK middle and upper classes. The premium paid for the first fresh teas of each new season created an emphasis on speed, with clipper ships quite literally racing outwards and homewards. The arrival of the compound engine and the near simultaneous opening of the Suez Canal brought steamships into the trade. Sail was quickly driven from the China Sea, but the new tea steamers were built with the same emphasis on speed. The steamers in question became increasingly fast, but only at the expensive of huge engines and high coal consumption. Some companies, such as Skinner's Castle Line, were forced to the edge of bankruptcy, but ultimately the trade itself imploded due to the mass production of stronger tasting Indian tea.

Coal Out - Grain Home

Although fast passenger and cargo liners attracted most media comment, the backbone of steam shipping was the less glamorous tramp. These accounted for most of the bulk trades, gradually driving sailing ships into distant waters. The mainstays of this industry were the carriage of coal outwards and grain homewards. The consumption of coal and wheat both increased incrementally in the 2nd half of the 19th century, but heavy ship building and increased engine efficiency produced both over-capacity and exaggerated cycles in both asset prices and freight rates. The best run companies earned respectable returns, often through buying ships at the bottom of the cycle and selling them at the top, but many other operators struggled to survive. Steam carrying capacity simply increased too much to keep prices, costs and margins in a state of equilibrium.