NBER WORKING PAPER SERIES

FIRST CABIN FARES FROM NEW YORK TO THE BRITISH ISLES, 1826-1914

Brandon Dupont
Drew Keeling
Thomas Weiss

Working Paper 22426
http://www.nber.org/papers/w22426

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 2016

We thank Stan Engerman, Peter Solar, Simone Wegge, and participants at the 2012 Economic History Association conference and the 2012 International Cliometrics Society Conference for comments. We also thank C.J. Berzin for providing some of the data on fares for the years before 1850. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

First Cabin Fares from New York to the British Isles, 1826-1914
Brandon Dupont, Drew Keeling, and Thomas Weiss
NBER Working Paper No. 22426
July 2016, Revised December 2016
JEL No. N10,N11,N7,N71,R41

ABSTRACT

We present a continuous time series on first cabin passenger fares for ocean travel from New York to the British Isles covering nearly a century of time. We discuss the conceptual and empirical difficulties of constructing such a time series, and examine the reasons for differences between the behavior of advertised fares and those based on passenger revenues. We find that while there are conceptual differences between these two measurements, as well as differences in the average values, the two generally moved in parallel, which means that the advertised fare series can serve as a reasonable proxy for movement of the revenue-based fares. We also find that advertised fares declined over time, roughly paralleling the drop in freight rates for U.S. bulk exports, until around 1890, but thereafter increased while freight rates continued to decline. We propose several hypotheses for this divergent behavior and suggest lines of future research.

Brandon Dupont
Western Washington University
Department of Economics
516 High Street
Bellingham, WA 98225-9074
brandon.dupont@wwu.edu

Drew Keeling
Independent Scholar
Zurich, Switzerland
drewkeeling@yahoo.com

Thomas Weiss
3128 Campfire Ct
Lawrence, KS 66049
and NBER
t-weiss@ku.edu

1. Introduction

The 19th century transportation revolution on the North Atlantic resulted fundamentally from the introduction of increasingly efficient coal-fuel marine steam engines, which allowed for the deployment of faster, safer, and above all bigger, oceanic steamships. The resulting time savings, risk reductions, lower transport costs, improved communication, and growing transatlantic ties in business, politics, and society, had widespread and important economic consequences. Economic historians have, however, studied these processes more with respect to transportation of freight cargoes, and to some extent mass immigration in the steerage class, than from the standpoint of luxury class tourism and business travel.[1]

Accelerated by the U.S Civil War of 1861-65, the transition from sailing ships to steamships was first spearheaded in the 1840s by the subsidized carrying of transatlantic mail, where the fixed speed and guaranteed arrival times of the steamships conferred powerful benefits to long distance communication. Lines of transatlantic steamships on regular schedules then captured most first class traffic from North America during the 1850s, immigrant crossings in the 1860s, and freight transport in the 1870s. Although perhaps not as quantitatively important as freight in the nineteenth century, overseas travel has nevertheless been significant and long lasting. Today, well over 30 million Americans travel overseas each year.[2] Expenditures on

[1] See North (1958, 1960), Simon (1960) and Harley (1971, 1988) on ocean shipping rates, and Taylor (1951) for general historical background.

[2] The number traveling to all foreign destinations is over 73 million a year. See *U.S. Citizen Traffic to Overseas Regions, Canada & Mexico 2015.* Retrieved from http://travel.trade.gov/research/monthly/departures/ on 10/20/2016.

travel abroad and passenger fares paid to foreign flag carriers now amount to roughly 30 percent of all service imports in the US International Accounts.[3]

Comparable balance-of-payment measures for the 19th century have been difficult to establish, however, owing to a paucity of systematic time series of travel price data (Gould, 1979; Cohn, 2009). Steerage fares series have been compiled from shipping company sources by Keeling (2007, 2008a), Harley (1990), and Killick (2000, 2014), and can be supplemented by useful additional though less extensive steerage price data sets (for example, Keeling (1999b, 2007, 2008a), Feys (2007) and Hvidt (1971)). North Atlantic freight rate information has been developed and made available by North (1958) and Harley (1988). Statistics on first class ticket prices have lagged, however. Sporadic observations and a few time series of first class passenger fares are available for relatively short periods of time, but there is no long term series representative of the broader industry.[4]

Studies using steerage fare series have indicated that declining prices in the early 19th century helped boost mass migration from the British Isles, although reductions in other barriers also played a role. By late in the century the long term trend of transatlantic steerage fares was flat to slightly upward. With incomes also rising long term, such fares amounted to only a few weeks or months of U.S. wages by the late 1880s, and temporary fare reductions mainly came during fare wars provoked by cyclical downturns in migration. For these later decades, to the limited extent that there even was much of a general association between steerage fares and

[3] US Bureau of Economic Analysis, "Table 2.1 US Trade in Services," Retrieved from http://www.bea.gov/itable on 10/20/2016.

[4] As regards these limitations, see for instance, Aldcroft (1968) and Gould (1979). Nothing like a consistent time series is reported in the Millennium edition of *Historical Statistics of the United States* (Carter, et al, 2006); for sporadic observations and anecdotes, see Cohn (1992), Dulles (1964), Hyde (1975), Levenstein (1998 and 2004), and Tyler (1939). See also the sources used in Kludas (1986) and Keeling (2008a). In this paper, as in the historical literature generally, "first class" and "first cabin" are used interchangeably to refer to the highest priced class of passenger travel.

steerage volumes, the two tended to move together and with volume changes driving price changes more often than vice versa. In the freight segment, fluctuations in transport charges for U.S. bulk exports depended on the interaction of fluctuating American commodity output and variations in shipping capacity. By 1914 steerage fares had climbed back to about where they had been in the 1830s. Freight rates, over the same time period, dropped by roughly half, but with many ups and downs in between.

What were the patterns of first class passenger fares during these many decades of developing long-distance transportation and economic growth? How similar or dissimilar to freight and steerage rates were the processes by which first cabin fares were determined, and what might their effects have been on transportation, travel movements and transnational commerce? Was the trend in fares for luxury class North Atlantic travel in any way akin to the long, uneven, but significant downward trajectory of charges for cargo shipments? Or were first class passage prices more like those in turn-of-the-20th-century steerage, subject to competitive fluctuations but ultimately not of great significance to the travel decisions of potential passengers? To address these issues requires a more comprehensive, consistent, and continuous time series on passenger fares.

In this paper we present a consistent series on passenger fares for North Atlantic travel in first cabin collected from newspaper and magazine advertisements for nearly a century of time, from 1826 to 1915. This series is a revised and extended version of that used by Dupont, Gandhi and Weiss (2012) in their study of the long-term trend in overseas travel.[5] The series presented here extends the time series backward another quarter of a century, increases the average number

[5] This 2012 study of American overseas travel found that demand for such travel was only slightly sensitive to changes in fares, when other factors are taken into account. Note, however, that first class Atlantic crossings were a narrower segment of overseas travel than was examined in that earlier paper.

of fare quotations per year, and reduces the influence of seasonality on fares.[6] And we have compiled both an unweighted and weighted fare series, the latter of which accounts for differences in passenger volumes across shipping companies.

The details involved in the construction of these series are contained in the appendix. There we present the evidence we collected on minimum fares for 12 of the most prominent lines, and explain how we estimated the value in those years for which we were unable to find any advertised fares. We also present the estimates of the passenger volumes by shipping lines which were used to calculate the weighted average fare. In the text, we discuss the merits and shortcomings of the minimum fare series, and compare this new series of advertised fares with the few available revenue-based series for subperiods of time compiled from financial records of several shipping lines.

The two series – advertised and revenue-derived fares – measure slightly different things. The revenue-based fares measure what passengers actually paid; the advertised fares represent the price information on which passengers based their decision to travel. Revenue-based fares are more desirable for some purposes, but as already noted, they are hard to come by, whereas the advertised fares are more readily available. Our comparison of the two different series indicates that they track each other closely, so although the average advertised fares differ somewhat from what passengers actually paid, they accurately represent the *changes* in fares paid. This is important because measuring the changes in price, after all, is the point of constructing a price index.

[6] The standard deviation of the log inflation-adjusted weighted fares is about 25 percent lower than for the fare series used in Dupont, Gandhi and Weiss (2012).

2. Evidence on Fares from Revenue-derived Data

Nineteenth century travel across the North Atlantic was generally well documented yet not the ubiquitous mass routine that it has become since World War Two. Nonetheless, for almost all transatlantic travelers before the 1950s, there was no feasible way to move between Europe and North America other than on a transatlantic ship.

By the mid-1800s, this occurred almost entirely through vessel fleets operated by organized "lines," which by the late 1880s had been consolidated into an oligopoly of large multinational passenger steamship corporations. Most were based in Europe but they had agents in New York, the port to and from which most passengers traveled. Managing and keeping track of passengers was a vital part of this long-lasting transnational mercantile business. The details of every traveler's trip, including fees paid, were recorded and reproduced multiple times by steamship lines, with paper copies of the information going to booking agents, accountants, government authorities, cartel administrators and the customers.

By the late 19th century, North Atlantic steamships were among the biggest human-built spectacles of all time. Thousands of people watched their arrivals and departures; newspapers often reported the names of first cabin passengers. Even in this mostly "open borders" era, passengers -especially emigrants- were also increasingly inspected and tracked by government authorities for health, safety, military, economic, and demographic record-keeping reasons (Brinnin, 1971).

Data on passenger revenues and passenger volumes have allowed researchers to calculate average revenue per passenger. Such revenue-derived fares incorporate variations in fares between vessels due to differences in the size, speed and vintage of the ship, and the location, spaciousness and degree of amenities provided on board. Revenue-based fares can only be

generated, however, where sufficient records have been preserved, and even that derivation can require long hours of research, interpretation and transcription.

The revenue-based fares for Cunard and Anchor, which are shown in Figure 1,[7] depict a roughly congruent pattern over the years in which they can be compared (i.e. after 1900). Fares were rather stable up through 1907, and then rose quite rapidly over the next five years. Although these series cover only a portion of the period for which we have advertised fares, they serve as a useful check on the behavior of the advertised fares, as we show below.

3. Advertised Ocean Passenger Fares

We have used advertisements in a number of newspapers and magazines to construct a consistent long-term series on first cabin passenger fares from 1826 to 1914. This has proved to be an efficient method of collecting enough evidence on fares to be representative of the industry as a whole. The *New York Times*, and other period newspapers and magazines, a number of them readily available on-line, reported ship movements, departure schedules, and contained shipping line advertisements of fares, often on a daily or nearly daily basis across the period. Compiling fares from standardized newspaper advertisements is more feasible than excavating heterogeneous data from the archives of multiple firms. Such a series can cover a longer time period than the fares that might be found for any single company because no company operated for the entire time period; and the series reflects the industry as a whole, providing a broader perspective from which to view the fares of individual lines. Moreover, an advertised fare series has its own merit, namely that it represents the price signals which passengers were likely to

[7] Cunard Voyage Abstracts, Liverpool; Killick (2014) analyses from the archives of the Cope Line of sailing packets has also yielded a series of annual cabin fares (presumably mostly first cabin) for 1822-68. Although that line ran from Philadelphia, its pricing appears to have been representative of New York based packet lines. See also Killick (2000).

have considered when deciding to travel, even though it does not always measure how much was actually paid.

Although it is easier to construct a consistent long term series from advertised fares than from archival data, it is not as simple as it might seem, and the series does have its shortcomings. These reflect the incomplete coverage of shipping lines in the ads available in each year and the nature of the evidence revealed in advertisements. Shipping lines did not advertise all the fares available on each ship, did not advertise fares on all their ships, and not all lines advertised fares in all years.

The last of these deficiencies poses a particular challenge because after 1896 there are relatively few newspaper ads that include fare information. We have not found a direct explanation for the demise of advertised fares at that time, but it appears related to the contemporaneous establishment of the first more or less permanent and broadly international North Atlantic passenger shipping cartel regulations of first class fares.

In order to extend our fares series from 1897 up to 1914, we have therefore used schedules of minimum fare categories set by those cartels (or "conferences"). Although not advertised in newspapers, these fares were reported in news stories and appeared in a number of shipping line brochures. They essentially amount, at least in general, to the travel price levels which *would have been advertised in the press*, had newspaper advertisements for ocean steamer voyages continued to include fares after 1896. So, while we refer to our 1826-1914 series as being 'advertised fares,' it is more accurately a combination of advertised fares up to 1896 and mostly cartel minimums after that.[8]

[8] There are fewer cartel minimum agreements (after 1896) than fare observations for earlier decades, but the cartel schedules typically show fares across the full range of passenger vessels in use, not just those ships with the lowest fares.

The shipping companies' decisions to cease advertising minimum fares in the mid 1890s and rely instead on collaborative inter-firm agreements about minimum fares, specified by vessel, across the various types and generations of ships employed within each line's fleet, was driven in part by shipping lines strategies. Concerned about the risks of high fixed cost shipping capacity which at times could provoke ruinous price slashing, especially during severe cyclical downturns, both corporate and family-owned passenger shipping enterprises were increasingly inclined to emphasize quality improvements over cost reductions. Their marketing approach to the luxury travel market typically centered around demonstrating rapid technical innovations, which had the concomitant result of helping make almost every new ship series bigger faster, safer and more comfortable than predecessors (Keeling, 1999a). Growing overseas tourism of wealthy Americans also seems to have been associated with relative price insensitivity among many first class travelers. A shift away from fare competition may thus also have appealed to shipping lines by making it easier to price discriminate between passenger segments.

For the four decades preceding World War I, Cunard, White Star and Inman/American dominated the UK-US luxury travel market, handling nearly three quarters of the cabin traffic, which was their business mainstay and public relations priority during most of that period.[9] At Cunard, for example, first cabin alone generated half of corporate revenues in the 1890s. Profitability was far from automatic, however. And, from 1894 to 1895, the companies suffered through one of the most severe fare wars of the steamship era in the North Atlantic.[10] Nonetheless, in its wake, the British lines managed to reinforce efforts at technological

[9] As late as 1900, the ten most prominent vessels of those three lines still carried 60% of UK-US first class passengers. Cunard annual reports; Cunard Voyage Abstracts; Keeling (2012), Voyage Database. See also Appendix, Table 3 below.

[10] The rate slashing which arose out of a British-German dispute over transit migration traffic was exacerbated by one the most severe economic recessions in history (Carter and Sutch, 1992, pp. 347-52).

advancement and non-price competition, in part by abandoning over a quarter century of price quoting in their newspaper ads.

US-UK steerage fares were in full downswing by mid-1894. The American Line, whose key concern was in protecting price margins, had already stopped including fare quotes for steerage or cabin that previous January.[11] With steerage prices well on the rise again by April 1895, White Star stopped quoting not only bargain basement steerage fares in its ads, but any fares at all, cabin or steerage. [12] Meanwhile Cunard (which rarely ever published ads with steerage fares) did continue listing first cabin rates, but only until April of 1896 the month that the representatives of major North Atlantic shipping lines, meeting in Liverpool, struck the first of a series of lasting agreements on conference-enforced, by-vessel minimum fares in first and second cabin.[13]

These cartel minimum fare deals encouraged market regularization, and helped protect the profitability of low-end vessels by giving them a price advantage (Murken, 90-188, 644-48).

---

[11] The American Line (ex Inman), which was in something of straddle position in the fare war because its sister company, Belgium's Red Star Line, was part of the German alliance, had its eyes fixed on new U.S. government subsidies recently granted, to help it acquire and operate two of the 1890s world class luxury ships. The general course of the 1894-95 fare war from the American Line's perspective is treated in Flayhardt, pp. 165-69, and from the German lines' standpoint in Murken, pp. 57-61. Hyde's history of Cunard adds little on the fare war, but is roughly consistent, and informative, in coverage of antecedents and aftermath, (Hyde, 1975, pp. 95-107).

[12] Key fare changes during the 1894-95 fare war are traceable in the Cunard Voyage Abstracts and by way of steamship ads in the New York press. *New York Tribune* and *New York Times* ads indicate little change in first cabin rates from June 1894 to May 1895 (Cunard at $60 throughout, White Star at $60, down to $50 on July 14, 1894, then back to $60 on April 27, 1895). Steerage fares, in sharp contrast, plunged by over half during late May through July of 1894, mostly recovering only in April-May of 1895 (Cunard Voyage Abstracts, New York to Liverpool, *New York Tribune*, July 11, 1894, p. 9: White Star steerage, New York to Liverpool at $10 versus $25 the day before). Anchor's ads apparently discontinued during the 1894-95 steerage fare war period, and White Star was alone in consistently displaying steerage fare quotes in its New York press ads.

[13] In the *New York Tribune*, American's last ad with fare quotes (for any class of travel) was on January 25, 1894 (p. 14) and White Star's was on May 13, 1895 (p. 8). Cunard's final ad with fare quotes appeared on April 10, 1896 (p. 10). Meeting in Liverpool that month, American, White Star, Cunard, Anchor and other British lines agreed on minimum second cabin fares on April 8, and on first cabin fares on April 16 (Murken,1922, pp. 93-94).

Keeping publicity about low-end first cabin fares out of daily news advertisements also helped foster renewed focus on improvements in travel quality. It thus makes sense to take into consideration cartel-set pricing in the pre-1914 period, not only because these minimum fares acted, as did the ads before them, as indicators of broader pricing trends, but also because their adoption was a key component of long term changes and continuities in the attitudes toward and role of pricing and price competition within the long-distance oceanic transport business.

Even in the years before cartel pricing became the standard, we were unable to find fares for the same set of shipping companies in every year. In some cases this is because they had not yet begun operation or had ceased operations, but even when companies were still in business they did not all advertise every year. The changing composition of companies that advertised can cause the industry average fare to vary even though the fares might have remained the same for all lines. As described below, we deal with this by calculating a weighted average fare which avoids the consequence of having one or more shipping companies fall out of the sample in a given year.

Another complicating element arising from the use of ad-based fares, is that on almost every ship there was more than one fare and on some there were many individual fares. Most North Atlantic passenger shipping lines offered several categories of passenger travel: first and second class (or first and second "cabin"), as well as steerage class. Within the first class segment itself there were also differences in accommodations and fares: by vessel, time of year, and on-board location.[14] For example, on two ships of the American Line, the *St. Louis* and *St. Paul*, there were 21 different categories of cabins and fares in first class. The difference in fare

[14] When emigrant traffic to the U.S. declined after the passage of the Quota Law of 1921, shipping companies transformed the former steerage space into tourist third class to appeal to lower middle-income travelers. By the 1930s, some companies had converted their second-class space into third class accommodations (Coons and Varias, 2003).

depended on which deck (promenade, upper or main) the cabin was located, whether it was an outside room or inside room, and whether it had a private bath or not (Flayhart, 2000).

Fares varied according to the speed, vintage and size of ships within each shipping line. The fares described above for the *St. Louis* and *St. Paul* differed from those on other ships in the American Line, being slightly higher than on the *New York* and *Paris*, which were 5 years older, and considerably higher than on the *Berlin* and *Chester*, which were considered secondary steamers (Flayhart, 2000). Fares also differed across shipping companies for ships of the same size and vintage. Because not all shipping lines advertised every year, the composition of the sample of fares changes over time and from year-to-year, which could affect the comparability of the average minimum fare we calculate, a point we discuss further below.[15]

Moreover, advertisements may not have always captured changes in fares made within a calendar year, or reflected discounts offered during the year, especially as the time to departure drew nigh.[16] Companies would not have advertised a change in fares if that went against an agreement set by a cartel; those who cheated would not likely advertise that fact. But even without such cartel behavior, firms may not have advertised every change in fare. Indeed, a number of them appear to have placed ads for a yearly schedule and did not bother to change them even when they might actually have altered their fares.[17]

---

[15] Fares differed for other reasons as well. They differed by season and even by day of the week, the latter perhaps reflecting a difference in the ships that sailed on particular days.

[16] Ads would not likely have captured the 25 percent reduction given to those crossing on The American Line's ship *New York* in May 1900. That discount was offered to compensate for the slower speed of the ship as it made its way back to Liverpool for repairs after having lost one of its propellers on the trip westward (Flayhart, 2000, p. 306).

[17] A rare exception was when Cunard on June 3, 1854 (in *The Albion*), advertised schedules and fares for upcoming weekly departures adding, "In consequence of the increased cost of coal, stores and provisions, the price of Passage will increase."

However wide or narrow an assortment of cabins and fares there might have been, the ads did not list them all. Instead, they tended to list the lowest fare in the cabin class – e.g. $80 and up - or a range of fares. Since a typical shipping company ad covered a number of ships operated by that company, the minimum fare was generally for the least expensive ship in the listing. Only a minority of passengers could have traveled at those minimum fares, and those fares would not be useful for estimating the total passenger revenue for a voyage. Nevertheless, they are useful as an indicator of the behavior of fares. The 'average minimum fare' for the industry calculated from advertised quotations serves a role comparable to 'the interest rate' in macroeconomics. Just as movements in 'the interest rate' –say the prime lending rate – are meant to suggest how other rates are behaving, changes in 'the minimum fare' indicate how other fares are moving..

These conceptual and measurement issues, combined with the time-consuming effort of retrieving fares for each year, made the endeavor of constructing a price series more complex than anticipated. Nevertheless, we have collected enough advertised fares for first class accommodations to provide a continuous time series from 1826 to 1914. Our advertised fare series has been compiled from newspapers and magazines, especially from the *New York Times*, the *New York Daily Tribune*, the *New York Tribune*, and *The Albion*. Because New York was by far the single most important port of arrival for passengers traveling to and from Europe, our series is based on fares from just this one port in the U.S. We only recorded fares from ads showing destination ports in the United Kingdom (primarily Liverpool, but also Southampton, London and Glasgow), because a very high percentage of American overseas travelers went to Europe in the period before World War I, and a large fraction of them made these cities in the

UK their first stop.[18] Many advertisements for travel to Liverpool or Glasgow also listed ports of call, such as Cork, Londonderry and Queenstown, and, it seemed appropriate to include fares advertised for these other places.[19] And, our data pertain to one-way fares from New York to Europe.[20] There were very few ads for roundtrip fares, but it appears that they would have been roughly double the one-way fare. Where a first or second class fare for westward passage was advertised, it was typically the same or slightly less than the eastbound fare.[21]

Fares included in our series come from a number of different shipping lines.[22] In each year, we collected fares from advertisements for several lines, recording summer fares - fares for

[18] For much of the nineteenth century, 70 to 90 percent of Americans going overseas went to Europe. The share declined after the Civil War, but still remained above two-thirds up through World War I. (Dupont, Gandhi and Weiss, 2012). Although tourists embarked and disembarked at a number of different ports, New York dominated in terms of numbers of passengers (*Statistical Abstract of the United States*, 1890, Table 153, pp. 210-15; 1886-1909, *Statistical Abstract*, 1909, Table 50; 1909-1919, *Statistical Abstract*, 1920, Table 71). For the period 1871-87, fifty two percent of U.S. cabin passengers came through New York. (These are international arrivals to America, including from regions other than Europe and including second cabin arrivals. Source: Annual Report of the Chief of the Bureau of Statistics on the Commerce and Navigation of the United States.) For 1899-1914, New York accounted for ninety three percent of first cabin passengers embarking for Europe; 42 percent of them traveled to and from ports in the British Isles. Of all UK-bound first cabin passengers from the USA over that period, 90% embarked at New York, and 10% at Boston (Keeling, 2012, Voyage database).

[19] The advertisements did not usually specify any difference in fare to alternative ports when multiple ports in the UK were listed. In any case, fares to these other UK ports account for only 5 percent of our observations and appear to have moved in tandem with those for Liverpool. Some advertised travel to London for little or no difference than the fare to Liverpool, although the trip required a rail journey to London.

[20] For the most part fares are per person in double occupancy cabins. Some ships, mostly in the era of sailing ships, reported only single occupancy fares. Occasionally, some fares included wine, but most did not.

[21] Apparently without exception after 1896, a single conference-agreed minimum first cabin fare -for each vessel class- applied uniformly west- and eastbound. Discounts for roundtrip bookings seem to have been a source of some irritation to conference organizers, however, because the standard practice of 5% or 10% "off the homeward fare" was at times granted, *defacto*, in both directions. The actual discount given evidently remained fairly modest. The 1896 conference deal proscribed roundtrip discounts altogether. From 1902 to 1906, they were "10% off homeward" or effectively 5% of the ad-listed fare. The 1908 conference seems to have effectively abolished them for good up until the First World War. See Murken (1922, pp. 94-94, 102-03, 343, 672).

[22] The sample includes fares from the four most significant and long-lived passenger shipping firms on the New York to Britain route: Cunard, White Star, Anchor, and Inman/American.

sailings in May through August - in almost all instances. Many ads displayed more than one fare or a range of fares for first class that reflected the different locations of the cabin as described above as well as differences in other amenities within that class. With enough additional evidence on the distribution of cabins according to different amenities it would be possible to use the range of fares to construct an average first class fare, but lacking that evidence we used only minimum fares. We took the minimum fare (or the lowest value of the range) advertised for summer sailings for each shipping line and averaged those across all lines to calculate both an unweighted average minimum for the industry in that year, and a weighted average in which the fare for each line is weighted by that line's actual or estimated share of first cabin traffic to the UK from New York.[23]

As can be seen in Figure 2, the advertised minimum fares varied considerably across lines and fluctuated quite a bit from year to year, while the average declined through the end of the 1880s, leveled off for a bit, then swung upward beginning in 1890s. Nominal fares at the end of the period were below those that prevailed on early passenger steamships before the Civil War, and well below fares on sailing vessels earlier in the century, but were not much different than those in the 1870s by which time the cost, speed and safety advantage of second generation steam ships, with screw propellers and metal hulls, had enabled them to capture, from sailing ships, all segments of the North Atlantic passenger traffic. Already by 1864 over 90% of first cabin traffic between New York and Europe was carried on steamships.[24]

[23] Although rather crude, the methodology is similar to that used by Isserlis to construct his classic series on freight rates. See Mitchell (1988). To simplify calculations, a few smaller lines were not used in deriving the weighted and unweighted average series shown in Table 1, in appendix Tables 1 and 2, and in figures 4, 5, 6 and A-1. The largest such example is probably the Atlantic Transport Line, which carried first cabin during the final years of the period; its limited available fares were close to the overall averages, so omitting it has had little effect on those averages.

[24] See Keeling (1999a) and Cohn (2009). The numbers for 1864 are from New York Commissioners of Emigration annual reports.

We think that most of the variation in fares reflects the ups and downs of the economy, as well as the reality of entry and exit into the industry.[25] But, it may also reflect the fact that we were unable to find ads for a consistent subset of firms in all years, even when they were still in business. This would not matter much if the fares for all firms were roughly the same, but they were not as can be seen in Figure 3.

Cunard, the first line to offer regular ongoing transatlantic steamship service beginning in 1840, advertised above-average fares for quite some years, but after 1865 converged towards the levels offered by its leading competitors Inman and Guion.[26] North German Lloyd, by then the leading German-based passenger carrier, also made port calls in England. Initially it advertised fares below Cunard's, but after 1865 almost always had the highest listed prices. In order to have a series that abstracts from variation that reflects the changing composition of the sample, we use a weighted fare series.

The weighted minimum fare series was constructed using actual or estimated shares of first class passenger volume for each line, which varied from year to year.[27] Cunard was the dominant line during most of the period after starting service to New York in 1848, but also typically charged higher fares than most if not all competitors. The weighted fare series thus tends to edge above the unweighted series in years when Cunard's market share was relatively higher than normal. Nevertheless, the weighted and unweighted minimum fares are highly correlated over the period from 1863 to 1914 as can be seen in Figure 4 (the correlation

[25] For example, during the economic slump of the 1890s, Inman, Guion and National (which together had carried upwards of 40% of cabin passengers between the UK and USA during 1860s, '70s and '80s) all went out of business or were shrunk and merged into other lines. See Keeling (2012, pp. 18-19). (Inman was merged into American in 1886 (Bonsor, 1955, p. 235).

[26] There are many other examples of such variations between lines. Typically they were associated with the types of vessels used: faster, larger, more spacious, and more modern ships could and did charge higher fares (Murken 1922, pp. 107-09).

[2727] See the appendix Table A4 for further details.

coefficient is 0.95). The average annual difference between them is about 2 percent, and there are only six years where the differences are greater than 10 percent.

First cabin fares fell steadily until the 1890s, partly reflecting increased competition.[28] By 1889, the average weighted fare was half its 1863 value, but fares began increasing again in the 1890s, somewhat earlier than occurred in the revenue-based fares shown in Figure 1. On the eve of the First World War, both the weighted and unweighted fares had nearly climbed back to the levels of the mid-1860s.

The post-1890 surge in fares was significant, but only partially reversed the longer term decline in passenger fares since 1826. Weighted fares increased an average of 2.6 percent annually between 1890 and 1914, compared to a decrease of 1.4 percent per year between 1826 and 1889. A simple regression of weighted average fares on a time trend from 1826 to 1889 yields a coefficient of -1.4 as compared to 1.75 for the post-1890 period. This reversal in trend for the weighted fares is evident in Figure 4 and is also confirmed by econometric tests for structural breaks.[29]

4. Comparisons between the Behavior of Ad Fares and Revenue-derived Fares

In Figure 5, the average revenue fare series for the Cunard and Anchor lines, available starting in 1883, is compared against the respective advertised minimum fares of those two lines. As expected, for each company, the revenue-based series was always higher than the advertised series, and the two series moved in similar fashion over time. How much higher the revenue

[28] The Herfindahl index fell steadily between the 1860s and 1880s before increasing in the late 1800s and early 1900s. A similar pattern is evident in the three-firm concentration ratios. The two fare series are highly correlated with the HHI: the correlation coefficient between the HHI and the weighted fares is 0.69, and 0.645 with the unweighted fares. Nearly half the variation in weighted fares can be explained by the HHI in a simple OLS regression.

[29] A Quandt likelihood ratio test indicates a break in the year 1893.

fares were above the ad fares could and did vary for several reasons: for instance, companies sometimes altered the range of on-board accommodations and amenities, price differences could shrink or expand with the season and over the life of the vessel, and the composition, tastes and pocketbooks of the traveling clientele also fluctuated.[30]

The example of Cunard illustrates a further source of variation in the revenue fare-ad fare differential: the whole catalogue of first cabin fare categories -from the modest interior rooms to the palatial suites on upper decks- varied *by vessel*. A shift towards more luxury vessels would tend to boost a line's average revenue per passenger without impacting the minimum advertised fare, which was set by the lower end vessels in the company's fleet (regardless of how typical or atypical they were of the line's overall offering). Thus, even though Cunard's revenue fares were above the industry's weighted average advertised fare by 30 to 40 percent for most of the period, the difference widened notably by 1909-14, to 50 percent or more, illustrating the salient role of the vessel mix in determining overall price levels.

After White Star was bought by J.P. Morgan's shipping "trust" in 1902, Cunard, not wanting to suffer the same fate, began a modernization program by which it leapfrogged over the technological level and ship investment programs of its rival firms. The strategy centered on the launch of Cunard's *Lusitania* and *Mauretania* in late 1907. This famous pair were the most expensive and modern vessels of their day and the fastest ocean liners in the world. More crucially, they were extremely popular with all categories of passenger - including those in first class - and in the new and more solid passenger conference (cartel) agreements of early 1908,

[30] Even if the fares for each cabin remained the same from one year to the next, the average revenue-based fare would remain unchanged only if the ships were occupied with the same adult-child and sex composition of passengers. If, as seems typical, fares for the highest priced first class quarters were ten times higher than the low-end minimum priced cabins, one percent of passengers deciding to switch from minimum to top-end accommodations would raise the overall average first class fare paid by ten percent.

they were rated in the highest price category: their minimum first class fare was set at $124 (Keeling, 2007, 2012). The impact of these extraordinarily high minimum fares on Cunard's average fare can be seen in Figure 5. With the *Lusitania* and *Mauretania* included, Cunard's average fare was $25 higher than it would have been without them. The result is that the average weighted fare was about 75 percent of Cunard's if we exclude the *Lusitania* and *Mauretania*; if they are included, the weighted fares are only 63 percent of Cunard's (between 1908 and 1914).

The new Atlantic Conference deals also helped instigate and enforce a general rise in fares after 1908, including at the low end where Anchor advertised. The effect is noticeable in Cunard's revenue based series, as we have just described, but it also shows up in the advertised series. The movement of the advertised series reflects both an increase in the minimum fares by the cartels, even for the slowest vessels, as well as the effect of the surge of cabin passenger traffic enjoyed by Cunard, thus giving Cunard's higher fares a larger weight in the advertised fare series.[31]

Cunard's modernization program was not fully complete until 1914 when the third sister ship, *Aquitania*, joined *Mauretania* and *Lusitania*. In the interim, White Star and HAPAG also built newer ships and drew off some of Cunard's traffic. Ironically, Anchor saw the largest percentage increases in first class passenger traffic between 1908 and 1913, but the annual increase in its first class passenger flow was still less than what *Mauretania* and *Lusitania* took in an average month (and in 1912 Cunard "purchased the entire ordinary share capital" of Anchor).[32] The growth in bookings on the newer, more luxurious – and higher priced - *Mauretania* and *Lusitania* reveals itself in the jump in Cunard's average revenue per passenger.

[31] Most of this surge in passengers was booked on ships with the higher mandated minimum price categories. See Murken (1922, pp 325-360, 671).

[32] See Bonsor (1955, p. 444) and Keeling (2012).

Between 1907 and 1914, the average fare on all of Cunard's vessels rose by 41 percent, but when confined to vessels other than the *Mauretania* and *Lusitania,* the average rose by only 18 percent. Over this same time period, the average advertised fare rose by 40 percent. In other words, advertised fares track rather well the behavior of Cunard's fares, even when Cunard was making large increases in capacity of the most luxurious and highest priced cabins. And, the advertised series behaves very similarly to that for Cunard for the previous 8 years. From 1900 to 1907, Cunard's fares rose on average by only 3 percent while the advertised fare series remained unchanged.[33]

First cabin fares on the pre-World War I North Atlantic varied seasonally to a modest extent (though more than in steerage) and cyclically as well (less so than in steerage).[34] But, more importantly, they also varied by route, line, and -unlike steerage- by vessel and on-board location on the vessel. Revenue-based fares better capture the net effect of these various influences, but such data sets are rare. Thus it is useful to see that while the level of the advertised fare series differs from a revenue-based series – something that would be true even if the latter were representative of the entire industry – it seems to be a reasonable indicator of the long term trend in fares (and, to a lesser extent, of fluctuations in them), and thus provides for a consistent long term series on changes in this key variable that will be useful in reexamining a number of issues in the history of transportation.

[33] The two series changed at much different rates between 1883 and 1900, due largely to the 1883 advertised fare being unusually high relative to Cunard's fares. The advertised fares rose noticeably from 1882 to 1883 when four of the sample firms - Cunard, White Star, Inman and National – raised their minimum fares by 10 percent or more over the preceding year. In 1894 they all reduced them to the 1882 level. About half the divergence between the two series is accounted for by that hike in fares.

[34] See Keeling (2008b, pp. 24-28).

5. General Findings

An important point to take from this investigation into passenger fares is the compatibility of revenue-based fare calculations with time series compilations from contemporary advertisements. Not only have we found that there is statistical consistency between the two series, we also found numerous examples of correspondence and agreement between the fares quoted in newspaper advertisements, and those specified in steamship line brochures, travel agent literature, industry conference agreements and compilations of other business and governmental entities. Indeed these consistencies are not a surprise, given the widespread standardization of regulations, policies, practices, marketing strategies, and public relations of the North Atlantic passenger shipping companies of the period, and their frequently high degree of interdependence and collaboration. This general consistency means that the two can be used together to pursue future research, such as investigating the interplay between publicly marketed prices and actual revenue generation, or possibly working the revenue-derived calculation procedure in reverse, in order to estimate transport company finances from fares and volumes.

Overlapping sources also raise potential for substitution to fill gaps, and for slight differences to perhaps yield insights regarding atypical episodes such as fare wars. Newspaper advertisements can also enable longer time series than, for example, corporate records, and future digitalization of additional historical periodicals may help make resulting time series further extendible across both time and geographical space.

First class advertised fares offer insights into the structure of travel prices across the North Atlantic in the nineteenth and early twentieth centuries. With a larger sample of fares than we have used here, it would be possible to track pricing differences more systematically by category of ship, destination port, shipping line and season of travel. The ads and compatible conference

minimum fare settings show how differences in price offerings mainly stemmed from differences in the types of vessels. Cunard, for example, generally had more higher-priced express liners, whereas Anchor had slower, smaller vessels providing functional yet less luxurious travel accommodations.

Such vessel differences influenced price variation by port, although ports were different for other reasons as well. Fares from New York to Glasgow and London might be generally lower than to Liverpool, for example, partly due to being serviced more by lower-fare category vessels, but also as part of a policy to help smaller ports compete with larger ones. Southampton, in contrast, seems to have used its relative proximity (by rail) to London to develop a niche as a hub or port of call for top-price category vessels of the several lines taking on and disembarking passengers there.

Beyond the general value of fares as a source for illuminating price-setting and structure, the resulting time series they generate can provide meaningful detail on the long term trajectory of travel prices, company competition, as well as exit and entry of firms and ships. The long term trend over 1826 to 1914 on the key New York to Britain corridor was one of first class fare declines over time, up until the late 1880s, with drops in passage prices concentrated on specific episodes (as can be seen in figures 2 and 4). Developing this first consistent series of annual minimum ad fares marks a valuable step towards uncovering the causes and effects of those fares and changes in them, and for making informed comparisons between the rates for cabin travel, steerage travel and freight transport.

6. Comparison of First Cabin, Steerage and Freight, and Possibilities for Future Research

The pattern, trajectory and year-to-year detail of the first class New York to Britain fares series suggest a number of implications for the transportation and economic history of the North Atlantic. A key sub-period of interest is the late 1860s through the 1880s.

Across the nearly three quarters of a century of transatlantic steamship travel from New York prior to the First World War, the middle quarter century after the U.S. Civil War is arguably the most dynamic in general, and for first class travel in particular. In 1866, transatlantic telegraph connections became permanent. America's transcontinental railroad and the Suez Canal were completed a few years later. Communication and transport links were globalizing the world, British ownership dominated global merchant shipping tonnage, and New York and Liverpool were leading international ports anchoring the ends of the premiere long-distance travel corridor (Headrick 1988), pp. 25-27, 50, 99).

A year later Cunard retired the last of its early generation wooden paddlewheel steamships. After a few more years, the four U.K. steamship lines which were to carry over 90% of first cabin passengers between Liverpool and New York up until World War I (Cunard, White Star, Anchor, Inman/American) had all launched vessels with compound engines. These engines reduced fuel costs "by about a half, with a corresponding reduction in bunker requirements and a considerable increase in space available for freight" (Bonsor 1955, 90, 93). By the 1880s, twin propellers, triple expansion engines, and steel hulls were further improving vessel strength, lowering coal requirements, and (by eliminating the need for auxiliary sails) enabling construction of the tall superstructure-laden express steamers which were to characterize "the standard ocean liner" (Keeling 1999b, 46, 68) for nearly a century to follow. A particularly early

and important result of this turning point in international travel was the concomitant sizable increase in the space and amenities available for luxury-oriented cabin class customers.

Steerage and freight traffic also mushroomed during those post-Civil War years: European immigration to America relative to the population reached a historic highpoint in 1882, surpassed only (slightly) during the potato famine era influx of 1850-51 (Keeling 2008a, 267). Over the quarter century ending in 1889, U.S. exports of wheat sextupled in volume, and the huge cargo holds of the new British liners enabled them to all but drive sailing ships and tramp steamers off the North Atlantic (*Statistical Abstracts of the United States*, Harley, 2008 and also 1971; Graham, 1956). But even more striking developments took place in the first class travel segment.

By 1870, 90% of North Atlantic passenger steamers' pre-1914 transit time gain over sailing ships had been achieved, the major U.K. lines were all providing at least weekly departures from New York, and *enroute* mortality was continuing a long decline.[35] Electric lighting and the first forms of refrigeration were soon to become standard onboard features as well. Cabin traffic between New York and the U.K. increased fourfold over the years between 1866 and 1889.[36] At the end of those two and a half decades of huge improvements in service frequency, safety and on-board comforts, first class travelers were, however, paying fares about 40% *lower* (1886-90 versus 1866-70: from data used in Figure 2. See also Figure 6). This buoyant performance before 1890 contrasts noticeably with what took place in first class travel on the New York – UK corridor for the two and half decades *after* 1890, during which first cabin fares increased while first cabin passenger traffic stagnated. What is consistent for both the

[35] For European emigrants of the early 1880s it fell to a level below that of those staying in Europe (Keeling, 1999b).

[36] Some of this increase was in the second class, but available statistics for Cunard show a nearly threefold increase of first class volume alone (NY Commissioners of Emigration, *Cunard Voyage Abstracts*). Re improvement in on-board amenities, see for instance, Brinnin (1971, pp. 273, 279, 363).

decades before and the decades after 1890s is the negative correlation of first cabin fares and passenger volumes, which was stronger than might be expected given that most pre-World War I first class transatlantic passengers were wealthy tourists not especially sensitive to the prices of tickets for the oceanic transit.

Further comparisons of price and volume patterns of first cabin, steerage and freight during 1866-89 corroborate the unexpected degree of negative association between fare levels and passenger tallies in the first cabin.[37] Although steerage fares over these two and a half decades fell about as much as first class fares did, steerage bookings rose by only about two-thirds of the increase racked up in first class. As might be anticipated, first cabin had fluctuations (average deviation from trend) well below those of steerage and freight. The unanticipated result from these comparisons, however, is that negative year-to-year correlation of price and volume for first cabin was not only stronger than that of steerage (whose customers, were after all, not purchasing discretionary leisure) but for that of freight as well.[38]

Explaining why first class fares and passenger volume moved in generally opposite directions so often and for so long will require more research to sort out the relative importance of different variables and competing hypotheses. Consider just the following possibilities involving the interaction between changing fares, the response of shipping managers, and the volume of travel.[39] Does the negative correlation of first cabin fares and volumes, strongest for

[37] Sources for the volume and price comparisons in this paragraph are listed under Figure 6 and Table A5 in the Appendix.

[38] Dupont, Gandhi, and Weiss (2012) estimated an own price elasticity of -0.25 for all passengers to all international destinations. The estimated elasticity using the more restricted first class passengers and fares to the UK that are described in this paper is about -0.5.

[39] As elaborated below, there are a number other factors at work, such as changes in income, in the price of tourist goods and services abroad, in exchange rates, and in the relative price of domestic travel that would need to be taken into account in any explanation. See Dupont, Gandhi and Weiss (2012) and Dupont and Weiss (2013).

the sub-period 1866-89 but also detectable across the full period since 1826 (see Figure 6), reflect budget-minded tourists splurging on European tours during the 1870s and 80s when fares to England were dropping, but vacationing elsewhere after 1890 when the price of oceanic passage rose again? Or did low-end tourist travel to Europe continue to increase after 1890 but only in second class, the fastest growing passenger segment across the final quarter century to 1914? A third scenario is that when growth in tourist travel, which arguably had been driven mainly by improvements to safety, convenience and comfort, slowed with more gradual technical progress after 1890 and increased competition from other leisure pursuits, shipping executives and owners responded differently than before. In the heady boom years after the Civil War, largely unchecked by cartel arrangements, it might be supposed that they threw caution to the winds, expanding capacity even faster than demand, and accepting lower fares, "made up" for -at least in part- by higher volumes. Then, more circumspect after the punishing cyclical downturns of the 1880s and '90s, shipping managers might have changed to emphasizing service quality, risk reductions, and corporate reputation over the pace of revenue expansion, and attempting to make up for a lack of growth in luxury class passenger volume by using route restrictions, governmental barriers, and interfirm cartel deals to keep first class ticket prices propped up. Although we cannot answer these questions here, our new series of annual fares helps make such hypotheses more testable.

An early twentieth century study of ocean steamship management suggested that "ocean fares have fluctuated less, and have, on the whole, been maintained at a higher level than freights" because technological scale economies and increased efficiencies in marine engineering were, for passenger steamers, "largely offset by the additional costs occasioned by increased

speed, comfort, luxury and betterments of passenger service." [40] Our evidence (Figure 7) corroborates that claim of freight rates exhibiting lower fluctuations, but presents a somewhat different picture than presumed with respect to price trends. While they decreased less than did freight rates, long term first class passenger fares also exhibited a general downward drift, up to about 1890. Thereafter movement in passenger fares began to diverge from that of freight rates, trending higher while freight rates continued their long-term decline. This might reflect increased efforts to substantially improve travel amenities as suggested by Johnson and Huebner, and made evident with Cunard's launching of the *Lusitania* and *Mauritania* in 1907. Or it might have been more a matter of passenger lines using stronger cartel price support, especially after 1908, to collect at least some offsetting revenue -through fare increases- for the mild cost inflation incurred since the 1890s and for enhancements provided to passengers. Our consistent series of first cabin passenger fares, for the key New York - U.K. routes, provides a vital measuring stick for use in assessing such possibilities.

Better fare data also make more feasible the exploration of other potential historical overlaps between technological and market developments across the cabin, steerage and freight segments of North Atlantic shipping. How fungible was fixed capital in shipping industries, and how quickly could assets be shifted to a different use? What role did pricing play in the overlapping and interchangeable accommodating of tourists and migrants in second class, and in the overall management of passenger capacity and pass-through of fuel economies in the form of improvements to on-board travel quality? How important were scale economies in price-setting across the passenger segments and vessel categories? To what degree might trends in fares have been significantly related to changes in routing, regulations, and corporate competition, collusion

[40] Johnson and Huebner (1920, pp. 335-337). See also Deltas, et. al. (1999).

and consolidations? How did trends in first class fares from New York compare to patterns of other costs, such as hotel prices or cost of rail travel, involved in a "belle epoch" grand tour of Europe.

Available statistics for freight, steerage and cabin show a roughly six to eightfold increase in volume between 1826 and 1914, which is slightly lower than the contemporaneous increase in the U.S. population. This suggests an only minor stimulating role was played by the approximate halving of Atlantic transit prices for freight and cabin over that span (and for steerage fares, mostly reversed by the end of it).[41] Was the development of first cabin travel ultimately based more on the growth of non-price related market demand than on transportation revolution-related reductions in travel expenses? If so, might this augment and support the similar argument of Jacks and Pendakur (2010) concerning oceanic trade?

And suppose such conclusions were to hold up, i.e. that falling costs of freight shipping and oceanic travel were not key late nineteenth century "drivers" of *either* the contemporaneous "trade boom" or the growth in first class transatlantic travel. If it turns out that lower fares did not induce higher passenger volumes (in other words the *demand* for luxury class tourist travel to Europe in this era was not driven by falling costs of the oceanic transit), what about factors on the *supply* of such travel? With oceanic shipping's expenses famously consisting overwhelmingly of fixed costs, and (using the example of Cunard, 1900-14) with a five percent net profit margin relative to revenues (a quarter of it attributable to first class traffic), a first class passenger traffic relatively unresponsive to fare changes would mean that a ten percent fare hike

[41] Sources for these volumes are those referenced above in the discussion concerning 1866-89 for freight (physical U.S. export quantities), for steerage (proxied by U.S immigration tallies) and for cabin (the measures by which the volume weights used for Figures 2, 4 and 6 were developed).

would increase profits by something approaching fifty percent.[42] One could well imagine such dynamics influencing strategies of the corporations supplying first class travel service. Such considerations also suggest potential for using fares data to measure and evaluate developments in the industrial structure of maritime passenger transport. To what degree, for example, might trends in fares have been significantly related to changes in routing, regulations, and corporate competition, collusion and consolidations?

7. Conclusions

Prior studies of nineteenth and early twentieth century travel, though insightful in many ways, have been limited by a paucity of consistent and continuous data on travel costs. For first class passenger traffic between the United States and the British Isles our research shows not only that such data do exist, but that they can be gathered from various scattered sources and compiled into a reasonably reliable, representative and informative long term time series. First class fares from New York to Britain presented and analyzed here indicate a long term decline in the costs of transatlantic tourist and business travel, between the 1820s and the early 1890s, in some respects more similar than expected to the better-known reduction of costs for goods shipments. Tracing the trends, likely origins and possible impacts of prices for cabin class transatlantic travel, potentially in conjunction with contemporaneous observations of price patterns for freight and steerage, may help future studies uncover and explain economic similarities, differences and interactions between these transport segments, all of which can now be more readily approached with the available assistance of a comprehensive long term series of first cabin fares.

[42] Profit margin per Cunard annual reports, first class portion of revenues per Cunard Voyage Abstracts, attributable profits by travel class per Keeling (2008a, pp. 240-42).

Appendix to

First Cabin Passenger Fares from New York to Great Britain, 1826-1914

Our series on passenger fares for ocean travel in first cabin class was collected from newspaper and magazine advertisements for nearly a century of time, from 1826 to 1914, supplemented in the years after 1896 with evidence from a few advertising brochures, and from shipping conference agreements setting minimum fares by vessel and vessel category. Although the ads contained fares for second cabin, and sometimes for third cabin as well as steerage, we have restricted our series to first cabin fares for summer sailings.[43] All the fares we used were for departures from New York to ports in the United Kingdom because a very high percentage of travelers went to Europe in the period before World War I, and a large fraction of them made the UK their first stop.[44] The most commonly observed destinations listed in advertisements were Liverpool (53%), Southampton (16%), Glasgow (14%, mostly on Anchor line), and London (11%).[45] .

[43] We would like to have had observations that came from ads that appeared in the same month, preferably June, and quoted fares for sailings in June through August. We were unsuccessful in that, but almost all the fares we have recorded pertain to sailings during the months of May through September. In a few instances it is not certain that a fare was for summer sailings. Some ads in April and May, for example, would include sailings in June, suggesting a summer sailing, but the minimum fare advertised might have pertained to only the departures in late May.

[44] For much of the nineteenth century the share of American travelers going to Europe ran between 75 and 90 percent. It declined somewhat after the Civil War, but still remained above two-thirds up through World War I, and even up through the Great Depression (Dupont, Gandhi and Weiss, 2012). Over the period 1900-14, 93 percent of first class passengers between the U.S. and Europe used the port of New York, and 42 percent of them traveled to and from ports in the British Isles (Keeling, 2008a).

[45] In many cases, the advertisements also listed other destinations in the UK, such as Cork, Londonderry and Queenstown. Because these other ports appear to have been substitutes for Liverpool or Glasgow, we included fares advertised for these other places in a few years for which we were unable to find fares for the major ports

We recorded fares from more than 30 different shipping lines, and 30 individual steamships, but our calculations of the industry averages are based on a subset of lines for most of which we had 20 or more annual observations. The total number of observations in the sample is 363. In order to calculate the weighted average fare in the period 1863 to 1914, we supplemented these observations with estimates of fares in those years for which we were missing an observation.[46] Almost all the missing fares were estimated as equal to the average value of fares in the surrounding years for that shipping line. The estimated fares and method of estimation are shown in the notes to Table A2.

On average we ended up with roughly 4 observations per year, although the number varied from 1 or 2 in some years to more than 10 in others. For the years 1826 to 1862 our fares came primarily from three sailing lines (1826-55), Cunard (1848-62), and the Great Western steamship company. For the latter, we have only 11 observations, but they are concentrated in the important period 1838-46, when the industry began the transition from sail to steam.[47] For the period 1863-1914, the calculations are based on fares for eight steamship lines, for each of which we had a fare for 20 years or more.[48]

The unweighted average fares are the simple average of the observations for the fares of those firms in the two subperiods, sail and steam, and the two combined in the period of transition. The average weighted fares for the industry were calculated by weighting the fares for

[46] For the period 1826-1862, we estimated fares for two years, 1847 and 1855. See Table A1.

[47] Near the end of the period we also have observations for several other steamship lines, as shown in Table A1.

[48] The only firm of note that was not among those used to calculate the averages is the Atlantic Transport Line because we could find only 7 observations. In the late 1890s and early 20th century its volume was comparable to that of either German line.

each individual line by its share of the total first cabin passenger volume. These were derived in two parts: 1826-1862 and 1863-1914 as described below.

Passenger Volumes and Weighted Average Fares, 1826 to 1862

For this earlier period, we do not have data on passenger volumes by line, but for the most part this is not necessary because the fares across lines were very similar. For the first part of that period, 1826-37, only sailing vessels operated, and the fare quotes in the ads by the various lines were nearly identical. And from 1838 to 1846, when the Great Western Steamship Company was the only steam alternative to sailing packets, its fares were almost identical to theirs. We thus saw little need for weighting in the years 1826 to 1846, and the average weighted fare equals the unweighted fares.

Beginning in 1847, the fares of different lines began to diverge, even among sailing lines. For 1847, a year for which we have observations for only sailing lines, we assigned a larger weight (2/3rds) to the NY-Liverpool Packets, and a smaller weight of one third to the average fare for the two London based packet lines.[49] According to Coleman (1972, 88), "The packet was entirely an American vessel. The British merchant marine never made any real attempt to compete in this trade."[50] So we assigned a larger weight to the US based NY-Liverpool line.

After 1848, when Cunard began service to New York, fares differed more noticeably across lines, especially the fares of Cunard and the sailing lines, so weighting seemed desirable. Our chief concern was to account for the relative importance of Cunard. Based on the histories

[49] Strictly speaking, we should perhaps have used these same share weights in the years prior to 1847, but because the fares of the different lines were so similar we chose not to do so.

[50] Coleman, *Passage*, 88. See also Hutchins (1941).

of the entry and exit of the various major shipping lines as described in Hyde (1975), Bonsor (1955) and other sources, Cunard and Collins had the lion's share of the passengers in the 1850s.[51] The Collins Line had some of the largest volumes in the 1850s, but it remained in business for only a short time, from April 1850 to February 1858.[52] Because its fares were nearly identical to Cunard we have combined the two lines.[53] As Collins faded out after 1855 Inman and the German lines, and to a lesser extent Anchor, moved into the market. Based on these narratives, we set Cunard (as a proxy for Cunard and Collins) at 70% for 1853-55 when it was at its peak importance. Then, as new steamship competition arose, reduced it to 60% in 1856 and then to 50 percent from 1857 to 1862 as Inman and the German lines entered the market.[54] The assumed weights of 50 percent for Cunard and 50 percent for all others in 1862 is close to the observed value for 1863, and yield a weighted fare for 1862 at the same level as that for 1863.

In the five years before 1853, Cunard and Collins were newcomers to the transoceanic passenger market, which had been the nearly exclusive domain of sailing ships. We put Cunard's share at 40 percent in 1848, to reflect the strength of the sailing lines; then increased it to 50 percent in 1849 and 1850, as sailing vessels became less and less able to compete with the

[51] Hyde, (1975, 38) reports that in 1852 (11 months), Collins carried 4,300 passengers and Cunard 3,000. Although we don't know the total number of cabin passengers in that year, the 7,300 would represent around 70 percent of the total cabin passenger volumes carried in the years immediately after the Civil War.

[52] According to Bonsor (1955, 208-08), Collins was in business from 1850-57, but it ship losses were by early 1856 a "blow from which the Company never fully recovered" (205)

[53] Indeed Collins and Cunard colluded to fix fares, something not revealed until after the demise of Collins.

[54] Sailing fares were not found after 1855, so they are not included in our averages after that. This is of little consequence as the maritime history sources are fairly clear that once Cunard started regular service to New York in 1848, its steamships very quickly captured most of the first cabin traffic from sailing packets. By 1864, sailing vessels carried less than 10% of passenger traffic.

speed and comfort of the steam ships; and then with Collins's entry we raised their combined share to 60 percent in 1851 and 1852.

The residual share of the passenger volume that was not assigned to Cunard was used to weight the fares of the other lines as follows: For the period 1848-55, the non-Cunard share was assigned to the sailing lines in the proportion described for 1847.[55] After 1855, the non-Cunard share was used to weight the average of all the other fares observed, all of which were for passage on steamships.

The fares for individual lines, and the average fares, both weighted and unweighted are shown in Table A1. The passenger volume shares used to calculate the weighted averages are shown in Table A2.

Passenger Volumes and Weighted Average Fares 1863-1914

For the period after 1863 we had more complete evidence on passenger volumes so were able to construct a weighted minimum fare series using actual or estimated shares of first class passenger volume for each of eight lines. The total number of passengers from the UK to the US for each of the British lines was taken from a variety of sources including the New York Commissioner of Emigration, the *New York Times*, and, in later years, records of the Transatlantic Passenger Conference. Estimates for passengers on the two German lines, HAPAG and NGL, were derived by assuming that the German figures equal 10 percent of the total US to UK passenger traffic in each year, and assuming that these passengers were evenly split between

[55] We did not include the $55 fare found for the Great Western Company in 1852. That fare was noticeably out of line with all other fares, and in any case its share of the passenger volume could not have been very large.

the two German lines.[56] Passenger volumes, and therefore the weights based on them, vary from year to year, but Cunard accounted for roughly one-third of passenger traffic between 1863 and 1914, so its fares had substantial influence on the weighted average series.

The fares for individual lines for the period 1863 to 1914, both those observed and those estimated, and the average fares, both weighted and unweighted, are shown in Table A3. The passenger volumes used to calculate the weighted fares are shown in Table A4.

[56] The 10 percent rule-of-thumb is based on the U.S. Special Consular Reports (1895-1905) and the Commerce and Finance series eastbound passenger traffic, which indicate that the German lines carried roughly 10 percent of passengers.

References

The Albion, A Journal of News, Politics and Literature (1822-1876); accessed ; American Periodicals Series Online

Aldcroft, D. H. (1968). The mercantile marine. In D.H. Aldroft (Ed.), *The development of British industry and foreign competition, 1875-1914* (pp. 326-363). London: George Allen.

Bonsor, N.R.P. (1955). *North Atlantic seaway: An illustrated history of the passenger services linking the old world with the new*. Prescot, Lancashire: T. Stephenson & Sons, Ltd.

Brinnin, J. (1971). *The sway of the grand saloon*. New York: Delacorte Press.

Carter, S. and Sutch, R. (1992). "The Great Depression of the 1890s: New Suggestive Estimates of the Unemployment Rate, 1890-1905." *Research in Economic History* 14, pp. 347-376.

Cohn, R. (1992). Transatlantic U.S. passenger travel at the dawn of the steamship era. *International Journal of Maritime History* 4(1), 43-64.

Cohn, R. (2009). *Mass migration under sail: European immigration to the antebellum United States.* Cambridge: Cambridge University Press.

Coleman, T. (1972). *Passage to America.* London: Hutchinson.

Coons, L. & Varias, A. (2003). *Tourist third cabin: Steamship travel in the interwar years*. New York: Palgrave MacMillan.

Cunard voyage abstracts, 1883-1914. Cunard Archives, University of Liverpool

Cunard annual reports, 1885-1914. Cunard Archives, University of Liverpool.

Deltas, G., Serfes, K., & Tomczak, P. (1999). American shipping cartels in the pre-World War I era. *Research in Economic History* 19, 1-38.

Dulles, F.R. (1964). *Americans abroad: two centuries of European travel*. Ann Arbor: University of Michigan Press.

Dupont, B., Gandhi, A., & Weiss, T. (2012). The long term rise in overseas travel by Americans, 1820-2000. *The Economic History Review* 65(1), 144-167.

Dupont, B. & Weiss, T. (2013). Variability in overseas travel by Americans, 1820-2000. *Cliometrica* 7, 319-39.

Feys, T. (2007). Where all passenger liners meet: New York as a nodal point for the transatlantic migrant trade, 1885-1895. *International Journal of Maritime History* 19(2), 245-72.

Flayhart, W. H. (2000). *The American Line: 1871-1902*. New York: W.W. Norton and Co.

Gould, J.D. (1979). European inter-continental emigration, 1815-1914: Patterns and causes. *Journal of European Economic History* 8(3), 593-679.

Graham, G. S. (1956). The ascendancy of the sailing ship, 1850-1885. *The Economic History Review* 9(1), 74-88.

Harley, C. K. (1971). The shift from sailing ships to steamships, 1850-1890. In D. McCloskey (Ed.), *Essays on a mature economy: Britain after 1840* (pp. 215-34). Princeton: Princeton University Press.

Harley, C. K. (1988). Ocean freight rates and productivity, 1740-1913: The primacy of mechanical invention reaffirmed. *Journal of Economic History* 48(4), 851-876.

Harley, C. K. (1990). North Atlantic shipping in the late nineteenth century: Freight rates and the interrelationship of cargoes. In L.R. Fischer & H.W. Nordvik (Eds.), *Shipping and trade, 1750-1950: Essays in international maritime economic history* (pp. 147-171). Pontefract, West Yorkshire: Lofthouse Publications.

Harley, C. K. (2008). Steers afloat: The North Atlantic meat trade, liner predominance, and freight rates, 1870-1913. *Journal of Economic History* 68(4), 1028-1058.

Headrick, D. R. (1988). *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1914*. New York: Oxford University Press.

Historical statistics of the United States millennial edition online. (2006). Retrieved from http://hsus.cambridge.org/.

Hutchins, J (1941). American Maritime Industries and Public Policy, 1789-1914. Cambridge: Harvard University Press.

Hvidt, K. (1971). *Flugten til Amerika eller drivkræfter i masseudvandringen fra Danmark 1868-1914*. Aarhus: Universitetsforlaget.

Hyde, F. (1975). *Cunard and the North Atlantic, 1840-1973*. Atlantic Highlands, NJ: Humanities Press.

Jacks, D. S. & Pendakur, K. (2010). Global trade and the maritime transport revolution. *Review of Economics and Statistics* 92(4), 745-55.

Johnson, E. R. & Huebner, G.G. (1920). *Principles of ocean transportation*. New York: D. Appleton.

Keeling, D. (1999a). Transatlantic shipping cartels and migration between Europe and America, 1880-1914. *Essays in Economic and Business History* 17, 195-213.

Keeling, D. (1999b). The transportation revolution and transatlantic migration, 1850-1914. *Research in Economic History* 19, 39-74.

Keeling, D. (2007). Costs, risks, and migration networks between Europe and the United States, 1900-1914. In T. Feys, L.R. Fischer, S. Hoste & S. Vanfraechem *Maritime transport and migration: The connections between maritime and migration networks* (pp. 113-173). St. John's: International Maritime Economic History Association.

Keeling, D. (2008a). Transport capacity management and transatlantic migration, 1900-1914. *Research in Economic History* 25, 225-283.

Keeling, D. (2008b). The voyage abstracts of the Cunard Line as a source of transatlantic passenger fares, 1883-1914. *Business Archives Sources and History* 96, 15-36.

Keeling, D. (2012). *The business of transatlantic migration between Europe and the United States, 1900-1914.* Zurich: Chronos.

Killick, J. (2000). An early nineteenth-century shipping line: The Cope Line of Philadelphia and Liverpool packets, 1822-1872. *International Journal of Maritime History* 12(1): 61-87.

Killick, J. (2014). Transatlantic steerage fares, British and Irish migration, and return migration, 1815-60. *The Economic History Review* 67(1), 170-191.

Kludas, A. (1986). *Die geschichte der deutschen passagierschiffahrt*. Berlin: Ernst Kabel.

Levenstein, H. (1998). *Seductive journey: American tourists in France from Jefferson to the jazz age*, Chicago: University of Chicago Press.

Levenstein, H. (2004). *We'll always have Paris: American tourists in France since 1930*. Chicago: University of Chicago Press.

Mitchell, B.R. (1988). *British historical statistics*. Cambridge: Cambridge University Press.

Murken, E. (1922). *Die großen transatlantischen Linienreederei-Verbände, pools und interessengemeinschaften bis zum Ausbruch des Weltkrieges: Ihre entstehung, organisation, und wirksamkeit*. Jena: Gustav Fischer.

New York Commissioners of Emigration, annual reports, 1848-1890.

North, D. (1958). Ocean freight rates and economic development 1750-1913. *Journal of Economic History* 18(4), 537-555.

North, D. (1960). The United States balance of payments, 1790-1860. In *Trends in the American economy in the nineteenth century* (pp. 573-628). Princeton: Princeton University Press.

Shipping line and conference brochures and records (various, 1890-1914). See items listed in Keeling (2012), p. 312.

Simon, M. (1960). The United States balance of payments, 1861-1900. In *Trends in the American economy in the nineteenth century* (pp. 573-628). Princeton: Princeton University Press.

Statistical Abstract of the United States. (various years). Washington DC: Government Printing Office.

Taylor, G.R. (1951). *The transportation revolution, 1815-60.* New York: Rinehart and Company.

Transatlantic Passenger Conferences, Reports of the Trans-Atlantic Passenger Movement, New York, 1899-1914.

Tyler, D.D. (1939). *Steam conquers the Atlantic*. New York: D. Appleton-Century Co.

US Bureau of Economic Analysis, "Table 2.1 US Trade in Services," Retrieved from http://www.bea.gov/itable on 10/20/2016.

U.S. Bureau of Statistics, annual reports on the Commerce and Navigation of the United States (1870-94).

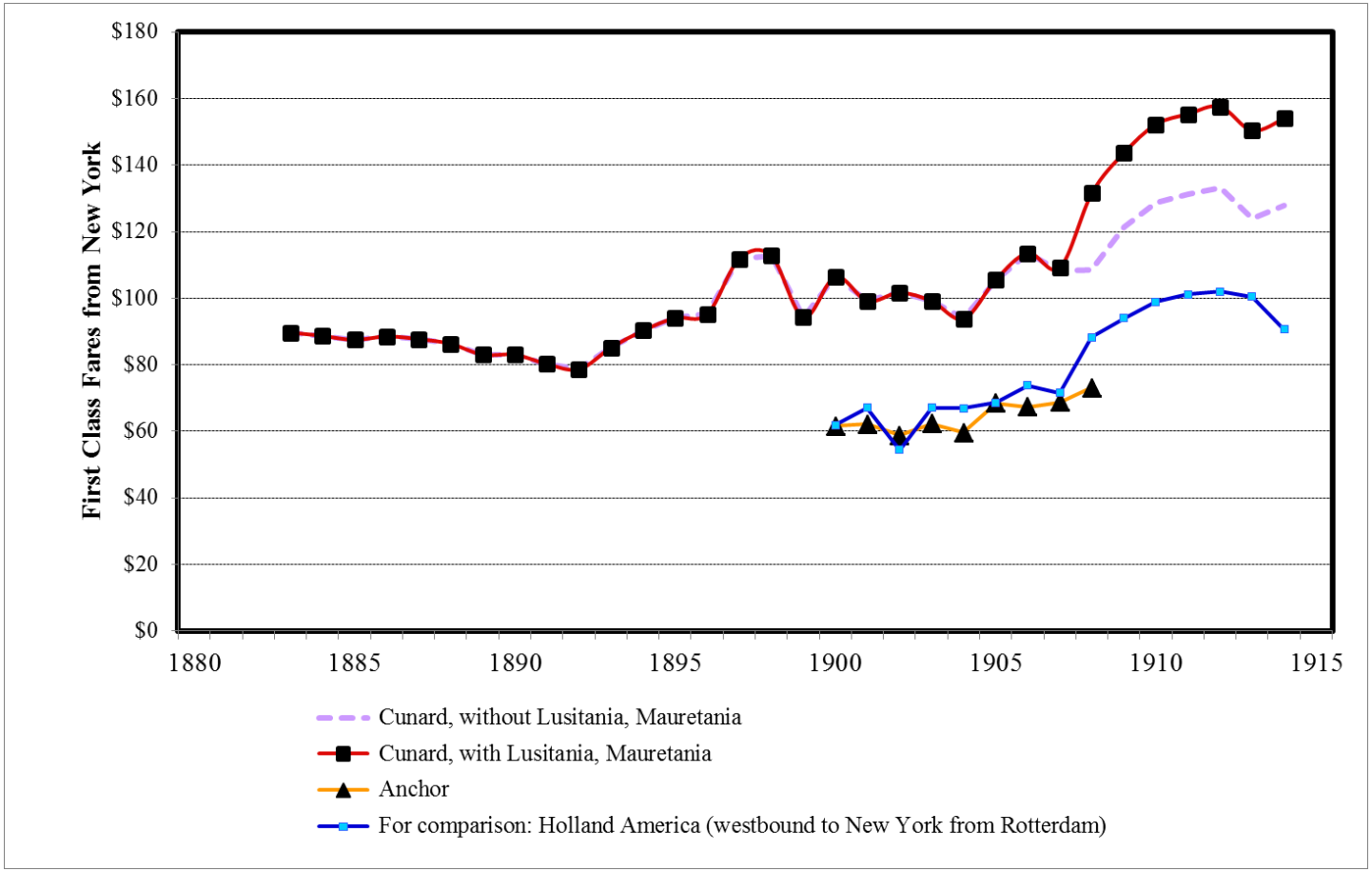
U.S. Bureau of Statistics, tables showing arrivals of alien passengers and immigrants in the United States from 1820 to 1888 (1889). Washington, DC.

US Department of Commerce, Bureau of Foreign Commerce. (1956). Survey of international travel. Washington DC: Government Printing Office.

U.S. Citizen Traffic to Overseas Regions, Canada & Mexico 2015. Retrieved from *http://travel.trade.gov/research/monthly/departures/* on 10/20/2016.

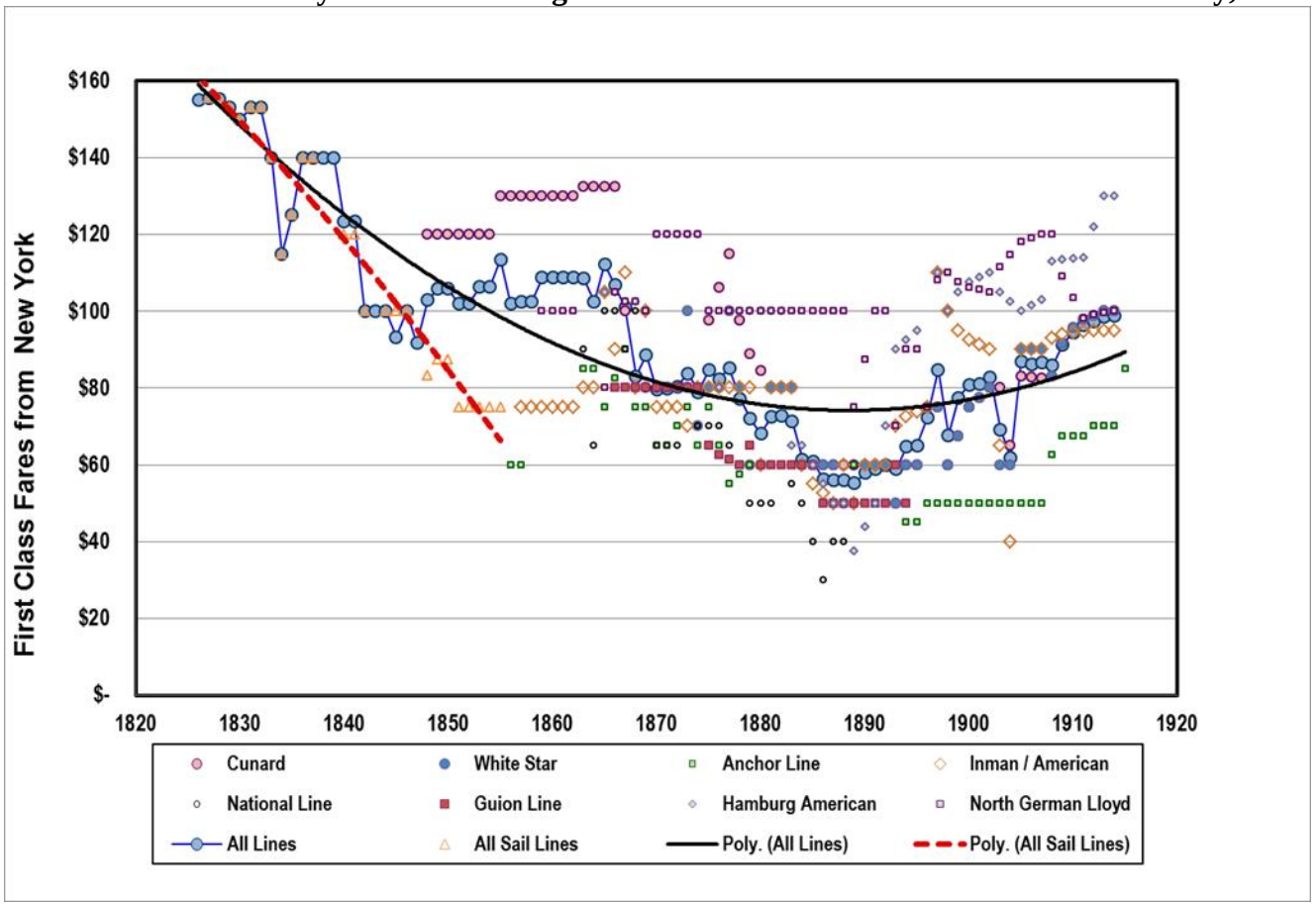
US Office of the Superintendent of Documents. (1895-1905). Special consular reports. Washington DC: Government Printing Office.

Figure 1: Average Annual Revenue-Based First Class Fares from New York to the British Isles, 1883-1914



Sources for Figure 1: Cunard Voyage Abstracts, Keeling (2007), p.p. 164-65, Anchor Line "Passenger Traffic, Glasgow and New York Trade, Glasgow Business History Centre Archive UGD 255/1/2/7

Figure 2: Minimum Fares by Line and Average Minimum Fares for All Lines and for Sail Only, 1826-1914

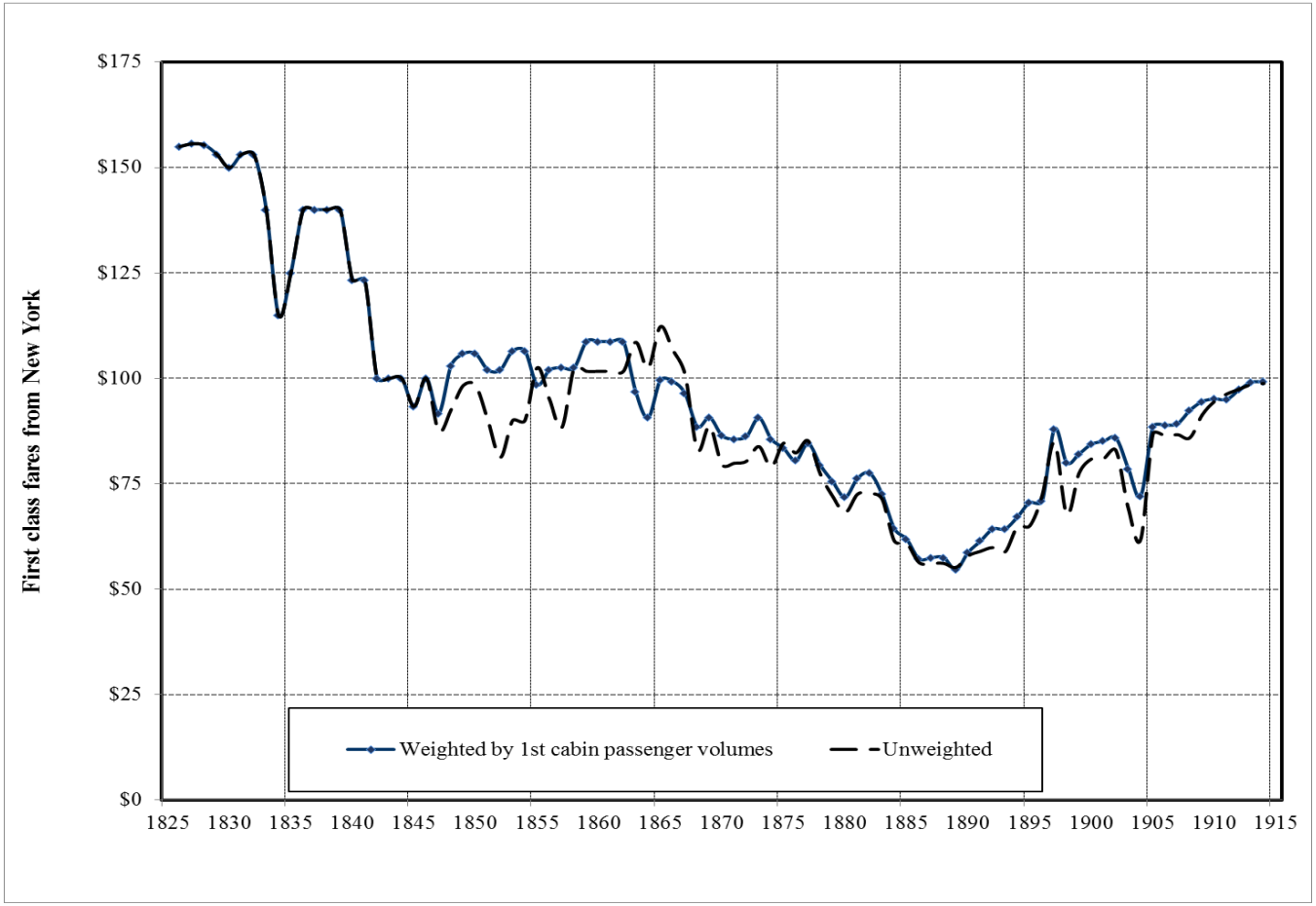


Sources for Figure 2: Advertisements mostly in *The Albion*, 1826-73 and the *New York Times*, 1852-1914; also in *New York Daily Tribune*, *New York Tribune*, and *New York Herald*, various years; cartel minimum fares; and shipping line brochures. For details see Appendix, Tables A1 and A3.

Figure 3: Comparison of Minimum First Class Fares for Selected Steamship Lines, 1848-1914

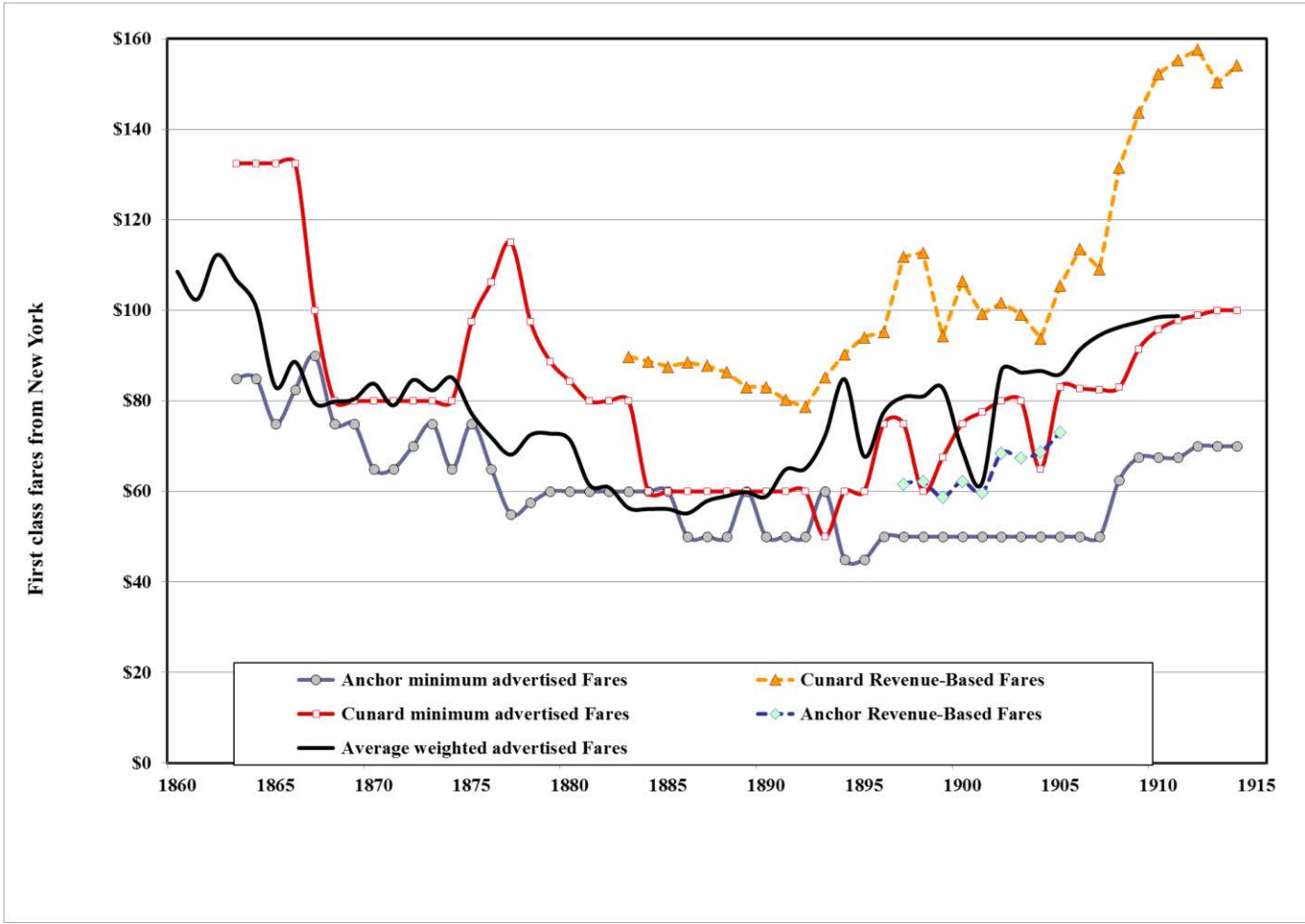
Sources for Figure 3: See Figure 2.

Figure 4: Weighted and Unweighted Average Minimum Ad Fares, 1863-1914



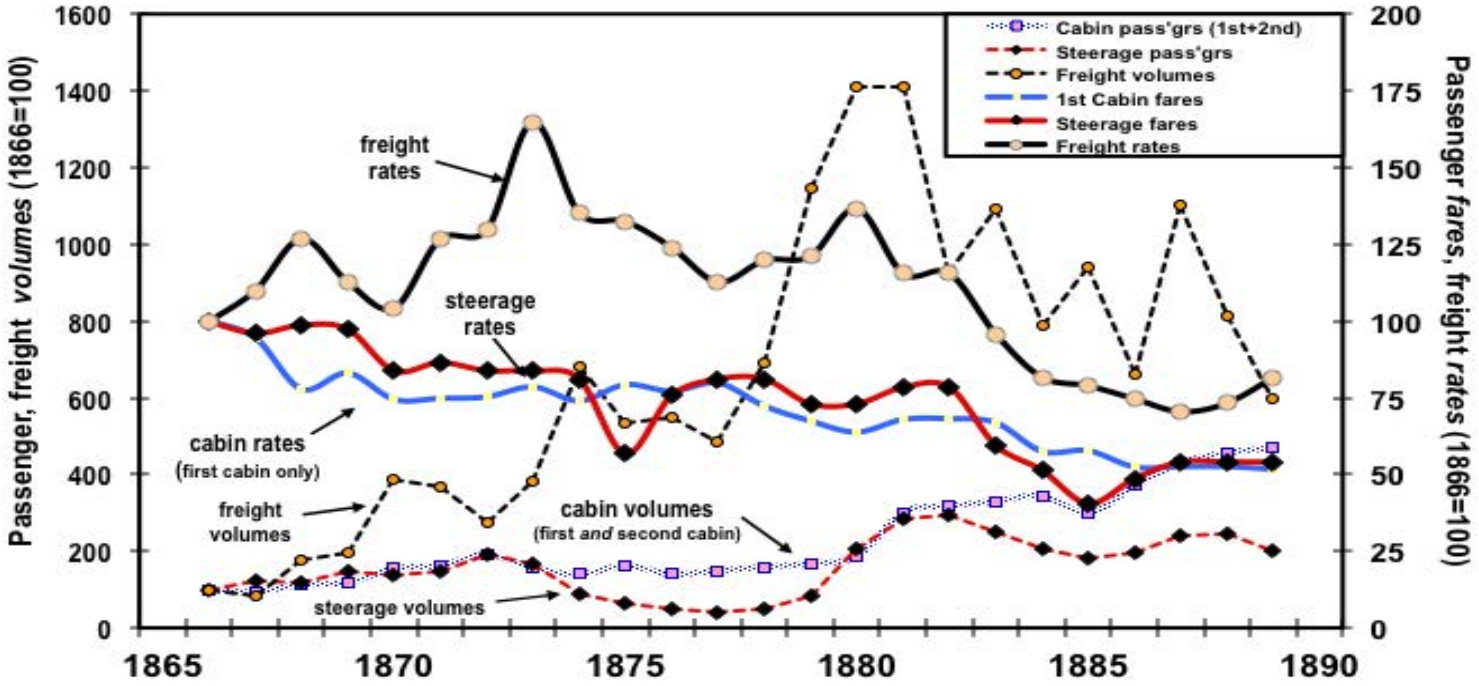
Note: The weighted and unweighted fares are identical before 1847 because ads from New York to London and Liverpool all quoted the same fare in nearly every year between 1826 and 1846. See Appendix Tables A1 and A3.

Figure 5: Comparison of Ad and Revenue-Based First Class Fares, 1863-1914



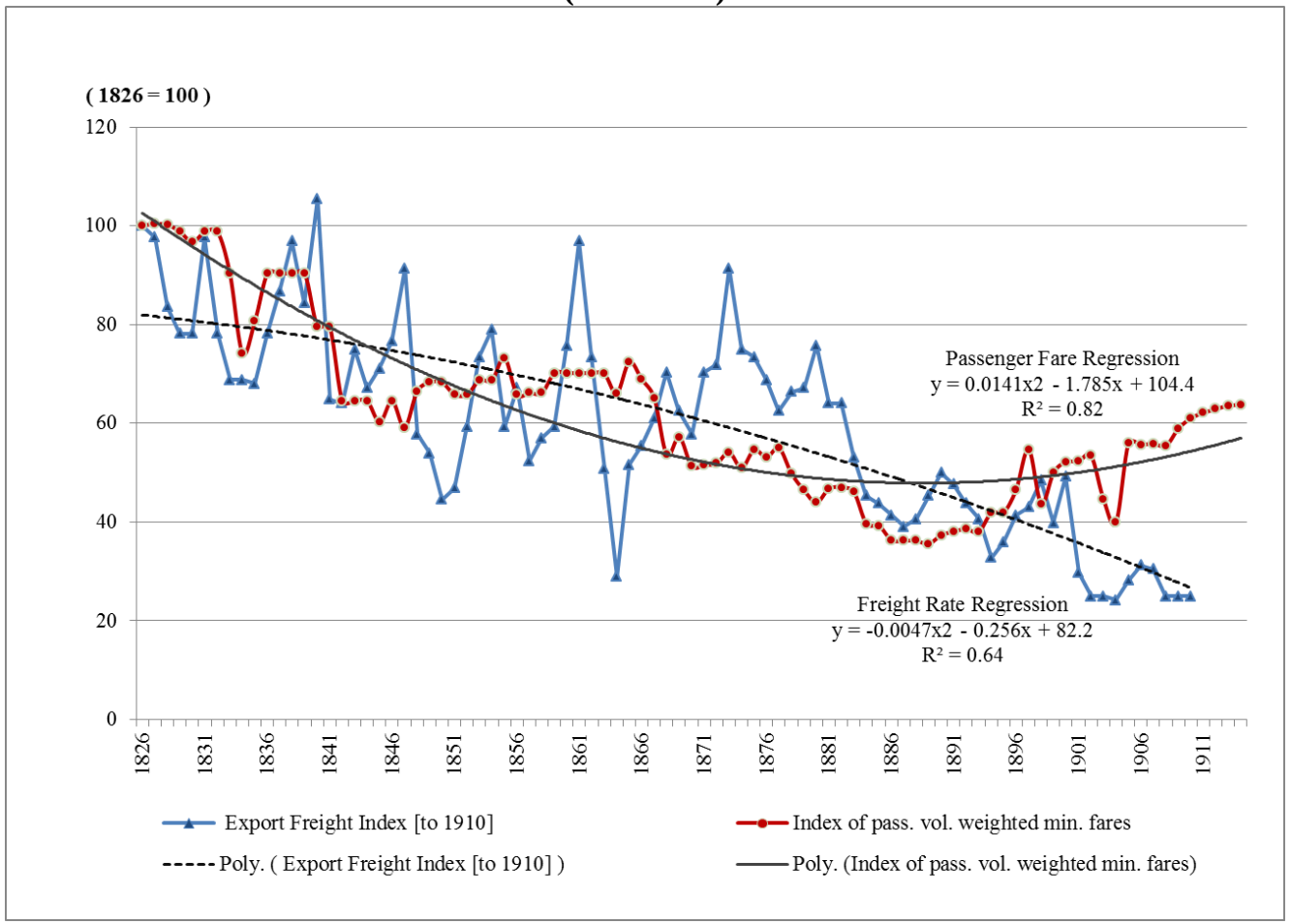
Sources for Figure 5: See Figures 1 and 2

Figure 6: Cabin, Steerage, Freight Volumes and Transportation Prices, 1866-89 (1866=100)



Notes and Sources: Cabin fares are NY-UK; Steerage fares are UK-NY; Cabin and steerage volumes are UK-NY; Freight rates and volumes are US-International. All six time series shown are taken from Appendix Table A5, and indexed at 1866=100. The freight volumes series is a simple average of the two wheat export series shown in Table A5. This weighting is based on the dollar values of the two series being roughly equal by the end of the period (*Statistical Abstract of the United States*, 1891, p. 140, table 167).

Figure 7 Indexes of Weighted Ad Fares 1826-1914 and Freight Rates, 1826-1910 (1826 = 100)



Sources: Weighted average passenger fares are from the appendix Tables A1 and A3. The freight index is from North (1958, Appendix Table 2, p. 549). North's series ends in 1910, but is consistent over nearly the entire period. Other series extending beyond 1910, such as Harley's (1990, Appendix Tables), show a turnaround in freight rates from 1911-13, but this has little impact on the long term trend.

Table 1
First Cabin Passenger Fares from New York to UK
one-way fares in US dollars, 1826-1914

	Unweighted Average Minimum Fares			Weighted Minimum Fares
	Sail	Steam	All	All
1826	155		155	155
1827	156		156	156
1828	155		155	155
1829	153		153	153
1830	150		150	150
1831	153		153	153
1832	153		153	153
1833	140		140	140
1834	115		115	115
1835	125		125	125
1836	140		140	140
1837	140		140	140
1838	140	140	140	140
1839	140	140	140	140
1840	120	130	123	123
1841	120	130	123	123
1842	100		100	100
1843	100	100	100	100
1844	100	100	100	100
1845	100	80	93	93
1846	100	100	100	100
1847	88		88	92
1848	83	120	93	103
1849	88	120	98	106
1850	88	120	98	106
1851	75	120	90	102
1852	75	88	81	102
1853	75	120	90	107
1854	75	120	90	107
1855	75	130	103	99
1856		95	95	102
1857		88	88	103
1858		103	103	103
1859		102	102	109
1860		102	102	109
1861		102	102	109
1862		102	102	109
1863			109	97
1864			102	91
1865			112	100

1866	107	99
1867	101	96
1868	83	89
1869	89	91
1870	80	86
1871	80	86
1872	80	86
1873	84	91
1874	79	86
1875	85	83
1876	82	80
1877	85	85
1878	77	79
1879	72	75
1880	68	72
1881	73	76
1882	73	78
1883	71	73
1884	61	64
1885	61	62
1886	56	57
1887	56	58
1888	56	58
1889	55	55
1890	58	59
1891	59	61
1892	60	64
1893	59	64
1894	65	67
1895	65	71
1896	72	71
1897	85	88
1898	68	80
1899	78	82
1900	81	84
1901	81	85
1902	83	86
1903	69	79
1904	62	72
1905	87	89
1906	86	89
1907	87	89
1908	86	92
1909	91	95
1910	95	95
1911	96	95
1912	97	97
1913	99	99
1914	99	99

Source: See Tables A1 and A2 in the appendix

Table A1
First Cabin Minimum Fares by Line and Averages for All Lines, 1826-1862
(in US Dollars)

	NY-Liverpool Packets	London Line of Packets	NY and London Packets	Cunard	Anchor Britain	Inman/ American	NGL	Great Western	Average Minimum Fares			
									Unweighted			Weighted
	sail	sail	sail						Sail	Steam	All	
1826	155								155		155	155
1827	156		156						156		156	156
1828	155		155						155		155	155
1829	153		153						153		153	153
1830	150								150		150	150
1831	153								153		153	153
1832	153								153		153	153
1833	140								140		140	140
1834	110		120						115		115	115
1835	130		120						125		125	125
1836	140		140						140		140	140
1837	140		140						140		140	140
1838	140		140					140	140	140	140	140
1839	140		140					140	140	140	140	140
1840	140		100					130	120	130	123	123
1841	140		100					130	120	130	123	123
1842	100		100						100		100	100
1843	100		100					100	100	100	100	100
1844	100		100					100	100	100	100	100
1845	100		100					80	100	80	93	93
1846	100		100					100	100	100	100	100
1847	100		75						88		88	92

1848	100	75	75	120					83	120	93	103
1849	100	*75*		120					88	120	98	106
1850	100	75		120					88	120	98	106
1851	75	75		120					75	120	90	102
1852	75	75		120				55	75	88	81	102
1853	75	75		120					75	120	90	107
1854	75	75		120					75	120	90	107
1855	*75*	75		130					75	130	103	99
1856				130	60					95	95	102
1857				130	60	75				88	88	103
1858				130		75				103	103	103
1859				130		75	100			102	102	109
1860				130		75	100			102	102	109
1861				130		75	100			102	102	109
1862				130		75	100			102	102	109

Notes and Sources: For sources of first cabin fares see the notes to Table A3:

We assumed the 1849 fare for the London line of packets was equal to the fare observed in every other year. We did this so that there would not be a spurious upward spike in fares in 1849 due entirely to the absence of a fare for the London line. We assumed the 1855 fare for the NY-Liverpool line was the same as that in the preceding 4 years for which we have observations.

Table A-2
Passenger Volume Share Weights, 1847-62

	Cunard Line	NY-Liverpool Packets	London Packet Lines	All Other Lines
1847		0.67	0.33	
1848	0.40	0.40	0.20	
1849	0.50	0.33	0.17	
1850	0.50	0.33	0.17	
1851	0.60	0.27	0.13	
1852	0.60	0.27	0.13	
1853	0.70	0.20	0.10	
1854	0.70	0.20	0.10	
1855	0.70	0.20	0.10	
1856	0.60			0.40
1857	0.50			0.50
1858	0.50			0.50
1859	0.50			0.50
1860	0.50			0.50
1861	0.50			0.50
1862	0.50			0.50

Notes and Sources: Based on comments by Hutchins (1941), for 1847 we assigned a 2/3rds weight to the NY-Liverpool fare, and one-third to that for the London packets. In the years 1848 to 1855 we assigned these lines the respective 2/3rd and 1/3rd of the non-Cunard share. Great Western was excluded from the calculation in 1852 because its fare seems way out of line. Its share could not have been very large in any case.

Table A3
First Cabin Minimum Fares by Line and Averages for All Lines (US Dollars), 1863-1914

Year	Cunard	White Star	Anchor Britain	Inman/ American	National	Guion	HAPAG	NGL	Average Unweighted Fare	Average Weighted Fare
1863	133		*85*	80	90				97	109
1864	133		85	80	65				91	102
1865	*133*		75	105	100		105	80	100	112
1866	133		*83*	90	100	80	*105*	105	99	107
1867	100		90	110	90	80	*103*	*103*	96	101
1868	80		75	80	100	80	*103*	*103*	89	83
1869	80		75	100	100	80	*100*	100	91	89
1870	80		65	75	65	80	*120*	120	86	80
1871	80	80	65	75	65	80	120	120	86	80
1872	80	80	*70*	75	65	80	120	*120*	86	80
1873	80	100	75	70	80	80	120	*120*	91	84
1874	80	70	65	80	70	80	120	120	86	79
1875	*98*	80	75	80	70	65	*100*	100	83	85
1876	*106*	80	*65*	80	70	*63*	80	100	80	82
1877	115	100	55	80	*65*	*61*	100	100	85	85
1878	*98*	80	*58*	80	60	60	100	100	79	77
1879	*89*	60	60	80	50	65	100	100	75	72
1880	*84*	60	60	60	50	60	100	100	72	68
1881	80	80	60	80	50	60	100	100	76	73
1882	80	80	60	80	60	60	100	100	78	73
1883	80	80	60	80	55	60	65	100	73	71
1884	60	60	60	60	50	60	65	100	64	61
1885	60	60	60	*55*	*40*	60	60	100	62	61

1886	60	60	50	*53*	30	50	*55*	100	57	56
1887	60	60	50	50	40	50	50	100	58	56
1888	60	50	50	60	*40*	50	*50*	100	58	56
1889	60	50	60	50		50	*38*	75	55	55
1890	60	60	50	60		50	*44*	*88*	59	58
1891	60	60	50	60		50	50	100	61	59
1892	60	60	50	60		50	*70*	100	64	60
1893	50	50	60	70		60	90	70	64	59
1894	60	60	45	73		50	*93*	90	67	65
1895	60	60	45	74			95	90	71	65
1896	75	75	50	75			75	75	71	72
1897	75	75	50	110			110	108	88	85
1898	60	60	50	*100*			100	110	80	68
1899	*68*	*68*	*50*	*95*			*105*	*108*	82	78
1900	75	75	50	*93*			*108*	*106*	84	81
1901	*78*	*78*	50	*91*			*109*	*106*	85	81
1902	80	80	50	90			110	105	86	83
1903	80	60	50	*65*			*105*	*112*	79	69
1904	65	60	50	40			*103*	*115*	72	62
1905	83	90	50	90			100	118	89	87
1906	*83*	*90*	50	90			*102*	*119*	89	86
1907	83	90	50	90			103	120	89	87
1908	83	83	63	93			113	120	92	86
1909	*92*	*92*	68	*94*			*114*	*109*	95	91
1910	*96*	*96*	68	*95*			*114*	*104*	95	95
1911	*98*	*98*	68	*95*			114	98	95	96
1912	*99*	*99*	70	*95*			*122*	*99*	97	97
1913	100	100	70	95			130	*100*	99	99
1914	*100*	*100*	70	*95*			*130*	100	99	99

Notes to Table A3:

Figures in italics were estimated as described below. We did not adjust any fares advertised during the Greenback Era because the prices were specified in gold in most instances, or when not so specified the values appear to be equivalent to gold prices. In a few cases the ads stated 'in currency', but converting them to gold would have only a negligible effect on our weighted and unweighted fares series so we made no adjustment.

Sources: *The Albion*, June 17, July 8, Nov 25, 1826; Jan 5, 13, July 5, Dec 1, 1827; Jan. 12, July 5, Dec. 6., 1828; Jan. 10, 1829; Feb. 6, July 3, 1830; Jan 22, July 2,1831; Jan 14, July 7, 1832; Dec. 21, 1833; Jan. 11, July 7, Dec. 13, 1834; July 4, 1835; July 2, 1836; July 1, July 29, 1837; July 7, Nov 3, 10, 17, 1838; Jan. 26, July 14, 1839; May 30, July 4, 1840; Jan 2, May 15, July 3,Aug 7, Sept 4, 1841; Jan 6, Feb 5, April 2,June 18,July 30, Nov 12,1842; Jan. 7, April 1, June 3,July 8, 1843; Jan. 6, July 13, 1844; April 5, July 5, Sept., Nov 1,1845; June 13, 1846; Aug. 7, Sept., Oct. 2, 1847; June 10, Dec. 9, 1848; Mar 20; June 9, 1849,: June 8, 1850; June 7, Dec 13, 1851; May 8, 1852; Jan 1, June 5, 1853; June 3, Dec. 2, 31, 1854; Jan., 6, 1855; May 3, Dec. 13, 1856; Jan. 10, 1857

Appleton's European Guide Book, Part 1, (New York: D. Appleton and Company, 1874, advertisements (no pages listed).

Ellis Island Brochure, 1907

Kludas re: Imperator 1913

The Literary Digest, June 7, 1913, p. 1308

Murken, (1896) 94; Murken (1897) 95-6; Murken (1898) 97-8; Murken (1902) 102-03 Murken (1908) 671;

NGL brochure, 1911

NY Daily Telegraph (Phil) June 23, 1871

NY DailyTribune, April 17, 1852; Mar 23, Nov, 16, 1859; June 11, July 15, 1860

NY Herald Oct 27, 1844; April 1, 1848; May 25, 1855; June 2, July 3, 1871; June 25, 1872; July 3, 1873

New York Times: Oct 7, Nov 11, Nov. 23, Dec 9, 1853; June 17, Sept 1, 1858; May 23, 1859; April 16, June 3, 1861; June 2, 1862; Feb 5, April 1, Aug 1, Oct 3, 1863; April 1, May 24, 28, Aug 1, 1864; June 7, 1865; April 25, 1867; April 11 and May 1, 1868; Mar 8, Oct., 1869; May 11, 1877; May 1, Aug 1, 1879; Mar. 10, May 19, 1880; May 10, 1881; Mar., April 14, 1882; May 1, June 16, 1883; April 26, 1884; May 1, 1885; May 1, 1886; May 6, 1888; April 2, 1889; May 2, 1890; April 4, May 2, 1891; April 1 and May 1, 1893; Jan.2, 3, April 10, June 10, 1894; May 1, 1895; May 2, 1896; May 2, 1897; April 3, May 6, 1898; May 1 1900; Sept. 1, 1901; May 1 1902; May 1, 1903; April 1, Sept. 4, 1904; May 1, 1905; April 1 1906; May 1, 1907; April 2 1908; May 1, 1909; May 1, 1910; May 1, 1911; April 1, May 1, June 13, 1912; May 2, 1913; Mar 1, June 1, Aug 1,1914.

NY Tribune: June 2, 1856; Aug. 17, 1857; June 24, 1858; June 29, 1859; June 29, 1866; July 12, 1870; Jan 2, Sept. 29, 1871; April, 24, June 17, 1872; June 29, 1874; May 22, June 27, 1875; Aug. 30, 1876; June 7, 1878; June 6, 1880; June 2, 1881; June 2, 1882; April 9, 1884; June 2, Oct. 1, 1892; April 9, June 7, 1894; May 2, 29, July 29, 1896; June 9, 1898; May 19, 1904; June 4, July 7, 1909

Fares were estimated for a number of years in order to allow calculation of the weighted average. For the following, the fares were estimated as equal to the average value of fares in the surrounding years for that shipping line.

Cunard: 1865, 1875-76, 1878-80, 1899, 1901, 1906, and 1909-12;

White Star: 1863, 1866, 1899, 1901, 1906, and 1909-12;

Anchor: 1863, 1866, 1872, 1876, 1878, and 1899;

Inman/American: 1885-86, 1894-95, 1898-1901, 1903, 1906, and 1909-12;

National: 1877, 1885; and 1888;

Guion: 1876-77

HAPAG: 1866-70, 1875, 1886, 1892, 1894, 1899-1901, 1903-04, 1906, 1909-10 and 1912;

NGL: 1867-68, 1872-73, 1890, 1899-1901, 1903-04, 1906, 1909-10, and 1912-13.

In addition, we estimated fares for HAPAG for 1888-90 by assuming its minimum fare changed at the same rate as the known fares for NGL. Finally, the 1914 fare for Cunard, White Star, Inman/American, and HAPAG were assumed to equal the 1913 fare for each line, which mirrors the behavior of fares recorded for Anchor and NGL.

Table A-4
First Cabin Passenger Volumes, 1863-1914 ('000s)

Year	Cunard	White Star	Anchor	Inman/ American	National	Guion	HAPAG + NGL ports of call	Total UK to US excl. HAPAG, NGL	All excl. HAPAG, NGL	All (incl. HAPAG, NGL)	Source(s)
1863	2.9			2.3	0.2			6.5	5.4	5.4	CoEm, 72-73
1864	3.2		0.2	3.3	0.5			7.3	7.2	7.2	CoEm, 65-67
1865	3.7		0.5	3.5	1.1		*0.9*	9.0	8.8	9.7	CoEm, 67-69
1866	4.4		0.9	3.5	1.0	0.9	*1.1*	11.3	10.7	11.8	CoEm, 76-81
1867	3.6		1.2	3.9	0.9	0.5	*1.0*	11.0	10.1	11.1	CoEm, 72-76
1868	5.7		1.2	3.7	1.0	0.5	*1.2*	13.1	12.1	13.3	CoEm, 80-84
1869	5.3		1.3	3.4	1.7	1.0	*1.3*	13.6	12.7	14.0	CoEm, 72-76
1870	7.7		1.6	3.6	2.2	1.5	*1.7*	17.3	16.6	18.3	CoEm, 57-62
1871	7.8	1.0	1.4	3.7	2.2	1.4	*1.8*	18.1	17.5	19.3	CoEm, 59-65
1872	8.3	3.3	2.1	3.0	2.5	1.3	*2.1*	21.3	20.5	22.6	CoEm, 9-14
1873	4.2	2.5	2.3	3.5	2.9	1.3	*1.7*	18.4	16.7	18.4	CoEm, 61-67
1874	*5.1*	*2.8*	*2.0*	*3.2*	*3.0*	*1.1*	*1.7*		17.0	18.7	
1875	5.9	3.1	1.6	2.9	3.0	0.8	*1.7*		17.3	19.0	CoEm, 38-42
1876	*6.9*	*4.4*	*4.2*	*3.4*	*3.2*	*2.8*	*2.5*		24.8	27.2	
1877	*7.4*	*5.1*	*5.4*	*3.6*	*3.3*	*3.7*	*2.8*		28.5	31.3	
1878	*7.7*	*5.4*	*6.1*	*3.7*	*3.4*	*4.2*	*3.0*		30.3	33.4	
1879	*7.8*	*5.5*	*6.4*	*3.7*	*3.4*	*4.5*	*3.1*		31.3	34.4	
1880	*7.8*	*5.6*	*6.5*	*3.8*	*3.4*	*4.6*	*3.2*		31.7	34.9	
1881	7.9	5.7	6.7	3.8	3.4	4.7	*3.2*		32.2	35.4	*NYT*, 8-Mar-82
1882	8.0	5.8	5.7	3.3	3.8	7.4	*3.4*	39.0	34.0	37.4	CoEm, 45-46
1883	9.2	5.8	6.4	3.7	2.2	8.0	*3.5*		35.3	38.8	CoEm, 34
1884	10.8	4.9	7.3	5.0	2.5	6.4	*3.7*		36.9	40.6	*NYT,* 13-Jan-85
1885	12.0	5.7	5.5	5.3	0.3	3.2	*3.2*		32.0	35.2	CoEm, 60
1886	13.9	5.5	7.2	5.7	2.1	5.2	*4.0*		39.6	43.6	*NYT,* 7-Jan-87
1887	15.3	6.7	10.1	5.0	2.5	6.5	*4.6*		46.1	50.7	*NYT,* 6-Jan-88
1888	16.7	6.9	9.5	6.8	2.8	6.2	*4.9*	53.0	48.9	53.8	*DailyA,* 18-Jan-90
1889	*15.0*	*9.5*	*9.2*	*8.0*		*6.1*	*4.8*		47.7	52.5	
1890	15.3	12.1	8.8	9.2		5.9	*5.1*	54.9	51.3	56.4	CoEm, 131
1891	14.7	13.2	7.3	*11.7*		*6.7*	*5.4*		53.6	58.9	*NYT,* Aldcroft, 357
1892	16.1	14.1	8.4	14.1		7.5	*6.0*		60.2	66.2	SanRep,277
1893	18.5	13.3	*7.5*	14.4			*5.4*		53.7	59.1	Fry, Appendix 3
1894	18.4	11.5	*7.1*	18.3			*5.5*		55.3	60.8	Fry, Appendix 3
1895	18.8	11.8	6.6	16.1			*5.3*	56.2	53.3	58.6	*NYT,* 7-Jan-96
1896	18.0	11.8	*6.6*	16.8			*5.3*		53.2	58.5	*NYT,* 10-Jan-97
1897	15.2	10.1	6.5	14.4			*4.6*	48.3	46.2	50.8	*NYT,* 9-Jan-98
1898	16.7	10.3	5.1	5.0			*3.7*	40.9	37.1	40.8	*Times,* 26-Jan-99
1899	9.9	8.5	1.6	8.4			*2.8*	31.5	28.4	31.2	Tr-A
1900	9.3	9.1	2.4	9.0			*3.0*	34.7	29.8	32.8	Tr-A
1901	8.4	11.3	2.2	6.2			*2.8*	33.2	28.1	30.9	Tr-A
1902	7.2	11.0	2.1	7.4			*2.8*	32.6	27.7	30.5	Tr-A
1903	6.6	12.5	2.0	4.5			*2.6*	29.5	25.6	28.2	Tr-A
1904	5.9	13.0	1.7	4.2			*2.5*	28.9	24.8	27.3	Tr-A
1905	8.2	13.5	2.6	5.6			*3.0*	33.9	29.9	32.9	Tr-A
1906	9.1	11.9	2.9	5.7			*3.0*	33.3	29.6	32.6	Tr-A
1907	11.0	15.5	3.0	5.1			*3.5*	38.3	34.6	38.1	Tr-A
1908	12.9	14.3	2.0	3.6			*3.3*	36.0	32.8	36.1	Tr-A
1909	14.4	13.6	2.1	3.4			*1.7*	37.0	33.5	35.2	Tr-A
1910	15.7	14.9	2.7	3.9			*1.9*	40.7	37.2	39.1	Tr-A
1911	14.7	15.6	2.6	3.3			*1.8*	39.4	36.2	38.0	Tr-A
1912	14.0	13.0	2.7	2.6			*1.6*	35.2	32.3	33.9	Tr-A
1913	13.0	14.0	2.9	2.0			*1.6*	35.8	31.9	33.5	Tr-A
1914	13.6	7.7	2.2	0.0			*1.2*	26.9	23.5	24.7	Tr-A

Sources for Table A4:

Aldcroft = Derek Aldcroft, ed., *The Development of British Industry and Foreign Competition* (1968)

CoEm = *New York Commissioners of Emigration*, annual reports

DailyA = *Daily Alta California*

Fry = Henry Fry, *The History of North Atlantic Steam Navigation* (1896)

NYT = New York Times

SanRep = *Abstract of Sanitary Reports*, US Treasury Dept. (May, 1893)

Times = *The Times* (London)

TR-A = Transatlantic Passenger Conferences reports, New York, 1899-1914

Italicized entries are estimates: see also notes to Table A3

For 1863-98, figures shown are cabin (total of first and second); for 1899-1914, first cabin only.

Table A5
Comparative Data on Cabin, Steerage, Freight (Exports)
NY-UK, except as indicated, 1866-1889

	Rates			Volumes		U.S. wheat exports	
	1st Cabin fares	Steerage fares	US Export Freight Index (1830=100)	1st & 2nd Cabin pass'grs	Steerage pass'grs	grain (bushels mil)	flour (barrels mil)
1866	$ 107	$ 37	71	10.7	155.3	6.0	2.2
1867	$ 101	$ 36	78	10.1	193.4	6.0	1.4
1868	$ 83	$ 37	90	12.1	180.1	16.0	2.0
1869	$ 89	$ 36	80	12.7	228.9	17.0	2.4
1870	$ 80	$ 31	74	16.6	212.5	37.0	3.4
1871	$ 80	$ 32	90	17.5	228.7	34.0	3.7
1872	$ 80	$ 31	92	20.5	293.2	26.0	2.5
1873	$ 84	$ 31	117	16.7	255.5	39.0	2.5
1874	$ 79	$ 30	96	15.0	140.0	71.0	4.0
1875	$ 85	$ 21	94	17.3	100.0	53.0	4.0
1876	$ 82	$ 28	88	15.0	74.5	55.0	3.9
1877	$ 85	$ 30	80	16.0	64.0	49.0	3.3
1878	$ 77	$ 30	85	17.0	78.7	72.0	3.9
1879	$ 72	$ 27	86	18.0	128.5	122.0	5.6
1880	$ 68	$ 27	97	20.0	321.0	153.0	6.0
1881	$ 73	$ 29	82	32.2	441.1	150.0	7.0
1882	$ 73	$ 29	82	34.0	455.5	95.0	5.9
1883	$ 71	$ 22	68	35.3	388.3	106.0	9.2
1884	$ 61	$ 19	58	36.9	321.2	70.0	9.1

1885	$	62	$	15	56	31.9	281.2	84.0	10.6
1886	$	56	$	18	53	39.6	300.9	57.0	8.2
1887	$	56	$	20	50	46.1	371.6	101.0	11.5
1888	$	56	$	20	52	48.9	383.6	65.0	11.9
1889	$	55	$	20	58	50.1	314.4	46.0	9.4

Sources for Table A5

1st Cabin fares: Table A3

US Export Freight Rate Index: North (1958), see Figure 7.

1st & 2nd Cabin Passengers: Table A4

U.S. wheat exports: *Statistical Abstract of the United States*, 1878, p. 123, table 118, and 1891, p. 186, table 132.

Steerage Fares:

New York Tribune advertisements between May 1 and May 15 of each year,* weighted 1/3 White Star, 1/3 Inman, 1/6 Guion, 1/6 National. A pro-rating was done whenever ads did not turn up for any of those four lines. Cunard evidently included no steerage fares in ads; the German lines (rarely) and Anchor (usually) did list fares but they were close to the average of the others. The overall annual averages were then computed by the formula 2/3 westbound to New York, and 1/3 eastbound. A small sample of *New York Times* ads showed close congruence to the *New York Tribune* listings.

For the following years where press ads were not found, or considered sufficiently complete, alternate estimations were made (currency conversions were £1 = $4.86):

1875 (£4.3): Average of three quotes (£4.1 Inman, £3.7 Guion, both instructions to agents

From Balch collection, www.balchinstitute.org/resources/destinations/html accessed August 14, 2009,

£5.25 Liverpool Steamship Conference agreement of June, 1875 (Hyde, p. 97). Inman and Guion also quoted same rates eastbound as west.

1877 (£6.3): Official Guide and Album of the Cunard Steamship Company (London; Sutton Sharpe and Co., 1877, Cunard Archive R/ HE945.ca ca 7, p. 31).

1880 (£5.3): Guion, “Rates and Conditions” (apparently for agents), Balch Collection (above)

1884: Cunard Voyage Abstracts [Keeling (2008)]

1883, 1885, 1886: 1/2 New York Tribune ads, 1/2 Cunard Voyage Abstracts

Steerage Volumes: See Appendix Table 3

* We measured eastbound and westbound volumes together where available (Cunard Voyage Abstracts from 1883) and westbound otherwise (New York Commissioners of Emigration, and U.S. Treasury Department Bureau of Statistics), May was the peak month for steerage travel.