

# *The Entry Into the U.S. Labor Market of Antebellum European Immigrants, 1840-60*

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*Abstract:* This study examines the occupational mobility of antebellum immigrants as they entered the U.S. White collar, skilled, and semi-skilled immigrants left unskilled jobs more rapidly after arrival than farmers and unskilled workers. British and German immigrants fared better than the Irish; literate immigrants in rapidly growing counties and places with many immigrants fared best. These findings have implications for (1) the accuracy of estimates of immigrant occupational mobility; (2) the size of the human capital transfer resulting from antebellum immigration; and (3) the causes of the difficulty experienced by some immigrant groups in transferring their skills to the U.S.

## Introduction

The research of a generation of economic and social historians has given us considerable insight into the occupational mobility experienced in the U.S. by immigrants in the first half of the nineteenth century. Work by Thernstrom (1964, 1973), Griffen and Griffen (1978), Esslinger (1975), and others has shown that upward occupational mobility was infrequent during the careers of first generation immigrants in the U.S.: no more than a third of immigrants who began their careers in the U.S. as unskilled laborers in cities as different as Newburyport, Boston, Poughkeepsie, and South Bend were able to rise into the ranks of skilled or white collar workers, even after several decades in the U.S. This poor performance seems inconsistent with the belief expressed by many immigrants that the U. S. was a place where economic advancement—particularly occupational mobility—was likely. This apparent paradox may result from a censoring problem in these studies: they examine immigrants' U.S. occupations using sources such as the U.S. census, city directories, and local tax records, while immigrants were least likely to be enumerated in such sources in their first years in the U.S. (Ferrie, 1992) As a result, these studies may miss a great deal of occupational mobility if mobility was most likely in the first years after arrival. Even if occupational mobility was genuinely infrequent among recent arrivals, immigrants' optimism may have been justified if some of those observed as white collar, skilled, or semi-skilled workers or farmers in the U.S. had been unskilled laborers before they left Europe. To see whether either of these is the case, we need to know how

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immigrants' post-migration occupations changed as their time in the U.S. increased, and how their pre-migration and post-migration occupations compared.

The more accurate picture of immigrant occupational mobility that such information would provide may help us to understand not only the optimism that prompted many immigrants to incur the substantial costs of migration but also the full benefit that the U.S. derived from immigrants' arrival. Several studies have examined the pre-migration occupations of nineteenth century immigrants to assess the value of the human capital transfer their arrival produced (Kapp, 1870; Uselding, 1970; Neal and Uselding, 1972). If immigrants stating they possessed some sort of human capital before their arrival (white collar, skilled, and semi-skilled workers and farmers) were unable to put that capital to use after arrival and remained unskilled laborers throughout their careers in the U.S., measures of the human capital transfer induced by immigration will be upward biased. If immigrants were prevented by institutional forces (such as the presence of guilds and rigid apprenticeship systems, or the presence of rigidities in the land market resulting from feudal ownership patterns) in the country of origin from entering occupations there that made full use of their innate skills, and were able to move into such jobs in the U.S., the human capital transfer will be understated by the occupations immigrants reported at their arrival. To see whether the distribution of pre-migration occupations overstates or understates the human capital transfer brought about by immigration, we need to know how the probability that immigrants were employed in their pre-migration occupation changed as their time in the U.S. increased.

Recent research on contemporary immigrants to the U.S. has shown that occupational mobility is often rapid early in immigrants' time in the U.S. and that many immigrants pursue occupations in the U.S. different from those they pursued in their country of origin (Chiswick, 1978). Moreover, this research suggests that these patterns are not uniform across all immigrants: the ability to employ pre-migration skills after arrival in the U.S. is greater for immigrants coming from places more like the U.S. in terms of their degree of economic development than for immigrants from places less like the U.S. This research suggests both the possibility that country of origin may be an important determinant of occupational mobility in the antebellum period and the mechanism that might account for differences in performance by country of origin.

This article describes results from a new sample of mid-nineteenth century immigrants that was constructed to reveal the extent, timing, and correlates of the changes in occupation made by immigrants from their occupations in Europe to their occupations in the U.S. (Ferrie, 1992). The sample consists of 2,594 male immigrants who appeared in passenger ship lists filed at the port of New York between 1840 and 1850 and who were found in the manuscript schedules of the 1850 and 1860 federal censuses of population. This longitudinal sample contains information on date of arrival, occupation in Europe, and occupation in 1850 and 1860, as well as a variety of individual and community characteristics. The article uses these data to answer three questions: 1) How much occupational mobility occurred between arrival and when we next observe immigrants in the 1850 or 1860 census? 2) How soon after arrival did immigrants change occupations? 3) And how can we account for this mobility? This sample allows us to examine such patterns for the first time for a group representative of the population of immigrants who arrived from Europe in the years before the Civil War.

### Previous Research on Immigrant Occupational Mobility

For the nineteenth century, it has been difficult to study the occupational mobility of immigrants between their arrival and their appearance in U.S. sources. Such an undertaking requires knowledge of an immigrant's occupation in Europe, which is absent from nineteenth century censuses, city directories, and tax and poll records. Several samples of immigrants linked from records in their community of origin to

the U.S. census have permitted such work, but the circumstances that allowed such linkage are unusual.<sup>1</sup> Two studies that have used such samples are Kamphoefner (1987) and Swierenga (1986).

Among German who emigrated from Lippe-Detmold to St. Louis and two adjacent rural counties between 1832 and 1860, Kamphoefner (1987) found significant movement from European occupation to U.S. occupation in 1860, with most arrivals able to improve upon their occupational status in Europe. Twenty-eight of the thirty immigrants (93.3%) who were laborers in Germany had risen in status by the 1860 census, of whom twenty-two had become independent farmers. Only two of twenty-nine artisans (6.9%) had fallen to the status of laborer by 1860, while 4 of 25 proprietors (16.0%) had fallen (Kamphoefner, 1987, p. 153).

Swierenga (1986) cast a wider net, examining the occupational mobility of all Dutch immigrants to the U.S. Among those who arrived over the period 1841-50, he found more movement downward to laborer and less upward from laborer than Kamphoefner had found. Of 1841-50 arrivals who were in white collar occupations in Holland, 23% were described as unskilled laborers in the 1850 census. Twenty-two percent of those who were craftsmen in Holland were unskilled laborers in 1850 (Swierenga, 1986, p. 107). Of 1841-50 arrivals who were unskilled laborers, farm laborers, or stated no occupation upon arrival, 51% had moved up in status by 1850.

The fact that the groups studied by Kamphoefner and Swierenga went to narrowly circumscribed areas in the U.S. might have made their experiences different from the experiences of the British, Irish, and Germans who arrived in the antebellum period and settled in widely disparate locations. For example, 72% of the 9,000 Dutch immigrants present in the U.S. in 1850 lived in only 16 counties. The cohesiveness of the Dutch community might account for the fact that so few of those in white collar and skilled blue collar occupations in Europe appeared as laborers in the U.S., and for the fact that those who were laborers in Europe were so likely to move up into craft and white collar jobs in the U.S.<sup>2</sup> The present sample includes immigrants who settled in more than 500 counties. Though some no doubt took advantage of the safety that migration to an existing immigrant community afforded, many of those in the present sample struck out on their own without the benefit of such ties.<sup>3</sup>

In the absence of detailed information on individuals linked from their place of origin to the census, historical researchers have instead relied on the record of mobility in individual local economies within the U.S. based on sources such as the decennial federal census, city directories, and local tax and poll records in which individuals can be linked across successive years. These studies have generally found little upward mobility among immigrants. Among Irish immigrants in Poughkeepsie who first appeared in the U.S. census as unskilled workers, only 26% escaped blue-collar occupations during their careers in the city. No more than 30% of immigrants in South Bend, Indiana who first appeared in the U.S. census as manual workers (skilled workers and unskilled laborers) were able to move into non-manual (white collar)

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<sup>1</sup> Previous studies in which linkage of this sort was done were possible because the immigrants studied traveled from a narrowly circumscribed area of origin and settled in narrowly circumscribed areas within the U.S., and because detailed point-of-origin occupational information was collected. See Ferrie (1992) for references.

<sup>2</sup> As Chiswick (1994, p. 105) notes, "Among immigrants with limited destination language skills, geographic concentration can serve as a shelter between the origin and destination labor markets." He notes further, however, that there may be a negative relationship between immigrants' labor market outcomes and their geographic concentration if concentration results in the provision of "ethnic goods" that immigrants value and immigrants are willing to trade off some improvements in labor market outcomes for these goods.

<sup>3</sup> The extent to which mobility in the present sample is accounted for by the characteristics of the communities to which immigrants went is considered below.

occupations during their careers in the city. In Newburyport, Thernstrom (1964, p. 100) found that only twenty percent of foreigners who were in unskilled occupations in the 1850 U.S. census were able to reach skilled or white collar occupations by 1860. For a slightly later period in Boston, Thernstrom (1973, p. 117) found that no more than a third of the foreign born whose first observed occupation in the U.S. was blue collar (unskilled manual or skilled manual) were in white collar (non-manual) occupations at the end of their careers in Boston.<sup>4</sup>

Since these studies were unable to control for an immigrant's time in the U.S. and since recent migrants were less likely to be enumerated by census takers, directory publishers, and tax collectors, these studies have understated mobility if mobility was most likely among recent arrivals. Since these studies contain no information on occupation prior to arrival, they also may miss what may have been the single biggest change the immigrant worker would have ever made: his introduction into the U.S. economy.<sup>5</sup> The extensive upward mobility in the Kamphoefner and Swierenga studies points to the possible magnitude of such transitions in the population of all immigrants.

### The Sample and Its Accuracy

The sample was constructed in three stages.<sup>6</sup> In the first stage, every twentieth male household head and male traveling alone was drawn from passenger ship lists of immigrant arrivals at New York between 1840 and 1850. This produced a sample of roughly 24,000 immigrants. In the next stage, the national index to the 1850 federal census of population (Jackson, 1981) and the census manuscripts were searched to locate them.<sup>7</sup> In the final stage, the national index to the 1860 federal census of population (Jackson, 1991) and the census manuscripts were searched to locate members of the original sample of 24,000 from the passenger ship lists. After excluding immigrants with no reported occupation in the ship lists, the resulting linked sample had 506 immigrants linked to both 1850 and 1860, 942 linked only to 1850, 1,109 linked only to 1860, and 2,557 linked to either 1850 or 1860 or both 1850 and 1860.<sup>8</sup>

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<sup>4</sup> Bodnar (1985) summarizes these city studies.

<sup>5</sup> Since these studies are based on specific communities and can trace occupational mobility only for those individuals who remained in the community over a decade, they are also unable to take account of immigrants who moved up by moving out and relocating to another city or a rural area where greater opportunities beckoned. Ferrie (1995) examines occupational mobility between 1850 and 1860 for those immigrants in the sample linked to both censuses, avoids this pitfall, and finds that many of the most successful immigrants were those who changed location.

<sup>6</sup> For a more detailed description of the sample and its representativeness, see Ferrie (1992).

<sup>7</sup> The indexes to the census for 1850 and 1860, available on microfiche, are alphabetically and phonetically arranged lists showing the location in the census manuscripts (state, county, subdivision, and page) of every household head and every individual living in each household whose name differed from that of the head. The accuracy of the lists is assessed in Ferrie (1996), which also uses the indexes to create a sample of native-born males linked from 1850 census records to 1860 census records.

<sup>8</sup> The most important reason for the low linkage rate was the inability to locate those with common names. These individuals were not statistically different from those with less common names who *were* located, however. There were no other apparent differences in terms of characteristics described on the ship lists between those who were linked and those who were not (Ferrie, 1992, pp. 46-51). Though this does not mean that the individuals who were linked were identical to those who were not (since unobserved characteristics could still differ between these two

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The information on each linked immigrant includes date of arrival, country of origin, occupation at arrival, age at arrival, location and occupation in 1850 or 1860, literacy, and the characteristics of the community in which the immigrant lived in 1850 or 1860, such as its ethnic composition and its population growth rate between 1850 and 1860. The reliability of the occupation information in the passenger ship lists, however, has been questioned by a number of researchers (Erickson 1989, Cohn 1992). Since this information is an important element of the story told here, it is worth exploring the reliability of these data in more detail.

One difficulty is the often haphazard recording of occupations: some lists contain nothing but farmers or laborers, and whole pages of a ship's list sometimes contain nothing but ditto marks in the column for occupation. Based on a comparison of the age and family structure of those on such "poor" lists with other immigrants on lists where occupation seems to have been recorded with greater care, though, Cohn (1992) concludes that the immigrants on the poor lists were probably in fact farmers and laborers.

A more serious problem with the lists is that the Passenger Ship Act of 1819 did not specify whether immigrants' actual occupations in Europe or their anticipated occupations in the U.S. should be reported by the ship's captain. Since there was no penalty for failure to report occupations accurately, immigrants might have merely given optimistic statements of their prospects rather than true statements of their occupations in Europe. What is necessary in order to get a sense of how serious a problem mis-reporting represents in the lists is a sample of immigrants linked to passenger ship lists from a source that describes their occupation in Europe with greater reliability than the ship lists.

In the course of tracing Dutch immigrants from Dutch municipal emigration records into the U.S. census, Swierenga (1986) created just such a sample.<sup>9</sup> These Dutch records were collected annually in cities, towns, and villages by local officials, who then forwarded them to the Interior Ministry at the Hague.<sup>10</sup> Table 1 presents a comparison of occupations stated in the passenger ship lists with occupations stated in the Dutch emigration records for 878 Dutch immigrants who arrived between 1841 and 1850. The occupations are grouped into four broad categories: high and low white collar, skilled and semi-skilled, farmer, and laborer.<sup>11</sup> The only occupation in which a majority of Dutch immigrants appear to have given an incorrect occupation in the passenger ship lists is farmer: more than sixty percent of those who described themselves in the passenger ship lists as farmers were known to Dutch municipal authorities by another

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groups), it suggests that the sample is no more biased than other samples created by linking those with uncommon names. Because the present sample includes individuals who changed their location between 1850 and 1860, while such individuals were excluded from previous studies, the overall bias in this sample is probably considerably below that in other studies using individuals linked across two or more sources. Among the linked observations, the only difference between those located only in 1850 and either those located only in 1860 or those located in both 1850 and 1860 was the higher average age of those linked only to 1850. This difference no doubt results from mortality: an immigrant had to survive to 1850 in order to be successfully linked.

<sup>9</sup> The patterns of Dutch occupational mobility between departure from Europe and arrival in the U.S. described above are based on these Dutch municipal records, rather than the information from the ship lists. Swierenga used the Dutch records because they included all the data on the ship lists as well as information not available in the ship lists, such as reasons for emigration and religious affiliation.

<sup>10</sup> Swierenga graciously provided this linked sample to me. The calculations that follow and any conclusions drawn from them are my own handiwork, and Swierenga should in no way be implicated in them.

<sup>11</sup> The specific occupational titles that fall into each category are shown in Appendix A. This is the categorization of occupations used by Thernstrom (1964, 1973) and the other studies of occupational mobility cited above.

occupational title. Most of those incorrectly identified in the ship lists as farmers were described by Dutch authorities as laborers or farm laborers. In contrast, 83 percent of those in white collar occupations in the ship lists and 77 percent of those in skilled and semi-skilled occupations in the ship lists were known to be in those occupations before their departure from Holland. Fifty-five percent of those in unskilled jobs in the ship lists had also been in unskilled jobs in Holland.

The occupation in the ship lists for those stating they were white collar, skilled, or semi-skilled thus seems a reasonably proxy for occupation before departure, albeit one measured with error. There does not appear to be any systematic change over the 1840s in the extent of that error, though.<sup>12</sup> Differences in mis-reporting by country of origin are probably insignificant as well.<sup>13</sup> Farmers are more problematic. This is probably less the result of carelessness on the part of those compiling the lists than it is the result of the presence of large numbers of farm tenants in Europe and the absence of the term “tenant” in the ship lists. An individual who was a farm tenant in Europe would thus have been described as either a farmer or a laborer in the ship lists. Since there were no clear guidelines by which farm tenants were assigned to either group in the ship lists, we cannot separate those who were farm tenants in Europe (who were probably more akin to laborers in the amount of capital they possessed and the amount of supervision they received) from independent farmers. The same problem applies to a lesser degree for those reported as unskilled in the ship lists.

### The Extent of Occupational Mobility From Arrival to 1850 and 1860

The sample introduced here makes it possible to compare occupation in the country of origin and occupation in the U.S. As in the previous section, we will group occupations into four broad categories (described in Appendix A), in order to focus on only the most significant occupational changes.<sup>14</sup> The first group is white collar workers. This includes those in professional, commercial, and proprietary pursuits, and corresponds to the high white collar and low white collar designations employed in other studies (Thernstrom, 1964). The second is skilled and semi-skilled, which includes anyone stating that the y

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<sup>12</sup> There is no trend over the 1840s in the percentage of unskilled workers in the Dutch ship lists who were actually white collar, skilled, semi-skilled, or farmers in the Dutch emigration records, or in the percentage of white collar, skilled, or semi-skilled workers or farmers who were actually unskilled workers.

<sup>13</sup> The British and the Irish in the sample sailed from the same ports—most left from Liverpool or London—so the same clerks compiled the ship list occupations for both groups. As a result, they should be measured with roughly equal error. We do not know how the accuracy of the occupations reported for the British and Irish compare to the accuracy for the Germans in the sample. The accuracy of the lists reflects both the probability that immigrants would report their true occupation and the probability that they would have their occupations recorded correctly by those creating the ship lists. The fact that the Germans did not speak English is not likely to have been a great source of inaccuracy in compiling the German lists, since the lists were apparently compiled at the port of origin.

<sup>14</sup> This procedure has the virtue of simplicity, but its simplicity is achieved at a cost: the focus on only four broad occupational categories makes it necessary to overlook subtle changes that immigrants made in occupational status, changes that did not represent movement across the boundaries of these groups but that nonetheless represented genuine improvements in their circumstances. An alternative to using a small number of discrete occupational categories would be to create a continuous measure with which to assess immigrants’ performance, based on wages, incomes, or occupational prestige, as has been done by Hanes (1996) and Chiswick (1991). For the present sample, such a measure is developed and used in Ferrie (1997). The continuous measure of performance produces no changes in the substantive findings presented here.

possessed a craft skill. These workers correspond to skilled blue collar or skilled manual workers in other studies. The next group is the unskilled, which includes those who described themselves simply as laborers and those with unskilled manual jobs. This corresponds to the unskilled blue collar or unskilled manual group in other studies. The fourth group is farmers. Those who stated they had no job in the ship lists have been excluded from the analysis.

Table 2 presents a comparison of the occupations immigrants stated in the passenger ship lists with the occupations they stated in the 1850 and 1860 censuses. For 1850 and 1860, the category “farmer” includes only farm owners; farm tenants and laborers are grouped with “unskilled” workers. Though the U.S. census was as imprecise as the ship lists in describing the occupations of those employed in agriculture, it is possible to infer whether an individual described as a “farmer” in the 1850 or 1860 was in fact the owner of a farm.<sup>15</sup>

The results show considerable mobility from occupation in Europe to occupation at the 1850 census. Forty-four percent of those who were described as unskilled in the passenger ship lists had moved up to a higher-status occupation by the time of the 1850 census. Just over a quarter of those in high white collar, low white collar, skilled, and semi-skilled occupations in the ship lists were found as unskilled workers in 1850. Finally, few immigrants seem to have moved from non-farm occupations in Europe into farming in the U.S. Of the 1,096 immigrants who arrived as white collar, skilled, semi-skilled, or unskilled workers, only 7% appeared as farmers by 1850. All of this mobility into farming, however, can be accounted for by inaccuracies in the ship lists: Table 1 suggests that, in the Dutch ship lists, 16% of immigrants who were described as white collar, skilled, semi-skilled, or unskilled workers were in fact either farmers or farm tenants before their departure from Europe, so even if the lists used here are twice as accurate as the Dutch lists, all of those moving into farming after entering the U.S. may have actually been farmers before departure from Europe.

Table 3 presents a breakdown of three types of mobility by country of origin: (1) downward mobility from white collar to unskilled; (2) downward mobility from skilled or semi-skilled to unskilled; and (3) upward mobility from farmer or unskilled to any occupation other than unskilled. In the balance of this article, high and low white collar workers will be grouped together, due to the small number of high white collar workers. Also, those who were described as farmers in the ship lists and those who were described there as unskilled will be grouped together.<sup>16</sup> This is because, as was noted in the previous section, it is not possible to distinguish someone who was the owner or independent operator of a farm from a farm tenant or laborer in the passenger ship lists. In 1850 and 1860, however, farmer and unskilled will remain separate categories.

The Irish clearly had the worst outcomes: the highest percentages moving down and the lowest moving up. The percentages moving down also exceeded the percentage moving up. The British and Germans were quite different from the Irish, but similar to each other, with the percentage moving up for

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<sup>15</sup> In both years, the census recorded the value of any real estate owned by the respondent. Following Bogue (1963), I have classified farmers as those who met two criteria: (1) they were listed in the 1850 or 1860 census as “farmers”; and (2) they were reported in that census to own real estate. Those listed as “farmers” but owning no real estate were classified as “unskilled,” as were those listed as “laborers” or “farm laborers” regardless of their real estate holdings.

<sup>16</sup> An alternative would be to eliminate entirely those immigrants described as farmers in the ship lists. The resulting loss of information from such a procedure is too high a cost to pay for a probably slight reduction in the measurement of occupation before arrival.

both groups three to four times as great as the percentage moving down.<sup>17</sup> A  $\chi^2$  test on the difference across countries of origin in the percentages moving up and moving down in Table 3 was statistically significant at the 5 percent level. These differences across countries of origin could result from several effects. Two that we will consider in the next section are how long different immigrant groups have been in the U.S. and how likely the average immigrant from a particular country was to possess characteristics associated with moving up from unskilled laborer. If the amount of time immigrants have spent in the U.S. is correlated with the possession of U.S.-specific human capital, or if age and literacy are correlated with general human capital, and these types of human capital made it easier for immigrants to move into white collar, skilled, and semi-skilled jobs after arrival, then the superior performance of the British and Germans might reflect greater average duration in the U.S. or their possession of greater amounts of human capital.

How quickly were gains in occupational status from European occupation to U.S. occupation made and losses in status recouped after arrival? Did occupational mobility occur only at arrival—was entry into the U.S. economy a permanent, one-time shock to an immigrant’s career—or was there scope for ongoing change and adjustment in the years after arrival? What were the factors that made occupational mobility more likely? We saw above (in Table 3) how much worse the Irish seem to have done compared to the British and Germans. How can we account for their relatively poor performance? In order to get a better understanding of both the temporal pattern of occupational mobility and what it was about particular

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<sup>17</sup> As was noted above, some of the mobility between pre-migration and post-migration occupation might be the result of inaccuracies in the ship lists. If we assume that the lists used here are as accurate as the Dutch lists for 1841-50, it is possible to calculate how much of the observed occupational mobility in Table 3 remains after accounting for inaccuracies. In the Dutch lists described in Table 1, 6 percent of high and low white collar workers were actually unskilled, 13 percent of skilled and semi-skilled workers were actually unskilled, and 60 percent of farmers and unskilled workers were actually high or low white collar, skilled, or semi-skilled workers, or farmers. Subtracting these percentages from the entries in Table 3 produces the following adjusted occupational mobility rates:

	All Origins	British	Irish	German
<i>Between Arrival and 1850</i>				
White Collar to Unskilled	19	16	32	16
Skilled to Unskilled	13	4	39	7
Farmer or Laborer to				
White Collar, Skilled, or Farmer	-11	3	-25	-1
	All Origins	British	Irish	German
<i>Between Arrival and 1860</i>				
White Collar to Unskilled	23	18	57	17
Skilled to Unskilled	12	3	39	9
Farmer or Laborer to				
White Collar, skilled, or Farmer	-1	17	-18	21

This implies, for example, that if the accuracy of the lists used here was the same as the accuracy of the Dutch lists, the 63.2 percent rate of upward mobility between arrival and 1850 for British immigrants who said they were farmers or unskilled workers in the ship lists consisted of upward mobility of 3 percentage points and mis-measurement of 60 percentage points. Note, however, that substantial differences in mobility by country of origin remain even after these adjustments. As we will see below, differences in mobility by years in the U.S. are also apparent. Neither of these patterns is likely to have resulted from the mis-classification of occupations in the ship lists.

individuals and particular places that promoted occupational mobility, we now turn to an analysis of the influence of these factors on occupational mobility in the years after immigrants' arrival in the U.S.

### The Timing of Occupational Mobility

Two difficulties arise in attempting to determine the extent, timing, and correlates of the occupational change experienced by immigrants between their European and U.S. occupations. The first and most serious is that while the sample tells us each immigrant's European occupation, date of arrival, and 1850 and 1860 occupations, we do not know the date at which occupational changes occurred. We may know, for example, that an immigrant who arrived as a laborer in 1843 had become a carpenter by 1850, but we do not know when during the immigrant's seven years in the U.S. that transition occurred; all we know is how long the immigrant was at risk to make such a transition and whether it occurred during that period. The second problem is that we do not know the date at which immigrants who had not yet changed occupations by 1850 or 1860 would do so. These observations are right-censored.

A continuous-time duration model with discrete observations can address both of these problems.<sup>18</sup> This method consists of estimating the following probability for each individual:

$$P_{jk}(t;X) = \text{Prob}[\text{in occupation } k \text{ at time } t | \text{in occu} \quad (1)$$

The date of arrival is time 0 and the time since arrival is  $t$ ; the vector  $X$  contains both personal characteristics and the characteristics of the immigrant's location. Estimation of such a model will allow us to calculate the probability that an immigrant had changed occupation at various times after arrival, which in turn will allow us to infer a distribution and mean for the time between arrival and occupational change. This technique compensates for the lack of information on each individual immigrant's date of occupational change. Since the model utilizes information on both those who have changed occupations and those who have not by time  $t$ , it also surmounts the right-censoring problem.

To see how we can estimate this model with two occupations—unskilled and “other”—suppose that after arrival in the U.S., an immigrant can immediately obtain work as an unskilled laborer.<sup>19</sup> The immigrant can then either devote all his time to that job or use some of his time to work as an unskilled laborer and some to prepare for and seek a better job in the “other” category (as a white-collar, skilled, or semi-skilled worker, or as a farmer). A maximization problem can be constructed in which the immigrant determines the intensity with which to seek a new job based on the costs and benefits of changing occupations (where costs include search and training costs, and benefits include higher wages and greater

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<sup>18</sup> This procedure is described in Amemiya (1985, pp. 440-442), and Sheps and Menken (1973, pp. 110-114). The procedure has been applied in another context by Gönül (1989). The approach is similar to that employed in recent historical work by Carter and Savoca (1990) and Jacoby and Sharma (1992), but with an important difference: the approach used here does not require knowledge of the date at which the transition from one state to another occurred. This approach can be applied in other situations where a transition between two states is possible but the researcher knows only whether the transition occurred and the amount of time an individual was at risk to make the transition, rather than the exact time when the transition occurred. For example, this approach could be used to determine the probability that immigrants departed from New York at different times since their arrival given their date of arrival in New York and whether they were located there at a known subsequent date. It could also be used to determine the probability of marriage at different ages for a sample of individuals given their ages and whether they were married at some known date.

<sup>19</sup> This motivation for the hazard model follows Lancaster (1990, p. 5).

employment security). The result of this maximization will be a function  $\theta(t;X)dt$  that describes the probability at each date since arrival in the U.S. that the immigrant will be offered a new job in the interval  $(t,t+dt)$ . If  $\gamma(t;X)$  represents the probability that such a job offer is worth accepting—that accepting such a job would allow the immigrant to move out of the unskilled category and result in a higher present value of lifetime utility—then the probability that the immigrant will change from unskilled to “other” in the interval  $(t,t+dt)$  is  $\lambda_{12}(t;X)dt=[\theta(t;X)][\gamma(t;X)]dt$ , where the subscripts refer to the transition from occupation 1 (unskilled laborer) to occupation 2 (“other”: white collar, skilled, semi-skilled, or farmer). The function  $\lambda_{12}(t;X)$  is known as the *hazard function*.

As Appendix B demonstrates, the hazard function for a sample of individuals is related to  $P_{12}(t;X)$ , the probability that the immigrant had left the unskilled laborer category after  $t$  years in the U.S., by the relationship

$$P_{12}(t;X) = 1 - \exp\left(\int_0^t -\lambda_{12}(u;X'\beta) du\right) \quad (2)$$

where  $\beta$  is a vector of parameters to be estimated. Appendix B describes the likelihood function that is used to estimate these parameters. We will assume that the hazard function follows either a *Weibull* distribution or a *log-logistic* distribution.<sup>20</sup>

The probability that an immigrant has moved up from unskilled laborer at each date since arrival should reflect the skills he possesses at arrival: those described as white collar, skilled, or semi-skilled workers in the ship lists, for example, should have less difficulty moving quickly into such occupations after arrival than workers who were unskilled when they left Europe. Separate analyses are thus performed for two groups, based on the occupations they stated in the passenger ship lists: (1) immigrants who were described as farmers or laborers; and (2) immigrants who were described as white collar, skilled, or semi-skilled workers. An immigrant will be said to have entered an occupation other than unskilled laborer if either of two conditions is true: (1) he was described as working in a white collar, skilled, or semi-skilled occupation in the U.S. census; or (2) he was described as a farmer in the census and his recorded real estate wealth was greater than zero.

Before we proceed to estimate the rate at which immigrants were able to move up from unskilled laborer to a better occupation, we need to consider the possibility that a correlation between occupational status and duration in the U.S. might be the result of differences in the propensities of successive cohorts of arrivals to move up at all, irrespective of their propensities to move up or down as their time in the U.S. increased. For example, in a single cross-section, if earlier arrivals are more likely to have moved up at any time since arrival than more recent arrivals (either because they are of higher quality or because they faced a better job market at their arrival), we might mistakenly attribute the higher occupational status of earlier arrivals to the fact that their duration in the U.S. is greater, when in fact their status would be higher even if they were observed at the same duration in the U.S. as more recent arrivals.<sup>21</sup>

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<sup>20</sup> The formula for each function appears in Appendix B. The single-parameter Weibull and log-logistic functions are used rather than more complicated functions—such as the gamma function or a piece-wise linear hazard function—to make estimation of the hazard easier with the relatively small sample sizes employed here.

<sup>21</sup> See Heckman and Robb (1983) for a discussion of these effects. Borjas (1986) finds such effects in his work on immigrant entry into self-employment, though they are not strong enough to eliminate his finding that immigrants were more likely to be self-employed the longer they had been in the U.S.

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In order to get around this problem, we will exploit the fact that some immigrants in the sample are observed in 1850, some are observed in 1860, and some are observed in both years. This will allow us to control for both duration in the U.S. and year of arrival. Each immigrant in the sample contributes one observation to the analysis. This means that a group of immigrants with the same year of arrival will contain some immigrants who have been in the U.S.  $t$  years and some who have been in the U.S.  $t+10$  years.<sup>22</sup> To determine the impact of duration in the U.S., we estimate the parameters of the hazard function using dummy variables for year of arrival as the only covariates in the  $X$  vector and years since arrival in the U.S. for  $t$ .

Since each immigrant is assumed to have been able to find work as an unskilled laborer at arrival, an observation is considered to have made a move out of the unskilled category only if one of the following conditions is true: (1) the individual was observed only in 1850 and had moved out of the unskilled category by that date (so  $t$  is the time from arrival to 1850); (2) the individual was observed only in 1860 and had moved out of the unskilled category by that date (so  $t$  is the time from arrival to 1860); (3) the individual was observed in both 1850 and 1860 and had moved out of the unskilled category by 1850 (so  $t$  is again the time from arrival to 1850); or (4) the individual was observed in both 1850 and 1860, was still an unskilled laborer in 1850, but had moved out of the unskilled category by 1860 (so  $t$  is again the time from arrival to 1860). Individuals who were observed only in 1850 and were unskilled laborers in that year were considered not to have made an occupational change, and the time from arrival to 1850 was used for  $t$ . Individuals who were observed only in 1860 and were unskilled laborers in that year were considered not to have made an occupational change, and the time from arrival to 1860 was used for  $t$ . Individuals who were observed in both 1850 and 1860 but were unskilled laborers in both years are considered not to have made an occupational change, and the time from arrival to 1860 is used as the value for  $t$ .

The coefficients on the dummy variables for year of arrival will embody two effects: differences in the state of the labor market faced by cohorts at their arrival and differences in the overall quality of successive cohorts. If labor market conditions were deteriorating over the 1840s and an immigrant's first occupation in the U.S. is an important determinant of his entire occupational trajectory, the estimated effect of duration would overstate the effect of time since arrival in the absence of controls for the immigrant's specific arrival cohort. The magnitude of this effect is probably slight: real wages for both laborers and artisans rose from 1840 to 1843, fell gradually through 1846, fell precipitously in 1847, and recovered thereafter to stand in 1850 at about the same level as in 1840 (Margo, 1992, p. 184). There was thus no obvious trend in the wages immigrants faced at arrival that would indicate that declining initial labor market conditions were biasing the effect of duration upward. Since the impact of aggregate labor market conditions at the time of entry should not vary substantially by country of origin, comparing the year of arrival effect across origins for a particular year of arrival will make it possible to isolate the impact of changes over the 1840s in the overall quality of successive cohorts.

Events in several countries over the 1840s, may have made immigrants from those countries either more or less likely to move up in occupation after arrival in the U.S. irrespective of their time in the U.S. by influencing the average quality of emigrants sent out in particular years. For example, the Germans who arrived in the late 1840s may have been quite different from those who had arrived earlier from Germany as a result of the revolutions that swept continental Europe, including large parts of Germany, in 1848. The Irish also experienced an event that could have been expected to produce a change in the quality of the migrants leaving Ireland—the potato famine of the late 1840s. It will be possible to test whether these

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<sup>22</sup> For example, if two immigrants arrived in 1845, and one rose to a skilled occupation by 1850 but the other was not observed as a skilled worker until 1860, the sample would contain two 1845 arrivals, but the years since their arrival that would be used in the analysis would be 5 and 15.

events had an impact on the propensity of immigrants to improve their occupational status by examining the coefficients on the dummy variables for specific years of arrival after controlling for time since arrival.

The impact of duration will likewise embody two effects: the impact of an additional year in the U.S. and the impact of particular years in the U.S. The second effect will be important if the 1850s differed significantly from the 1840s in the state of the labor market and its impact on occupational mobility.<sup>23</sup> The evidence suggests that the 1850s were much like the 1840s: there was a slight rise in real wages early in the 1850s, a gradual decline after 1852-53, a more precipitous decline through the Panic of 1857, and some recovery later in the decade (Margo, 1992, p. 184). The hazard function adopted here, which allows the impact of duration in the U.S. to change as time in the U.S. changes, will make it possible to capture the impact of a change between the 1840s and the 1850s in the effect of a year of time spent after arrival in the U.S.

Figures 1 and 2 presents plots of the maximum-likelihood estimates of the effect of time since arrival in the U.S. on the probability that immigrants would be observed as white collar, skilled, or semi-skilled workers or farmers rather than as laborers at each date since arrival, controlling for the specific year of arrival.<sup>24</sup> The log-likelihood functions estimated are Equation B10 in Appendix B (the Weibull hazard) for Figure 1, and the corresponding log-likelihood using the log-logistic hazard for Figure 2. These plots show the value of  $P_{12}(t;X)$  at each date since arrival, with separate plots for those who arrived as (1) white collar, skilled, and semi-skilled workers and (2) farmers and unskilled workers, using the average year of arrival effect in the sample.<sup>25</sup> They reflect the experience of an average immigrant who arrived between 1840 and 1850. For both those who arrived as farmers and unskilled workers and those who arrived as white collar, skilled, and semi-skilled workers, and for all countries of origin, the marginal effect of an additional year in the U.S. on the probability of moving up from work as an unskilled laborer was greatest for those who had been in the U.S. the least time. When the log-logistic hazard function—which allows a non-monotonic hazard—is used in Figure 2, the results are identical to those in Figure 1 using the monotonic Weibull hazard, suggesting that in this case, the assumption of a monotonic hazard function is reasonable.

Immigrants who were reported in the passenger ship lists to have white collar, skilled, or semi-skilled jobs were considerably more likely than their countrymen who were reported to be farmers or unskilled workers to leave the unskilled category soon after arrival. For the British and Germans, for example, more than 55 percent of white collar, skilled, and semi-skilled arrivals had returned to these jobs or entered farming within a year of entering the U.S.; only about 20 percent of British and German immigrants who were described as farmers or unskilled had moved into white collar, skilled, or semi-skilled jobs or entered farming. The same differences based on occupation in the ship lists can be seen for the Irish, but at a lower level: after a year in the U.S., 40 percent of white collar, skilled, and semi-skilled arrivals had moved up from unskilled work, as opposed to only 15 percent arrivals who were farmers or

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<sup>23</sup> For example, immigrants who arrived in 1845 and were observed in 1860 may be different from immigrants who arrived in 1845 and were observed in 1850 in two respects: the former have been in the U.S. ten years longer when they are observed and are observed after having passed through a particular period (the 1850s) which contained the Panic of 1857 which may have made labor market conditions more difficult than they had been in the 1840s.

<sup>24</sup> The sample sizes used to construct Figures 1 and 2 are as follows. For white collar, skilled, and semi-skilled workers at arrival: British, 283; Irish, 169; German, 330. For farmers and unskilled workers at arrival: British, 375; Irish, 903; German, 431.

<sup>25</sup> In creating Figures 1 and 2, a small positive value (0.001) was substituted for zero years since arrival, because the natural log of zero is undefined.

unskilled. For German and Irish immigrants, the impact of an additional year in the U.S. on the probability of moving up from unskilled work was greater for those reporting unskilled or farm jobs at arrival than for those reporting white collar, skilled, or semi-skilled jobs at arrival. For the British, the opposite was true.

Because more mobility in each origin or occupation-at-arrival group occurs earlier than later in the years after arrival, estimates of occupational mobility that exclude the most recent arrivals will clearly underestimate the actual amount of mobility that occurs among immigrants. This can be seen most clearly in the case of British immigrants who arrived as white collar, skilled, or semi-skilled workers. If we assume that immigrants appear in the census only after two years in the U.S., the rate of upward occupational mobility in a single cohort of immigrants observed in, say, both the 1850 and 1860 U.S. censuses will be 43 percent: at two years, 35 out of 100 arrivals will still be unskilled workers when they are observed in the 1850 census; at 12 years, 20 out of the original hundred will still be unskilled laborers, yielding an upward mobility rate over 10 years of 15/35 (43 percent). If we could observe immigrants from immediately after their arrival, though, the ten year upward mobility rate would be 65 percent instead: immediately after arrival, 57 out of 100 arrivals would be unskilled workers; after 10 years, 20 out of the original 100 arrivals in that cohort would still be unskilled workers, producing an upward mobility rate of 37/57 (65 percent). These calculations suggest that previous studies of nineteenth century occupational mobility may have substantially understated the mobility experienced by immigrants if recently arrived immigrants were less likely than immigrants who had been in the U.S. longer to be enumerated in the census, city directories, or tax records.

The mobility patterns for white collar, skilled, and semi-skilled arrivals in Figures 1 and 2 suggest that the occupations reported by immigrants in the ship lists represent a reasonable measure of the value of the human capital transferred to the U.S. by the arrival of British and German immigrants: within just four years of arrival, more than 70 percent of these immigrants were able to employ the skills they had brought with them. For the Irish, however, the fraction of white collar, skilled, and semi-skilled arrivals who left the unskilled category never reached 50 percent, suggesting that for this group, the distribution of occupational titles in the ship lists provides an overstatement of the human capital transfer occasioned by their immigration to the U.S.<sup>26</sup> The gradual improvement in the position of immigrants who arrived as farmers or unskilled workers does not support the view that the distribution of occupational titles in the ship lists understates the value of human capital embodied in immigrants because of rigidities in the labor and land markets they left. If such rigidities had been an important impediment to occupational mobility and the U.S. had fewer of these structural impediments to occupational improvement, the curves for arriving farmers and unskilled workers in Figures 1 and 2 either would have had a higher intercept or would have been much steeper in the early years after arrival than later.

In order to assess the impact of arrival in a particular year, and the impact of arrival after the start of the Irish Famine or after the German Revolutions of 1848, the Weibull hazard used to generate Figure 1 was re-estimated, for each country of origin, with the inclusion of two additional variables: a dummy variable for either arrival in the period from the Fall of 1846 through the summer of 1850 (post-Famine Irish immigrants) or arrival in the period from the Fall of 1848 through the summer of 1850 (post-

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<sup>26</sup> This assumes that Irish white collar, skilled, and semi-skilled workers were unable to return to these jobs because their training in these areas were a poor match for the skills needed in the U.S. labor market. If their poor performance resulted instead from outright discrimination in hiring and promotion, then Irish arrivals did indeed transfer human capital with them, but the U.S. simply chose not to utilize that capital. Irish immigrants, like other immigrants, contributed to an outward expansion of the production possibility frontier, but the economy chose to operate at a point inside the frontier. The foregone production was the "price" paid to purchase the observed level of discrimination.

Revolution German immigrants), and interactions between these dummies and years since arrival in the U.S. Attention is restricted to Irish and German immigrants here since, in generating Figures 1 and 2, there were no apparently significant differences in the effect of year of arrival for British immigrants; for Irish and German arrivals, though, there was an apparent change in the performance of those who arrived late in the 1840s. The specification used here allows both the probability of moving up from unskilled work immediately after arrival and the change in that probability as time in the U.S. increases to differ between arrivals from the early 1840s and those from the late 1840s. Recall that year-of-arrival effects will capture two influences: the impact of aggregate labor market conditions in the U.S. at arrival, and the impact of changes over the 1840s in the average propensity to move up from unskilled work for arrivals from each origin. Comparing the year-of-arrival effects for the Irish and Germans (within either occupation-at-arrival group) will allow us to infer the impact of the second of these influences.

The results shown in Table 4 for white collar, skilled, and semi-skilled immigrants provide some evidence for a widening gap between the performance of German and Irish immigrants at the end of the 1840s. For Germans who arrived after the Revolutions of 1848, the probability of moving up from unskilled work immediately after arrival was 34 percentage points higher than the probability of making such a move for 1840 arrivals. At the same time, the Irish show very little net change in the probability of moving up immediately after arrival. For Germans who arrived as farmers or unskilled workers, there was a slight increase in the probability of immediate upward mobility among those who arrived in the years after 1847, compared to the probability for 1840 arrivals, but this pattern mirrors pattern for the Irish in this occupation group (though the changes relative to 1840 for the Irish are not statistically significant). The increasing difference in performance at arrival seen for white collar, skilled, and semi-skilled workers could result from (1) higher average quality German arrivals after the Revolutions; (2) lower average quality Irish arrivals after the start of the Famine; (3) increased anti-immigrant prejudice in the late 1840s that was directed particularly toward Irish immigrants; or (4) a combination of these.<sup>27</sup> The weight of the available evidence suggests the widening gap in performance between Irish and German white collar, skilled, and semi-skilled workers was produced by developments in Germany and not by those in Ireland.

There is some circumstantial evidence suggesting that the Revolutions of 1848 produced a net improvement in the average quality of German arrivals in white collar, skilled, and semi-skilled jobs at the end of the 1840s. Levine (1992) notes the prominent role played in the uprisings by urban artisans, who accounted for two thirds of the deaths on the barricades erected by the revolutionaries in the streets of Berlin in the spring of 1848 (1992, pp. 36-37). Ferrie (1994, p. 14-15) shows that Germans who arrived in the wake of the revolutions held less real estate on average than other German immigrants after controlling for years since arrival. Finally, Wittke (1952) describes the importance of Germans who arrived in 1848 and after as leaders in the political and economic life of the German community in America. These observations are consistent with the need for some otherwise successful urban white collar and craft workers to leave Germany to escape the post-revolutionary reaction, their departure with little financial capital, and their ability to employ their human capital after arrival and rise to positions of prominence in their communities.

There is little evidence of a decline in the average quality of Irish arrivals after the start of the Famine that would have decreased the ability of the Irish to leave unskilled work shortly after arrival. Though Mokyr and Ó Gráda (1982) show decreasing numeracy among Irish immigrants to the U.S. over this decade, the trend they observe begins before the start of the Famine. Most other research on the characteristics of pre-1846 and post-1846 Irish emigrants has found no marked differences between these

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<sup>27</sup> The impact of differences in the degree of discrimination faced by the British, Irish, and Germans on their relative performance will be considered in greater detail below.

groups. Most came from the regions that had traditionally sent large numbers abroad, and similar proportions were independent farmers and craftsmen. At least initially, the best that the most impoverished could do was to reach Britain. They lacked the resources for a trans-Atlantic voyage, and hoped to earn or beg their fare in Britain's port cities, or wait there for remittances from America. It was not until 1851, as emigrants received those resources, that differences in the characteristics of immigrants became apparent (Miller, 1985, pp. 293-295).

The ability to observe immigrants at several points after their arrival makes it possible here to distinguish the effect of time in the U.S. (the duration effect) from the effect of changes over time in the average performance at arrival of successive groups of immigrants (the cohort effect). Much of the debate over the performance of contemporary immigrants to the U.S. has centered on the relative magnitudes of these duration and cohort effects. Borjas (1994) suggests that cohort effects account for a substantial portion of the impact of years since arrival in cross-sectional data; a number of other studies have disputed this claim (see Chiswick, 1994, p. 108 for references). It is possible to use the present sample to see how much of the effect of time since arrival represents duration and cohort effects by comparing the coefficients on  $\log(\textit{Time in the U.S.})$  controlling for year of arrival effects (the coefficients used to construct Figures 1 and 2) with the coefficients on  $\log(\textit{Time in the U.S.})$  without controls for year of arrival.

The only group for which the introduction of year of arrival effects makes a substantial change in the effect of time since arrival is the Irish who arrived in white collar, skilled, and semi-skilled jobs. Without controls for year of arrival, their coefficient on  $\log(\textit{Time in the U.S.})$  is 0.089 (significant at the 5% level)—an effect identical to that for the British. With the introduction of controls for year of arrival, the coefficient falls in magnitude to 0.030 and is reduced to statistical insignificance.<sup>28</sup> This difference is consistent with the decline over the 1840s in the numeracy of Irish immigrants to the U.S. observed by Mokyr and Ó Gráda (1982).

<sup>28</sup> The coefficients on  $\log(\textit{Time in the U.S.})$  without controls for year of arrival and with such controls are shown below for each occupation at arrival and country of origin group.

	Without Year of Arrival Effects	With Year of Arrival Effects
White collar, skilled, and semi-skilled		
British	0.087**	0.093**
Irish	0.089**	0.030
German	0.007	0.011
Farmer and Unskilled Laborer		
British	0.229***	0.244***
Irish	0.098***	0.114***
German	0.214***	0.253***

\* Significant at the 10% level.

\*\* Significant at the 5% level.

\*\*\* Significant at the 1% level.

### The Role of Personal and Locational Characteristics

The clear differences by European occupation and ethnicity in post-arrival occupational mobility after accounting for year of arrival effects deserve further attention. The success of Germans who entered the U.S. with the handicap of not speaking English and the failure of Irish who arrived without such a handicap are somewhat puzzling. Such differences in performance could be the result of differences across groups in the possession of observed characteristics associated with rapid occupational mobility or the result of unobserved origin-specific differences in such characteristics. We thus now turn to a more detailed examination of the characteristics that influenced an immigrant's chances of moving up in occupational status in the years after arrival. The independent variables employed are the immigrant's age at arrival, literacy, and country of origin, controls for region and urban residence, and the 1850 foreign born population and 1850-60 population growth rate of the county where the immigrant was found. Interactions between residence in the west and the fraction foreign born and population growth rate were also included. The mean values for the variables used in the analysis and the parameter estimates are presented in Table 5.<sup>29</sup>

The immigrant's age was included to capture the impact of the length of the time horizon faced by immigrants and of their resources at arrival in deciding whether to change occupation. Older immigrants who arrived as unskilled workers may have been more reluctant than younger immigrants to make the investments that would have allowed them to change occupations, since they had fewer remaining years over which to reap the net benefits of making a change.<sup>30</sup> Older immigrants, however, may have been better able to re-establish themselves in their original occupations after arrival, or been better able to move up from unskilled work, if their age was correlated with their possession of greater human or financial

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<sup>29</sup> The differences between the sample sizes used here and the full sample used of 2,557 immigrants located in either 1850 or 1860 (on whom Tables 2 and 3 were based) is the exclusion of 25 white collar, skilled, and semi-skilled arrivals and 71 farmers and unskilled workers at arrival for whom it was not possible to calculate a county population growth rate because their 1860 county did not exist in 1850.

<sup>30</sup> To see this, suppose an immigrant faces the choice of remaining in occupation 1 or switching to occupation 2, but must incur a fixed cost  $C$  to pay for retraining if he switches. The probability that he will switch will be an increasing function of the net income gain, discounted by his rate of time preference ( $r$ ) over his remaining work life ( $T$ ):

$$Prob(\text{switch}) = h\left[\int_0^T (Y_2 - Y_1)e^{-rt} dt - C\right] \quad h'[\ ] > 0, \quad h[0] = 0, \quad Y_2 > Y_1$$

This probability is higher for immigrants who have a longer remaining work life:

$$\frac{\partial Prob}{\partial T} = h'[\ ](Y_2 - Y_1)e^{-rT} > 0$$

Chiswick (1994, p. 102) describes another mechanism through which greater age at arrival will have a negative influence on the extent of post-migration occupational mobility: immigrants who were older at arrival had also probably received more of their occupational experience in their country of origin. If we had a measure of labor market experience distinct from the immigrant's age, it would be possible to assess the independent influence of this effect.

capital.<sup>31</sup> Literacy was included as a direct measure of the immigrant's human capital; literate immigrants should have been more likely to move up from unskilled work.

The characteristics of an immigrant's location were included to see whether particular sorts of places were more conducive to occupational mobility.<sup>32</sup> The studies of Kamphoefner (1987) and Swierenga (1986) suggest a possible link between where an immigrant settled and the extent of occupational mobility. To account for the possibility that the probability of occupational improvement is influenced by the size of the local labor market, the availability of land, and the nature of the output produced locally, dummy variables for the region in which the immigrant was located and for whether the immigrant was located in an urban (population greater than 2,500) or rural census subdivision (city, township, or town) were included.<sup>33</sup> The 1850-60 population growth rate and 1850 size of the foreign born population for the immigrant's location were included as well.

The effect of the population growth rate could work in either direction. Workers may have moved up more often and down less often where a county's population was growing rapidly if that growth increased the demand for labor and drew workers up into the ranks of the skilled or allowed workers who would have fallen elsewhere to find work in their original occupation.<sup>34</sup> But some places that grew rapidly—such as New York—did so not because of unusually favorable occupational opportunities there. They grew instead because enormous numbers of immigrants passed through them on their way elsewhere. Immigrants' prospects may have been poorer if they settled in eastern cities like New York, Boston, or Philadelphia with populations inflated by the arrival of other immigrants and wages depressed by glutted labor markets than if they settled in western cities like Chicago, Cincinnati, or St. Louis that had both growing populations and booming labor markets. To account for this possibility, an interaction between the population growth rate and whether a place was located in the west (the North Central or Northwest states) was included as an explanatory variable.

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<sup>31</sup> To see this, write the cost of changing occupations in footnote 30 as

$$C = g(T^* - T) \quad g'(\cdot) < 0$$

where  $T^*$  is the anticipated age at death. Now the impact of age on the probability of switching occupations is ambiguous and depends on the relative magnitudes of the effect of age on the length of the benefit stream and the effect of age on the cost of changing occupations.

<sup>32</sup> Strictly speaking, these variables may not be exogenous if immigrants choose where to locate on the basis of how readily a location's characteristics will help him move up in occupation. Given the difficulty of finding suitable instrumental variables for these community characteristics and the difficulty of incorporating a location-choice equation into the hazard analysis, this complication will be ignored here. The differences in occupational mobility experienced by those in different locations may have resulted from either the characteristics of the locations themselves, or some unobserved individual-specific characteristic—such as wealth at arrival—that influenced both the choice of location and occupational mobility.

<sup>33</sup> The regions are Northeast (the New England and Middle Atlantic States), which is the excluded category, the North Central states (Ohio, Indiana, Michigan, Illinois, Wisconsin, and Missouri), the Northwest states (Minnesota, Iowa, the Dakotas, Nebraska, Kansas, California, Oregon, and Washington), and the South (everywhere else).

<sup>34</sup> Galenson (1991) suggests that the success of immigrants in accumulating wealth in Chicago in the 1850s may have resulted from the opportunities that opened up in a rapidly growing economy. Similarly, Ferrie (1994, p. 24) found that wealth accumulation among immigrants was most rapid for those who were located in rapidly growing places over the 1850s.

Places with large foreign born populations may have presented more opportunities for advancement than similar locations with smaller foreign born populations. This would be true if, for example, immigrants found it easier to get jobs from their countrymen or were able to rely on formal or informal support networks among other immigrants.<sup>35</sup> The relationship between occupational mobility and the size of a county's foreign born community could run in the other direction, though. Those who had fallen in status or failed to rise from the unskilled ranks may have been more often drawn to the support networks available in places with large numbers of foreign born. Competition for jobs may have also been more intense in places with large foreign born populations, such as New York, Boston, and Philadelphia.<sup>36</sup>

The results in the first three columns of Table 5 are for immigrants who were white collar, skilled, or semi-skilled workers at arrival, with all nationalities pooled. The estimated parameters suggest that both the characteristics of individual immigrants and the characteristics of their locations exerted a strong influence on their ability to rise from unskilled work into other occupations. The impact of age on the probability of leaving unskilled work was non-linear: it was positive at younger ages, achieved a maximum at age 34.5, and became negative at older ages. This suggests that the impact of age on immigrants' ability to change occupations (through the positive correlation between age and human capital) was more important at younger ages than the impact of age on immigrants' valuation of the benefits of changing occupations. After age 34.5, the effect of the time horizon dominated the effect of the ability to change occupations. Since the average age at arrival for this group was 27 years, many immigrants in this group reached ages where an additional year of age reduced the probability that they would move up from unskilled work. Immigrants who were able to read or write were 32 percentage points more likely to move up at each date since arrival than those who could not. Finally, immigrants who were located in more rapidly growing counties were also more likely to move up, though this effect was absent in the western states. In the Northeast and South, an increase of 10 percentage points in a county's population growth rate was associated with a 1.8 percentage point increase in the probability of moving up from unskilled work. The only arrival cohorts with statistically significant coefficients for year of arrival were 1841 and 1847; in both cohorts, immigrants were considerably less likely to move out of unskilled work than 1840 arrivals. The 1847 arrivals may have faced a particularly unfavorable labor market at their arrival, as indicated by the real wage data cited above.<sup>37</sup>

Results for immigrants who arrived as farmers or unskilled workers are shown in the last three columns of Table 5. The impact of age on movement out of unskilled work at each time since arrival was again non-linear: age increased this probability through age 44.1, and decreased it thereafter. Since the average age at arrival for this group was only 22 years, most immigrants who arrived as farmers or unskilled workers were still at ages when an additional year of age increased the probability of upward occupational mobility. Literacy increased upward mobility here as well: immigrants who arrived as farmers or unskilled workers and who could read or write were 30 percentage points more likely to move up after arrival than those who could not. Immigrants who went to the west did better than those in the Northeast

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<sup>35</sup> For contemporary immigrants, Borjas (1986, pp. 502-505) found that immigrants were more likely to enter self-employment if they were located in places with large foreign born populations.

<sup>36</sup> The 1850 Census of Population records only the total foreign born population of each county; breakdowns by country of origin are given only at the state level. The foreign born population figure used in the following analysis is thus not the best-suited to answer these questions, but it seemed a better choice than the alternative—the state-level figure for a state's ethnic composition—since so many of the immigrants in the sample went to only three states.

<sup>37</sup> Margo (1992, p. 184) reports that real wages fell sharply in 1847.

and South, while immigrants who went to places with large foreign born populations did better than those who went elsewhere. The population growth rate of an immigrant's location had no impact on his chances of changing occupation. The only difference by year of arrival in the probability of moving up from unskilled work into craft or white collar employment was the apparently easier transition experienced by those who arrived after 1845.

The coefficients on country of origin for both white collar, skilled, and semi-skilled workers and farmers and unskilled workers at arrival suggest that the Irish did worst at moving up from unskilled jobs not just because they possessed fewer of the characteristics that were associated with easy occupational mobility—such as literacy—but also because unobserved origin-specific differences made them less successful at making these moves than otherwise identical immigrants from Britain and Germany.

For Irish white collar, skilled, and semi-skilled workers, such unobservable characteristics could consist of several factors. One is the specific occupational skills with which the Irish arrived: their poor performance may have been the result of arriving more often than the British and Germans in the sorts of occupations that made a poor fit with the U.S. economy—for example, crafts such as weaving that were increasingly mechanized in the U.S.<sup>38</sup> This does not appear to have been the case, however. If skilled and semi-skilled occupations are grouped into those seen by contemporaries as offering good and poor prospects in the U.S., the Irish who arrived as skilled or semi-skilled workers arrived far more often than British skilled or semi-skilled workers with “good” skills: 90% of Irish skilled and semi-skilled workers were in these specific crafts, as opposed to only two thirds of the British.<sup>39</sup> The Germans were just as likely as the British to be in good craft occupations.

The poor performance of Irish white collar, skilled, and semi-skilled workers is also consistent with Chiswick's (1978) findings for more recent immigrants. Because of the imperfect international transferability of skills, there is a clear pattern of downward movement in status with arrival in the U.S. among contemporary immigrants, with the extent of the downward move a function of the similarity of the sending and U.S. economies. Immigrants from countries markedly less developed than the U.S. experience a larger drop in status (but also a more rapid rise in status) after arrival than immigrants from economies at a similar stage of development. Britain probably had more places that were at a stage of development similar to that of the U.S. than did Germany, and Ireland probably has less than either of these.<sup>40</sup> Thus many British immigrants may have arrived familiar with life in a sophisticated market system, fewer

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<sup>38</sup> Potential immigrants were advised by guidebooks and letters from America before their departure that some occupations and skills could be readily transferred to the U.S. economy, but that others could not (Thompson, 1849). The skills thought to be of little use in the U.S. were those being displaced by industrial production methods. For example, one prominent guidebook suggested that needle makers, bookbinders, tinsmiths, horn turners, dyers, nail smiths, and rope makers would all have difficulty securing employment in their trades in the U.S. Lawyers were similarly advised to expect difficulty, because of differences between the German and U.S. legal systems. Doctors and surgeons, however, were expected to do well in the U.S. (Flicker, 1853, pp. 473-474).

<sup>39</sup> The bad crafts were carder, dresser, dyer, warper, weaver, cordwainer, bookbinder, and turner. The good crafts were carpenter, engineer, founder, machinist, mason, plasterer, plumber, tailor, and wheelwright. These were described as good and bad occupations by two contemporary observers, Flicker (1853) and Thompson (1849).

<sup>40</sup> In 1851, 27.7% of the population of Great Britain lived in cities of more than 50,000 inhabitants. The 1855 population of cities with more than 50,000 inhabitants in Saxony was 9.0% of Saxony's total population in 1852. In Ireland, 7.6% of the 1851 population lived in cities of more than 50,000 inhabitants. These figures were calculated from U.S. Census Office (1852, pp. xxxiv) and U.S. Census Office (1863, pp. lii-liii).

Germans and still fewer Irish may have arrived with backgrounds that would have allowed them to become easily integrated into the U.S. economy.

This explanation fits the poor initial performance of the Irish. It does not, however, account for the continued poor performance of the Irish after their arrival. Among contemporary immigrants, those from places least like the U.S. make the most investment in acquiring U.S.-specific skills after arrival, leading to a rapid rise in occupational status. This does not appear the case among the Irish. They moved out of unskilled work more slowly than the British or Germans. To explain the slow departure from unskilled work among the Irish we need to look elsewhere. Differences-in-development as a cause of differences in performance in the U.S. must be no more than part of the residual left after accounting for other observed factors influencing performance.

Irish immigrants who were farmers or unskilled workers before arrival also fared worse after arrival than British and German arrivals in these jobs. The fact that the Irish experienced difficulties regardless of their occupation at arrival suggests another explanation for their slow upward mobility. Their slow escape from unskilled jobs may also represent the effect of barriers to entry in U.S. craft labor markets, barriers that had a greater impact on the Irish than on the British or Germans. If the Irish were barred from entering some pursuits after arrival, and had to spend more time proving themselves as unskilled assistants or apprentices than the British or Germans, the result may have been to slow the departure of the Irish from unskilled work in the years after arrival.<sup>41</sup>

The coefficients on country of origin in Table 5 are insufficient for assessing the impact of discrimination, since they constrain the “prices” paid for each characteristic to be the same for all origins. Discrimination may have occurred through unequal payments for identical characteristics. If the equations in Table 5 are re-estimated with the addition of interactions between Irish origin and the characteristic that had the largest impact on the probability of moving up from unskilled work—literacy—there are in fact differences in the return to literacy by origin, but the differences do not go in the expected direction. For both white collar, skilled, and semi-skilled workers and farmers and unskilled workers, the impact of literacy was greater for the Irish than for the British and Germans. The dummy variable for Irish origin, however, remains negative, substantial in magnitude, and statistically significant.<sup>42</sup> The magnitude of the positive literacy effect for the Irish, however, was dwarfed by the remaining negative effect of Irish origin. Even though they earned a greater return on their literacy than the British or Germans, they still were less likely to move out of unskilled work. These results suggest that the slow occupational mobility of the Irish is probably the product of both the differences between their Irish origins and the circumstances they faced in the U.S. and the burden of discrimination they bore in greater measure than other immigrants.

<sup>41</sup> Other personal characteristics correlated with country of origin that are not observed, such as wealth at arrival, for which we have only imperfect proxies, may also be important here.

<sup>42</sup> The partial effects for literacy, the literacy-Irish origin interaction, and Irish origin are shown below:

	White Collar, Skilled, and Semi-Skilled At Arrival	Farmers and Laborers At Arrival
Literate	0.170	0.091
Literate x Irish	0.364	0.269
Irish	-0.626***	-0.553***

\*\*\* Significant at the 1% level

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## Conclusion

European immigrants to the U.S. in the antebellum period, like immigrants a century later, experienced considerable occupational mobility. In the years after their arrival, many who arrived as white collar, skilled, and semi-skilled workers were able to regain that occupational status or enter farming. The most successful at making these transitions were immigrants who were literate and those who located in rapidly-growing places in the Northeast and South. Age was associated with more rapid movement out of unskilled work at young ages, but with less mobility at older ages. Among those who arrived as farmers or unskilled workers, mobility was again more rapid among the literate. The impact of population growth was absent for this group; however. Instead, these immigrants did better if they moved to the North Central and Northwest states and settled in places with large concentrations of foreign born. The only group in which the introduction of controls for the specific year of arrival produced a change in the effect of duration in the U.S. was the Irish who arrived as white collar, skilled, and semi-skilled workers. For them, it appears that declining average quality over the 1840s would produce an overstatement of the effect of duration in the absence of controls for year of arrival. The clearest pattern to emerge from the year of arrival effects themselves is an apparent rise in the average quality of German white collar, skilled, and semi-skilled workers who arrived in the years following the Revolutions of 1848.

All immigrants experienced more occupational mobility earlier in their time in the U.S. than they experienced later, suggesting that previous studies concentrating on immigrants only after they have spent some time in the U.S. have understated the occupational mobility experienced by antebellum immigrants. The escape from unskilled work by the British, Irish, and Germans who were farmers and unskilled workers in Europe is more consistent with their accumulation of financial and U.S.-specific human capital than with the opportunity after arrival to utilize talents that had been under-utilized at their place of origin. The human capital transfer produced by immigration thus does not appear to have been underestimated for those who arrived as farmers and unskilled workers. The relatively rapid escape from unskilled work by the British and German who were in white collar, skilled, or semi-skilled jobs before leaving Europe suggests that for these immigrants the distribution of occupations in the ship lists represents only a slight overstatement of the human capital transferred to the U.S. by their arrival.<sup>43</sup> The human capital brought to the U.S. by the Irish white collar, skilled, and semi-skilled workers who had such difficulty escaping unskilled work after arrival is overstated if their difficulty resulted from differences between the Irish and U.S. economies. If their difficulties resulted instead from discrimination it is unclear whether the transfer is overstated or understated by the distribution of ship list occupations.

Finally, the results suggest some of the impediments faced by immigrants as they entered the U.S. labor market. The Irish fared particularly poorly regardless of their pre-migration occupations. The available evidence suggests that this poor performance may have been the result of a combination of a lack of readily transferable labor market skills and labor market discrimination. Together with the results for British and German immigrants, these findings show the importance of both pre-migration experience and post-migration labor market conditions in shaping the outcome of the migration process.

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<sup>43</sup> This pattern is also consistent with the distribution of occupations in the ship lists representing an overstatement of the human capital brought by British and German white collar, skilled, and semi-skilled workers, and substantial labor market discrimination *in favor of* these workers in the U.S. labor market

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## Appendix A: Coding of Occupations in the Ship Lists and the Census

### I. White Collar

#### A. Professional

Artist	Publisher	Physician	Minister	Professor	Dentist
Attorney	Doctor	Clergyman	Priest	Teacher	Other
Lawyer					

#### B. Commercial

Agent	Broker	Importer	Salesman	Wholesaler	Other
Banker	Clerk	Merchant	Trader		

#### C. Proprietary

Baker	Druggist	Jeweller	Peddler	Victualler	Contractor
Barber	Florist	Keeper	Tobacconist	Furrier	Manufacturer
Butcher	Grocer	Owner/Landlord	Confectioner	Builder	Other
Dealer	Huckster				

### II. Skilled and Semi-Skilled

Beamer	Currier	Gilder	Molder	Sawyer	Upholsterer
Binder	Cutter	Gainer	Painter	Shoemaker	Warper
Blower	Cutler	Grinder	Paver	Smelter	Weaver
Boiler	Distiller	Hatter	Plasterer	Smith	Wheelwright
Brewer	Dresser	Joiner	Plumber	Sorter	Operator
Carder	Dyer	Layer	Printer	Spinner	Other
Carpenter	Engraver	Mason	Puddler	Tailor	Engineer
Carver	Finisher	Measurer	Refiner	Clothier	Mechanic
Candler	Fisherman	Miller	Roller	Tanner	Machinist
Cooper	Fitter	Millwright	Saddler	Turner	Lithographer
Cordwainer	Founder				

### III. Farmer

### IV. Unskilled

Milkman	Policeman	Miner	Domestic	Boatman	Drayman
Digger	Quarryman	Logger	Waiter	Carman	Driver
Fireman	Watchman	Lightman	Porter	Carrier	Hostler
Gardener	Waterman	Postman	Mariner	Carter	Teamster
Heaver	Whitewasher	Servant	Seaman	Coachman	Laborer
Packer					

## Appendix B: A Continuous Time Duration Model With Discrete Observations

In order to analyze the timing and correlates of occupational mobility among immigrants after their arrival, we need to calculate the probability that an immigrant with a particular set of characteristics would be observed in a particular occupation at each date since arrival. If we know the date at which changes in occupation occur, this is a straightforward exercise: it involves estimating a duration model which yields a hazard function, the probability that a change will occur at each date. Since we do not know the date at which immigrants changed occupation (we know only whether they had changed occupation between departure from Europe and 1850 or 1860 and how long they had been in the U.S. by those dates), the standard duration model must be modified slightly to account for the fact that immigrants are not observed continuously but are instead observed only at two or three discrete dates.

To form the hazard function for the transition from occupation 1 to occupation 2 with discrete observations, consider a sample of individuals who are identical in all respects except the length of time they spend after arrival in the U.S. in occupation 1 before moving into occupation 2. This time  $t$  is distributed in the population according to a density function  $f(t)$  which has a corresponding distribution function  $F(t)$ . For every  $t$ ,  $f(t)$  gives the probability that an immigrant will experience a completed spell in an occupation of length  $t$ . The distribution function  $F(t)$  is defined as

$$F(t) = \int_0^t f(u) du \quad (\text{B1})$$

where  $F(t)$  gives the probability that an immigrant will experience a completed spell in an occupation of length no greater than  $t$ . Thus, the probability that an immigrant is still in occupation 1 after time  $t$  (i.e. the probability that an immigrant experiences a completed spell in occupation 1 of length greater than  $t$ ) is given by  $[1-F(t)]$ . The “instantaneous hazard rate”

$$\lambda_{12}(t) = \frac{f(t)}{1-F(t)} \quad (\text{B2})$$

is the probability of an immigrant changing occupation at time  $t$  given that the immigrant had been in occupation 1 until time  $t$ . For a small increment  $dt$ ,

$$\lambda_{12}dt = \text{Prob}[\text{in occupation 2 at time } (t+dt) | \text{in oc} \quad (\text{B3})$$

is the probability that an immigrant in occupation 1 at time  $t$  will move into occupation 2 by time  $t+dt$ . We can use this to write the probability of observing an immigrant in occupation 1 at time  $t+dt$  as the product of two terms: the probability that the immigrant has remained in occupation 1 until time  $t$ , and the probability that the immigrant will remain in occupation 1 in the interval  $dt$  (i.e. *not* move to occupation 2 in the interval  $dt$ ). Thus,

$$P_{11}(t+dt) = P_{11}(t)(1-\lambda_{12}(t) dt) \quad (\text{B4})$$

Dividing both sides by  $dt$ , re-arranging terms, and taking the limit as  $dt$  goes to zero yields

$$\frac{\partial P_{11}(t)}{\partial t} = -P_{11}(t) \lambda_{12}(t) \quad (\text{B5})$$

The solution to this differential equation is

$$P_{11}(t) = \exp\left(\int_0^t -\lambda_{12}(u) du\right) \quad (\text{B6})$$

Since the probabilities for the two events must sum to one, we can write the second probability as

$$P_{12}(t) = 1 - \exp\left(\int_0^t -\lambda_{12}(u) du\right) \quad (\text{B7})$$

All that remains is to specify the hazard function  $\lambda_{12}(u)$ —how the probability of changing occupation at any date  $t$  depends on personal characteristics and on the amount of time since arrival  $t$ . Three approaches can be pursued at this point: a non-parametric approach, a semi-parametric approach, and a fully parametric approach.<sup>44</sup> The advantage of the first two is that they are less sensitive to misspecification of the distribution of the hazard. The advantage of the latter is that it can be pursued with a relatively small number of observations, as in the present case. The fully parametric approach will be adopted here, but two different distribution functions will be examined to reduce the possibility of misspecification.<sup>45</sup>

First, assume that the hazard follows a *Weibull* distribution, and that individual characteristics enter the hazard multiplicatively. For individual  $I$  with characteristics described by the vector  $X$ , the hazard can then be written as:

$$\lambda_{12}(t_i; X_i) = \alpha \left[ \exp(X_i' \beta) t_i \right]^{\alpha-1} \quad (\text{B8})$$

where  $\beta$  and  $\alpha$  are parameters to be estimated. This allows the hazard to change as the time at risk increases. In particular, if  $\alpha < 1$ , the hazard rate falls as  $t$  increases; if  $\alpha > 1$ , the hazard rate rises as  $t$  increases; and if  $\alpha = 1$ , the hazard rate does not change as the time at risk increases. Note, however, that the change in the hazard is monotonic: the Weibull hazard does not allow for the possibility that the hazard may increase for some time after arrival before it falls. Now, given a sample of  $N$  individuals, the log-likelihood function for the sample is

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<sup>44</sup> For examples of the non-parametric and semi-parametric approaches with continuously observed samples, see Meyer (1986).

<sup>45</sup> A non-parametric approach, using a continuous measure of immigrants' occupational attainment, is presented in Ferrie (1997). The results are entirely consistent with those presented here.

$$L(\beta, \alpha) = \sum_{i=1}^N (y_i) \log \left[ \exp \left( -\exp(X_i' \beta) t_i \right)^\alpha \right] + (1 - y_i) \log \left[ 1 - \exp \left( -\exp(X_i' \beta) t_i \right)^\alpha \right] \quad (\text{B9})$$

where  $y_i$  is a binary variable equal to one if the individual was in occupation 1 after  $t$  years in the U.S. and equal to zero if the individual was in occupation 2 after  $t$  years.

A second approach uses the *log-logistic* hazard. Individual characteristics again enter the hazard multiplicatively. For individual  $I$  with characteristics described by the vector  $X$ , the hazard can now be written as

$$\lambda_{12}(t_i; X_i) = \frac{\alpha \left[ \exp(X_i' \beta) t_i \right]^{\alpha-1}}{1 + \left[ \exp(X_i' \beta) t_i \right]^\alpha} \quad (\text{B10})$$

This specification permits a non-monotonic hazard. If  $\alpha < 1$ , the hazard decreases monotonically from  $\infty$  at time zero as  $t$  increases; if  $\alpha = 1$ , the hazard decreases from  $\exp(X_i' \beta)$  at time zero to zero as  $t$  increases; and if  $\alpha > 1$ , the hazard increases from zero at time zero to a single maximum at time  $[(\alpha-1)/\exp(X_i' \beta)]^{1/\alpha}$ , and then decreases to zero as  $t$  increases.<sup>46</sup>

## References

- Amemiya, T. (1985), *Advanced Econometrics*. Cambridge: Harvard University Press.
- Bodnar, J. (1985), *The Transplanted: A History of Immigrants in Urban America*. Bloomington: Indiana University Press.
- Bogue, A. G. (1963), *From Prairie to Corn Belt: Farming in Illinois and Iowa in the Nineteenth Century*. Chicago: University of Chicago Press.
- Borjas, G. J. (1986), "The Self-Employment Experience of Immigrants." *Journal of Human Resources* 21, 485-506.
- Borjas, G. J. (1994), "The Economics of Immigration." *Journal of Economic Literature* 32, 1667-1717.
- Carter, S. B., and Savoca, E. (1990), "Labor Mobility and Lengthy Jobs in Nineteenth-Century America." *Journal of Economic History* 50, 1-16.
- Chiswick, B. R. (1978), "A Longitudinal Analysis of the Occupational Mobility of Immigrants." In Industrial Relations Research Association Series, *Proceedings of the Thirtieth Annual Meeting, December 28-30, 1977*. Madison: The Association.
- Chiswick, B. R. (1991), "Jewish Immigrant Skill and Occupational Attainment at the Turn of the Century." *Explorations in Economic History* 28, 64-86.

<sup>46</sup> See Lancaster (1990, pp. 44-45) for a discussion of the Weibull and log-logistic hazard functions.

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- Chiswick, B. R. (1994), "The Performance of Immigrants in the United States Labor Market." In H. Giersch (Ed.), *Economic Aspects of International Migration*. Berlin: Springer-Verlag.
- Cohn, R. L. (1992), "The Occupations of English Immigrants to the U.S., 1836-1853." *Journal of Economic History* 52, 377-387.
- Erickson, C. (1989), "Emigration from the British Isles to the U.S.A. in 1841: Part I." *Population Studies* 43, 347-367.
- Esslinger, D. R. (1975), *Immigrants and the City: Ethnicity and Mobility in a Nineteenth Century Midwestern Community*. Port Washington: Kennikat Press.
- Ferrie, J. P. (1992), 'We Are Yankeys Now': *The Economic Mobility of Two Thousand Antebellum Immigrants to the U.S.* Ph.D. dissertation, University of Chicago.
- Ferrie, J. P. (1994), "The Wealth Accumulation of Antebellum European Immigrants to the U.S., 1840-60." *Journal of Economic History* 54, 1-33.
- Ferrie, J. P. (1995), "Up and Out or Down and Out? Immigrant Mobility in the Antebellum United States." *Journal of Interdisciplinary History* 26, 33-55.
- Ferrie, J. P. (1996), "A New Sample of American Males Linked From the 1850 Public Use Micro Sample to the Manuscript Schedules of the 1860 Federal Census of Population." *Historical Methods* 16, forthcoming.
- Ferrie, J. P. (1997), 'Yankees Now': *The Economic Mobility of Antebellum Immigrants to the U.S.* New York: Oxford University Press, forthcoming.
- Flicker, C. T. (1853), "Friendly Adviser for All Who Would Emigrate to America and Particularly to Wisconsin." Leipzig. Reprinted in *Wisconsin Magazine of History* 25, 215-236, 331-353, 455-475.
- Galenson, D. W. (1991), "Economic Opportunity on the Urban Frontier: Nativity, Work, and Wealth in Early Chicago." *Journal of Economic History* 51, 581-603.
- Gönül, F. (1989), "Dynamic Labor Force Participation Decisions of Males in the Presence of Layoffs and Uncertain Job Offers." *Journal of Human Resources* 24, 195-220.
- Griffen, C., and Griffen, S. (1973), *Natives and Newcomers: The Ordering of Opportunity in Mid-Nineteenth Century Poughkeepsie*. Cambridge: Harvard University Press.
- Hanes, C. (1996), "Immigrants' Relative Rate of Wage Growth in the Late 19th Century." *Explorations in Economic History* 33, 35-64.
- Heckman, J. J., and Robb, R. (1983), "Using Longitudinal Data to Estimate Age, Period, and Cohort Effects in Earnings Equations." In H. Winsborough and O. Duncan (Eds.), *Analyzing Longitudinal Data for Age, Period, and Cohort Effects*. New York: Academic Press.
- Jackson, R. V. (1981), "Index to the Seventh Census of the United States." Unpublished: Salt Lake City.
- Jackson, R. V. (1991), "Index to the Eighth Census of the United States." Unpublished: Salt Lake City.
- Jacoby, S., and Sharma, S. (1992), "Employment Duration and Industrial Labor Mobility in the United States, 1880-1980." *Journal of Economic History* 52, 161-180.
- Kamphoefner, W. D. (1987), *Westphalians: From Germany to Missouri*. Princeton: Princeton University Press.
- Kapp, F. (1870), *Immigration and the Commissioners of Emigration of the State of New York*. New York: The Nation Press.
- Lancaster, T. (1990), *The Econometric Analysis of Transition Data*. Cambridge: Cambridge University Press.
- Levine, B. (1992), *The Spirit of 1848: German Immigrants, Labor Conflict, and the Coming of the Civil War*. Urbana: University of Illinois Press.

- 
- Margo, R. A. (1992), "Wages and Prices During the Antebellum Period: A Survey and New Evidence." In R. E. Gallman and J. J. Wallis (Eds.), *American Economic Growth and Standards of Living Before the Civil War*. Chicago: University of Chicago Press.
- Meyer, B. D. (1986), "Semiparametric Estimation of Hazard Models." Unpublished: MIT.
- Miller, K. (1985), *Emigrants and Exiles*. New York: Oxford University Press.
- Mokyr, J., and Ó Gráda, C. (1982), "Emigration and Poverty in Pre-Famine Ireland." *Explorations in Economic History* 19, 360-384.
- Neal, L., and Uselding, P. J. (1972), "Immigration: A Neglected Source of American Economic Growth: 1790-1912." *Oxford Economic Papers* 24, 68-88.
- Sheps, M. C., and Menken, J. A. (1973), *Mathematical Models of Conception and Birth*. Chicago: University of Chicago Press.
- Swierenga, R. P. (1986), "Dutch International Migration and Occupational Change: A Structural Analysis of Multinational Linked Files." In I. Glazier and L. De Rosa (Eds.), *Migration Across Time and Nations*. New York: Holmes and Meier.
- Thernstrom, S. (1964), *Poverty and Progress: Social Mobility in a Nineteenth Century City*. Cambridge: Harvard University Press.
- Thernstrom, S. (1973), *The Other Bostonians: Poverty and Progress in the American Metropolis, 1880-1970*. Cambridge: Harvard University Press.
- Thompson, D. R. (1849), *Hints to Emigrants; or to Those Who May Contemplate Emigrating to the United States of America, and California*. London: Francis Whelpton.
- U.S. Census Office (1852). *Seventh Census of the United States: 1850*. Washington: Government Printing Office.
- U.S. Census Office (1863), *Compendium of the Eighth Census of the United States: 1860*. Washington: Government Printing Office.
- Uselding, P. J. (1970), *Studies in the Technological Development of the American Economy During the First Half of the Nineteenth Century*. Ph.D. dissertation, Northwestern University.
- Wittke, C. F. (1952), *Refugees of Revolution: The German Forty-Eighters in America*. Philadelphia: University of Pennsylvania Press.

TABLE 1  
 Comparison of Occupations  
 Reported By Dutch Immigrants to the U.S. In  
 Dutch Emigration Lists and U.S. Ship Lists, 1841-1850

Occupation in U.S. Ship Lists	N	Occupation in Dutch Emigration Lists (Percent)			
		High & Low White Collar	Skilled & Semi-Skilled	Farmer	Unskilled
High & Low White Collar	35	82.9	11.4	0.0	5.7
Skilled & Semi-Skilled	225	3.6	77.3	6.2	12.9
Farmer	547	7.7	15.5	38.6	38.2
Unskilled	71	7.0	28.2	9.9	54.9

*Source.* Sample of Dutch Immigrants to the U.S., 1841-1850, linked from Dutch municipal emigration records to U.S. passenger ship lists, provided by Robert Swierenga.

*Note.* "Unskilled" includes common laborers, farm laborers, and servants.

TABLE 2  
 Occupational Mobility Between Arrival and 1850 or 1860  
 All Arrivals, 1840-1850

Occupation in U.S. Ship Lists	N	Occupation in U.S. Census (Percent)					
		High White Collar	Low White Collar	Skilled	Semi-Skilled	Farmer	Unskilled
<i>1850 Occupation</i>							
High White Collar	22	36.4	0.0	18.2	9.1	9.1	27.3
Low White Collar	78	7.7	30.8	20.5	9.0	7.7	24.4
Skilled	306	2.0	4.9	46.7	9.8	7.8	28.8
Semi-Skilled	23	1.0	7.3	31.7	30.9	9.8	19.5
Farmer	352	1.1	7.1	20.2	8.5	19.9	43.2
Unskilled	567	1.0	4.8	20.6	10.8	7.2	55.7
All	1,448	2.1	6.9	26.9	11.6	10.7	41.8
<i>1860 Occupation</i>							
High White Collar	19	10.5	15.8	42.1	0.0	21.1	10.5
Low White Collar	67	1.5	17.9	20.9	13.4	11.9	34.3
Skilled	237	2.5	7.6	37.1	7.6	16.9	28.3
Semi-Skilled	110	1.8	8.2	32.7	16.4	21.8	19.1
Farmer	363	2.5	11.3	26.7	8.0	23.4	28.1
Unskilled	819	1.2	7.0	19.1	12.7	12.8	47.3
All	1,615	1.9	8.7	24.7	11.0	16.5	37.3

*Source.* Sample of 1840-1850 European immigrants to the U.S. linked to 1850 and 1860 federal census manuscript schedules.

*Note.* "Farmer" in 1850 and 1860 is an individual reporting their occupation as farmer in the census and reporting a positive amount of real estate wealth.

TABLE 3  
Occupational Mobility Between Arrival and 1850 or 1860  
By Origin, All Arrivals, 1840-1850

	Number at Risk (N) and Percent Making Specified Move (%) )))))))))					
	British )))))		Irish )))))		German )))))	
	N	%	N	%	N	%
<i>Between Arrival and 1850</i>						
White Collar to Unskilled	23	21.7	16	37.5	54	22.2
Skilled to Unskilled	231	17.1	92	52.2	147	20.4
Farmer or Unskilled to White Collar, Skilled, or Farmer	187	63.2	427	35.1	234	58.6
<i>Between Arrival and 1860</i>						
White Collar to Unskilled	17	23.5	16	62.5	49	22.5
Skilled to Unskilled	129	15.5	68	51.5	139	22.3
Farmer or Unskilled to White Collar, Skilled, or Farmer	233	76.8	635	41.9	280	81.1

*Source.* Sample of European immigrants to the U.S., 1840-1850, linked to 1850 and 1860 federal census manuscript schedules.

*Note.* “White Collar” includes high and low white collar workers; “Skilled” includes skilled and semi-skilled workers; “Farmer” in 1850 and 1860 is an individual reporting their occupation as farmer in the census and reporting a positive amount of real estate wealth.

TABLE 4  
 Year of Arrival Effects  
 Controlling for Years Since Arrival in the U.S.

Year of Arrival	White Collar, Skilled, or Semi-Skilled at Arrival ) ) )		Farmer or Unskilled at Arrival ) ) )	
	Irish $\partial P_{12}/\partial X$	German $\partial P_{12}/\partial X$	Irish $\partial P_{12}/\partial X$	German $\partial P_{12}/\partial X$
1841	0.085	-0.119	0.040	0.055
1842	0.158	0.046	0.152**	0.045
1843	0.156	-0.009	0.292***	0.053
1844	0.254	0.039	0.061	0.170*
1845	0.219	0.022	0.171*	0.096
1846	0.021	—	0.183**	—
1847	-0.407	—	0.275	—
1848	-0.287	0.196**	0.322	0.279***
1849	0.061	0.214	0.303	0.336*
1850	-0.301	0.144	0.332	0.425**
Irish Famine (Fall 1846-1850)	0.385		-0.035	
German Revolution (Fall 1848-1850)		0.335**		0.093
Baseline Probability ( $\bar{P}_{12}$ )	0.468	0.737	0.353	0.674
Observations	169	330	903	431

Source. Sample of European immigrants to the U.S., 1840-1850, linked to 1850 and 1860 federal census manuscript schedules

Note. " $\partial P_{12}/\partial X$ " is the difference between: (1) the probability that an individual who arrived in the indicated year was employed in a job other than "unskilled laborer" immediately after arrival; and (2) the probability that an individual who arrived in 1840 (the excluded year of arrival dummy) was employed in a job other than "unskilled laborer" immediately after arrival ( $\bar{P}_{12}$ ). It is  $\partial P_{12}/\partial X = (\beta\alpha)(-\bar{P}_{11})(\log(\bar{P}_{11}))$ , where  $\beta$  and  $\alpha$  are the coefficients on dummy variables for year of arrival for the Weibull hazard function (Equation B8),

$$\bar{P}_{11} = \sum_{i=1}^N [\exp(-\exp(X_i/\beta)t_i)^\alpha]/N$$

is the average probability in the sample that an individual had not moved up from unskilled laborer, and  $\bar{P}_{12} = 1 - \bar{P}_{11}$ . The regression included two other variables (not shown): years since arrival in the U.S. and interactions between years since arrival in the U.S. and either arrival after the start of the Irish Famine (Fall 1846-1850) or arrival after the German Revolutions of 1848 (Fall 1848-1850).

\* Significant at the 10% level.

\*\* Significant at the 5% level.

\*\*\* Significant at the 1% level.



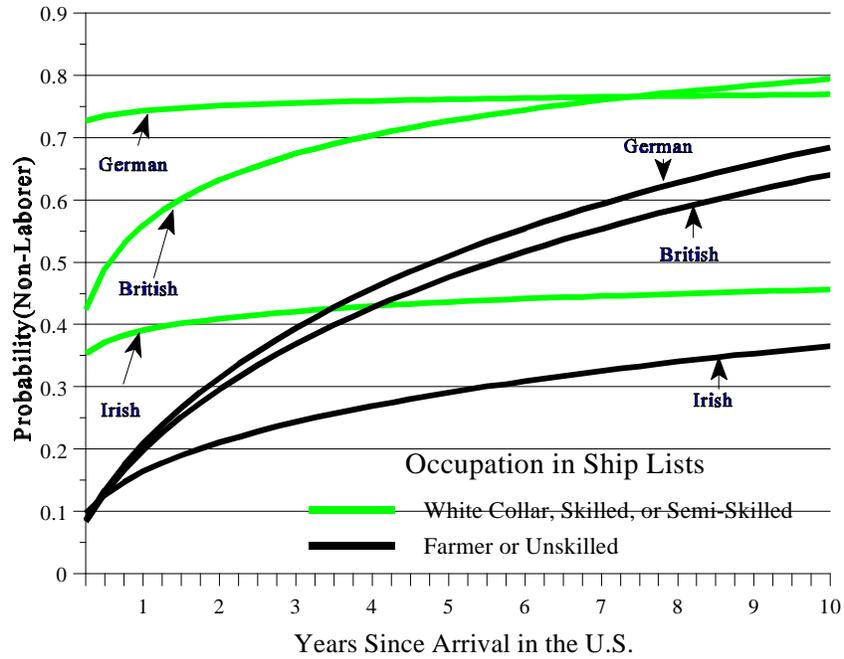


FIG 1. Probability of employment in a job other than “unskilled laborer” by time since arrival, controlling for year of arrival and assuming a Weibull hazard function (see Appendix B).

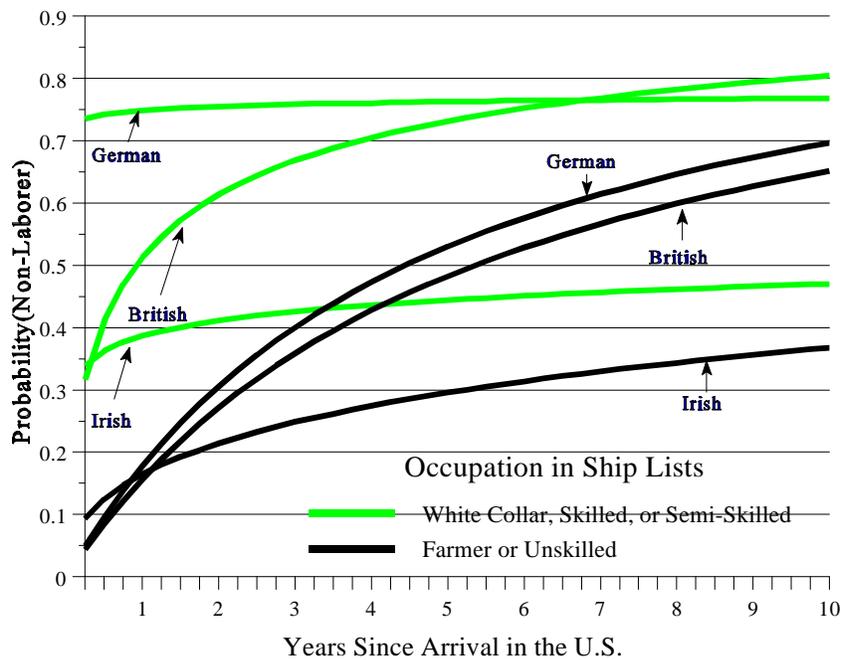


FIG 2: Probability of employment in a job other than “unskilled laborer” by time since arrival, controlling for year of arrival and assuming a log-logistic hazard function (see Appendix B).

