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, Simone Wegge, and participants at the 2012 Economic History Association 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
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

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

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

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 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.

[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*. Re international accounts: US Bureau of Economic Analysis, "Table 2.1 US Trade in Services," (accessed April 13, 2016): http://www.bea.gov/itable/iTable.cfm?ReqID=62&step=1#reqid=62&step=6&isuri=1&6210=4&6200=160

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. 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.[3]

Studies using steerage fare series have indicated that declining prices in the early 19th century helped boost mass migration from mid-century 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 steerage volumes, the two tended to move together, not oppositely, 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

[3] As regards these limitations, see for instance, Aldcroft (1968 p. 351) and Gould (1979 p. 611. 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).

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 over 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 travel versus non-travel decisions of potential passengers? These are issues helping motivate this study, and to address them effectively, more comprehensive, consistent and continuous time series data on fares are indispensable.

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.[4] The series presented here extends the time series backward another quarter of a century, increases the average number of fare quotations per year, and reduces the influence of seasonality on fares. And we have

[4] This 2012 study of American overseas travel found that demand for such travel was sensitive to changes in fares, among other factors. Note, however, that first class Atlantic crossings were a narrower segment of travel.

compiled both an unweighted and weighted fare series, the latter of which accounts for differences in passenger volumes across shipping companies. We 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. Such revenue-based fares are similar to the sorts of prices that the Bureau of Labor Statistics collects to calculate the Consumer Price Index, and thus might be the more desirable evidence on fares. They are, as already noted, 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.

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.
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.[5]

Data on passenger revenues and passenger volumes have allowed researchers to calculate average revenue per passenger. Such revenue-derived fares take into account 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 are shown in Figure 1,[6] and both depict a roughly congruent pattern over the years in which they can be compared, that is since 1900. Fares were rather stable up through 1907, and then rose quite rapidly over the next five years.

[5] Brinnin, 1971, pp. 300, 332).

[6] 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). The quarterly westbound Rotterdam fares 1903-13 of Keeling (2007), though not from US to UK routes, show a considerable correlation to fare patterns on those routes (see also Figure 1 below).

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.

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 1915. 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 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 nature of the evidence revealed in advertisements and the incomplete coverage of shipping lines in the ads available in each year. 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, especially late in the period.[7]

Using advertised fares is, however, a way to avoid the distortions arising from average fare measurements which reflect the lumping together of standard first class cabins with palatial suites of luxury staterooms, and a range of price categories in between. 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.

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 passengers 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.[8] 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 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.[9]

Not all ships had such a wide assortment of cabins and fares, but even when there were fewer fares 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

[7] Given the scarcity of advertised rates after 1896, we extended our series up to 1914 using minimum fares established by the North Atlantic passenger ship cartels or conferences.

[8] 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).

[9] Flayhart (2000), p. 208).

number of ships operated by that company, the minimum fare was generally for the least expensive ship in the line. We view the 'minimum fare' for the industry that we calculate from advertised quotations as serving a role comparable to 'the interest rate.' 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 in that class are moving, even though there are many other factors at play.

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.[10] 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.

Fares differed for other reasons as well. They differed by season and even by day of the week.[11] The adult fare differed from that of a child. Although all the fares we collected were for departures from New York, the ports of disembarkation differed.[12] Moreover, advertisements may not have always captured changes in fares within a calendar year, or reflected discounts offered during the year, especially as the time to departure drew nigh.[13] Companies would not

[10] Flayhart (2000, pp. 208-210).

[11] The latter may reflect a difference in the ships that sailed on particular days.

[12] To improve consistency, we confined the destinations to ports in the United Kingdom.

[13] Ads would not likely have captured the 25 percent reduction given to those crossing on The American Line's ship *New York* in May 1990. That discount was offered to compensate for the slower speed of the

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.[14]

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 1915. 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.[15] Many advertisements for travel to Liverpool or Glasgow also listed ports of

---

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).

[14] 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."

[15] 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). 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,

call, such as Cork, Londonderry and Queenstown, and, it seemed appropriate to include fares advertised for these other places. Moreover, the advertisements did not usually specify any difference in fare to alternative ports when multiple ports in the UK were listed.[16] And, our data pertain to one-way fares from New York to Europe.[17] 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.[18]

Fares included in our series come from a number of different shipping lines.[19] In each year, we collected fares from advertisements for several lines, recording summer fares in almost

---

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). New York also dominated in numbers of observations on fares.

[16] Fares to all 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.

[17] 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. Some of the fares include wine, but some do not.

[18] 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).

[19] 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. During the steamship-only era, 1863-1914, these lines collectively carried over 80% of first cabin passengers on that corridor (based on passenger volume data used in Figure 4 below) and most of those lines listed ads with fare quotes in nearly all of those years, at least up to the late 1890s, after which most ads stopped including fares.

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. [20]

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.[21]

[20] Although rather crude, the methodology is similar to that used by Isserlis to construct his classic series on freight rates. See Mitchell (1988).

[21] 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.[22] 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.[23] North German Lloyd, by then 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 constructed a weighted fare series described below.

It can also be seen in Figure 3 that ads for these firms disappear almost completely by the middle of the 1890s. They simply stopped posting fares. They continued to advertise: the space devoted to ads in the *New York Times* seems greater near the end of the nineteenth and in the early twentieth centuries than it was in the middle of the nineteenth century; and the ads for the major firms were larger than in earlier years and better illustrated. But they lacked fare quotations. The boom in "grand tours" of Europe by wealthy Americans generated a class of travelers who perhaps did not need reminders of the amount of an often relatively minor expense,

[22] 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 business or were shrunk and merged into other lines. (Inman was merged into American in 1886 (Bonsor 235).

[23].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).

and who were happy being known as "above" such mundane trivial details. After the recession of the early 1890s, the shipping conference agreements of 1896 and 1898 marked the start of a period of mostly sustained collusion between the UK-US passenger lines on cabin pricing. Shipping lines preferred confidentiality on prices, both because the high risk of fare wars breaking out in their very low variable cost business made it advantageous to not publicize rate reductions, and because it was easier to price discriminate between segments of the traveling public if differentially applied fare hikes were not emphasized.[24]

We constructed a weighted minimum fare series using actual or estimated shares of first class passenger volume for each line.[25] 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 other newspapers, and, in later years, records of the Transatlantic Passenger Conferences. 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 the two German lines.[26] Passenger volumes, and therefore the weights based on them, vary from year to year, but Cunard accounted for roughly one-third of westbound passenger traffic between 1863 and 1914, so its fares had substantial influence on the weighted average series. 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

[24] Keeling (1999a, pp. 196-97, 203), Murken (1922, pp. 78-118). In order to have more evidence on fares in the post-1896 period, we have supplemented our advertised data with those cartel fares established by the transatlantic passenger conferences and reported in Murken (1922) and elsewhere.

[25] See figure 4.

[26] The 10 percent rule-of-thumb is based on the U.S. Consular Report series and the Commerce and Finance series eastbound passenger traffic, which indicate that the German lines carried roughly 10 percent of passengers.

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 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.[27] 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 but it is also confirmed by econometric tests for structural breaks.[28]

[27] 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.

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

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

Although the average revenue-based fares differed from the advertised minimum fares, the two moved in similar fashion over time – at least for the period after 1883 for which we can make comparisons. The comparisons for specific lines shown in Figure 5 indicate what we would expect: the revenue-based series, both that for Cunard and for Anchor, are consistently higher than the advertised fares for those respective lines. Because the prices of accommodations on every ship ranged well above the minimum for standard first class cabins, the average revenue-based fares are naturally higher than the advertised fares. The differences, however, were not uniformly the same, and would not necessarily be so even if the fares for the various categories of first cabin accommodations remained the same, because passengers may have rented more luxury suites one year and less in another.[29]

The comparisons also show that while Cunard's average revenue-based fares differed from the average minimum advertised fares for all lines over the period 1883-1914, to a large extent Cunard's fares and the average for all lines moved together over the period. The difference between the two did not change much over time: the weighted advertised fare was consistently between 60 and 75 percent of Cunard's fare with only a few exceptions. The two series were closer in 1901 and 1907, when the advertised average minimum for all lines was equal to about 82 percent of Cunard's fare, than at any other time. But this pattern changed after 1907 when Cunard fares began to rise relative to the average weighted fares. Cunard fares were

[29] 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. As can also be seen in Figure 5, the revenue-based fares of Holland America, though it did not take passengers to or from British ports, lie between those for Cunard and Anchor, but move in tandem with those other fares, especially after 1903

at least 50 percent above the average in every year between 1909 and 1914, a divergence that deserves a fuller explanation.

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 around 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, 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.[30]

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).[31] 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. 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 3 percent while the advertised fare series remained unchanged.[32]

---

[30] Most of this surge in passengers was booked on ships with the higher mandated minimum price categories. See Murken (1922, pp 325-60, 671).

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

[32] The two series changed at much different rates between 1883 and1900, 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 is accounted for by that spike in fares.

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).[33] 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, though such data sets are rare. And they are only representative of industry-wide trends to the extent that a diverse and representative sample of firms and vessels were included in the calculations. Gathering such a large amount of data would take a long time. 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.

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

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

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, and 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, 4 and 6). 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.

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. Several associated avenues for potential future research may be noted. 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.

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 surpassed only (slightly) during the potato famine influx of 1850-51. 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 (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.[34] 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.[35] 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). 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 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 because 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. 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. And as might be anticipated, first cabin had fluctuations (average deviation from trend) well below those of steerage and freight; the negative year-to-year correlation of price and volume for first cabin was not only stronger than that in steerage

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

[35] 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).

(whose customers, were after all, not purchasing discretionary leisure) but for that of freight as well.

How to explain the contrast in the behavior of first class fares and passenger volume in these two periods 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 shippers, and the volume of travel.[36] Does the strong negative correlation of first cabin fares and volumes, strongest for 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 tourists continue to travel to Europe 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

[36] 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; Dupont and Weiss, 2013.

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 increase 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." [37] Our evidence (figure 6) 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. But, 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 arguments.

[37] Johnson and Huebner, chapter XIX , pp. 335-37. See also Deltas, et. al. (1999).

Better fares 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 and consolidations? How did trends in first class fares from New York compare to patterns of other costs involved in a "belle epoch" grand tour of Europe (hotel prices, costs of rail travel, etc)?

Available statistics for freight, steerage and cabin show a roughly six to eightfold increase in volume for these segments between 1826 and 1914, which is slightly lower than the contemporaneous increase in the U.S. population. This might suggest 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).[38] 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?

[38] Source 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).

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 would increase profits by something approaching fifty percent.[39] 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?

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

[39] 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).

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 class fares.

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

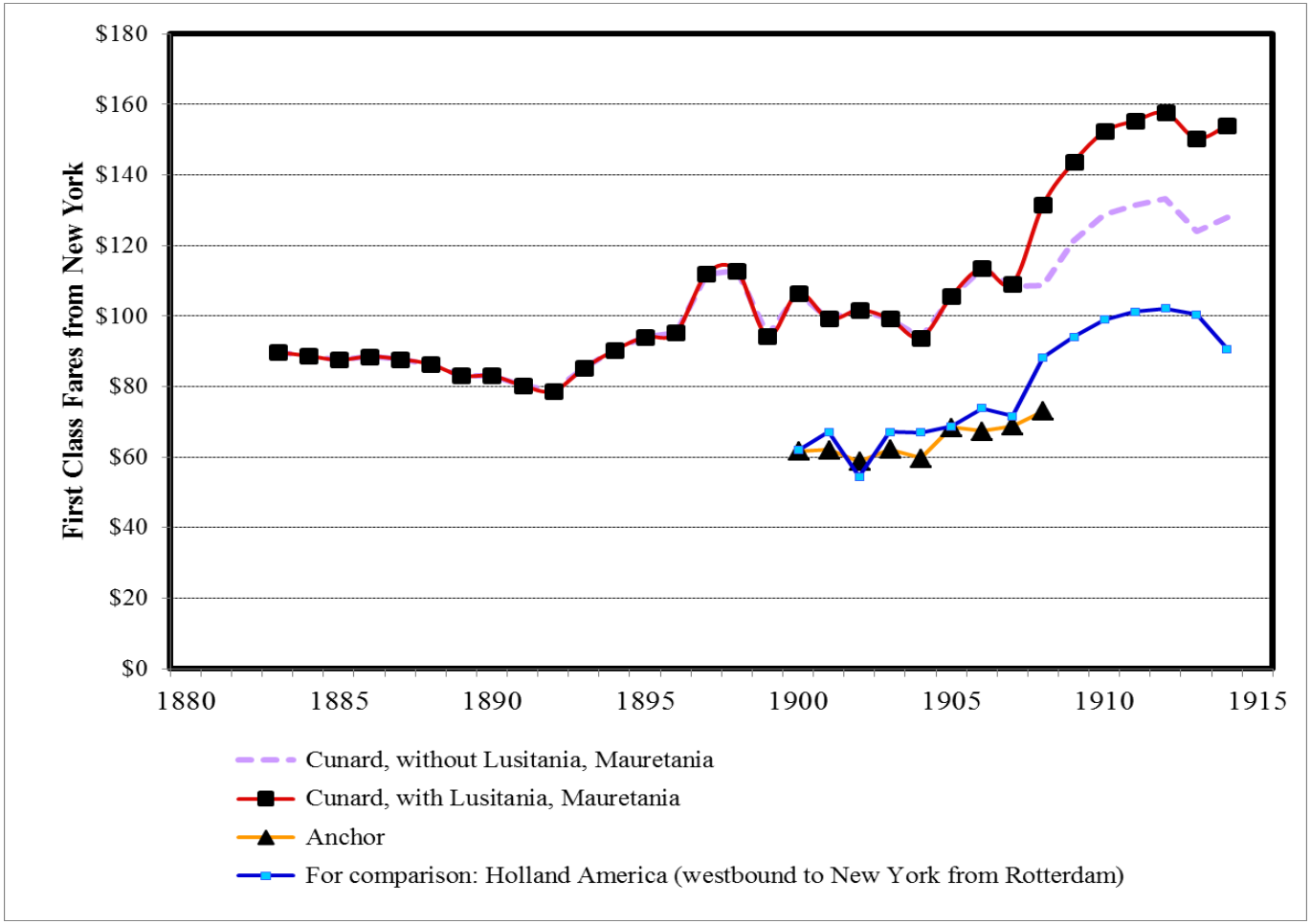
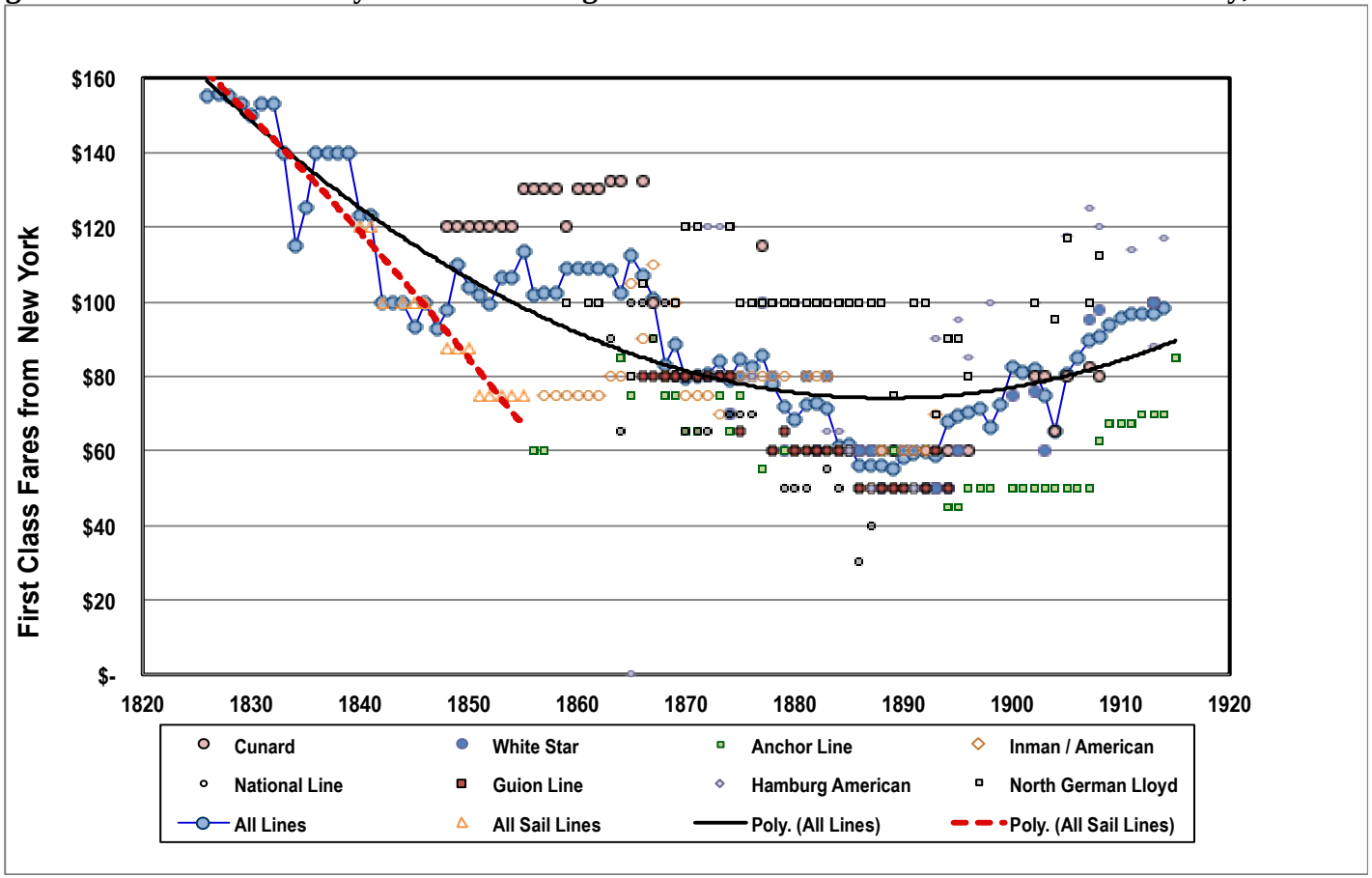
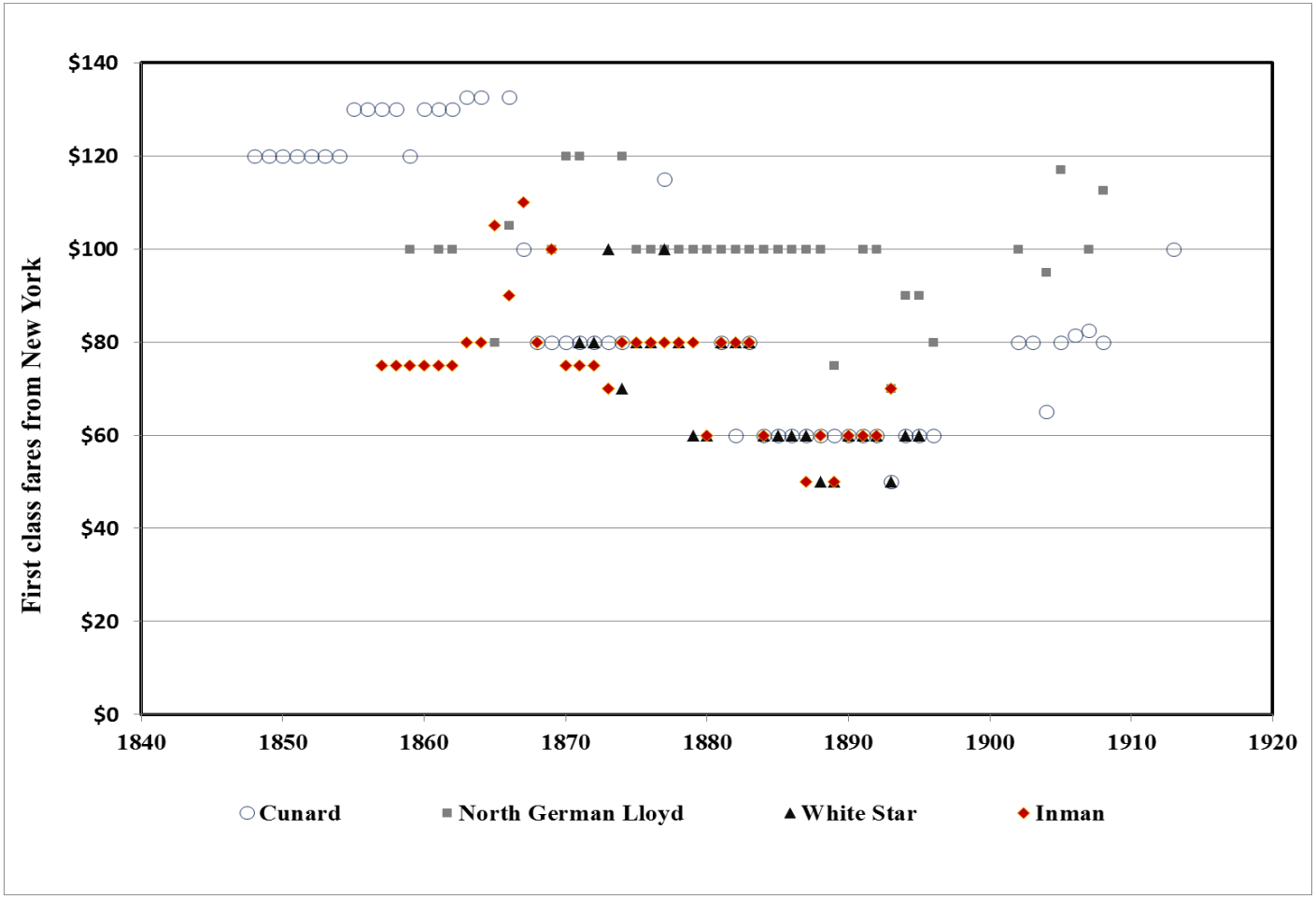


Figure 2: Minimum Fares by Line and Average Minimum Fares for All Lines and for Sail Only, 1826-1914



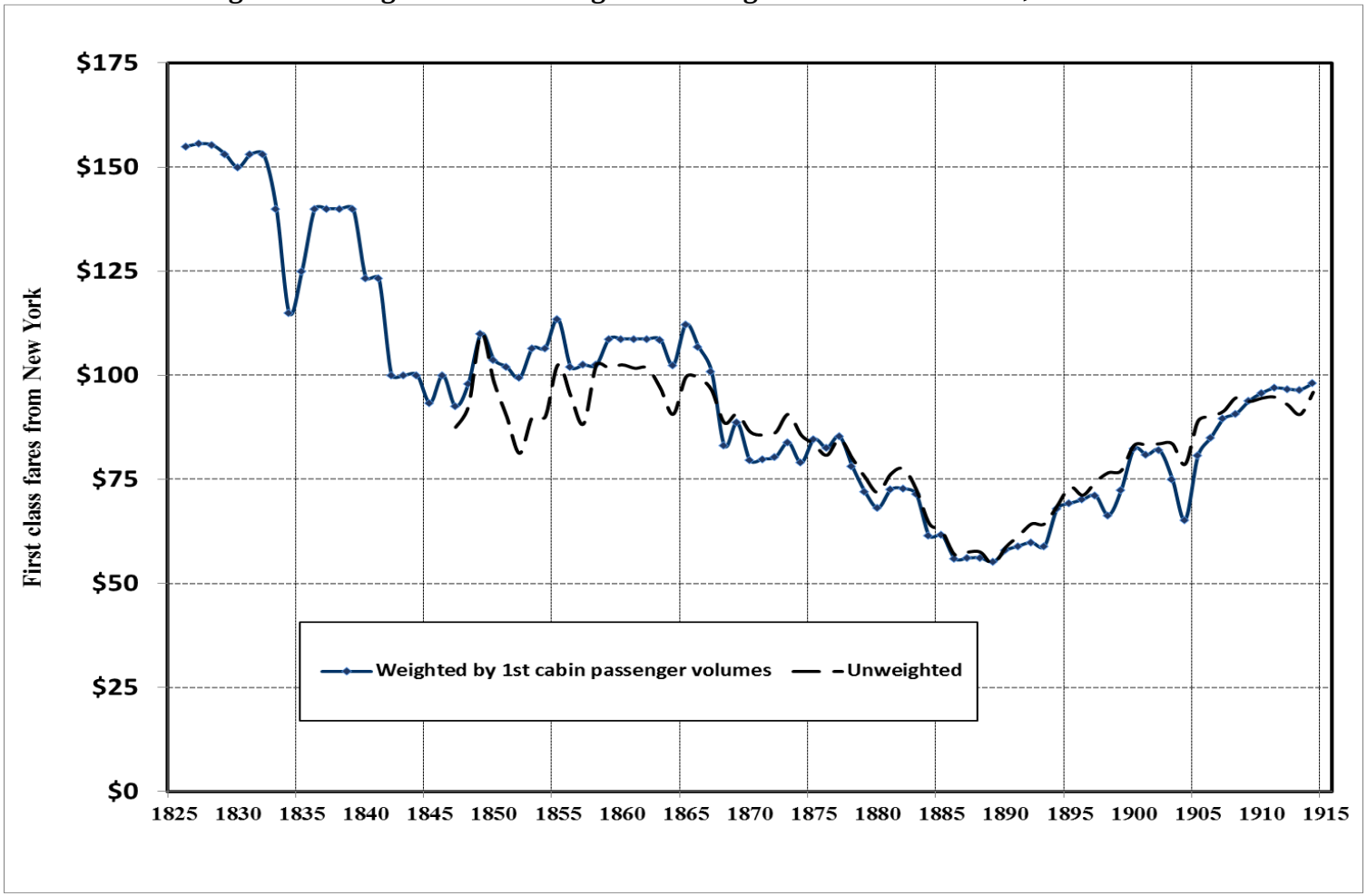
Sources for Figure 2: Advertisements mostly in *The Albion*, 1826-73 and the *New York Times*, 1852-1916; also in *New York Daily Tribune*, *New York Tribune*, and *New York Herald*, various years; Atlantic Conference Cartel prices; and shipping line brochures, Coleman (1972, p. 88) Albion, R.G. (1938, appendices). For details see the Appendix to this paper available from the authors upon request.

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



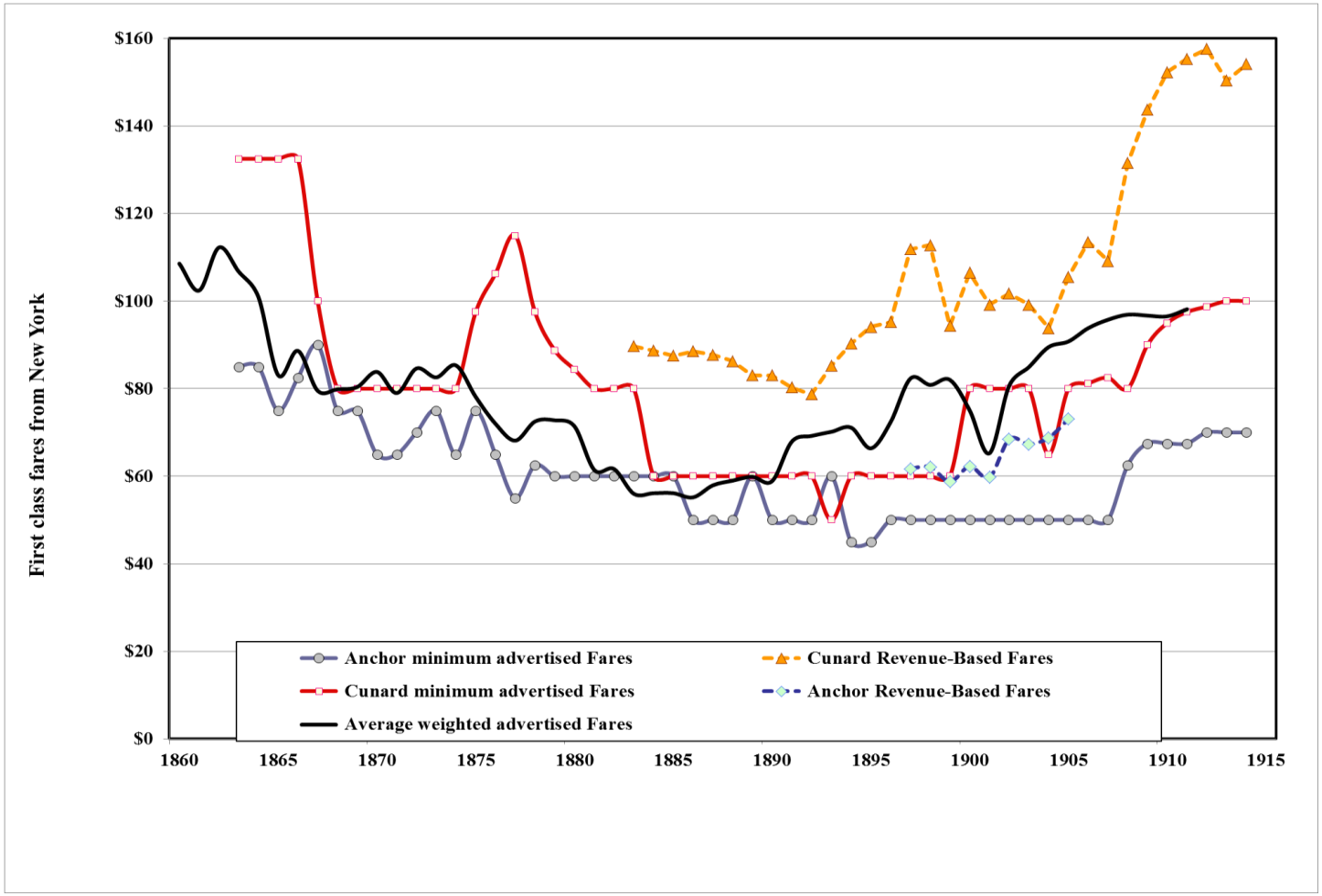
Sources for Figure 3: See Figure 2.

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



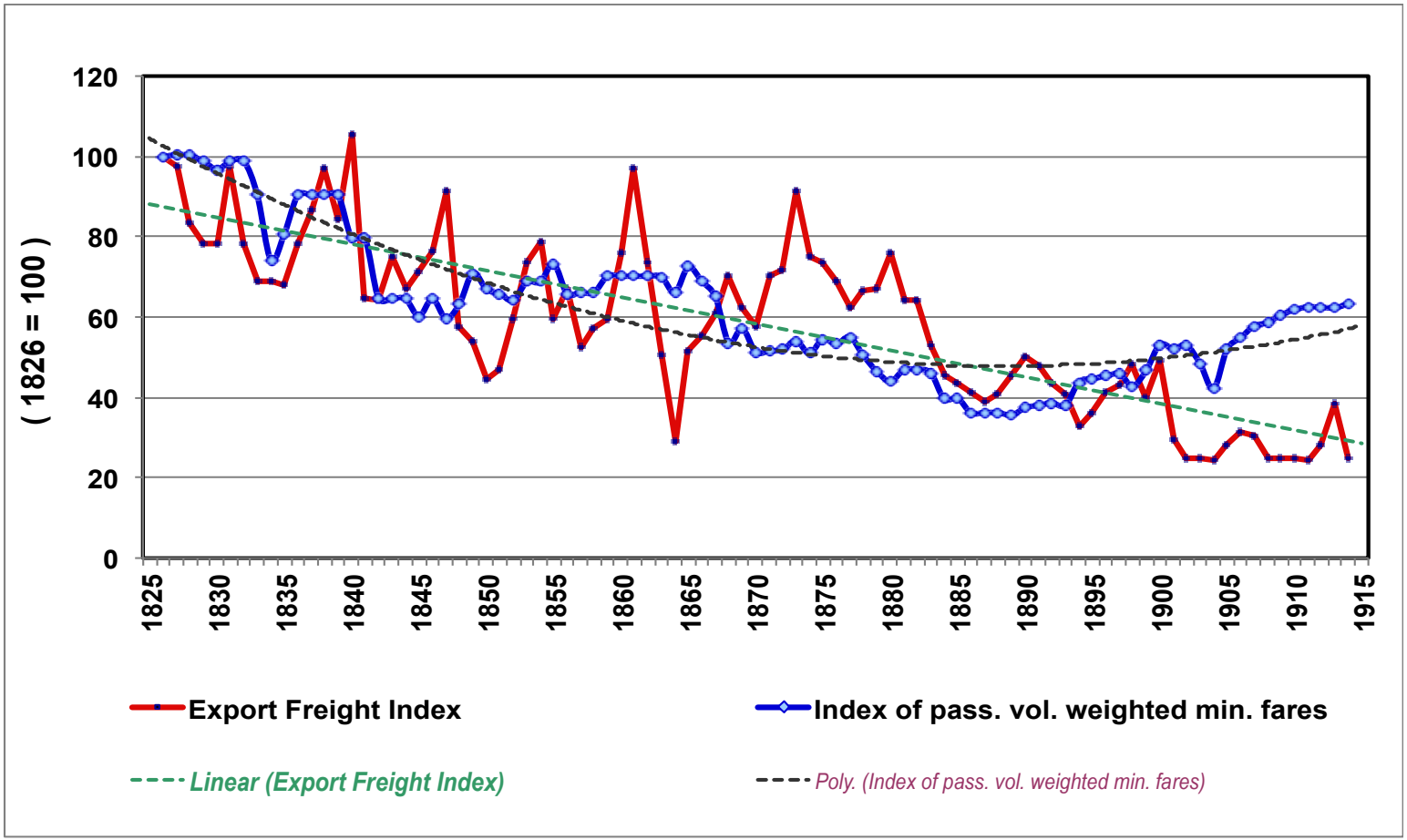
Note: The weighted and unweighted fares are identical before 1847 because ads from New York to London and Liverpool all quoted the same fare in nearly every year between 1826 and 1846.

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



Sources for Figure 5: See Figures 1 and 2

Figure 6: Weighted Ad Fares and Freight Rates, 1826-1914 (1826 = 100)



Notes and Sources to Figure 6: Export Freight Rate Index: North (1958, Appendix Table 2, p. 549).
An Import Freight Rate Index based on data in North (1960, pp. 607-08, Table B-2) and Simon (1960, p. 652, Table 7) shows a similar pattern. We have used the export index because it is a slightly longer series, running up to 1910.

References

The Albion

Albion, Robert Greenhalgh. *Square-Riggers on Schedule: The New York Sailing Packets to England, France and the Cotton Ports.* Princeton: Princeton University Press, 1938.

Aldcroft, Derek H. "The Mercantile Marine" in *The Development of British Industry and Foreign Competition, 1875-1914,* edited by Derek H. Aldcroft, 326-63. London: George Allen, 1968.

Bonsor, N.R.P. *North Atlantic Seaway: An Illustrated History of the Passenger Services Linking the Old World with the New*. Prescot, Lancashire: T. Stephenson & Sons, Ltd, 1955.

Brinnin, John. *The Sway of the Grand Saloon*. New York: Delacorte Press, 1971.

Cohn, Raymond. "Transatlantic U.S. Passenger Travel at the Dawn of the Steamship Era." *International Journal of Maritime History* 4, no. 1 (1992): 43-64.

Cohn, Raymond. *Mass Migration Under Sail: European Immigration to the Antebellum United States.* Cambridge: Cambridge University Press, 2009.

Coleman, Terry. *Passage to America.* London: Hutchinson, 1972.

Coons, Lorraine and Alexander Varias. *Tourist Third Cabin: Steamship Travel in the Interwar Years*. New York: Palgrave MacMillan, 2003.

Cunard Voyage Abstracts, 1883-1914, Cunard Archives, University of Liverpool

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

Deltas, George, Konstantinos Serfes, and Peter Tomczak. "American Shipping Cartels in the Pre-World War I Era." *Research in Economic History* 16 (1999): 1-38.

Dulles, Foster Rhea. *Americans Abroad: Two Centuries of European Travel*. Ann Arbor: University of Michigan Press, 1964.

Dupont, Brandon, Alka Gandhi, and Thomas Weiss. "The Long Term Rise in Overseas Travel by Americans, 1820-2000." *The Economic History Review* 65, no. 1 (2012): 144-167.

Dupont, Brandon and Thomas Weiss. ""Variability in overseas travel by Americans, 1820-2000," *Cliometrica* 7 (2013): 319-39.

Feys, Torsten. "Where All Passenger Liners Meet: New York as a Nodal Point for the Transatlantic Migrant Trade, 1885-1895." *International Journal of Maritime History* 19, no. 2 (2007): 245-72.

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

Gould, J.D. "European Inter-Continental Emigration, 1815-1914: Patterns and Causes." *Journal of European Economic History* 8, no. 3 (1979): 593-679.

Graham, Gerald S. "The Ascendancy of the Sailing Ship, 1850-1885." *The Economic History Review* 9 no 1: 74-88 (1956).

Harley, C. Knick. "The shift from sailing ships to steamships, 1850-1890" in *Essays on a Mature Economy: Britain after 1840*, edited by D. McCloskey, 215-34. Princeton: Princeton University Press, 1971.

Harley, C. Knick. "Ocean Freight Rates and Productivity, 1740-1913: The Primacy of Mechanical Invention Reaffirmed." *Journal of Economic History* 48, no. 4 (1988): 851-876.

Harley, C. Knick, "North Atlantic Shipping in the Late Nineteenth Century Freight Rates and the Interrelationship of Cargoes" in *Shipping and Trade, 1750-1950: Essays in International Maritime Economic History* edited by Lewis R. Fischer and Helge W. Nordvik, 147-171. Pontefract, West Yorkshire: Lofthouse Publications, 1990.

Harley, C. Knick. "Steers Afloat: The North Atlantic Meat Trade, Liner Predominance, and Freight Rates, 1870-1913." *Journal of Economic History* 68 no. 4 (December 2008): 1028-1058

Historical Statistics of the United States, millennial edition (Cambridge, 2006).

Hvidt, Kristian. *Flugten til Amerika eller Drivkræfter i masseudvandringen fra Danmark 1868-1914*. Aarhus: Universitetsforlaget, 1971.

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

Jacks, David S. and Krishna Pendakur. "Global Trade and the Maritime Transport Revolution." *Review of Economics and Statistics* 92, no. 4 (November, 2010): (4), pp. 745-55.

Johnson, Emory R. and Grover G. Huebner. *Principles of Ocean Transportation*. New York: D. Appleton, 1920.

Keeling, Drew. “Transatlantic Shipping Cartels and Migration between Europe and America, 1880-1914.” *Essays in Economic and Business History* 17 (1999a): 195-213.

Keeling, Drew. “The Transportation Revolution and Transatlantic Migration, 1850-1914.” *Research in Economic History* 19 (1999b): 39-74.

Keeling, Drew. “Costs, Risks, and Migration Networks between Europe and the United States, 1900-1914” in *Maritime Transport and Migration: The Connections between Maritime and Migration Networks,* edited by Torsten Feys, Lewis R. Fischer, Stéphane Hoste and Stephan Vanfraechem, 113-173. St. John’s: International Maritime Economic History Association, 2007.

Keeling, Drew. “Transport Capacity Management and Transatlantic Migration, 1900-1914.” *Research in Economic History* 25 (2008a): 225-283.

Keeling, Drew. “The Voyage Abstracts of the Cunard Line as a Source of Transatlantic Passenger Fares, 1883-1914.” *Business Archives Sources and History* 96 (2008b): 15-36.

Keeling, Drew. *The Business of Transatlantic Migration between Europe and the United States, 1900-1914.* Zurich: Chronos, 2012.

Killick, John. “An Early Nineteenth-Century Shipping Line: The Cope Line of Philadelphia and Liverpool Packets, 1822-1872.” *International Journal of Maritime History* 12, no. 1 (2000): 61-87.

Killick, John. “Transatlantic Steerage Fares, British and Irish Migration, and Return Migration, 1815-60.” *The Economic History Review* 67, no. 1 (2014): 170-191.

Kludas, Arnold. *Die Geschichte der deutschen Passagierschiffahrt*. Berlin: Ernst Kabel, 1986.

Levenstein, Harvey. *Seductive Journey: American Tourists in France From Jefferson to the Jazz Age,* Chicago: University of Chicago Press, 1998.

Levenstein, Harvey. *We’ll Always Have Paris: American Tourists in France Since 1930,* Chicago: University of Chicago Press, 2004.

Mitchell, B.R. *British Historical Statistics*. Cambridge: Cambridge University Press, 1988.

Murken, Erich. *Die großen transatlantischen Linienreederei-Verbände, Pools und Interessengemeinschaften bis zum Ausbruch des Weltkrieges: Ihre Entstehung, Organisation, und Wirksamkeit*. Jena: Gustav Fischer, 1922.

New York Commissioners of Emigration, annual reports,1848-1990

New York Herald

New York Daily Tribune

New York Tribune

New York Times

North, Douglass. "Ocean Freight Rates and Economic Development 1750-1913." *Journal of Economic History* 18, no. 4 (1958): 537-555.

North, Douglass. "The United States Balance of Payments, 1790-1860" in *Trends in the American Economy in the Nineteenth Century*, 573-628. Princeton: Princeton University Press, 1960.

Shipping line and conference brochures and records (various, 1890-1914).

Simon, Matthew. "The United States Balance of Payments, 1861-1900" in *Trends in the American Economy in the Nineteenth Century*, 573-628. Princeton: Princeton University Press, 1960.

Statistical Abstract of the United States. Washington: Government Printing Office, various years.

Taylor, George Rogers. *The Transportation Revolution, 1815-60.* New York: Rinehart and Company, 1951.

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

Tyler, David D. *Steam Conquers the Atlantic*. New York: D. Appleton-Century Co., 1939.

U.S. Bureau of Statistics, annual reports (1870-94).

U.S. Commerce and Finance series.

U.S. Citizen Traffic to Overseas Regions, Canada & Mexico 2015.

U.S. Special Consular Reports, 1895-1905.