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War and Ethnic Discrimination Evidence from Applications to the New York Stock Exchange from 1883 to 1973*

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Ethnic discrimination has proven difficult to measure because the ethnic characteristics of minorities may be correlated with productivity. An ideal test of discrimination would measure the effects of an exogenous shock to preferences to individuals with identical characteristics. This paper draws on opera programs, census records, and food purchases in the United States to show that World War I created such a shock. It introduces a new data set on applications for membership at the New York Stock Exchange between 1883 and 1973 to test whether this shift in tastes worsened the treatment of German-Americans relative to other ethnicities. Applicants for membership at the New York Exchange must pass a subjective test of “personal and financial integrity”. Data on more than 7,000 applications between 1883 and 1973 suggest that the probability that German applicants would be rejected increased by 25 percent relative to Anglo-Saxons after the beginning of the war.

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Ethnic discrimination has proven difficult to measure because the ethnic characteristics of minorities may be correlated with productivity. An ideal test of discrimination would measure the effects of an exogenous shock to preferences to individuals with identical characteristics. This paper draws on opera programs, census records, and food purchases to show that World War I created such a shock to preferences in the United States. It introduces a new data set on applications for membership at the New York Stock Exchange between 1883 and 1973 to test whether this shift in tastes worsened the treatment of German-Americans relative to other ethnicities. Applicants for membership at the New York Stock Exchange must pass a subjective test of “personal and financial integrity”; data on more than 7,000 applications between 1883 and 1973 suggest that World War I increased the probability that German-Americans would be rejected in this test by 25 percent relative to Anglo-Saxons.

Economists define discrimination as the differential treatment of minority members with identical productivity characteristics. For example, Gary Becker’s (1957) model of taste-based discrimination predicts that minorities receive lower wages than majority members at equal productivity because employers must be compensated for their distaste of minority characteristics. Models of taste-based discrimination have been difficult to test, because minority characteristics may be correlated with productivity. Models of statistical discrimination, such as Edmund Phelps (1972), Kenneth Arrow (1973), and Dennis Aigner and Glenn Cain (1977) address the issue by treating discrimination as a result of differences in the reliability of indicators for ability, rather than differences in preferences. If individual characteristics such as race and gender are correlated with productivity and minority applicants are – on average – less productive,

minorities may receive lower wages at equal productivity, even though the average worker in each group is paid his productivity wage. Moreover, expectations of discrimination may discourage minorities from investing in education and other means to increase their productivity. As a result, wage differentials measure the combined effects of differences in productivity and in tastes, and these two forces are almost impossible to disentangle.

An ideal test would measure the effects of an exogenous shock to preferences to individuals with identical characteristics. In the absence of such shocks, empirical studies have pursued regression analyses, natural experiments, laboratory experiments, and field experiments. Derek A. Neal and William R. Johnson (1996) use regressions to examine potential determinants of the earnings gap between white and black workers. They find that pre-market differences in skills explain a large part of the racial earnings gap for 15 to 23 year olds in the National Longitudinal Survey who took the AFQT at age 17 or below. Claudia Goldin and Cecilia E. Rouse (2000) employ the policy of using screens to hide the identity of musicians to identify the effect of gender on auditions. Goldin and Rouse find that female musicians benefit from the use of screens. Among female and male musicians that perform both in blind and non-blind auditions, women do better.

Several studies use names as a proxy for ethnicity. Chaim Fershtman and Uri Gneezy (2001) construct a laboratory experiment in which participants infer their opponents' ethnicities from Ashkenazi and Sephardic names. Their experiment reveals differences in treatment across ethnicities: male Ashkenazi Jews receive larger transfers from both Ashkenazi and Sephardic Jews. Marianne Bertrand and Sendhil Mullainathan

(2003) create a field experiment by sending out fictitious resumes of applicants with identical characteristics that differ in the ethnic connotation of a name. They find that call-back rates are lower for ethnic-sounding names, and that applicants with black names benefit less from experience or academic honors. In contrast, Steve Levitt and Roland Fryer (2004) suggest that racially distinctive names have limited effects on the life outcomes of children born in California between 1961 and 2000.

This paper exploits World War I as an exogenous shock to preferences over ethnicities, which changed the status of German Americans from majority to minority members. After the beginning of World War I, clubs and professional organizations, such as the Chemists Club, where Germans had been prominent, the Lamb Club, and the New York Athletic Organization, expelled their German-born members and banned the use of German. At the same time, programs of the Metropolitan opera in New York suggest a strong shift in the tastes for German music; in the years leading up to the war, between 30 and 50 percent of operas performed at the Metropolitan in New York were by German-language composers. This share drops to zero after the United States enters the war in 1917. Similarly, in 1916, the number of boys receiving two typical German names -- Otto and Wilhelm -- drops by 34.6 and 35 percent respectively and continues to decline during the war. Among food items, the consumption of a distinctive German food item -- sauerkraut -- drops by 85 percent between 1914 and 1918. These changes suggest a significant shock to preferences, which I exploit to measure preference-based discrimination in a unique application process to the New York Stock Exchange.

My data include information on 8,347 applications to the NYSE between 1883 and 1973. Beginning in 1883, clerks recorded all attempted sales of memberships in

large leather-bound ledgers of transactions, which can be accessed at the archives of the Exchange. For each attempted sale, a scribe recorded the buyer's name, the seller's name, the price of the seat, the date of the application, the date of the decision, and whether the application was accepted or not. Remarks on the margins distinguish applications that were conducted by the Committee of Admissions rather than by private parties.

Previous analyses of the NYSE have emphasized the influence of expected trading volume and the price of stocks, as well as technological change, on the price of membership (Lance E. Davis, Larry Neal, Eugene N. White 2005, G. William Schwert 1977, Gregg, A. Jarrel 1984, Devra L. Golpe 1986, Donald B. Keim and Anath Madhavan 2000). Their analyses have not taken advantage of data on the identity of buyers and sellers, or attempted to explain differences between accepted and rejected transactions. Such analyses also have no explained differences in the price that two buyers pay for seats with identical privileges, at identical market conditions.

I use the names of buyers and sellers as proxies for their ethnicities. List Service Direct, a commercial data base company, uses linguistic rules and naming practices to assign applicants' to ethnicities based on their first and last name. Eighty-five percent of 8,347 applicants can be assigned to ethnicities by this process, yielding a total of 7,097 observations. I combine these ethnicities to form four groups: German, Jewish, Anglo-Saxon, and Other Ethnicities. For Jewish applicants I construct an additional measure of ethnicity, which assigns each last name to its most frequent country of origin based on the arrival records of immigrants to the United States between 1850 and 1950.

A two-step process of admissions allows me to distinguish two ways to discriminate against minorities: charging a higher price for membership, and denying admission to the Exchange. In the first step of the selection process, incumbent members identify potential buyers for their seat and agree on a price. This price is paid entirely to the seller, and there is no proportional payment to the Exchange. In the second step of the application process, the NYSE's Committee of Admissions decides whether to accept the buyer, based on his personal characteristics.¹ If World War I caused discrimination the probability that German applicants are rejected should increase relative to majority applicants.

Data on applications to the NYSE suggest that World War I did result in ethnic discrimination against German-Americans in the United States. German applicants did not pay higher prices for their seats, but their applications were denied more frequently. The probability that a German applicant was rejected increased by 25 percent after the beginning of World War I relative to applicants from the Anglo-Saxon majority. The data also show that Jewish applicants paid higher prices and were more likely to be rejected throughout the history of the Exchange.

The remainder of this paper presents tests using the NYSE data to identify the effect of World War I on the treatment German-Americans. Section I describes the process of admission, and section II introduces the price and ethnicity data for accepted and rejected applications. Section III examines evidence for a shift in tastes over ethnicities as a result of World War I. Section III presents logit regressions of the decision to accept or reject an applicant. Section IV presents results from regressions of

¹ Male pronouns seem appropriate here, because there was only one female member at the Exchange, Muriel Siebert.

seat prices on ethnicity and other control variables, including annual fixed effects to control for conditions of the stock market, and section V concludes.

I. The Process of Admissions

The earliest mention of a stock exchange occurred in the *Diary, or Loudon's Register* which advertised in March 1792:

The Stock Exchange Office is opened at No.22 Wall Street for the accommodation of the dealers in Stock, and in which Public Sales be held daily at noon...²

On May 17 of the same year, traders agreed to deal only with each other (Francis L. Eames 1894, p. 14, 43). In 1817, they named their organization the *New York Stock Exchange and Board*. Membership expanded to 533 by May 8, 1869, when the Exchange joined 354 members of the *Open Board of Brokers* and 173 members of the *Government Bond Department* to form the 1,060 member strong *New York Stock Exchange* (Eames 1894, p.43). In 1879, the NYSE created an additional 40 memberships to finance its expansion to an adjoining property south of the Exchange.³

By that time, membership at the Exchange had become exclusive. Francis L. Eames, President of the Exchange from 1894 to 1898 (Francis L. Eames 1894, p.68) describes the basic conditions for membership:

Any person, at least twenty-one years of age, and a citizen of the United States, may buy a membership in the Stock Exchange from any member desiring to sell, subject to the approval of the Committee of Admissions.

² Francis L. Eames (1894), p.13.

³ The average seat price during this sale was \$13,000, worth about \$235,000 in 2004 (Eames 1894, p.62, converted by the GDP deflator available at Samuel H. Williamson, "What is the Relative Value?" *Economic History Services*, April 2004, URL: <http://www.eh.net/hmit/compare/>)

In the first step of the admissions process, potential applicants identified incumbent members who planned to leave the Exchange.⁴ If incumbents died or were expelled, the Exchange's Committee of Admissions sold their seats in an anonymous auction market (Eames 1894, p.68, Davis, Neal, and White 2005). Twenty percent of all seat sales were administered by the Committee, but the majority of sales occurred between private parties. Once a buyer and seller had agreed on a price, the prospective buyers' name and proposed purchase price were posted in a prominent place at the Exchange, and remained visible until the new member had been accepted or rejected as a new member of the trading floor.

In the second step, the 15-member strong Committee of Admissions conducted a series of interviews to evaluate each applicant's "personal and financial integrity" (Eames 1894, p.51).⁵ Two incumbent members were needed to act as sponsors for each prospective buyer. In a typical interview, sponsors explained how long they had known the applicant and whether their connection was social or through business. The Committee then asked sponsors whether they could recommend the applicant "in every way as a proper person to be admitted to the Exchange".⁶ To assess the applicant's

⁴ Seats had become salable in 1869, when the first memberships sold for 8,000 dollars (100,000 dollars in 2004). Seats *within* the Exchange had become saleable seven years earlier, in October 1861. At that time, transactions were recorded in large ledgers and chairs became necessary. Each member occupied a seat in a particular place; when Treasurer James W. Bleeker died in October 1861, his chair, which was in a particularly desirable position, was put up for a charitable auction. It fetched \$460 dollars, above \$8,000 in 2004 (Eames 1894, p.43)

⁵ Members of the Committee of Admissions were drawn from the 40 members of the Exchange's Governing Committee. Each May three members were replaced from the Committee of Admissions. At the same time, all traders voted to replace 10 members of the Governing Committee. New officers were nominated by the five members of the Nominating Committee's. Members of the Nominating Committees were traders who were not members of the Governing Committee; they were elected by the entire Exchange (Eames 1894, p.74-75). This system of electing new members was in place from 1869 until the reorganization of the Exchange in 1938.

⁶ An anonymous member of the Exchange emphasized the importance of character: "Character is essential to the Stock Exchange member. He buys and sells in a milling, excited crowd around a trading post, and

financial integrity, the Committee demanded whether the sponsors would “accept his uncertified check for \$20,000 if he were alone in business and a member of the Exchange”. Then the Committee interviewed the applicant to ascertain that he was not a member of a competing exchange and that he was healthy and in good financial standing. A verbatim transcript of Harry Markoe Jr.’s interview on December 4, 1905, which was fairly typical, is reported in the appendix as an example. At the conclusion of the interviews, the Committee of Admission adjourned. Applications were voted at their next meetings, typically two weeks after the interview.

Ballots were anonymous, and, until 1934, they were recorded as white balls in support of an application and black balls in opposition to it. A one third vote of “no” sufficed to reject an application; the Committee could vote with 10 attending members.⁷ If the Committee decided to allow the transaction, buyers paid the agreed purchase price to sellers and transferred an initiation fee to the Exchange. This fee was independent of the purchase price; from 1858 to 2005, it remained relatively stable around 20,000 year 2004 dollars.⁸

II. World War I as a Shock to Preferences over Ethnicities

From the onset of World War I, and especially after Congress declared war on April 7, 1917, American tastes for things German diminished rapidly. Figure 1 reports

his contracts are oral. None is written and he must stand by his word of today, even though his transaction will show him a loss tomorrow." (*New York Times*, August 24, 1924)

⁷ In the early years of the exchange, applicants were balloted by the entire membership, and five blackballs among a group of less than one hundred attending members sufficed to reject an application. In 1861, only 7 of 29 applicants were elected by this process (Eames 1894, p.42).

⁸ The fee was \$1000 in 1858 (Eames 1894, p.38, Henry Clews 1908 p.7). Data for 2005 from the *NYSE 2005 Price List*, updated on October 10, 2005. Other members only benefited from a higher sales price if the original seat owner had become insolvent. Then, "...his membership may be sold by the Committee, creditors who are members of the Exchange having a first lien upon the proceeds." (Eames 1894, p.68)

the proportion of operas by German-speaking composers that were performed at the Metropolitan Opera house between 1910 and 1925. In 1910, 36 percent (four of eleven performances) were German; between 1910 and 1917, the proportion of German-language pieces varied from 30 to 50 percent. Once the United States entered the War, however, the Metropolitan performed no German-language operas until 1920. Among the four German-language operas in 1910 were Richard Wagner's *Lohengrin*, *Tannhäuser*, *Tristan und Isolde*, operas with a distinctly Germanic theme, by a composer with prominently German tastes. Wagner's *Meistersinger von Nürnberg*, which premiered on March 19th 1917, was the last German opera in 1917, but the Met performed no other German composer after the American declaration of war. Six of Wagner's operas were performed in the first three years following the armistice.⁹ During the war, radio stations refrained from playing German music, and performers faced protests if they performed works by German-speaking composers (*New York Times*, October 3 and 19, 1919).

Another measure of preferences over ethnicities might be derived from parents' choices of naming their children. Figure 2 reports the number of children in the United States Census of 1920 that were named Otto or Wilhelm. Both were typical German names of the day, with prominently Germanic namesakes: Otto von Bismarck was Prussia's Prime Minister from 1862 to 1890 and German Chancellor from 1867 to 1890. Bismarck's namesake was Otto I, King of the Germans from 936 to 973, first in a long

⁹ World War II did not have a similar effect. In 1945, H.W. Heinsheimer observes that "The War – in marked contrast to World War I – has not interfered with the production of opera in German. One of the marked highlights of last season was the complete presentation of Wagner's 'Ring', so successful that the whole circle had to be repeated. Again, the greatest box office success of the current year has been a magnificent production of 'Meistersinger,' a magnificent success for conductor George Szell, and the stage manager, Herbert Graf. The works of Richard Strauss likewise are much in the public favour." (Heinsheimer 1945, p.8)

line of kings named Otto. Wilhelm II was German Emperor at the beginning of the war; he followed his grandfather Wilhelm I (1797 – 1888), after his father Friedrich's 99-day reign. Figure 2 shows that the number of boys named Otto and Wilhelm declined sharply after 1915. The number of Otto's per cohort dropped from by 34.7 percent from 2,133 to 1,394 between 1915 and 1916, and the number of Wilhelm's declined by 35 percent from 140 to 91. As a robustness check, I have compared the number of Wilhelm's and Heinrich's to William's and Henry's as their English-language equivalents from the United States Census records for 1910, 1920, and 1930. While number of Wilhelm's and Heinrich's decreases between 1910 and 1920 and increases after 1920, the number of William's and Henry's increases steadily during the war.

Alternative measures confirm a significant change in taste. Among food products, American consumption of a distinctly German food -- sauerkraut -- declined by 75 percent between 1914 and 1918, causing New York's grocers' to complain that "There is enough sauerkraut in stock at the present time to feed a good-sized German army" (*New York Times*, April 25, 1918, p.10). In June 1918, Representative J.F.C. Smith of Michigan introduced a bill to congress demanding that towns named "Berlin", "German Town", or "Bismarck" be renamed "Liberty" or "Victory". American cities, such as Portland, Oregon re-christened its Teutonic named streets (*New York Times*, June 2, 1918). In May 1918, the American Defense Society and the American Relief Legion petitioned President Wilson to ban the publication of German language newspapers (*New York Times*, May 9, 1918). Starved of advertising, many German language papers were forced to close (Carl Wittke 1956, p. 115).

Social clubs and professional organizations, such as the Chemists' Club, forbade the use of German on their premises, and expelled members born in Germany (*New York Times*, May 5, 1918). The Lamb Club of New York prohibited the use of German in its club house for the duration of the war and resolved to banish all "enemy aliens" (*New York Times*, April 20, 1918). The New York Athletic Club expelled members that were suspect of being pro-German (*New York Times*, April 11, 1918). The German-American National Alliance, which had been founded in Philadelphia in 1900 "to arouse and promote feelings of unity within the people of German origin", and had grown to three million members by 1916, had its charter withdrawn in 1917, and was disbanded by Congress in 1919. By 1919, Ohio, Iowa, and Nebraska made the teaching of German in private schools illegal; these rules remained in place until United States Supreme Court ruled them to be unconstitutional in 1923 (*Meyer v. State of Nebraska*, 262).

In sum, World War I resulted in a strong negative shift in preferences towards objects and people with German associations. I use this shift to examine the effects of discrimination at the example of applications to the New York Stock Exchange.

III. The NYSE Data

The NYSE data include information on 8,347 applications between December 27, 1883 and February 7, 1974. From 1883 all attempted transactions were recorded in a ledger of transactions, which can be viewed at the archives of the New York Stock Exchange. Each of the ledger's hand-written entries includes the buyer's name, the seller's name, the price of the seat, the date of the application, the date of the decision, the decision, and the number of black balls and white balls that were cast.

A. Description of the NYSE Data

Similarly to existing data sets of membership transactions, this data set records information on the price of membership, along with the date of a sale. In contrast to existing sources, such as Davis, Neal, and White (2005) the current data include additional information about the identity of each buyer and seller, along with the number of white balls in favor and black balls that were cast in opposition to the applicant, as well as the decision that resulted from this vote. Data also include the hand-written remarks of the Admissions Committee that reveal whether transactions were conducted privately between the original owner and the prospective buyer of the seat, or by the Committee of Admissions. These scribbles also tell whether the original owner was suspended or expelled from the Exchange or whether the seat was transferred for a nominal sum.

Nominal transfers typically occurred within members of the same firm or family, and may therefore have been subject to less stringent reviews than transfers between private parties. Over time, their share increased from 10 percent for the period prior to WWI to 42 percent between 1934 and 1974 across ethnicities (Table 1). To the extent that this shift represents a transfer of membership decisions into the realm of firms, discrimination becomes more difficult to observe.

In the average week between 1883 and 1974, the membership committee decided on 2.4 applications. Figure 3 illustrates the movement of seat prices over time: Prices rose from 390,000 (year 2000) dollars in 1883 to 5.2 million in 1929 and declined sharply during the Great Depression. Across all years, the average real price of a seat was

\$1,327,180; in spring 2005, that seat sold for \$2,400,000. Rejection rates varied from less than one percent in the last period of the data (after the reorganization of the Exchange in 1938) to 4.3 percent after the onset of WWI (Table 1).¹⁰

B. Names as a Proxy of Ethnicity

Names are matched to ethnicities by a commercial data base, List Service Direct (LSDI)¹¹. This algorithm matches names to ethnicities by given name and then surname. LSDI uses linguistic rules about pre- and suffixes as well as information on location-specific naming practices to determine the ethnic origins of names. For example, surnames ending in “dda” or “ddo” are assigned to Sardinia and therefore Italy. This algorithm creates unique ethnicity matches for 85.5 percent of buyers and 85.2 percent of sellers, yielding a total of 7,097 observations. I divide these ethnicity data into four groups, *Anglo-Saxon*, *German*, *Jewish*, and *Other Ethnicities*. The *Anglo-Saxon* variable combines data for English, Scottish, and Irish traders. The *Other Ethnicities* variable includes data for Dutch, Italian, Russian, and other Eastern European sellers, along with a small number of South African and other names.¹² The remaining 15 percent of the data that cannot be matched are included in *Other Ethnicities*.

¹⁰ The ledgers include some additional information which I use in a related project about the importance of ethnic and other social networks. This information consists of the names of two existing members who sponsored the application are also recorded in the ledgers as well as some notes on the margins that indicate the reason for the sale, if it was initiated because the seat’s owner was deceased or expelled from the exchange.

¹¹ List Service Direct, Inc. at http://listservicedirect.com/ethnic_religious.html

¹² The small number of observations in these groups makes it impractical to account for these ethnicities separately, but I have re-run all regressions including the main groups in other ethnicities, Dutch and Italian. The Dutch variable behaves like the Anglo-Saxon variable, which is consistent with the elite status of Dutch ethnicities in New York.

Figure 6 illustrates changes in the ethnic composition of the stock exchange over time.¹³ In 1890, close to two thirds of all members were Anglo-Saxon, 8 percent Jewish, 6 percent German, and 24 percent other ethnicities. Over time, the proportion of Anglo-Saxons slowly decreased, to 54 percent in 1970. The share of Jewish traders decreased slightly until 1930, and increased afterwards to about 8.5 percent in 1970. The proportion of Germans rose from 6.3 in 1890 to 8.2 percent in 1910; growth slows after 1910, and picks up again after 1940 to reach 10.6 percent in 1970.

The data are divided into four time periods: pre-World War I, World War I to the Dividend Sale in 1929, from the Dividend Sale to the reorganization of the Exchange in 1938, and from 1938 to the end of the data in 1974. The pre-World War I period begins with the first recorded transaction on January 3, 1883 and ends on June 28, 1914 with the assassination of the Austrian Archduke Franz Ferdinand by Gavrilo Princip in Sarajevo. The stock exchange closed in July of that year and re-opened on November 28, 1914 to trade government bonds. The next period, from World War I to 1929 ends with the first of 259 quarter dividend sale; this sale occurred on February 13, 1929. It was followed by the stock market crash on Black Thursday, October 24, 1929 and the sell-off panic on Black Tuesday, October 29, which precipitated the Great Depression. The period ends with the reorganization of the NYSE in May 1938, which resulted in the adoption of a fifteen-point program aimed to upgrade protection for the investing public on October 31, 1938. The period between 1938 and 1974 includes August 15, 1945 when Emperor Hirohito accepts the terms of the Potsdam Declaration. For the post-war period, transactions can be recorded up to January 1974.

¹³ The stock of members of the exchange is calculated by matching buyers to sellers for each time period and, for each time period, excluding those buyers that have sold their seats during the period.

C. Potential Weaknesses of the Data

The most important weakness of the data is that names may be an imperfect measure of ethnicity; this will make it harder to identify ethnic discrimination. Stanley Lieberman (2000) argues that parents' choices of first names reflect current attitudes towards religion, philosophy, and social movements, subjects studied in science, forms of humor, and recreational activities. LSDI's algorithm to match ethnicities to names is optimized for early 21st century naming practices, which implies that the accuracy of the LSDI matching may decline as we go back in time. This potential bias will make it harder to detect discrimination in the early part of the 20th century.

The use of ethnically distinct names may also vary with expectations about ethnic discrimination. For the late 20th century, Steve Levitt and Roland Fryer (2004, p.770) observe that Californian children born in African American families were significantly less likely to receive racially distinct names in the 1960s than in the later years. Similarly, census data presented in the previous section suggests that children were less likely to receive typically German names after 1916.¹⁴ Some of the names, which are classified as "other ethnicity" because LSDI cannot match them to a unique ethnicity, appear to be first generation German immigrants with English first names. For example, Tracy R. Falk, who applied for membership in 1912, has an English first name and a German last name. Falk's census record of 1930 reveals that both of his parents were born in Germany (Figure 4).

¹⁴ In the early 20th century, baseball legends Heinie Groh of Cincinnati and Heinie Zimmerman of the New York Giants chose to be addressed as "Henry" rather than their given names (*New York Times*, July 3, 2005).

Expectations of discrimination may also have affected a family's choice of last names, although such changes carried higher costs. In 1918, the *New York Times* reports that "Loyal citizens who possess German forms of the patronymic are striking them out, and similarly in the case of those becoming citizens" (*New York Times*, June 2, 1918). The NYSE data also include some applicants that cannot be assigned to ethnicities because their last names are anglicized. For example, Arthur Rittmaster, another applicant that cannot be assigned to an ethnicity, carries a last name that is an anglicized version of the German "Rittmeister".¹⁵ The algorithm leaves Rittmaster unassigned because of these ambiguities, and he is included in the category *Other Ethnicities*. If fear of ethnic discrimination motivated Germans to anglicize their names, discrimination will be more difficult to capture with the name data, especially if name changes respond to expectations of discrimination.

Another potential weakness of the data lies in the definition of the Jewish ethnicity variable based on religion rather than countries of origin. This may be important, if German Jews may have more in common with other Germans rather than with an English or Russian Jews. To address this issue, I use passenger lists of ships that entered the United States between 1850 and 1950 to identify the most frequent country of origin for the last names of all Jewish. Such data indicate that Germany was the country of origin for 80 percent of all Jewish applicants between 1910 and 1930.¹⁶

¹⁵ In the census of 1920 Arthur Rittmaster, a 30-year old stock broker in New York, reports that both of his parents were born in Russia, as were the parents of his wife Jennie. This suggests that Rittmaster's family was part of the wave of Jewish immigrants from Russia. Then, Rittmaster could be German, Jewish, or Russian.

¹⁶ I am currently matching last names for all remaining years to their most frequent country of origins. To compare this matching method with LSDI's algorithm, I repeat the process for all last names starting with B and compare ethnicity matches based on last names with LSDI's ethnicity matches.

IV. Ethnicity and the Probability of Rejection

If World War I led to discrimination against Germans, their treatment should deteriorate relative to majority applicants after the onset of the war. This section examines whether World War I increased the rate at which German-American applicants were rejected relative to Anglo-Saxons. Data on the share of rejected applicants across ethnicities indicate that rejection became more likely for German applicants after the beginning of World War I, while there was little change for Anglo-Saxons (Figure 5). The share of German applications that the Committee vetoed increases from 4 percent before the war to close to 8 percent after 1914. After the dividend sale of 1929, rejection rates return to a lower level at 1 percent. The share of Jewish applications that the Committee rejected on grounds of “personal and financial integrity” also increased from 3 to above 10 percent but dropped back to 5 percent after the war. At the same time, the Committee rejected a smaller proportion of Anglo-Saxon applications after the beginning of the war (2.3 percent compared to 2.9 percent).

Logit regressions with and without annual fixed effects measure the effects of ethnicity variables on rejection rates controlling for other characteristics of each transaction (Table 2). Four ethnicity variables distinguish buyers and sellers of *Anglo-Saxon*, *German*, *Jewish*, and *Other Ethnicities*; Anglo-Saxon is excluded because it is the largest and socially dominant ethnicity. The variables *pre-WWI* and *WWI* account for period effects, and data from 1929 to 1973 serve as a control group for the other years.¹⁷ Interactions between time and ethnicity variables, such as *German*WWI* compare differences over time in differences across ethnicities. Regressions further control for

¹⁷ Estimating regressions separately for each time period and dropping all data after the reorganization in 1938 confirms the results that are included in the paper.

sales by the *Committee of Admissions*, *Quarter Dividend* sales, and *Nominal* transfers. *Nominal* transfers may be subject to less interference because they typically occur between members of the same firm.

Positive coefficients on the time variables pre-WWI and WWI reflect the fact that rejections were more frequent in the early years of the Exchange (Table 2, columns I-III). Before World War I, 3.2 percent of applicants were rejected. During World War I, rejection rates reached the highest levels in the history of the exchange, with 4.3 percent. After the reorganization of the Exchange in 1938, rejections became extremely rare, at less than one percent (Table 1). Applications during the time of the quarter dividend sale were more likely to be rejected (Table 2, columns I-III), but this effect disappears with the inclusion of time-fixed effects (Table 2, columns IV-VI)¹⁸.

Results in Table 2 indicate that World War I resulted in a significant increase in the probability that German-American applicants would be rejected relative to Anglo-Saxons.¹⁹ The coefficient for the time ethnicity interaction *WWI * German Buyer* is positive and statistically significant at 5 (Table 2, columns I-III and VI) and 10 percent (columns IV and V). Coefficients in columns IV and V, which account for annual fixed effects, yield marginal probabilities of 0.247 and 0.239, implying that World War I increased rejection probabilities for Germans (relative to Anglo-Saxons) by 25 percent.²⁰

¹⁸ Regressions with fixed effects include only time ethnicity interactions and no separate variables to identify time periods because these variables would only capture differences in prices for the beginning and ending years of each period. For example, an additional World War I variable would capture changes between January 1st, 1914 and the beginning of World War I on June 28, 1914.

¹⁹ Regressions show that nominal transfers are significant and less likely to be rejected. Somehow I managed to forget them for these tables, and I have no time now to redo them, but they will be back.

²⁰ Marginal probabilities are calculated from the coefficients at the sample means. For example, the partial effect of being German in World War I on the probability of rejection is:

$$G(\beta_0 + \beta_{\text{German}}X_{\text{German}} + \dots + \beta_{\text{German} * \text{WWI}} + \dots + \beta_{\text{Nominal}}X_{\text{Nominal}}) - G(\beta_0 + \beta_{\text{German}}X_{\text{German}} + \dots + \beta_{\text{Nominal}}X_{\text{Nominal}})$$

No other time-ethnicity interaction is significant, except for the *WWI * Jewish Buyer* (Table 2, column III) and interactions between *WWI * Other Ethnicity*, (Table 2, columns I and III) which are significant at 10 percent in regressions without time fixed effects. This may, at least in part, be a result of the inclusion of unassigned names, such as “Tracy Falk” or “Arthur Rittmaster”, which appear to be anglicized versions of German or Jewish names.

Regressions in Table 2 also suggest that applications from Jewish traders were more likely to be rejected across all time periods. The variable *Jewish Buyer* carries a positive coefficient, that is significant at 1 (Table 2, columns I, II, IV, and V), 5 (column V), and 10 percent statistical significance (column III). Coefficients for the *Jewish Buyer* variable in columns IV and V, with annual fixed effects, translate into a 24.7 or 23.8 percent increase in the probability of rejection for applicants with Jewish names.

An analysis of the number of opposing votes, rather than rejection rates, confirms that World War I made it harder for Germans to be admitted to the Exchange relative to Anglo-Saxons.²¹ OLS regressions in Table 3 suggest that the number of blackballs that the Committee cast applicant increased by close to one for German applicants relative to Anglo-Saxons after the beginning of World War I (0.723 in column I, Table 3, significant at 5 percent, 0.672 in column II, significant at 5 percent, and 0.645 in column II, 10 percent). Thirteen members of the fifteen-member Committee voted on an average application; this implies a 6 percent increase in opposing votes for the average German applicant after the beginning of the war. Jewish applicants also received close to one more vote of “no” after the beginning of the war, even though this result does not

²¹ The overall fit on these regressions is low. Perhaps this is due to the fact that an analysis of blackballs might be sensitive to the idiosyncratic voting of individuals.

translate in an equivalent change in rejection rates (0.857 in column I, and 0.796 in column II, significant at 5 percent, and 1.112 in column II, significant at 1 percent).²²

In sum, these results suggest that incumbent members of the Exchange were more likely to oppose German applicants relative to majorities after the beginning of the war. Logit regressions with and without time fixed effects reveal a significant increase in the probability of rejection for German relative to Anglo-Saxons, and OLS regressions of blackballs suggest that World War I increased the number of Committee members who voted against Germans relative to Anglo-Saxons. Regressions also reveal a persistent bias against Jewish applicants. The following section examines whether members who exited the Exchange exhibited a similar bias by charging higher prices to minorities.

V. Ethnicity and the Price of Admission

In contrast to the decision to accept or reject applicants, the choice to charge a higher or lower price is made by members who are about to exit the Exchange, and may therefore have a weaker incentive to discriminate, even if they have strong preferences over ethnicities. While the Admissions Committee benefits from the identity of new members and not the price that they pay, sellers benefit only from a higher price and only indirectly from the identity of the new member. Price regressions in this section examines whether these differences result in differences in discrimination.

Tables 4 and 5 report the results of OLS regressions with time fixed effects and binary variables to distinguish time periods as controls for stock market conditions. In Table 4, time-period fixed effects serve as controls for the conditions of the stock market.

²² There also seems slightly more resistance against applicants that were selected by the Committee of Admissions itself and against applications that were part of the quarter dividend sales.

The ideal approach to isolate the ethnicity effect would be to compare sales on the same day. Seats were sold every two weeks, and because of the small volume of transactions, there are too few observations to allow for a meaningful estimation even on a monthly basis. Instead the data allow regressions with annual and bi-annual fixed effects (Table 4)²³ and regressions without time fixed effects as a secondary check (Table 5).

Price data yield only weak evidence of discrimination against Germans after the onset of World War I. Coefficients for the variable *WWI * German Buyer* in Table 5 indicate that German applicants paid between 14 and 15 percent higher prices between 1914 and the dividend sale of 1929. These results, however, disappear with the inclusion of time fixed effects: regressions with annual fixed effects suggest that German applicants paid between one and two percent lower prices relative to other periods and other ethnicities after the beginning of the war, although the effect is not statistically significant (Table 5, columns I-IV). This tenuous effect is weakened further by a one percent markup for German applicants across all periods (the coefficient on *German buyer* in Table 5, which, again, is not significant).

German buyers may have avoided discrimination by buying seats from sellers of their own ethnicity who would have favored them. The variable *German Buyer and Seller in WWI* denotes sales with German buyers and sellers at the time of the war to measure this effect. If German sellers favored German buyers to compensate for discrimination, the coefficient on this variable should be negative. Results in Columns I and II, however, reveal a positive, albeit not statistically significant coefficient. An equivalent variable for Jewish buyers and sellers has no effect, and there is no evidence

²³ These regressions include annual fixed effects, but bi-annual fixed effects, which can compare a larger number of observations, yield almost identical results, with only slightly smaller standard errors.

that members of other ethnic groups favored members of their own group. A binary variable *own ethnicity* that marks all transactions whose buyer and seller belong to the same ethnic group, carries a positive, though not statistically significant effect in all regressions.²⁴ These results suggest that sellers did not systematically charge lower prices to favor members of their own ethnicity.

There is, however, evidence of price discrimination against Jewish applicants, especially in the early years of the Exchange. Regression results in Table 4 and 5 suggest that Jewish applicants paid significantly more for membership than did majority applicants. Coefficients on the time ethnicity interactions *WWI * Jewish Buyer* in Table 4 (with annual fixed effects) indicate that Jewish applicants paid a 5 percent markup after the onset of World War I (Table 4, columns I-IV). Across all periods, Jewish buyers received discount of 2 percent, which yields an adjusted markup of approximately 3 percent for the years following 1914. Regressions with period dummies instead of time fixed effects in Table 5 suggest a larger markup, of 14 percent before World War I and 24 percent after the beginning of the war. Across all periods, Jewish applicants receive a discount of 10 percent (with a coefficient on *Jewish buyer* between 0.09 and 0.1). This yields an adjusted markup for Jewish buyers of 4 percent prior to WWI and 14 percent after the beginning of the war.

Regressions also reveal that applicants who bought four quarter seat shares during the dividend sale, rather than one seat from a single seller paid between 8 and 9 percent more for their memberships (Table 4, columns I-IV).²⁵ A closer look at the data reveals

²⁴ Interactions between a variable for own ethnicity and time periods are not statistically significant.

²⁵ OLS regressions without fixed effects indicate that dividend sale seats were 1.5 times more expensive than regular seats, but this coefficient may reflect changing market conditions that are not completely captured by the time period dummies. Davis, Neal, and White 2005 describe the significant influence of

that buyers often paid higher prices to individual sellers of a quarter dividend. One potential explanation for these price differences might be that an additional quarter seat becomes more valuable to a buyer with any quarter seat that the buyer has agreed to purchase. Higher prices may be a result of an increase in transaction costs for sales that required agreements on four separate sales, and they may reflect an increase in the bargaining power of the last person to sell a quarter share to a potential member.

Results in Table 5 further suggest that seats that were sold by the *Committee of Admissions* sold at a discount of approximately 22 percent. Such discounts are plausible, considering that the proceeds of seat sales by the Committee benefited the creditors and heirs of the expelled or deceased member, rather than the Exchange, and that the members of the Committee had only weak incentives to bargain for a higher price. Interactions between ethnicity variables and the *Committee of Admissions* yield no statistically significant coefficients (such interactions are included in the first column of Table 4 and 5).

Prices may also be higher if sellers expect the application to be rejected, because buyers compensate sellers for the increase in the likelihood of rejection. A seller may believe that an application is more likely to be rejected if because the applicant belongs to a minority, and the seller expects the Committee to discriminate, or because the seller has other information about the buyer, that would make him a poor match for the Exchange.²⁶

I observe the minority effect but not the effect of private information. The variable *Rejected* captures applications that were rejected by the Committee of Admissions and

other factors, such as profitability, the volume of trade, and technical change on the price of membership during this period.

²⁶ For example, applicants may have failed in business or been expelled from another exchange. This information is available in the Minutes of the Committee of Admissions, but coding it for all applicants would take a very long time.

that sellers may have expected to be rejected. It shows that the price of a rejected seat was about 1 percent higher than the price of other seats, though the effect is not statistically significant. The variable *Rejected * German * WWI* accounts for an increase in expectations that a German applicant will be rejected after World War I. It suggests that such applicants paid 7 percent more, though this markup is not statistically significant.

In sum, the NYSE data yield little evidence that World War I resulted in an increase in the price of membership for German applicants. It is interesting to note, however, that Jewish applicants paid higher prices than Anglo-Saxon applicants in early years of the Exchange, leading up to 1929. This difference may be a result of anti-Semitism in response to waves of immigration in the late 19th and early 20th century, as well as anti-Semitic publications that begun to circulate in the 1910s and explicitly directed at Jews in finance.²⁷

Henry Ford's *Dearborn Independent* first attacked Jews in on May 22, 1920.

The international financiers are behind all war. They are what is called the International Jew -- German Jews, French Jews, English Jews, American Jews. I believe that in all these countries except our own the Jewish financier is supreme... Here, the Jew is a threat." (Howard M. Sachar 1992, p.311)

From 1920 to 1922, anti-Semitic articles were reprinted by the Dearborn Publishing Company, in book forms as *The International Jew, the World's Foremost*

²⁷ Between 1880 and 1914, the number of Jewish New Yorkers increased from 60,000 to 1.5 million. Hundreds of thousands of these immigrants settled in the tenements of New York City's "Lower East Side", which Jacob Riis (1890) describes in *How the Other Half Lives*: "Every fresh persecution of the Russian or Polish Jew on his native soil starts greater hordes hitherward to confound economical problems, and recruit the sweater's phalanx. The curse of bigotry and ignorance reaches half-way across the world, to sow its bitter seed in fertile soil in the East Side tenements" (Riis 1890, p. 95). In 1908, an "official" New York City Kehillah was formed in response to police charges that over fifty percent of crimes in New York City were committed by Jews.

Problem (November, 1920), *Jewish Activities in the United States* (April, 1921), *Jewish Influences in American Life* (November, 1921), and *Aspects of Jewish Power in the United States* (May, 1922). The *Dearborn Independent* warned that Jews were trying "to control the world, not by territorial acquisition, not by military aggression, not by governmental subjugation, but by control of the machinery of commerce and exchange." According to The International Jew, "it is not merely that there are a few Jews among international financial controllers; it is that these world-controllers are exclusively Jews." (*Anti-Defamation League* 2005)

These publications ended in 1927, when the banker Aaron Sapiro sued for defamation. The *Dearborn* had printed accusations that Jewish lawyer Aaron Sapiro and a group of Jewish bankers and merchants were seeking to control the nation's wheat farming. Sapiro sued for defamation, and his case came to trial in Detroit. After declaration of a mistrial, Ford issued public statements and apologies to individuals and Jews as a group.

VI. Alternative Explanations and Robustness Checks

Analyses of rejection rates and prices in the previous sections suggest that WWI resulted in discrimination against German and Jewish Americans. The following paragraphs perform robustness checks for these results.

A. Competition with Other Exchanges

In Becker's (1957) model of taste-based discrimination, the existence of discrimination in a population depends on the share of discriminating employers. If the

fraction of discriminating employers is low, discrimination will be competed away and no minority workers work for discriminating firms. If, however, the fraction of discriminating employers in the population is high, some minority workers work for discriminating firms and the wage for majority workers will exceed those of minority workers. With free entry and constant returns to scale, discrimination disappears because non-discriminating firms expand as they hire minority workers at identical productivity and cheaper wages. Regulation and capital requirements create barriers to entry, and, as trading organizations, stock exchanges are likely to have a sizable minimum efficient scale. Despite these obstacles, new exchanges entered, especially in the early period of the exchange, and the New York Stock Exchange appears to have faced competition from competing exchanges in New York and several regional exchanges.

From the earliest days of stock dealing, high times of speculation created competing exchanges in the streets. Early in the 18th century the recognized place for this market was near the buttonwood tree in front of 68 and 70 Wall Street, later this shifted to the corner of Wall Street and Hanover Street. As the street market grew in importance, it became organized as the *Open Board of Stock Brokers* in 1864 (Eames 1894, p.43). After the officers of New York's banks decided to suspend specie payments on December 28, 1861, and the NYSE banned it as unpatriotic business, war time speculation encouraged the creation of a gold exchange. This exchange, originally a street market on William Street, was organized as the *New York Gold Exchange* in October 1864. Another alternative market developed in the basement of 23 William Street, known as the "Coal Hole". Membership in this exchange and the NYSE was mutually exclusive, though all parties dealt together in the street. Calls in the Coal Hole

were printed as “Sales at the Public Stock Board” in local newspapers. In 1894, the Consolidated Stock and Petroleum Exchange offered another alternative for about 2,000 traders (Eames 1894, p.70). “Bucket shops” provided opportunities for the more risk-loving types.

Intense competition during the bull market of the 1920s similarly encouraged the creation of competing exchanges. At that time, the Exchange’s tough listing standards limited trading in the “high tech” firms of the day, which were more likely to be traded on street markets or the regional exchanges. Between 1927 and 1929, the NYSE’s listings rose by over 12 percent, but an even larger number of new issues were listed on the Curb. Competition from the Chicago Exchange picked up in 1928: On January 1, 1927 and 1928 the Chicago Exchange listed only 237 and 238 stocks, but by January 1, 1929, there were 426 issues, increasing to 519 at the beginning of 1930. On June 4, 1928, the Los Angeles Stock Exchange created its own Curb to handle new stocks and securities that did not meet the requirements of the regular exchange. The Los Angeles Exchange also played a central role in the opening of the San Diego Stock Exchange in March 1929 (Davis, Neal, and White 2005, p.5-6). This growing network of regional exchanges created competition for the New York Stock Exchange, which may have mitigated discrimination in response to negative shocks to preferences. The next section examines whether World War I created such a shock.

B. The Ethnic Composition of the Committee of Admissions

In addition to selecting buyers for their individual seats, incumbent members collectively select the members of the admissions committee. If World War I created a

bias against Germans and Jews at the Exchange, the share of new members that are German or Jewish should decline as well. Figure 7 represents the ethnic composition of the 15 member strong Committee of Admissions between 1880 and 1930.²⁸ Changes in the representation of ethnicities at the Committee are consistent with bias against German and Jewish traders after the beginning of World War I. In 1880, before the beginning of our data, 3 of the Committee's 15 members were German-American, and 1 was Jewish. Between 1913 and 1915, the number of German members had dropped to 2 and there was no member with a Jewish name. Representation further declined to 1 German member by 1921, before it recovered to 2 German and 1 Jewish members of the Committee in 1930. These trends are not statistically significant, but they are consistent with the regression results of bias against Jewish and German traders in response to World War I.

The composition of the Committee could also influence the outcome of the Committee's voting behavior if a small number of votes were sufficient to veto an application and if some members systematically blackballed applicants of certain ethnicities. The voting rules allowed such behavior; an opposing vote of one third was sufficient to reject. In practice, however, applications were decided by an overwhelming majority. Between 1910 and 1920, two applicants were rejected although the majority of the Committee voted in their favor: David Levey (December 5, 1912, 9 white, 3 black balls) and George Shaskan (March 13, 1919, 8 white, 3 blackballs). Both applicants were Jewish, George Shaskan having arrived from Russia in 1891. At the time of the census of

²⁸ I have collected the names of members from the *Minutes* of the Committee of Admissions (1904), Francis Eames (1894, for 1880 and 1894), and the *New York Stock Exchange Directory* for the remaining years. Names are matched to ethnicities by List Service Direct. Names that LSDI cannot identify are assigned to ethnicities from census records and passenger lists of ships entering New York and Boston. Votes at the exchange are anonymous, and we can therefore not observe whether members of the Committee exhibited the within-group bias that is lacking from the overall data.

1920, Shaskan's naturalization was still pending. This was likely the grounds his rejection, since membership was restricted to U.S. citizens. For David Levey, the U.S. census of 1910 reports three possible matches in New York, but I cannot determine the exact match. Two of the three possible matches had German-born parents.

C. Changes in Minority Applications to the Exchange

Another concern with the measurement of discrimination is that expectations of discrimination may discourage applications from minority members. Then, the share of applicants with German names to the exchange should drop as a proportion of all applicants. Figure 8, however, shows that the proportion of German applicants experienced a slight increase, from 7.6 before World War I to 9.1 percent during World War I, and to 9.2 percent after the War. The share of Jewish applicants drops from 7.5 percent before World War I to 6.5 percent during World War I and recovers to 9.2 percent after World War I. This suggests that German applicants may not have internalized their expectations of discriminations, whereas it cannot be positively excluded that Jewish traders may have delayed their applications, and that the true size of discrimination may exceed observed levels of discrimination.

VI. Conclusions

This paper has used a new data set on more than 7,000 applications to the New York Stock Exchange between 1883 and 1973 to measure the effects of taste-discrimination against minorities. It takes advantage World War I as an exogenous shock to preferences over ethnicities: if World War I turned German Americans from a majority

to a minority group, the terms of admissions for German applicants should deteriorate after the beginning of the war relative to other ethnicities. Various measures confirm that World War I created such a shock to preferences. Clubs and professional organizations expelled their German members; census data show that the number of children with typically German names declined by 30 percent, and program notes at the Metropolitan opera reveal that the share of German-language performances dropped from 30 to 0 percent.

Data on rejection rates by ethnicity reveal that this shift in tastes resulted in a significant decrease in the probability of admission for Germans relative to other applicants. With the beginning of World War I, the probability that a German applicant was rejected increased by 25 percent relative to Anglo-Saxons. Data on the voting behavior of the NYSE's Committee of Admissions reveal that the average number of votes opposing a German applicant increased by 6 percent relative to Anglo-Saxons. The data also suggests that applications from Jewish traders were more likely to be rejected and that Jewish applicants paid higher prices for admission, especially in the early years of the Exchange.

World War I had a much smaller effect on the price of membership. Members that exited the Exchange did not charge Germans higher prices after the beginning of the war, and they did not sell to Anglo-Saxons at a discount. Sellers also did not favor members of their own ethnicity, even if their group experienced ethnic discrimination. In contrast, sellers may have charged a markup to applicants whom they expected to be rejected, perhaps to compensate themselves for the effort of finding a new buyer for their seat.

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Appendix I -- Transcripts of the Minutes of the Committee of Admissions

December 1st, 1904.

A meeting of the Committee on Admissions was held this day, Mr. F. L. Eames, presiding, in the absence of the Chairman. Also present: Messrs. Atterbury, Donald, Goodhart, Hazard, Keppler, Lawrence, Robinson, Rodewald, Sturgis, Swords and Maury.

Application of HARRY MARKOE, JR., for Admission

MR. A. MURRAY YOUNG appeared, and stated:

Q. How long have you known Mr. Markoe?

A. About eight or nine years.

Q. Have you known him socially, or in a business way?

A. Mostly socially.

Q. What is his present business?

A. Well, he was with Messrs. J. P. Morgan & Co. for a number of years. Then dealing in outside securities.

Q. Do you recommend him in every way as a proper person to be admitted to the Exchange?

A. I do.

Q. If he were alone in business and a member here, would you take his uncertified check, in the ordinary course of business, for \$20,000?

A. I would.

Q. Do you know anything about his health?

A. I should say it was very good.

MR. GEORGE F. BAKER, JR., appeared, and stated:

Q. How long have you known Mr. Ware?

A. About four years.

Q. Have you known him socially, or in a business way?

A. Both

Q. What has been his business, from your acquaintance with him?

A. Well, as a clerk in different offices downtown. I believe he did some outside work lately.

Q. Do you recommend him in every way as a proper person to be admitted to the Exchange?

A. Yes.

Q. If he were alone in business and a member here, would you take his uncertified check, in the ordinary course of business, for \$20,000?

A. Yes, sir.

Q. Do you know anything about his health?

A. No, except I think it is generally good.

MR. HARRY MARKOE, JR., the applicant, appeared, and on being questioned stated:

Q. It is my duty to call your particular attention to Section 3, Article XVII of the Constitution of this Exchange, which is read to all applicants for admission (reading said section). Are you a citizen of the United States?

A. I am.

Q. What business are you in at present?

A. I am connected with Francke, Thompson & Robb—Stock Exchange house.

Q. Are you a partner there?

A. No; a clerk.

Q. Have you ever failed in business?

A. No, sir.

Q. Are you free from debt and solvent now?

A. I am.

Q. Are there any judgments against you?

A. No.

Q. Are you engaged in any lawsuits?

A. No.

Q. Do you pay for the membership with your own means?

A. No; it was given to me by my family.

The Secretary stated that he held the release of Mr. Markoe's mother for \$20,000; for his aunt for \$34,000 and of another aunt for \$25,000., making in all \$79,000.

Q. Outside of your membership, you can state to the Committee a minimum amount of your means?

A. Three thousand dollars.

Q. What is your age?

A. Twenty-three

Q. In regard to your health, how is that?

A. Perfectly good.

Q. Have you enjoyed uniformly good health all your life?

A. Yes.

Q. Have you any insurance on your life?

A. No.

Q. Did you ever make application for a life insurance that was refused?

A. No.

Q. Are you a member of any other Exchange?

A. No.

Q. If admitted to this Exchange, have you made any plans as to what business you are going to carry on?

A. I have.

Q. Alone, or with a partner?

A. I expect to go with the firm of Dick Bros. & Company.

TABLE 1 – APPLICATIONS FOR MEMBERSHIP AT THE NEW YORK STOCK EXCHANGE – SUMMARY STATISTICS

	1883 to WWI	WW1 to Dividend Sale	Dividend Sale to Reorganization	Reorganization to February 1974	All years
ANGLO-SAXON					
Applications	1,207	704	1,137	1,478	4,526
Rejected	2.9%	2.3%	2.1%	0.5%	1.8%
Nominal	11.2%	19.0%	24.3%	39.1%	24.8%
GERMAN					
Applications	149	117	180	327	773
Rejected	4.0%	7.7%	1.1%	0.9%	2.59%
Nominal	4.0%	12.0%	20.6%	33.6%	21.60%
JEWISH					
Applications	147	105	186	331	769
Rejected	3.4%	10.5%	4.8%	1.8%	4.0%
Nominal	10.2%	17.1%	13.4%	29.0%	20.0%
OTHER					
Applications	188	133	199	510	1,030
Rejected	4.3%	7.5%	4.5%	0.4%	2.82%
Nominal	8.5%	12.8%	16.1%	42.2%	27.2%
ALL ETHNICITIES					
Applications	1,691	1,059	1,702	2,646	7,098
Rejected	3.2%	4.3%	2.6%	0.7%	2.3%
Nominal	10.2%	17.3%	21.7%	37.8%	24.3%

Notes: Data on price and admissions decisions were collected from the Archives at the New York Stock Exchange. An algorithm that is designed for marketing research matches names to ethnicities. Prices are in year 2000 U.S. dollars.

TABLE 2 — LOGIT REGRESSIONS; 1883-1973: COEFFICIENTS
DEPENDENT VARIABLE IS 1 FOR REJECTED APPLICANTS, 0 FOR ACCEPTED

	I	II	III	IV	V	VI
	No Fixed Effects			Annual Fixed Effects		
German Buyer	-0.024 [0.494]	-0.127 [0.485]	-0.627 [0.744]	0.003 [0.495]	-0.077 [0.489]	-0.526 [0.748]
Jewish Buyer	1.029 [0.330]**	0.932 [0.319]**	0.73 [0.405]+	1.165 [0.336]**	1.082 [0.325]**	0.959 [0.412]*
Other Ethnicity	0.490 [0.362]	0.376 [0.356]	0.266 [0.470]	0.651 [0.368]+	0.541 [0.363]	0.353 [0.479]
Pre-WWI	1.130 [0.273]**	1.177 [0.273]**	1.307 [0.371]**			
WWI	0.881 [0.330]**	0.927 [0.331]**	0.804 [0.472]+			
Pre-WWI * German	0.557 [0.668]	0.461 [0.662]	0.859 [0.925]	0.784 [0.685]	0.667 [0.672]	0.961 [0.935]
Pre-WWI * Jewish	-0.678 [0.588]	-0.773 [0.582]	-1.119 [0.846]	-0.8 [0.599]	-0.882 [0.593]	-1.279 [0.857]
Pre-WWI * Other Ethnicity	0.137 [0.540]	0.016 [0.535]	0.014 [0.685]	0.047 [0.554]	-0.095 [0.547]	0.044 [0.700]
WWI * German	1.371 [0.661]*	1.295 [0.659]*	2.115 [0.927]*	1.21 [0.665]+	1.126 [0.661]+	1.883 [0.922]*
WWI * Jewish	0.568 [0.539]	0.501 [0.537]	1.234 [0.656]+	0.442 [0.543]	0.375 [0.541]	0.746 [0.645]
WWI * Other Ethnicity	1.004 [0.556]+	0.854 [0.547]	1.263 [0.707]+	0.809 [0.562]	0.637 [0.553]	1.084 [0.708]
Committee of Admissions	0.559 [0.250]*	0.258 [0.193]		0.416 [0.260]	0.127 [0.203]	
Quarter Dividend Sale	0.912 [0.269]**	0.905 [0.269]**	1.300 [0.441]**	0.036 [0.405]	0.039 [0.405]	-0.041 [0.448]
Real Price (in ln)			0.057 [0.183]			0.489 [0.673]
Constant	-4.815 [0.220]**	-4.761 [0.218]**	-5.823 [2.492]*			
Observations (Sales)	7,095	7,095	5,256	4,497	4,497	2,823
Groups (Years)				56	56	35

Notes: Data on price and admissions decisions were collected from the Archives at the New York Stock Exchange. Applicants' names were assigned to ethnicities by an algorithm from List Service Direct Inc. (LSDI) that is used for marketing purposes. Prices are in year 2000 U.S. dollars. + denotes significance at 10%; * at 5%; ** at 1%.

TABLE 3 — OLS REGRESSIONS; 1883-1934
DEPENDENT VARIABLE IS NUMBER OF BLACKBALLS (VOTES OPPOSING AN APPLICATION)

	I	II	III
German Buyer	-0.067 [0.234]	-0.097 [0.233]	-0.062 [0.256]
Jewish Buyer	-0.144 [0.247]	-0.175 [0.246]	-0.221 [0.264]
Other Ethnicity	0.522 [0.212]*	0.497 [0.210]*	0.216 [0.226]
Pre-WWI	-0.123 [0.117]	-0.102 [0.117]	-0.416 [0.150]**
WWI	-0.137 [0.129]	-0.116 [0.128]	-0.385 [0.150]*
Pre-WWI * German	0.350 [0.302]	0.285 [0.297]	0.178 [0.314]
Pre-WWI * Jewish	0.421 [0.315]	0.334 [0.308]	0.295 [0.325]
Pre-WWI * Other Ethnicity	-0.356 [0.273]	-0.407 [0.269]	-0.204 [0.281]
WWI * German	0.723 [0.318]*	0.672 [0.315]*	0.645 [0.338]+
WWI * Jewish	0.857 [0.336]*	0.796 [0.333]*	1.112 [0.354]**
WWI * Other Ethnicity	0.037 [0.300]	-0.022 [0.294]	0.243 [0.310]
Committee of Admissions	0.257 [0.106]*	0.150 [0.088]+	
Quarter Dividend Sale	0.393 [0.149]**	0.396 [0.149]**	0.579 [0.167]**
Real Price (in ln)			-0.212 [0.069]**
Constant	0.372 [0.099]**	0.378 [0.099]**	3.526 [1.002]**
Committee Ethnicity Interactions	Yes	No	No
Observations (Sales)	3,625	3,625	2,992
Groups (Years)	0.01	0.01	0.02

Notes: Data were collected from the Archives at the New York Stock Exchange. Votes are by members of the NYSE's Committee of Admissions; the Committee has 15 members and votes with when at least ten members are present. Blackballs are only recorded until 1934. Applicants' names were assigned to ethnicities by an algorithm from List Service Direct Inc. (LSDI) that is used for marketing purposes. Prices are in year 2000 U.S. dollars. + denotes significance at 10%; * at 5%; ** at 1%.

TABLE 4 - ORDINARY LEAST SQUARES REGRESSIONS, 1883-1974, YEARLY FIXED EFFECTS
DEPENDENT VARIABLE IS LOG PRICE OF A SEAT IN YEAR 2000 US DOLLARS

	I	II	III	IV
German Buyer	0.012 [0.010]	0.011 [0.009]	0.008 [0.008]	0.008 [0.008]
Jewish Buyer	-0.016 [0.009]+	-0.02 [0.009]*	-0.026 [0.008]**	-0.026 [0.008]**
Other Ethnicity	0.011 [0.009]	0.012 [0.008]	0.009 [0.008]	0.009 [0.008]
Pre-WWI * German Buyer	-0.015 [0.017]	-0.016 [0.017]	-0.008 [0.016]	-0.008 [0.016]
Pre-WWI * Jewish Buyer	0.027 [0.017]	0.026 [0.017]	0.034 [0.016]*	0.034 [0.016]*
Pre-WWI * Other Buyer	-0.021 [0.016]	-0.02 [0.015]	-0.014 [0.014]	-0.014 [0.014]
WWI * German Buyer	-0.022 [0.020]	-0.023 [0.020]	-0.012 [0.018]	-0.017 [0.018]
WWI * Jewish Buyer	0.049 [0.020]*	0.049 [0.020]*	0.055 [0.019]**	0.055 [0.019]**
WWI * Other Ethnicity	-0.01 [0.018]	-0.01 [0.018]	-0.004 [0.017]	-0.003 [0.017]
German Buyer and Seller in WWI	0.035 [0.047]	0.037 [0.046]		
Committee of Admissions	0.006 [0.007]	0.003 [0.005]		
Quarter Dividend Sale	0.083 [0.012]**	0.083 [0.012]**	0.093 [0.011]**	0.093 [0.011]**
Rejected			0.011 [0.015]	0.007 [0.015]
Rejected*German*WWI				0.077 [0.062]
Constant	13.723 [0.004]**	13.723 [0.004]**	13.717 [0.003]**	13.717 [0.003]**
Committee Ethnicity Interactions	Yes	No	No	No
Observations	4,535	4,535	5,256	5,256
Groups	92	92	92	92
R-squared	0.01	0.01	0.02	0.02

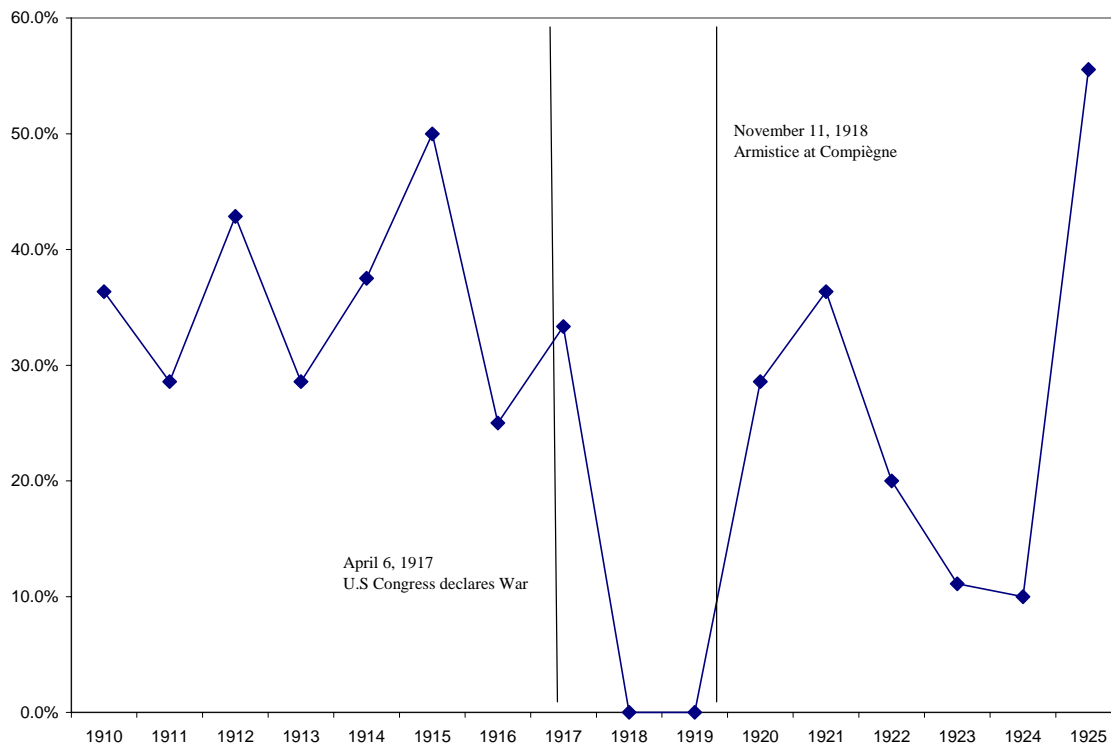
Notes: Data are for attempted sales, after the agreement between buyer and seller, but before the decision of the Committee of Admissions to accept the application. Data on price and admissions decisions were collected from the Archives at the New York Stock Exchange. Applicants' names were assigned to ethnicities by an algorithm from List Service Direct Inc. (LSDI) that is used for marketing purposes. Prices are in year 2000 U.S. dollars. Coefficients with a ** are significant at a 1 percent level and those with * at 5 percent.

TABLE 5 – ORDINARY LEAST SQUARES REGRESSIONS, 1883-1974, WITH PERIOD DUMMIES,
DEPENDENT VARIABLE IS LOG PRICE OF A SEAT IN YEAR 2000 US DOLLARS

	I	II	III	IV
German Buyer	-0.030 [0.041]	-0.031 [0.038]	-0.028 [0.036]	-0.028 [0.036]
Jewish Buyer	-0.088 [0.039]*	-0.099 [0.036]**	-0.100 [0.034]**	-0.100 [0.034]**
Other Ethnicity	-0.079 [0.037]*	-0.065 [0.035]+	-0.061 [0.032]+	-0.061 [0.032]+
Pre-WWI	-0.164 [0.027]**	-0.164 [0.027]**	-0.170 [0.025]**	-0.170 [0.025]**
WWI	0.253 [0.033]**	0.253 [0.033]**	0.244 [0.031]**	0.244 [0.031]**
Pre-WWI * German Buyer	0.123 [0.071]+	0.121 [0.070]+	0.124 [0.066]+	0.124 [0.066]+
Pre-WWI * Jewish Buyer	0.139 [0.071]*	0.135 [0.070]+	0.141 [0.067]*	0.140 [0.067]*
Pre-WWI * Other Buyer	0.007 [0.065]	0.014 [0.065]	0.042 [0.060]	0.042 [0.060]
WWI * German Buyer	0.149 [0.084]+	0.149 [0.084]+	0.155 [0.076]*	0.142 [0.077]+
WWI * Jewish Buyer	0.273 [0.083]**	0.272 [0.083]**	0.239 [0.079]**	0.240 [0.079]**
WWI * Other Ethnicity	0.084 [0.077]	0.096 [0.077]	0.051 [0.071]	0.051 [0.071]
German Buyer and Seller in WWI	-0.106 [0.196]	-0.104 [0.195]		
Committee of Admissions	-0.220 [0.027]**	-0.217 [0.022]**		
Quarter Dividend Sale	1.506 [0.027]**	1.507 [0.027]**	1.572 [0.025]**	1.572 [0.025]**
Rejected			0.019 [0.061]	0.006 [0.063]
Rejected*German*WWI				0.218 [0.265]
Constant	13.563 [0.019]**	13.562 [0.019]**	13.501 [0.017]**	13.501 [0.017]**
Committee Ethnicity Interactions	Yes	No	No	No
Observations	4535	4535	5256	5256
R-squared	0.49	0.49	0.48	0.48

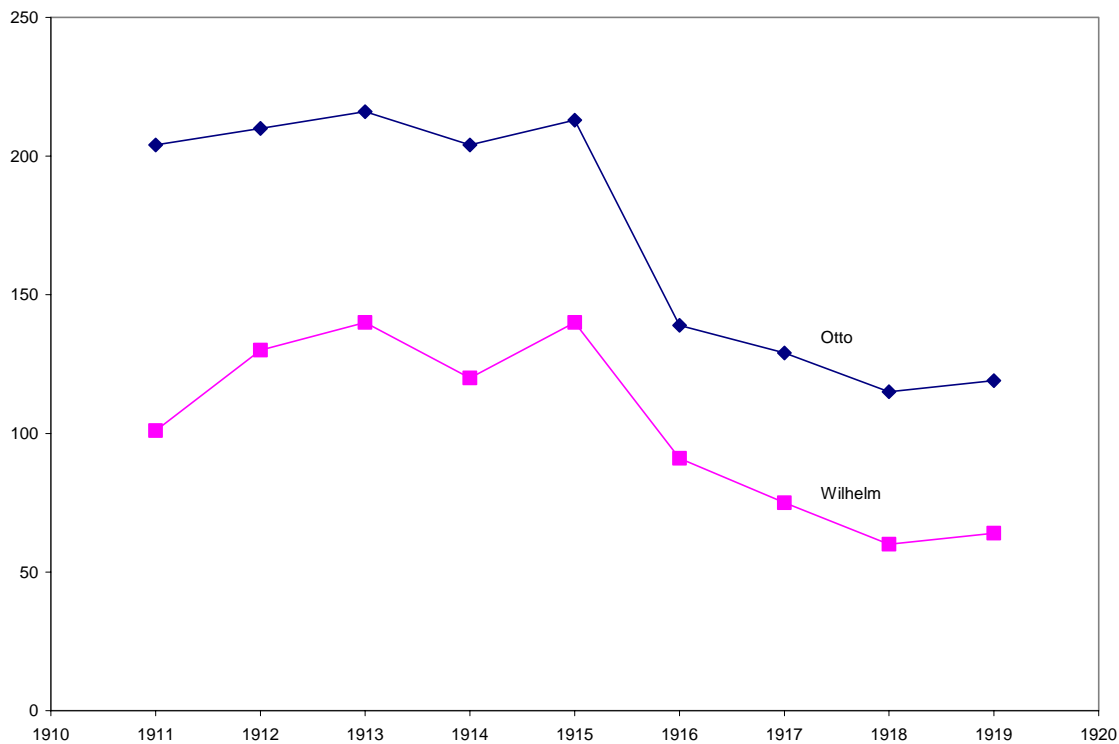
Notes: Data on price and admissions decisions were collected from the Archives at the New York Stock Exchange. Applicants' names were assigned to ethnicities by an algorithm from List Service Direct Inc. (LSDI) that is used for marketing purposes. Prices are in year 2000 U.S. dollars. Coefficients with a ** are significant at a 1 percent level, those with * at 5 percent, and coefficients with a + at 10 percent.

FIGURE 1 – THE PROPORTION OF GERMAN-LANGUAGE OPERAS PERFORMED AT THE METROPOLITAN OPERA HOUSE FROM 1910 TO 1925



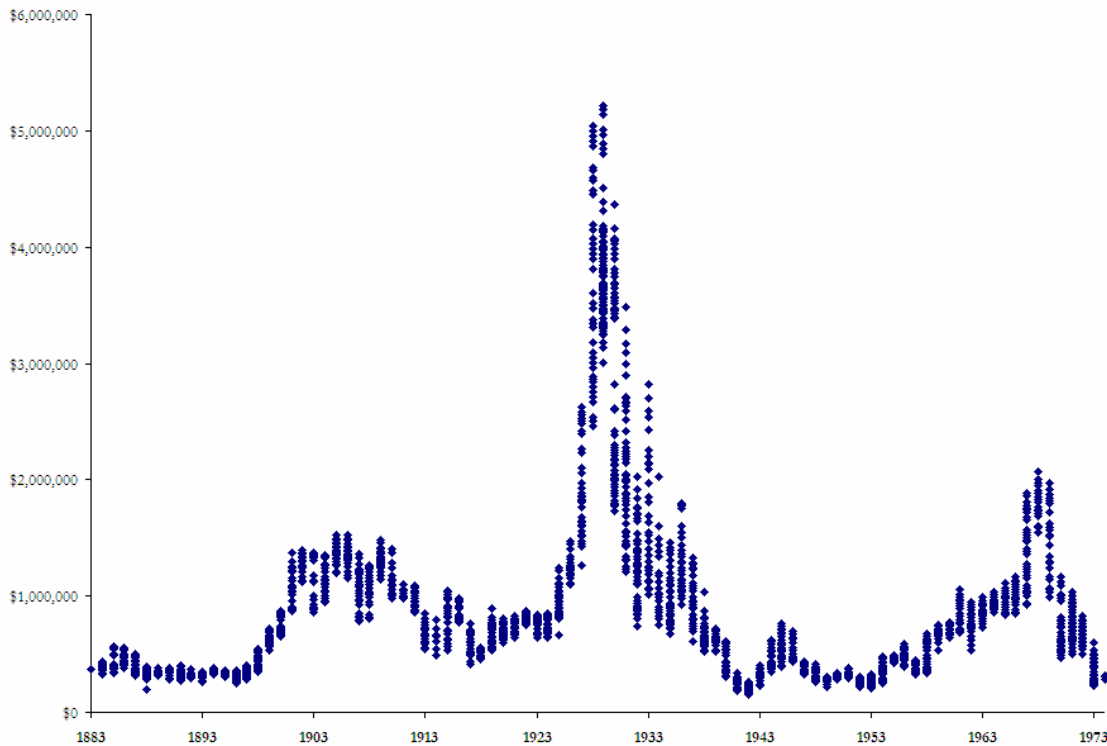
Notes: Performances were drawn from the *Metopera Database* of the Archives of the Metropolitan Opera.

FIGURE 2 – CHILDREN NAMED OTTO OR WILHELM FROM 1911 TO 1919



Notes: Data were constructed by counting the number of children with the name Otto or Wilhelm born in individual years between 1911 and 1919 in the United States Census of 1920. Otto's are reported in tens.

FIGURE 3 -- NEW YORK STOCK EXCHANGE MEMBERSHIP SEAT PRICES, 1883-1974



Notes: Price data were collected from the ledgers of transactions in the Archives of the NYSE Archives.

FIGURE 4 – CENSUS RECORD FOR TRACY FALK, REJECTED FOR MEMBERSHIP IN 1912

DEPARTMENT OF COMMERCE-BUREAU OF THE CENSUS
FIFTEENTH CENSUS OF THE UNITED STATES: 1930
POPULATION SCHEDULE

Enumeration District No. 34V
Superior's District No. 34V
Sheet No. 20B

Tracy Falk, New York City, New York

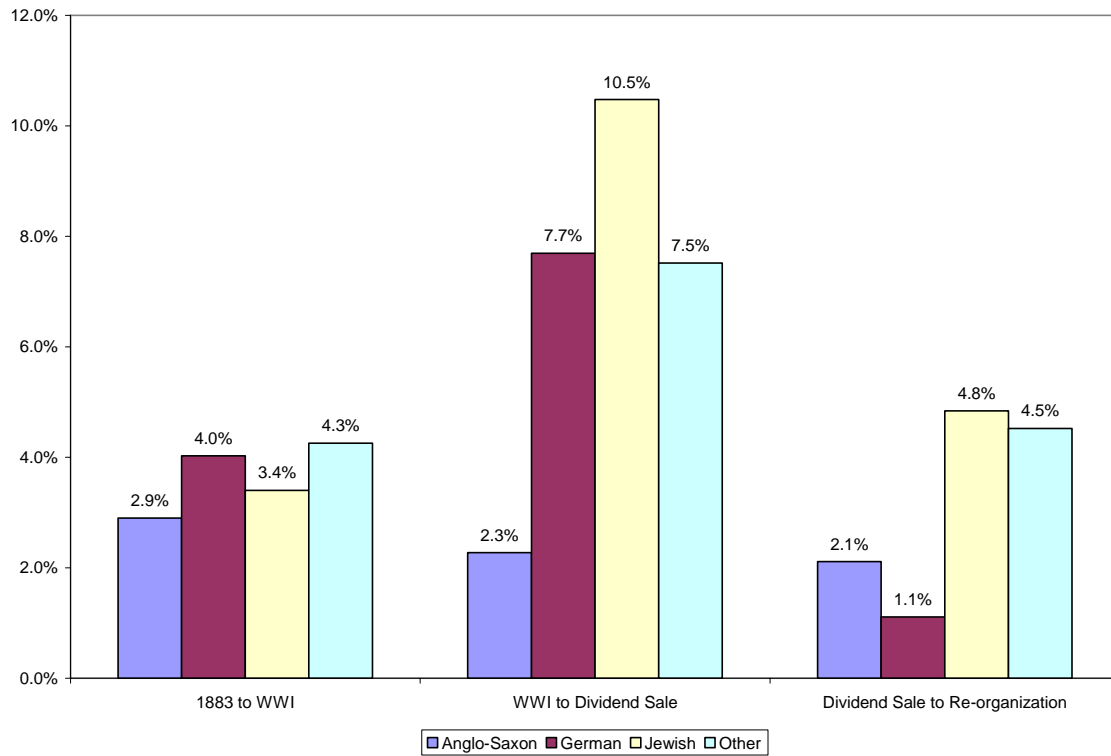
PLACES OF BIRTH

NAME	RELATION	BIRTH DATE	PLACE OF BIRTH	NATIVE	COLORED	SEX	AGE	EDUCATION	OCCUPATION AND INDUSTRY	EMPLOYMENT	REMARKS
Tracy Falk	Head	1883	New York City	White	No	M	47	High School	Broker	Self	
Elizabeth Falk	Wife	1885	New York City	White	No	F	45	High School	Homemaker	Self	
Robert Falk	Son	1905	New York City	White	No	M	25	High School	Student	None	
William Falk	Son	1910	New York City	White	No	M	20	High School	Student	None	
John Falk	Son	1915	New York City	White	No	M	15	High School	Student	None	
Margaret Falk	Daughter	1920	New York City	White	No	F	10	High School	Student	None	
Tracy Falk	Head	1883	New York City	White	No	M	47	High School	Broker	Self	
Elizabeth Falk	Wife	1885	New York City	White	No	F	45	High School	Homemaker	Self	
Robert Falk	Son	1905	New York City	White	No	M	25	High School	Student	None	
William Falk	Son	1910	New York City	White	No	M	20	High School	Student	None	
John Falk	Son	1915	New York City	White	No	M	15	High School	Student	None	
Margaret Falk	Daughter	1920	New York City	White	No	F	10	High School	Student	None	

ABSTRACTS TO BE USED BY CENSUS OFFICE

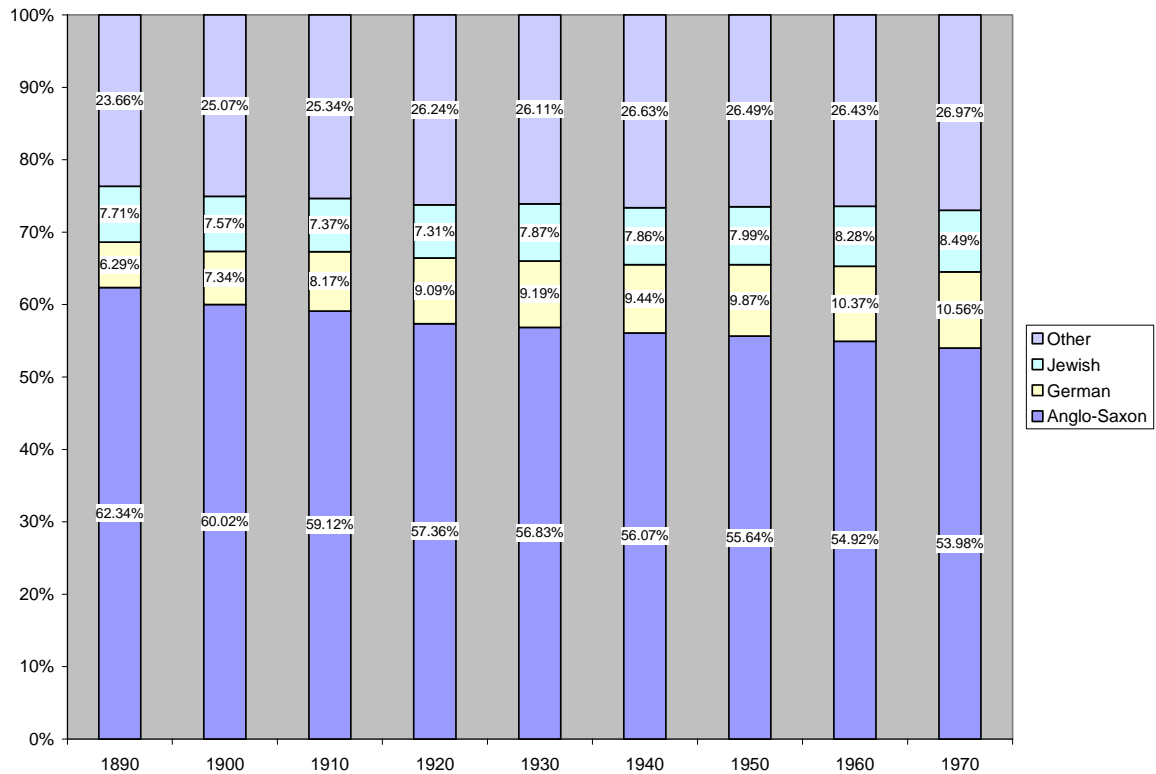
ENTRIES ARE REQUIRED IN THE SEVERAL COLUMNS AS FOLLOWS:

FIGURE 5 -- SHARE OF REJECTED APPLICANTS BY ETHNICITY 1883-1938



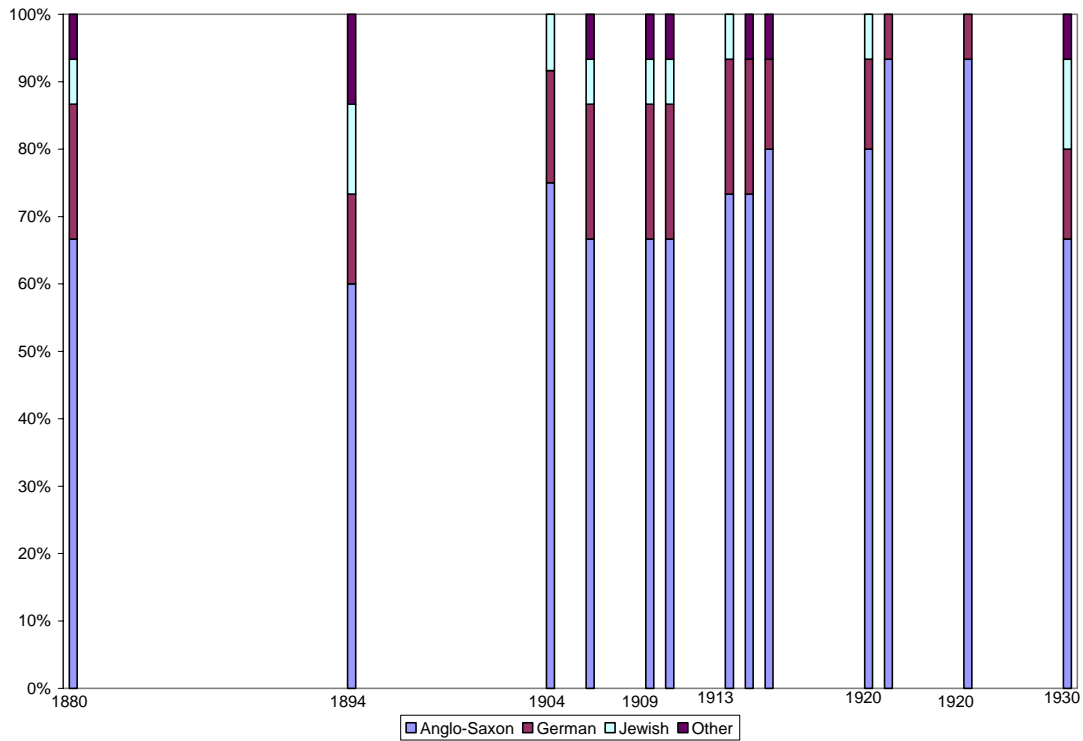
Notes: Data on names and election outcomes were collected at the archives of the New York Stock Exchange. List Service Direct, a commercial data base firm, matched names to ethnicities.

FIGURE 6 – ETHNIC COMPOSITION OF THE NEW YORK STOCK EXCHANGE 1883-1974



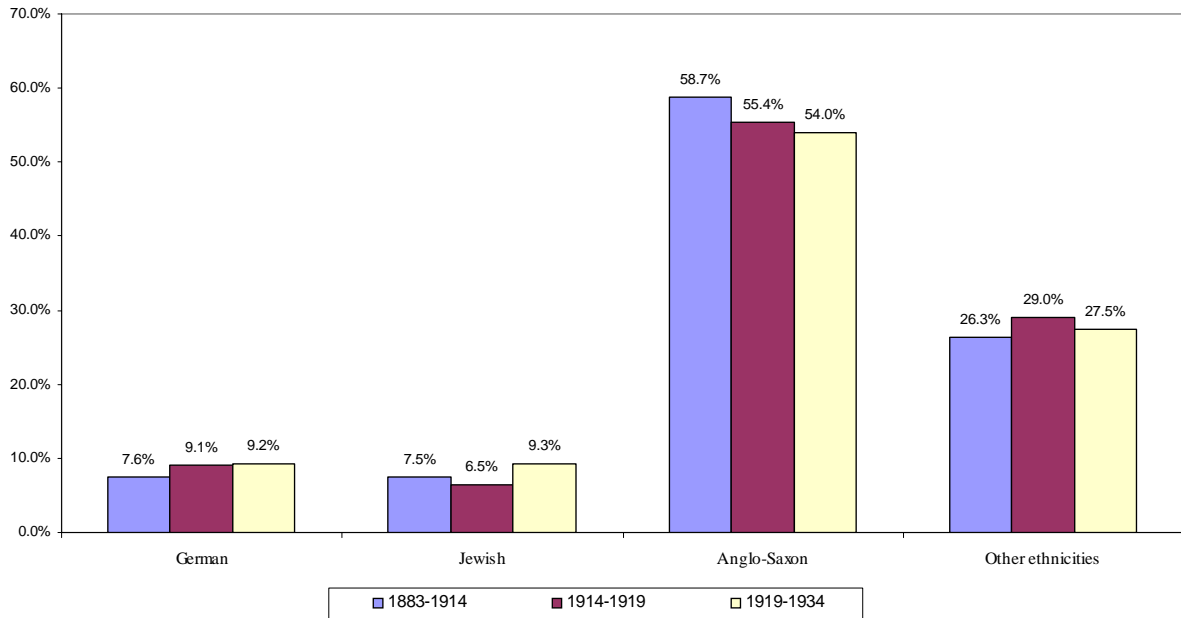
Notes: Price and name data were collected from the ledgers of transactions in the archives of the New York Stock Exchange. List Service Direct, a commercial data base firm, matched names to ethnicities.

FIGURE 7 – THE ETHNIC COMPOSITION OF THE COMMITTEE OF ADMISSIONS



Notes: The Committee of Admissions had 15 members. I have collected their names from the *Minutes* of the Committee of Admissions (1904), Francis Eames (1894, for 1880 and 1894), and the *New York Stock Exchange Directory*. Names that LSDI cannot identify are assigned to ethnicities from census records and passenger lists of ships entering New York and Boston between 1850 and 1950.

FIGURE 8 – SHARE OF MINORITY APPLICANTS BEFORE, DURING, AND AFTER WORLD WAR I



Notes: Price and name data were collected from the ledgers of transactions in the archives of the New York Stock Exchange. List Service Direct, a commercial data base firm, matched names to ethnicities.