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The U-Shaped Self-Selection of Return Migrants*

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Abstract

Return migrants often come from either the top or bottom part of the foreign-born income distribution, leading to a U-shaped pattern of self-selection. A common explanation for the U-shape is that the low-earners return home because they fail in the labor market, while the high-earners return home because they quickly hit savings targets. However, a simple model demonstrates that the self-selection of return migrants is U-shaped if the costs of migration are higher for low-skilled individuals. I test this model using data on migrants' intentions to return home, which are formed prior to potentially failing in the labor market. In addition to proposing that this model explains the U-shape found in many contemporary datasets, I show that the U-shape exists for a sample of migrants entering Ellis Island during the early 20th century.

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1 Introduction

Migration flows do not always go in one direction, as many migrants return to their home countries - an old insight that goes back to Ravenstein’s laws of migration (1885). Return migrants are often separated into two groups: target savers and failures in the labor market (Borjas and Bratsberg, 1996). Target savers plan to return home, using temporary migration as an investment strategy in either financial or human capital to increase their lifetime earnings at home (Dustmann and Weiss, 2007); failures, on the other hand, do not plan to return when they first arrive, but switch their duration decision due to worse-than-expected outcomes in the host country. These two reasons are used to justify a common finding that self-selection into return migration with respect to income is U-shaped: migrants who are particularly productive hit their savings targets first and make up the upper end of the U, while the bottom end of the U consists of failures who experienced negative wage shocks (Bijwaard and Wahba, 2014). However, the U-shape is not simply due to temporary shocks to income as researchers have found a U-shape with respect to permanent levels of human capital (e.g., education) in various contexts such as modern-day Germany, Sweden, and the United States (Dustmann and Görlach, 2015; Nekby, 2006).

In this paper, I argue that the U-shape could be solely due to individuals who *plan* to return home rather than a combination of target savers and failures. This prediction follows from a combination of two strands in the migration literature: the potential for return migration and higher costs of migration for the least skilled. In a model of return migrant selection, Borjas and Bratsberg (1996) show that return migrants are “marginally” attracted by higher wages in another country, but are easily lured back to the home country because the wage premium from migration is small. For example, lower-skilled individuals migrate to a country with a low-skill premia, but the relatively higher skilled earn the smallest premium and thus are more likely to return home.¹ In a separate strand of the selection literature,

¹In other words, migrants are negatively selected from the home country, but return migrants are positively selected relative to permanent migrants.

some researchers have failed to empirically verify the theoretical prediction of negative self-selection based on the relative skill premia. To reconcile theory and empirics, some have proposed that migration costs must be higher for the lower skilled, perhaps due to wealth constraints (Chiquiar and Hanson, 2005). This has led others to explore how variation in migration costs influences the pattern of migrant self-selection from Mexico to the United States (McKenzie and Rapoport, 2010; Fernández-Huertas Moraga, 2013).

If one combines the intuition that return migrants are those marginally attracted to a country with the idea that migration costs are highest for the least skilled, then the self-selection of return migrants is U-shaped with respect to human capital. Given an intermediately selected group of migrants, the bottom and top of the human capital distribution earn the smallest premium from migration: the bottom because high costs of switching countries reduce the net benefits of migration, and the top because the higher skill premia at home pulls them back to the source country.² Thus, a U-shaped pattern of self-selection could occur prior to negative wage shocks after arrival.

I test this model using data on how migrants self-selected into *planned* return migration at arrival, leaving aside the possibility of failures in the labor market changing the distribution of return migrants. While this model provides support for empirical findings for contemporary data, I use data from migrant arrivals to Ellis Island between 1917 and 1924 - a time period when incomes in Europe were similar to incomes in many developing countries today, and thus migration costs were likely a binding constraint.³ Unfortunately, these migrant records do not include income or education level to gauge a migrant's quality, but do include each migrant's height, a measure which is correlated with strength, intelligence and productivity (Steckel, 1995; Steckel, 2009). For many migrant ethnicities, a U-shape existed for planned return migrants at arrival, where the tallest and shortest were more likely to plan

²For the other case where the skill premia is lower in the source country, then lower-skilled migrants are more likely to return home - another result commonly found in the migrant assimilation literature (Abramitzky, Boustan, and Eriksson, 2014; Lubotsky, 2007).

³According to the Maddison database (2013), GDP per capita for Western European countries in 1920 was \$3,333 in 1990 Geary-Khamis dollars. This number is close to Maddison's estimate for India in 2010 at \$3,372.

to return home. The U-shape exists both across and within ethnicities, and is also robust to controlling for year of arrival, which is important due to the fallout of World War I and United States policy changes in the 1920s. However, it does not exist for every ethnicity in the dataset, suggesting that the theory does not completely explain the self-selection of planned return migrants.

The model predicts the selection of return migrants in a world where there is no uncertainty about wages. In another light, it predicts the selection of return migrants based on the *expectations* of wages by migrants entering the country; the pattern of selection could change if actual wages in the host country do not line up with expectations. For example, it is possible that after arrival the least skilled are more likely to experience wages below expectation, ultimately driving them to return back home; this would create a difference between planned return migrant selection and actual return migrant selection where more failures after arrival would increase the mass at the bottom end of the U (Bijwaard, Schluter, and Wahba, 2014).

To explore how the selection of return migrants changes after arrival, I link entering migrants to later census data to proxy for which migrants stayed and which migrants returned home. Linking is not a perfect proxy for remaining in the United States because of other reasons for failure to link besides return migration, such as death, name changes or measurement error.⁴ With these shortcomings in mind, I find that those who were linked to the census, and thus stayed in the United States, were at the upper end of the height distribution while those who were not linked were at the lower end. This provides suggestive, but not conclusive, evidence that negative income shocks after arrival were concentrated among shorter individuals, which ultimately led to a negative self-selection of return migrants on height - consistent with other papers on the selection of return migrants during a similar time period (Abramitzky, Boustan and Eriksson, 2014; Ward, 2014).

⁴Another reason for not linking migrants is due to unique names: only those with a unique name, age and country of birth combination can be linked. Unique names are often associated with slightly higher human capital.

These results on return migrant selection have implications for related strands of literature on migration. First, the selection of return migrants could bias estimates of how quickly migrants assimilate into the labor market (Borjas, 1985); correcting for the selection of return migrants can explain a large portion of increasing migrant wages over time (Abramitzky, Boustan and Eriksson, 2014; Lubotsky, 2007). Moreover, the selection of return migrants is important for estimating any causal effect related to temporary migration, including the “return” to return migration and the effect of temporary migration on the family left behind (Antman, 2013; Dinkelman and Mariotti, 2014; Kosack, 2014; Wahba, 2015). Finally, this model also provides insight into the brain drain and brain gain literature by examining the human capital level of both stayers and returners (Gibson and McKenzie, 2011a).

2 Theoretical Framework

2.1 The Model

Suppose that an individual is considering a move to another country. At first, assume that she can only migrate permanently, without the option to return home. Wages in both the source and destination countries are determined solely by some observable measure of human capital such as literacy, years of schooling, or in the case of this paper, height. Of course, wages could be influenced by unobservables, as in the original Borjas model of migrant selection (1987), but here I simplify to model only selection on observables. I follow the usual notation where wages at home are indexed by 0:

$$\ln(w_0) = \mu_0 + \delta_0 h \tag{1}$$

The base wage is represented by μ_0 , and $\delta_0 > 0$ is the return to human capital h . Likewise,

wages in the host country (in this paper, the United States), are:

$$\ln(w_1) = \mu_1 + \delta_1 h \quad (2)$$

where the United States has a different base wage (μ_1) and return to schooling (δ_1) than the home country. There is no uncertainty about wages in the United States - migrants are guaranteed income solely based on their quantity of human capital, the return to human capital, and base wages. Initially, assume that the return to human capital is higher at home ($\delta_1 < \delta_0$). The other case where the return to human capital is higher in the destination country rather than at home ($\delta_1 > \delta_0$) will be explored later in the section.

Let the cost of migration from the source to the host country be denoted M .⁵ An individual will migrate to another country if

$$\ln(w_1) - \ln(w_0) - M \geq 0 \quad (3)$$

A key assumption by Borjas (1987) is that M is not a function of h , an assumption that Chiquiar and Hanson (2005) alter to where migration costs are decreasing in human capital.⁶ I will apply the same relaxation later in this section, but for now assume that migration costs are constant. The above equations are plotted in Panel A of Figure 1 to show which individuals select into immigration. There is a cutoff level of human capital h^* where those below the cutoff ($h < h^*$) will migrate while those with higher levels of human capital ($h > h^*$) remain at home.⁷ Since migrants have the least amount of human capital relative to the home population, the selection of migrants is negative.

⁵The typical assumption is that there is a cost C_i of migration, where $M = \frac{C_i}{w_0}$ is the labor-hours cost of migration. This could easily be assumed, but I simplify the notation to just use M .

⁶Borjas (1991), in an extension of his original model, shows how varying costs affect selection, which underscores the general point that one can change assumptions on migration costs to explain various empirical results on migrant selection.

⁷For a continuous distribution of h in the home country, the rate of migration is $\int_0^{h^*} f(h)dh$. Given a continuous distribution of human capital, there is zero mass of individuals who have exactly h^* human capital. Alternatively, those who have h^* human capital are indifferent between migrating or staying at home.

Given this selection for one-way migration, now we will see how the selection changes when individuals have the option to return home. In the simplest terms, assume that if a migrant spends time abroad in the host country then there will be a premium to earnings at home (κ), where wages upon return are $\ln(w_0) + \kappa$ (Borjas and Bratsberg, 1996). Like migration costs M , assume that the premium when returning home is constant across the human capital distribution. This premium could be from accumulated savings abroad which are used to invest in a business back home - indeed, many studies find that return migrants are likely to be entrepreneurs upon return (Dustmann and Kirchkamp, 2002; Ilahi, 1999; McCormick and Wahba, 2001; Mesnard, 2004).

Assume that a temporary migrant spends an exogenously fixed length of time τ abroad.⁸ Lifetime earnings for the migrant will be a weighted average of income in the host and home countries after return. The potential earnings from migrating temporarily are then defined as

$$\tau[\ln(w_1)] + (1 - \tau)[\ln(w_0) + \kappa] = \underbrace{\tau[\ln(w_1)] + (1 - \tau)\ln(w_0)}_{\ln(w_{10})} + (1 - \tau)\kappa \quad (4)$$

Let $\ln(w_{10})$ be the weighted average of both the host country's and home country's income; to this income, returning home yields a further premium of $(1 - \tau)\kappa$. While this premium attracts individuals to a temporary migration strategy, there is also a return migration cost R which, like M , is constant across individuals. Now, given the option of return migration, an individual decides to migrate to the United States if either Equation (3) holds or

$$\ln(w_{10}) + (1 - \tau)\kappa - R - M \geq \ln(w_0) \quad (5)$$

This states that one will temporarily migrate if it yields a higher net return than never migrating at all. However, an individual will only return home if wages after remigrating

⁸Others have explored the endogeneity of time spent abroad in other settings (see Dustmann and Weiss, 2007).

home are higher than staying in the destination country, or:

$$\ln(w_{10}) - M - R + (1 - \tau)\kappa \geq \ln(w_1) - M \quad (6)$$

For Equation (6) to be relevant, the premium from returning home must be high enough to justify the costs of migrating to and back from the host country. Specifically, $\kappa > M - \frac{R}{1-\tau}$.⁹

These relationships are shown in Panel B of Figure 1, which adds an extra wage profile to Panel A in order to reflect temporary migration. Importantly, the slope of this line is between the slopes of wages at home and wages abroad ($\delta_1 < \tau\delta_1 + (1-\tau)\delta_0 < \delta_0$); it is this alternative “skill premia” that will drive differential selection into return migration. Individuals compare the three relevant wages, either staying at home, migrating and then returning home, or migrating permanently, and then select which option would be most financially beneficial. For the case in Panel B of Figure 1 where the return to human capital is higher at home, the least skilled migrate permanently because their human capital earns the highest premium in the United States. Correspondingly, those in the middle of the human capital distribution are attracted by higher wages in the United States, but not permanently because the premium from migrating back home outweighs the benefits of staying permanently. In this case, return migrants are positively self-selected from the migrant population; alternatively, return migration intensifies the negative self-selection of migrants. Finally, with respect to the home country’s population, return migrants are intermediately selected.¹⁰

Much of the previous setup yields the same insights of the analysis in Borjas and Bratsberg (1996); here, I depart from their model by relaxing the assumption that migration costs are constant across all individuals. Similar to Chiquiar and Hanson (2005), I assume that

⁹Due to the nature of the model’s set up, this is the same condition that needs to hold for returning home in Borjas and Bratsberg (1996).

¹⁰Technically, the relative selectivity depends on the distribution of human capital $f(h)$. It is possible that the support of $f(h)$ goes from 0 to someplace in between h_1 and h_2 , which would suggest that return migrants would be positively selected from the home country’s population. Of course, this would also imply that everyone from the source country would migrate either permanently or temporarily, which is unreasonable.

the cost of moving from the source to the destination country (M) is decreasing in skill.¹¹ This could be because liquidity constraints make it difficult for low-skilled individuals to finance the move abroad. In equation form:

$$\ln(M) = \mu_m - \delta_m h \quad (7)$$

where μ_m is the base cost of migration and δ_m is the rate at which migration costs decrease when human capital increases.

If we incorporate this alternative parameterization of migration costs, the resultant effects on the migration decision are displayed in Figure 2. Panel A plots the equations where individuals only migrate in one direction, corresponding to intermediate self-selection in Chiquiar and Hanson (2005). Those who have human capital between the critical values of h_L and h_U find it attractive to migrate. Intuitively, while low-skilled individuals earn high benefits from low-skilled jobs in the United States, the high costs of migration exclude them from migrating. This changes the self-selection of migrants from negative to either intermediate or positive, depending on the distribution of human capital h in the home country's population. Those who have more human capital than h_U decide to stay in the home country because of the higher skill premia at home.

Panel B now incorporates the possibility of returning home. Just as in Figure 1, the slope of the wage profile from a temporary migration strategy is between the slopes of the permanent migration and staying at home. Also as in Figure 1, those who are most willing to return home are the migrants who receive the lowest premium from going to the destination country. When the selection of migrants is initially intermediate, as in the case for Panel A of Figure 2, return migrants are the “marginal” migrants in the sense that they are the least attracted to the United States; those who are at the top and bottom ends of the human

¹¹I keep the assumption that the return migration cost is constant across the human capital distribution. It is possible that the return migration cost is higher for the least skilled, but given that the return migration process involves little institutional constraints such as visas or quotas, the cost is likely cheaper. However, if returning home is costly, this leads to the lowest skilled being more likely to stay permanently, which aligns with arguments put forward by Piore (1979).

capital distribution earn the least net benefit and so these are the migrants who are most likely to return home. For those on the lower end of the human capital distribution, between h_L^* and h'_L , since migration costs are so high, individuals are only marginally attracted to the United States. Similarly on the upper end, between h'_U and h_U^* , migrants are only marginally attracted to the United States because returns to human capital are higher at home.

In both cases where migrations costs are constant or decreasing in skill, return migrants are those who are marginal migrants, who are just barely attracted by wages in the United States. If we change the assumptions of the model so the return to human capital is higher in the United States ($\delta_1 > \delta_0$), then the prediction for the selection of return migrants will change, as shown in Figure 3.¹² Panel A demonstrates the case if the costs of migration are constant across the human capital distribution, which leads to return migrants being negatively selected relative to permanent migrants. Panel B depicts the case where the costs of migration are increasing in human capital, which does not alter the result from Panel A that return migrants are negatively selected from the migrant population. Given these alternative assumptions, it may be unsurprising that return migrants are often found in empirical studies to be negatively selected because it could be those who *planned* to return home.

The analysis so far is based on the assumption that wages in the United States are *known* to the migrant before arrival. In other words, there is no idiosyncratic shock, or “mistake” in the migration decision that return migration reverses. It is possible that migrants either overestimate or underestimate wages abroad, which could lead to disappointment or exuberance after arrival (McKenzie, Gibson, and Stillman, 2013). In this case, wages in the host country could be modeled as

$$\ln(w_1)_i = \mu_1 + \delta_1 h_i + \epsilon_i \quad (8)$$

¹²We also need to assume that base wages (net from migration costs) are lower in the United States, or else the entire population would migrate.

where ϵ_i is a shock to wages after arrival in the United States. If one assumes that ϵ_i is not correlated with human capital h , then a U-shaped pattern of self-selection should occur for actual return migrants.¹³ However, if ϵ_i is correlated with human capital h , then the selection of planned return migrants could be different from the selection of actual return migrants - for example, return migrants could be entirely negatively self-selected if the lowly skilled receive negative wage shocks and the highly skilled receive positive wage shocks.

2.2 Connecting the Model to the Early 20th Century

While the patterns predicted by the model have been found in other datasets (Dustmann and Görlach, 2015; Nekby, 2006), I test the model in the context migration to the United States in the early 20th century United States, a time period when return migration flows were about 60 to 75% of inflows (Bandiera, Rasul, and Viarengo, 2013). The key parameters that drive the model's predictions are the relative skill premia between countries and the decreasing costs of migration with respect to human capital.¹⁴

The model's assumption that the return to skill is lower in the United States goes against other studies which find that the return to human capital was relatively lower in Europe during the 1920s (Anderson, 2001; Betrán and Pons, 2004).¹⁵ However, the assumption in the model on skill premia is specific for migrant earners, rather than skill premia for the entire economy. The return to human capital for a migrant could be different from the return to human capital for the native born if there was any discrimination. Indeed, there is evidence of discrimination during the 1920s: for example, migrants who anglicized their name received a premium in the labor market (Biavaschi, Giulletti, and Siddique, 2013).¹⁶

¹³The previous analysis was the special case where ϵ_i only took on the value zero.

¹⁴The model also assumes that base wages are high enough in the country abroad to attract migrants in the first place, which is justified by Williamson (1995) showing that real wages for unskilled labor were much larger in the United States compared to Europe during the early 20th century.

¹⁵As an alternative measure of skill premia besides income, Baten and Blum (2011) use difference in heights and find that the United States has similar skill premia to Italy and United Kingdom in 1920, two major sending countries in the dataset. Stolz and Baten (2012) estimate a statistical link between this measure of skill premia using height and the selectivity of migrants between 1820 and 1909, which is evidence in support of the Borjas model (1987).

¹⁶For more on the debate over labor-market discrimination against migrants during the late 19th and early

Another reason why the relative skill premia, specifically for migrants, could have been lower in the United States is that a migrant's human capital did not transfer across country borders.¹⁷ One way to examine this is to estimate the return to education in a Mincerian framework, which is possible using 1940 IPUMS sample, which is the first census to include wage data (Ruggles et al., 2010). Results of the Mincer regressions are shown in Figure 4, which plots the return to education in the United States if one was born abroad or born in the United States; a migrant's return to education, no matter what country of birth, is about half or less than half than the return to education for a native born.¹⁸ This suggests that, although the United States had a high return to human capital during the 1920s, this skill premia was not representative for individuals moving to the United States.¹⁹

The second assumption of the model relates to the costs of migration, which were likely high for migrants between 1917 and 1924. Not only did migrants have to outlay money for a ticket, but also they had to forgo work for about two weeks while traveling across the Atlantic. Moreover, during and after World War I, there was a significant spike in freight rates between Europe and the United States - since freight rates were highly correlated with passenger fares, there was also likely an increase in costs for migrants (Mohammed and Williamson, 2004; Covarrubias et al., 2015).²⁰ Further, the enactment of migration quotas during the early 1920s likely raised the cost of migration by creating barriers to free entry.²¹ On the other hand, Abramitzky, Boustan and Eriksson (2012, 2013) find negative self-selection of Norwegian migrants during the Age of Mass Migration, from which they infer that migration

20th century, see Blau (1980), Hannon (1982), Higgs (1971), and Hill (1975). More recently, Moser (2012) provides evidence of discrimination specifically against Germans during the 1920s.

¹⁷This has been found in contemporary data where migrants downgrade occupations at arrival (Friedberg, 2000).

¹⁸Specifically, I regress log wages on education, potential labor market experience and its square, and sex. Potential experience is defined as years after age 16. I limit the sample to those who earn positive wages and are between the ages of 16 and 55.

¹⁹Unfortunately, estimates for the return on education does not exist for other countries closer to the time period of 1917 to 1924 to verify that the relative return to human capital was lower in the United States.

²⁰In their examination of passenger fares from the United States to Europe, Dupont, Keeling and Weiss (2012) also find a spike during the early years of World War I. Unfortunately their series ends in 1916, a year before the time period of my study.

²¹From the Canadian perspective during the 1920s, Armstrong and Lewis (2012) argue that high moving costs and borrowing constraints limited migration from the Netherlands.

costs were not a binding constraint for poorer individuals. However, it is likely that at least some migrants were limited by the costs of migration: this constraint at the lower end of the human capital distribution is all that is needed to find a U-shaped pattern of return migrant self-selection.

3 Data: Ellis Island Records from 1917 to 1924

Starting in 1917, the United States asked every migrant arriving in the United States whether they planned to stay permanently, or whether they planned to return home.²² I collect a 1% random sample of ships arriving at Ellis Island from European ports between 1917 and 1924, which leads to a total of 19,042 migrants. To get this number of observations, I drop those with heights either higher than 190 or less than 140 centimeters, were born in the United States, were in transit through the United States to another country, and those under age 16.²³ Since the sample is from Ellis Island while migrants could enter the country through other ports, I reweight the sample for regressions to match the total flow of migrants entering the country by year and source country location.²⁴ Finally, I include in the return migrant group anyone who was planning to leave or uncertain about staying in the United States; the results are unchanged if one drops the uncertain group (see Appendix A).

Measuring human capital can be difficult, especially in a historical setting. Traditional measures of migrant quality for self-selection, such as wages or education, are unavailable with the given data. However, these measures are often problematic when trying to estimate the self-selection of migrants. For example, wages change across boundaries due to price changes, leaving the counterfactual wage for remaining at home unclear. Moreover, edu-

²²The text of the question reads “whether alien intends to return to country whence he came after engaging temporarily in laboring pursuits in the United States.” There was no penalty for misrepresenting one’s true intentions.

²³These modifications to the sample drop 7,124 observations from the sample, mostly children. Dropping heights above 190 and below 140 centimeters does not change the results, but narrow the support for the U-shape graphs.

²⁴Source country location is either new source countries (i.e., Southern and Eastern Europe) or old source countries (i.e., Northern and Western Europe). Reweighting does not change the results for the U-shape.

cation may be misreported or have differently quality if education was acquired in multiple countries. Therefore, I use another metric of human capital, height, which has many benefits over other proxies for productivity. Height is measured consistently across countries, unlike education; further, it does not change when one crosses a border, unlike skill prices.²⁵ Height is also positively correlated with skill, intelligence and strength - all inputs into productivity, especially during a time period when many migrants worked in manual jobs (Steckel, 2009).²⁶

Characteristics of the sample are shown in Table 1. The average planned return migrant was 166.6 centimeters tall, while planned permanent migrants were on average 166.0 centimeters tall, which is significantly different at a 5% level.²⁷ However, more relevant to the model, the table also lists the standard deviation of height for permanent and return migrants - which, when using the entire sample, is larger for return migrants by a slight amount. I also disaggregate the means of heights, age and sex for different ethnicities that are included in the sample.²⁸ While the overall sample includes over 30 ethnicities, the number of return migrants is not large for each ethnicity. Since the planned return migration rate was often less than 20% for ethnicities, I test for the U-shape pattern of height only for ethnicities that have over 40 observations of planned return migrants.²⁹

²⁵Height is measured in feet and inches in the data, which I convert into centimeters. Since most migrants came from countries that used the imperial system for measuring length, it is likely that border officials or the ship captain measured each migrant's height.

²⁶This is not the first paper to use height as a measure of migrant's skills. See Kosack and Ward (2014) and Spitzer and Zimran (2014) for a further discussion.

²⁷See Ward (2014) for a further explanation of how migrants selected into planned return migration. The sample is slightly different between these two papers because Ward (2014) creates a sample to fit the administrative record's definition of a migrant and also includes children in the sample.

²⁸I use ethnicity instead of country of origin because you can uncover selection patterns for ethnicities such as "Hebrew" which do not have a consistent country of origin.

²⁹The bandwidth I use for estimating densities is 2 cm. I also test for the U-shape using regression analysis, so the statistical evidence for the U-shape does not depend on the bandwidth.

4 Empirical Analysis

4.1 Height Densities

I use two different empirical tools to demonstrate the U-shaped self-selection of return migrants. First, I estimate the height densities for both planned return and planned permanent migrants for each ethnicity in my dataset. I plot the unconditional densities, so these may also reflect differences in age, sex, or policy setting between return and permanent migrants. As a check on the estimated height densities, I use regression analysis to control for covariates and statistically verify the U-shapes in the following section.

First, in Figure 5, I estimate the height densities for Italian and English migrants. For Italian migrants, there is a clear concentration of planned permanent migrants at 165 centimeters, while planned return migrants are spread more evenly along the height distribution. The wider variation of height for planned return migrants is consistent with the prediction of the model that return migrants are more likely to be at the ends of the height distribution. In Panel B, I plot the difference between the estimated densities in Panel A to show the relative selection into planned return migration. There is a large dip right at the 165 centimeter mark with a positive mass on either side. This is the visual evidence of a U-shaped selection into return migration. The estimated height densities for English migrants are shown in Panels C and D, which show a slight U-shaped pattern; however, the mass of the distribution is heavily on the upper end of the U. This is seen in the descriptive statistics: English return migrants were on average taller than permanent migrants by 2.9 centimeters, while Italians return migrants were on average 1.5 centimeters shorter than permanent migrants. Accordingly, Italians have a larger mass at the bottom end of the U.

In Figure 6, I estimate the height densities now for German, Scandinavian and Scottish migrants. For German migrants in Panel A and Scandinavian migrants in Panel C, the estimated height densities for return and permanent migrants are nearly on top of each other, but in both instances the height density for planned permanent migrants is slightly

more narrow and tall. The differences between the permanent and return height densities are plotted in Panel B (Germans) and Panel D (Scandinavians), and both show evidence of a U-shaped pattern of self-selection into return migration. While the U is not as “deep” compared to the densities shown in Figure 5, the relationship still appears. For Scottish migrants in Panel E, there is very slight evidence of a U-shape, but return migrants are clearly shorter on average than permanent migrants. This could have something to do with the fact that permanent migrants were 58.2% male while return migrants were only 52.9% male.

Two instances where the self-selection of planned return migrants is obviously not U-shaped are shown in Figure 7, which plots height densities for Hebrew and Irish migrants. For Hebrew migrants, there were very few migrants who planned to return home - only 45 of the 1,715 in the sample. Clearly, selection could be altered not only by costs of migration and different skill premia, but rather due to cultural or discriminatory factors at home - refugee sorting could occur where the incentive for returning home is very low. Many of these migrants arrived from Russia, where there was anti-Semitic violence following the Russian Revolution in 1917. Hebrew migrants who did plan to return home were from the upper end of the height distribution compared to the rest of the migrant population.

Irish height densities are also plotted in Figure 7 and display an upside down U-shape, which is the exact opposite relationship from the one predicted in the model: planned return migrants have a smaller variation of height relative to planned permanent migrants. This could be partially due to the large percentage of Irish females migrating (57%), females who had a relatively high planned return rate of 35.9% compared to Irish males at 21.1%. Other reasons besides economic incentives may have influenced female return migration, making the pattern of Irish return migrant selection unclear. While the unconditional selection is arguably of first-order importance to policy makers, controlling for sex is fundamental for uncovering the mechanisms behind the selection patterns.

4.2 Regression Analysis

The results presented so far do not control for any observables such as sex or age. Here I test for the U-shaped selection into return migration using the following regression equation:

$$PlannedReturn_i = \beta_0 + \beta_1 Height_i + \beta_2 Height_i^2 + X_i' \Pi + \epsilon_i \quad (9)$$

where $PlannedReturn_i$ equals one if the migrant plans to return home, $Height_i$ is the migrant's height in meters, and X_i' are any observables which could affect the relationship between height and planning to return home - specifically, I include age, sex and year of arrival as covariates. Year of arrival is particularly important as the data's time period (1917-1924) overlaps a policy change in 1921 where migration quotas were put into place to limit inflows from Southern and Eastern Europe. The quotas were structured in such a way that a maximum number of migrants could enter each year; it has been shown that these quotas influenced both inflows and outflows from the United States (Greenwood and Ward, 2015). I separately estimate Equation (9) by ethnicity while also including year fixed effects, which should control for the enactment of the migration quotas. The model predicts that β_1 should be negative while β_2 is positive, given that the return to schooling is higher in the source country and migration costs are decreasing in human capital.

The results from Equation (9) are shown in Table 2. I run the regression twice for each ethnicity, first using no control variables and a second controlling for age, sex and year of arrival dummy variables.³⁰ Before running the regression for each ethnicity, I first estimate the equation when using the entire sample of migrants entering the country. The coefficient on β_0 is negative and statistically significant and the coefficient on β_1 is positive and statistically significant, in accordance with predictions from the model. Using these two variables, the estimated bottom of U is at 165.3 centimeters, between the support of the height distribution. When including the control variables (including ethnicity fixed effects)

³⁰The age dummy variables are for every single age.

the estimated coefficients do not change much, and the height turning point moves slightly to 165 centimeters.

The rest of the top row of Table 2 are ethnicities that statistically support a U-shaped curve: Italians, English and Germans. In each of these cases the U-shape holds with or without controlling for age, sex and year of arrival fixed effects. For the case of Scottish migrants, the pattern of self-selection is not supported when estimating the unconditional relationship, but when one adds the control variables, the standard errors narrow enough for the U-shape to be statistically significant at the 10% level. Thus, it appears that the U-shaped pattern of self-selection is not driven by sex-based means or by policy changes that occurred following the 1920s migration quotas. While the migration quotas could obviously alter the selection of return migrants, it does not change a U-shaped pattern.

For Scandinavian migrants, there is no support for a U-shaped selection of planned return migrants. This is perhaps surprising since the German ethnicity provided statistical support for the model; as we saw previously in Figure 6, German and Scandinavian height densities were relatively similar. Finally, Hebrew and Irish planned return migrants do not satisfy the model, which is perhaps due to other reasons for staying permanently such as discrimination against Hebrew migrants at home or sex-based return migration for Irish individuals.

In Appendix A, I show that the estimated relationship is robust to different classifications of the sample and definitions of a return migrant. One difference between return migrants and permanent migrants is the sex composition - in particular, for many ethnicities males had lower planned rates of return than females. I run the regressions using only males, and still find the U-shaped relationship - in fact, the results are stronger when only including males. In particular, the upside-down U-shape disappears for Irish migrants, and Scandinavian migrants now verify the U-shape. Other robustness checks include dropping the years 1917 and 1918 to exclude effects of the War, and then also dropping migrants who were uncertain about returning home - the U-shape is still verified despite these different

samples.

5 Data Linked to the 1930 US Census

The Ellis Island ship manifests record only potential return migrants, or those who planned to return home rather than actually returned home. Of course, negative shocks (or positive shocks) after arrival could have changed the return migration decision. To explore the selection of actual return migrants, I link the Ellis Island data to the 1930 United States Census to proxy permanent and return migrants. Using a linking process that is similar to Abramitzky, Boustan and Eriksson (2014) and described further in Appendix B, I am able to link 3,113 males to the 1930 census.³¹ The links are made based on a migrant's first name, last name, country of birth, and year of birth within a 2-year range.

The goal is to compare the height of linked migrants to unlinked migrants and infer something about the return migration of actual migrants. However, a migrant may not be linked to the census for a variety of reasons besides returning to his original country. Transcription error, deaths, and name changes are the main candidates for why a migrant may not be linked. Further, a migrant with a common name could be linked to multiple individuals, making it impossible to know which is the true link - these individuals are dropped. In functional form:

$$Link_i = f(ReturnHome_i, Death_i, NameChange_i, CommonName_i, TranscriptionError_i)$$

Thus, failing to link is not only a proxy for return migration, but also is a proxy for death, having a anglicized one's name, having a common name or measurement error. However, these other proxies are likely correlated with height. For death, it is feasible that shorter individuals are less likely to be linked since shorter individuals had worse nutrition earlier in

³¹Females are not linked because of potential last name changes after marriage.

life and are generally less healthy. This bias is compounded by name changes: in a sample of foreign-born who went through the naturalization process in New York, Biavaschi, Giuliatti, and Siddique (2013) find that lower-skilled individuals were more likely to change their name. This would bias results where linked individuals are taller than not linked individuals. Common names are also associated with lower-skilled individuals (Abramitzky, Boustan and Eriksson, 2014), which suggests that unlinked individuals will have worse occupations and thus shorter heights. Transcription error is likely random with respect to height, so will not bias results.

While there are many reasons for failing to link an individual, we can check whether return migration plans correlate with failing to link - if this is the case, then we can be more confident that failing to link proxies return migration. The linking rates, separated by planning to return or planning to remain permanently, are shown in Table 3. Overall, 29.8% of the male migrant sample is linked forward to the 1930 census.³² The relative linking rate is different between those who planned to return and those who did not: migrants who planned to stay had a linking rate at 32.4%, while those who planned to return home had a linking rate less than half at 15.3%.

As a secondary check on potential biases from linking, I estimate the representativeness of the sample compared to the rest of the migrant population using the 1930 IPUMS sample. As detailed in Appendix B, I find individuals who were successfully linked to the entire 1930 US Census in the 5% IPUMS sample, where there is readily available information about a migrant’s occupation. In particular, I regress the occupational score on whether a migrant was successfully matched to the Ellis Island data.³³ Those successfully linked from Ellis Island to the 1930 IPUMS sample have an occupational score that is statistically indistinguishable from the rest of the 5% IPUMS sample (Ruggles et al., 2010). Thus, while

³²This linking rate is more successful than Abramitzky, Boustan and Eriksson’s (2014) linking rate for migrants between 1900 and 1920, which could be because they were linking three datasets (1900, 1910 and 1920 census), while I only link two (arrival data and 1930 census).

³³An occupational score is a number assigned to each occupation to reflect its earnings. They are used as a substitute for wages, which are often not available in historical data. This occupational score is the variable “occscore” in IPUMS, which is based on the median earnings for each occupation in 1950.

there are clear measurement issues, linking does seem to proxy for returning home and leads to a representative sample of migrant occupations in 1930.

The estimated height densities for linked and unlinked individuals are shown in Panels A and B of Figure 8. If migrants went through with their plans to return home and failing to link is a perfect proxy for return migration, then the difference between the two densities should display a U-shape.³⁴ This is not the case as those who were linked to the 1930 census were more likely to come from the upper end of the height distribution while those I failed to link were at the bottom end of the height distribution. This provides *suggestive* evidence that after arrival those at the higher end of the height distribution were more likely to stay while those at the bottom end of the distribution were more likely to return home - ultimately, return migrants were negatively selected from the migrant population.

This interpretation is biased by the fact that failing to link proxies for other characteristics besides return migration. In Panels C and D, I attempt to control for this bias by only examining those who were successfully linked to the 1930 census. Here I estimate two densities: those who planned to stay and were successfully linked, and those who planned to return but *switched* their duration decision and were successfully linked. Planned return migrants who were linked had taller heights than those who planned to stay permanently. This also suggests that, despite planning to return home, taller migrants were more likely to stay while shorter migrants were not as likely to be linked.

One interpretation of these figures is that shorter migrants were more likely to “fail” in the labor market; another interpretation could be that low-skilled migrants had unrealistic expectations prior to arrival. Either way, this evidence supports Abramitzky, Boustan and Eriksson’s (2014) argument that permanent migrants were on average higher skilled than migrants who returned home. However, given the other reasons for failing to link migrants, this evidence is suggestive at best. When estimating regressions for the linked sample, Italian is the only ethnicity that supports a U-shaped self-selection of unlinked migrants relative to

³⁴In the data, migrants also list how many years they intended to stay - if they intended to stay past 1930, then I allocate them to the planned to stay group.

linked migrants.

6 Conclusions

I modeled a simple framework for why return migrants might come from the top or the bottom of the human capital distribution. The U-shape follows simply from a basic migrant selection model that incorporates both the possibility of returning home and high migration costs for the least skilled. The model explains the U-shaped pattern that has been observed for other datasets from the United States, Germany, the Netherlands and Sweden (Bijwaard and Wahba, 2014; Dustmann and Görlach, 2015; Nekby, 2006), but argues that the pattern of selection could appear with no “failures” in the labor market. It is clear that income shocks do drive migrants back home - however, income shocks are not necessary for the U-shaped pattern of self-selection to emerge (Bijwaard, Schluter and Wahba, 2014).

This paper underscores the importance of expected income in another country: because migration outcomes are uncertain and inherently risky, individuals only move based on expectation (Bryan, Chodhury and Mobarak, 2014; Kennan and Walker, 2011). As individuals return home, they come back with either success or failure stories - stories that influence the next round of migration. Given the importance of migration policy as a tool to alleviate poverty (Clemens, 2011), understanding how these expectations are formed and then how actual outcomes deviate from expectations is crucial. Further work on modeling how networks, culture and family affect return migration decisions could be a next step to uncovering other selection mechanisms for return migration (Gibson and McKenzie, 2011b).

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Table 1: Descriptives Statistics of Migrants, by Ethnicity and Intention to Return

Ethnicity Planned:	All		Italian		English		German	
	Permanent	Return	Permanent	Return	Permanent	Return	Permanent	Return
Height (cm)	166.0 ^a (7.345)	166.6 ^a (7.787)	164.4 ^a (5.390)	162.9 ^a (6.638)	164.8 ^a (7.656)	167.7 ^a (8.531)	167.5 (7.418)	167.8 (8.176)
Age	29.79 (11.36)	29.96 (11.74)	29.37 (11.09)	29.04 (10.52)	33.46 ^a (12.27)	38.23 ^a (13.81)	29.08 (10.83)	32.96 (13.55)
Male	0.547 (0.498)	0.551 (0.497)	0.680 ^c (0.467)	0.642 ^c (0.480)	0.430 ^b (0.495)	0.517 ^b (0.501)	0.515 (0.500)	0.486 (0.501)
Observations	16,208	2,834	3,134	640	1,014	240	3,691	276
Ethnicity Planned:	Scottish		Scandinavian		Hebrew		Irish	
	Permanent	Return	Permanent	Return	Permanent	Return	Permanent	Return
Height (cm)	169.0 (7.415)	169.1 (7.463)	168.6 ^b (7.245)	166.1 ^b (7.883)	162.7 ^a (7.481)	166.1 ^a (6.683)	166.7 ^b (8.290)	165.4 ^b (7.493)
Age	29.08 ^c (10.76)	28.27 ^c (10.80)	30.14 ^a (9.220)	39.35 ^a (14.13)	31.28 (14.95)	32 (13)	27.30 ^a (8.886)	23.80 ^b (7.464)
Male	0.582 ^a (0.493)	0.529 ^a (0.499)	0.710 ^a (0.454)	0.471 ^a (0.504)	0.448 (0.497)	0.533 (0.505)	0.479 (0.500)	0.305 (0.461)
Observations	2,025	886	768	51	1,670	45	587	246

Notes: Data is from Ellis Island Records (1917-1924). Means and standard deviations are reported. T-tests are performed within ethnicity where *c* has a p-value<0.10, *b* has a p-value<0.05 and *a* has a p-value <0.01

Table 2: Regression of Planned Return on Height

Ethnicity	All	Italian	English	German
$Height(m)$	-7.829*** (1.412)	-26.24*** (4.681)	-15.91*** (6.151)	-3.620* (2.040)
$[Height(m)]^2$	2.368*** (0.426)	7.787*** (1.432)	5.056*** (1.851)	1.093* (0.613)
Age, Sex, Year FE	X	X	X	X
Height Turning Point	165	168.5	157.3	165.6
Observations	19,042	3,774	1,254	3,967
R-squared	0.080	0.025	0.038	0.001

Ethnicity	Scottish	Scandinavian	Hebrew	Irish
$Height(m)$	0.547 (3.556)	-13.81 (9.827)	1.311 (1.379)	11.66 (7.872)
$[Height(m)]^2$	0.0182 (3.526)	-11.68 (7.510)	1.545 (1.333)	14.61** (6.928)
Age, Sex, Year FE	0.115 (1.055)	3.537 (2.978)	-0.363 (0.428)	-3.573 (2.373)
Height Turning Point	X	X	X	X
Observations	-7.9 2,911	165.1 819	180.7 1,715	163.2 833
R-squared	0.128	0.016	0.004	0.005

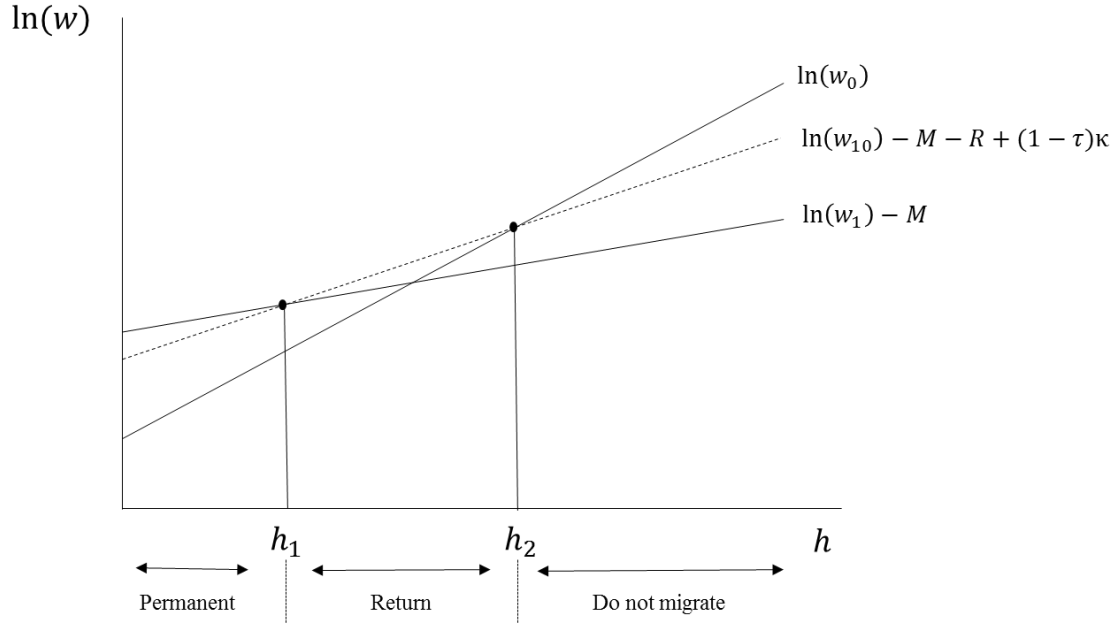
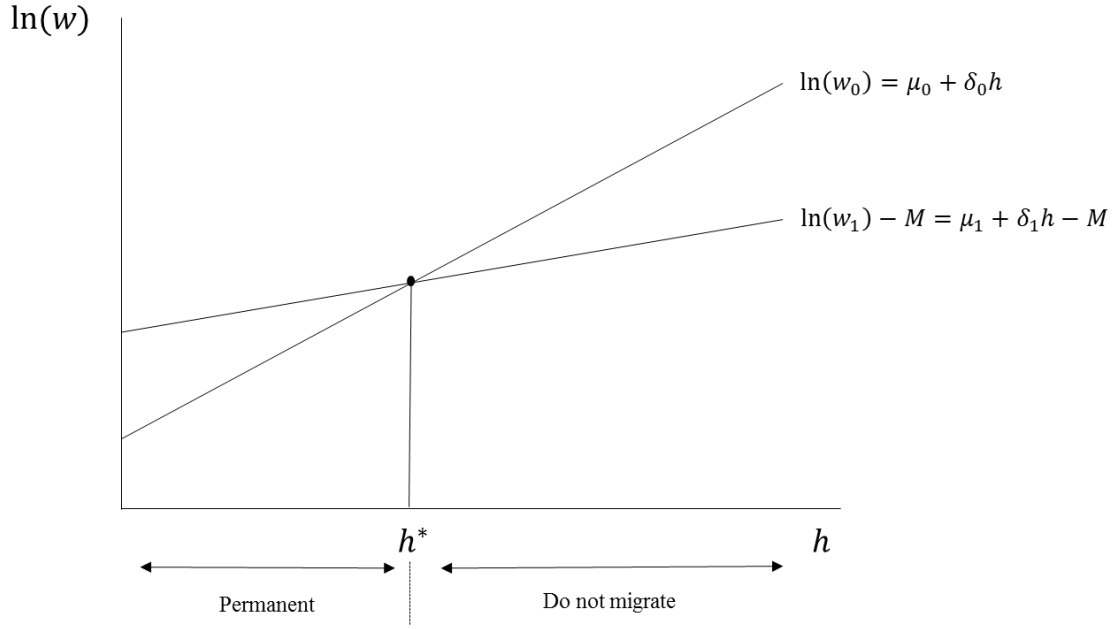
Notes: Data is from Ellis Island Records (1917-1924). The dependent variable is 1 if the migrant plans to return home at arrival, and 0 if the migrant plans to stay permanently. The top row, second column also includes ethnicity fixed effects. Standard errors are robust. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Linking Rates to the 1930 US Census

	Not Linked	Linked	Total
Planned Permanent	5,996 (67.6)	2,875 (32.4)	8,871 (100.0)
Planned Return	1,324 (84.7)	238 (15.3)	1,562 (100.0)
Total	7,320 (70.2)	3,113 (29.8)	10,433 (100.0)

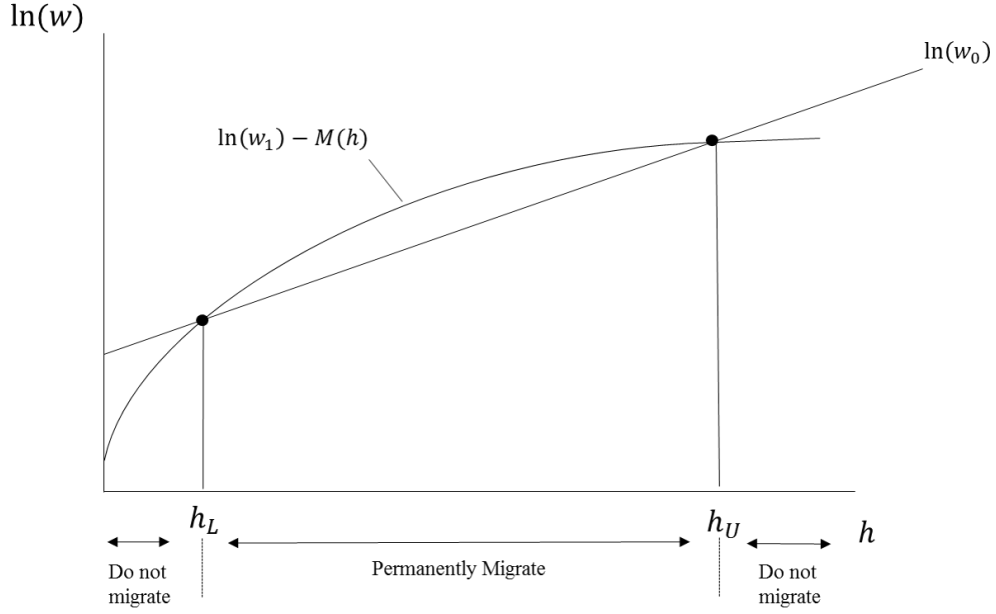
Notes: Data is from Ellis Island Records (1917-1924) linked to the 1930 US Federal Census.

Figure 1: Self-Selection of Return Migrants, Constant Costs

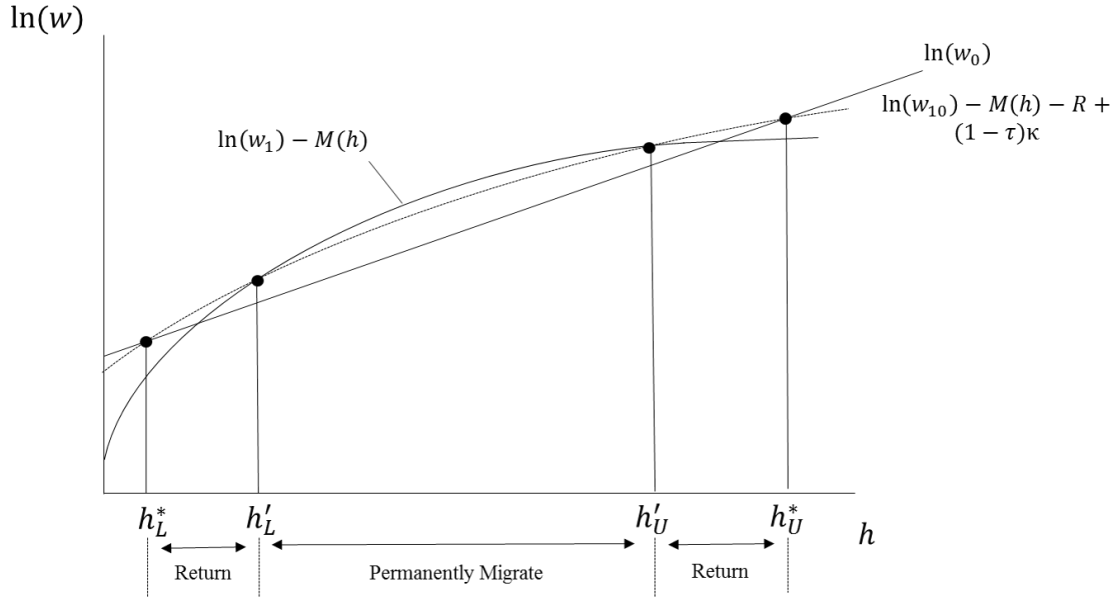


Notes: This figure displays the potential income from staying at home ($\ln(w_0)$), migrating to another country ($\ln(w_1) - M$), or temporarily migrating and returning home ($\ln(w_{10}) - M - R + (1 - \tau)\kappa$), given that the cost of migrating from the source to the destination country (M) is constant across the human capital distribution.

Figure 2: Self-Selection of Return Migrants, Heterogenous Costs



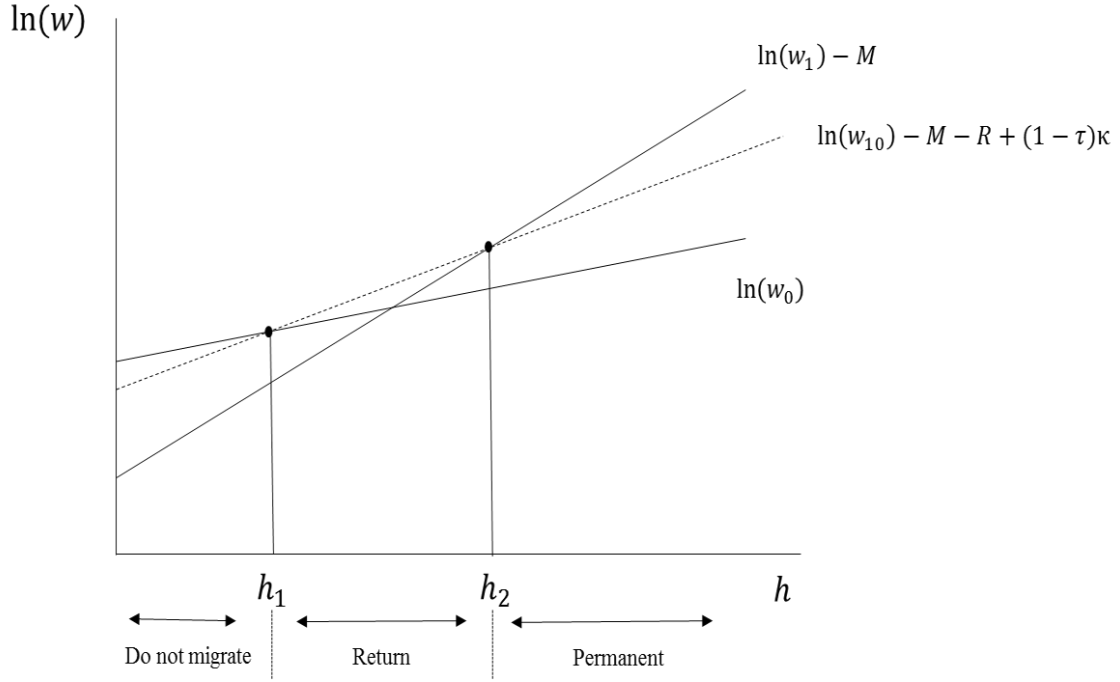
Panel A. One-Way Move



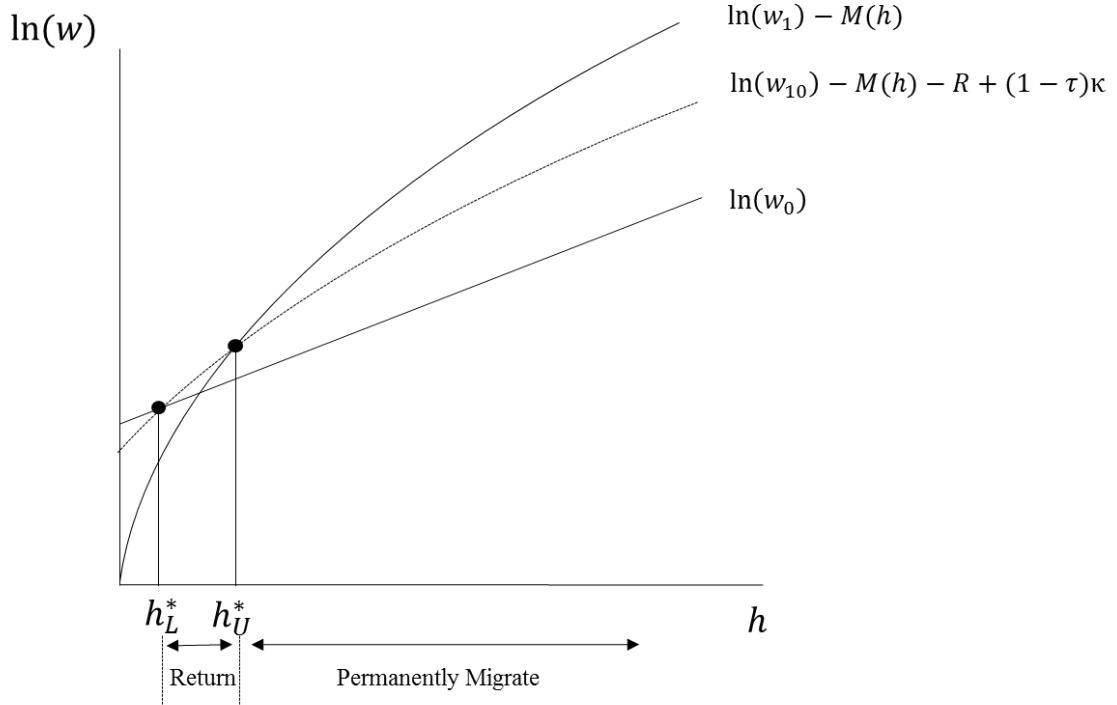
Panel B. Potential to Return Home

This figure displays the potential income from staying at home ($\ln(w_0)$), migrating to another country ($\ln(w_1) - M$), or temporarily migrating and returning home ($\ln(w_{10}) - M - R + (1 - \tau)\kappa$), given that the cost of migrating from the source to the destination country (M) is decreasing across the human capital distribution.

Figure 3: Self-Selection of Return Migrants, Return to Human Capital Higher in US



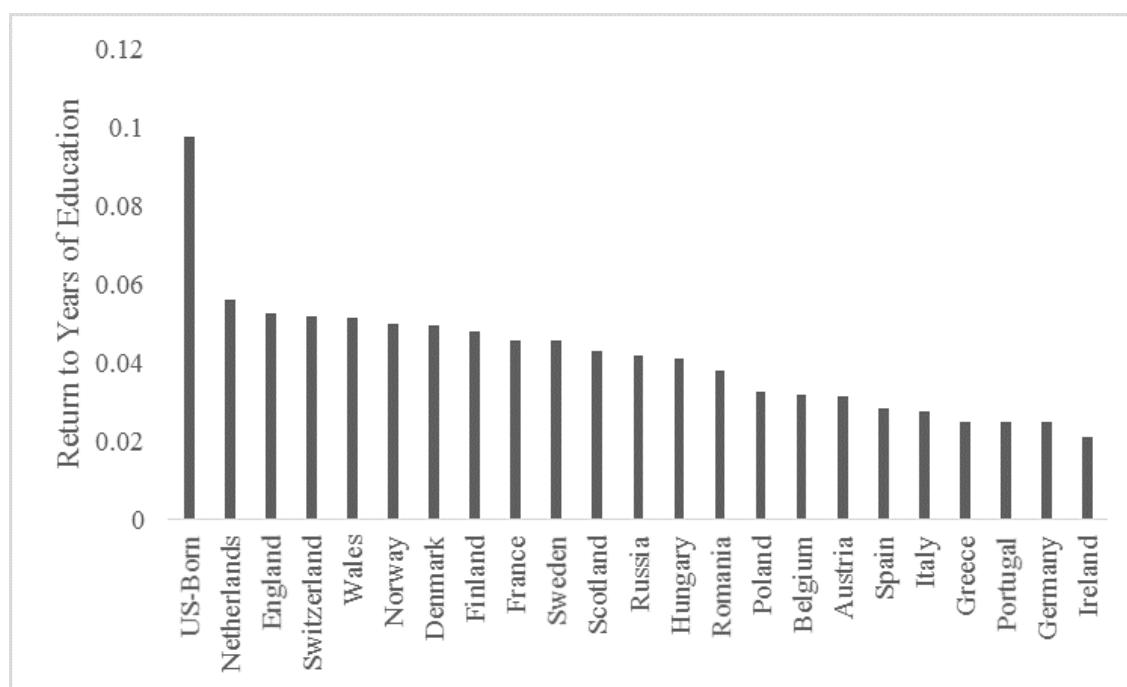
Panel A. Constant Costs of Migration



Panel B. Varying Costs of Migration

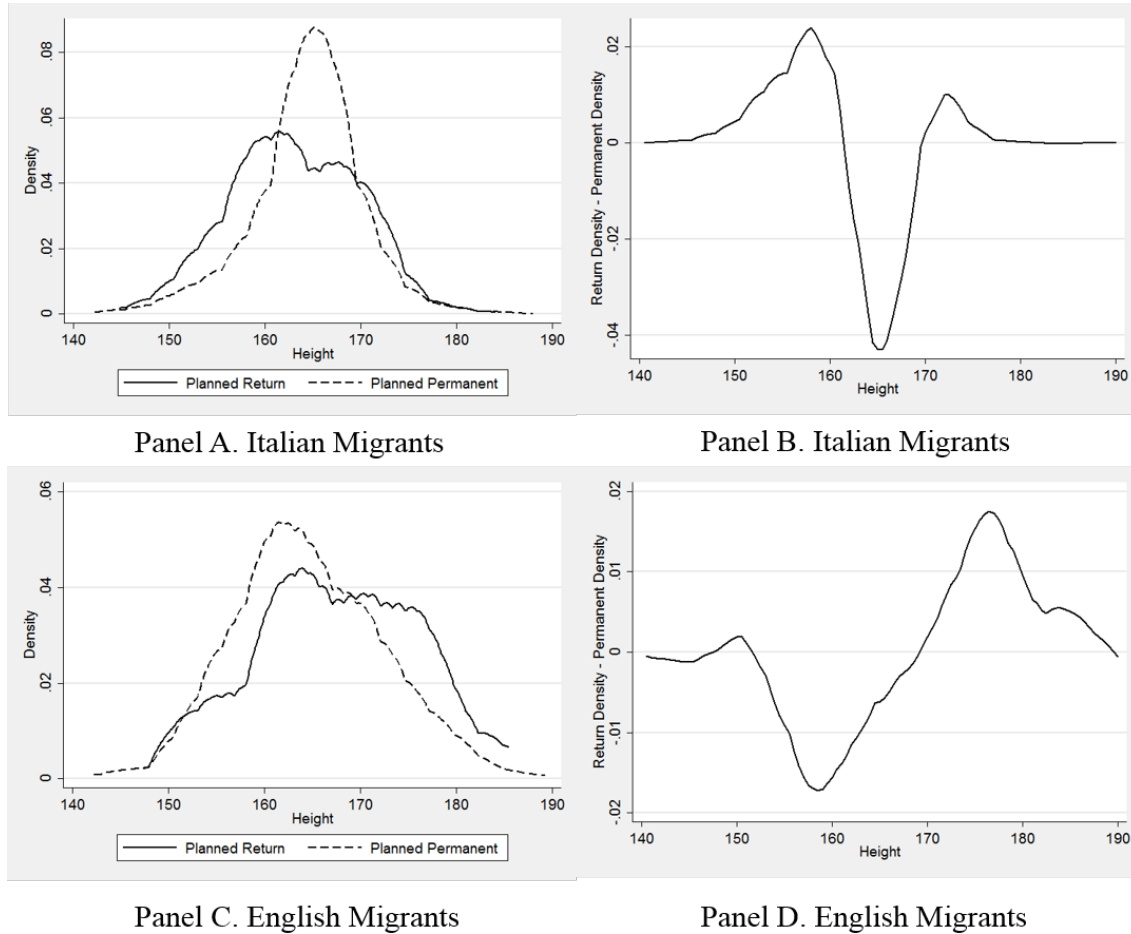
Notes: This figure displays the potential income from staying at home ($\ln(w_0)$), migrating to another country ($\ln(w_1) - M$), or temporarily migrating and returning home ($\ln(w_{10}) - M - R + (1 - \tau)\kappa$), given that the return to human capital is higher in the destination country rather than at home.

Figure 4: Return to Education in 1940 United States, by Country of Birth



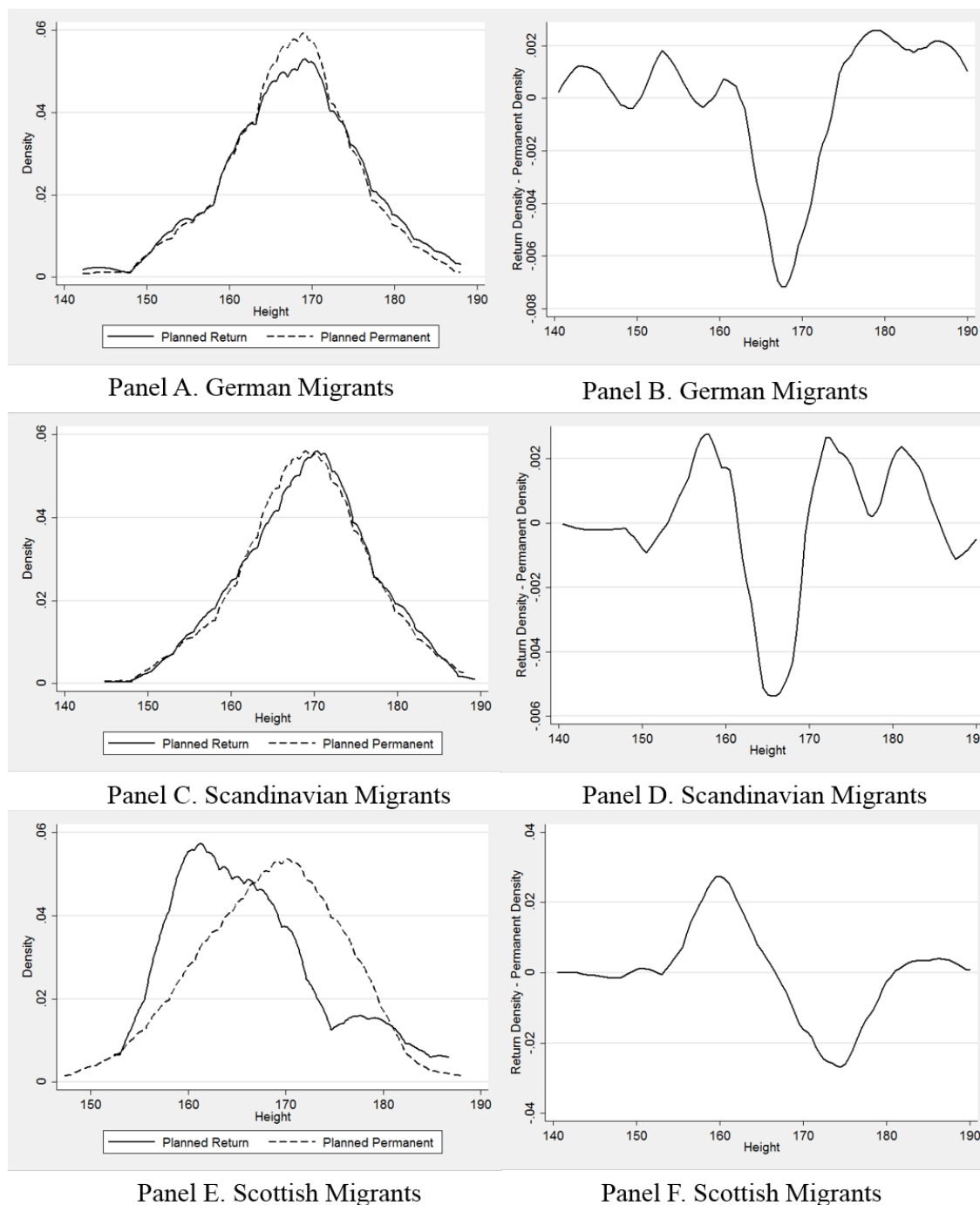
Notes: The source of the data is a 20 percent sample of the full-count 1940 IPUMS data (Ruggles et al, 2010). I separately estimate a regression of log wages on education, potential, potential experience squared and sex for each country. The coefficient on education is reported. Each coefficient is statistically significant from zero, and statistically different from the return to education for the native-born.

Figure 5: The U-Shaped Self-Selection of Return Migrants, Italy and England



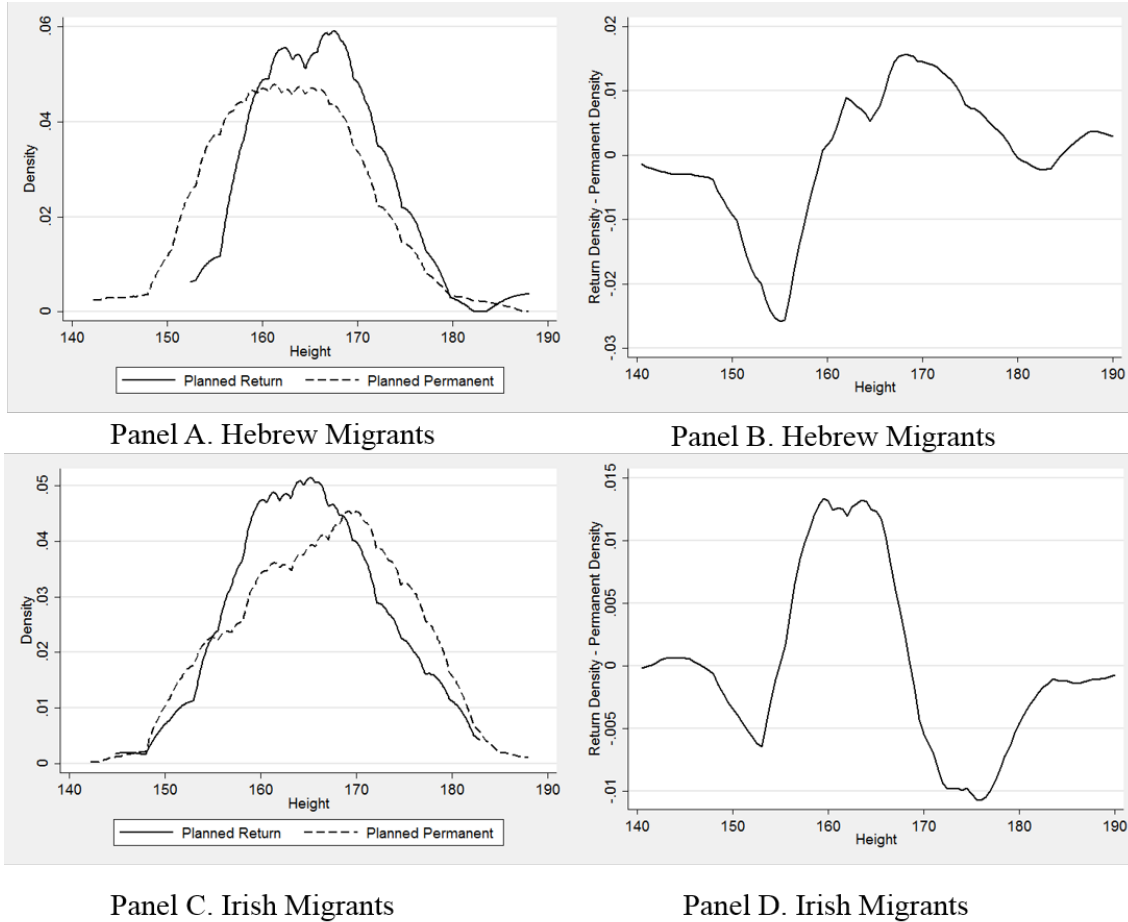
Notes: Data is from Ellis Island ship manifests (1917-1924). Height is listed in centimeters. The rightside panels is the difference between the planned return migrant and planned permanent migrant density, where a value above 0 indicates that there were more planned return migrants at that height rather than planned permanent migrants.

Figure 6: The U-Shaped Self-Selection of Return Migrants, Germany and Scandinavia



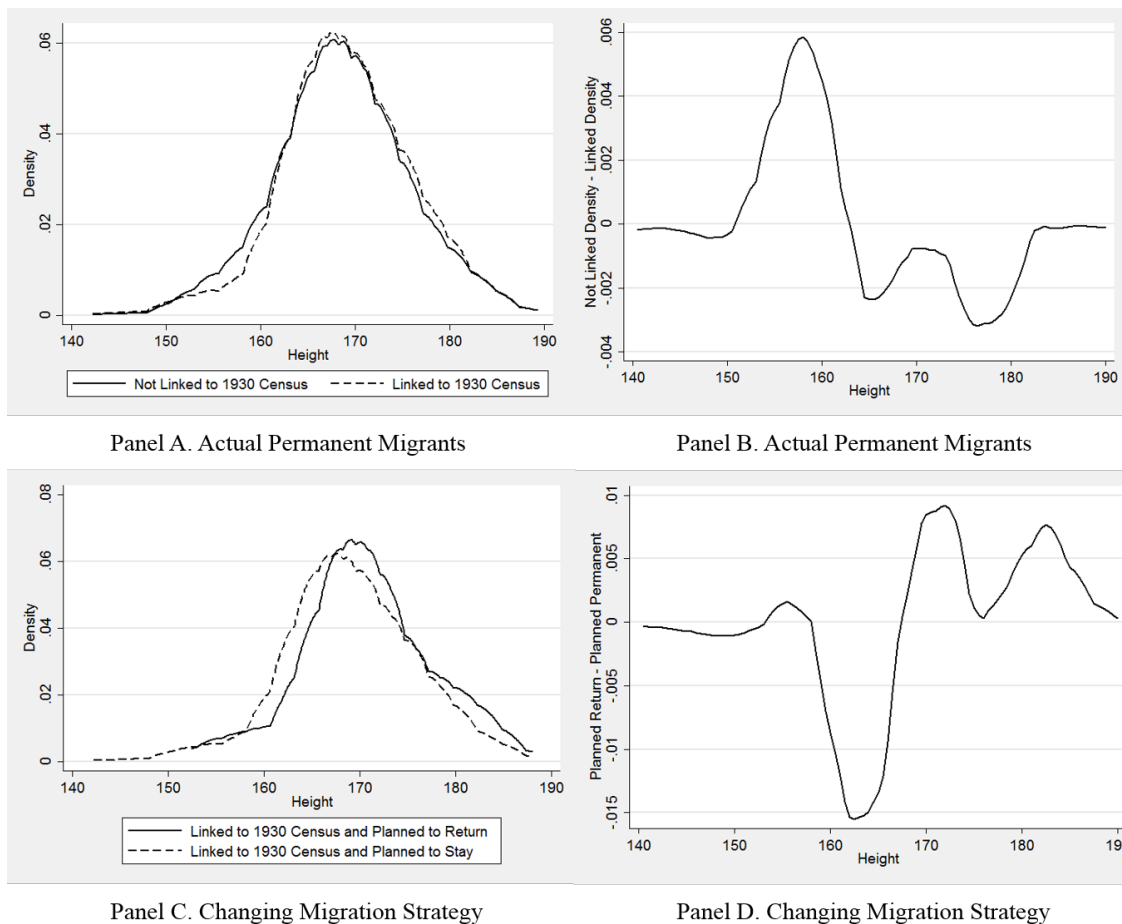
Notes: Data is from Ellis Island ship manifests (1917-1924). Height is listed in centimeters. The rightside panels is the difference between the planned return migrant and planned permanent migrant density, where a value above 0 indicates that there were more planned return migrants at that height rather than planned permanent migrants.

Figure 7: Non U-Shape Self-Selection: Hebrew and Irish Migrants



Notes: Data is from Ellis Island ship manifests (1917-1924). Height is listed in centimeters. The rightside panels is the difference between the planned return migrant and planned permanent migrant density, where a value above 0 indicates that there were more planned return migrants at that height rather than planned permanent migrants.

Figure 8: Linking to the 1930 Census



Notes: Data is from Ellis Island ship manifests (1917-1924) linked to the 1930 US Census. Height is listed in centimeters. The rightside panels is the difference between the not linked and linked migrant density, where a value above 0 indicates that there were more not linked migrants at that height rather than linked migrants. Failing to link is a proxy for return migration.

Online Appendix

A Alternative Samples and Definition

In Tables A1 and A2, I show the results of the regressions using different samples. First in Table A1, the sample includes only males. Despite the main regression specifications including sex fixed effects, it is possible that demeaning the average height by sex does not adequately control for sex-based return migration. In actuality, the results get slightly stronger for the U-shaped behavior where Scottish and Scandinavian migrants display a U-shape, and there is no upside down U for Irish migrants. Table A2 drops the years 1917 and 1918 from the sample in case that World War I is driving the results. However, there is no difference between this table and the main regression specification. Finally, in Table A3, I define a return migrant as someone who is certain that they will return home - the U-shape is still found for the entire dataset.

B Linking Algorithm

I link the sample of migrants from Ellis Island (1917-1924) to the 1930 US Federal Census using the full-count data available at the NBER. The method for linking is very similar to those used by Abramitzky et al. (2014) and Ferrie (1996). The linking algorithm is as follows:

1. First, I drop females from the dataset since it is likely that females' last names have been changed following marriage. Next, I standardize individuals' names using the Soundex algorithm in order to minimize potential enumeration errors. After the names have been standardized, I drop any duplicate observations that have the same first name, last name and year of birth. I do this because it is impossible to verify which unique individual has been linked - in practice, this eliminates very common names.

2. I do the same steps as above but for the 1930 US Census. In addition, I also drop any native-born individuals.
3. Having these two large datasets, I link them based on first name, last name and year of birth. If there is an exact match, then I describe this person as linked. If there is not a match, I connect these people based on year of birth plus or minus one year; likewise, if they are successfully matched, I put them in the linked categories. I repeat the process for year of birth plus or minus two years.

If an individual is not linked at all, then they are marked as “not linked.” The linking success rates are presented in the Table 3, which shows that the total linked sample includes 3,113 males.

A common issue with linking is that the sample may not be representative of the underlying population. For instance, a linked individual must not have died, changed his name, or had a common name, characteristics which are correlated with lower occupational scores and heights. To check the representativeness of the sample, I find the ones I could link to the entire 1930 census in the 1930 5% sample. I am able to locate 166 males, slightly more than 5% of the 3,113 males I linked to the entire 1930 census. I use the IPUMS sample because it has readily available characteristics - in particular, the occupation of each individual. I pool the rest of the 1930 5% sample with the matched sample, and regress characteristics on an indicator for whether they were matched. To make the comparisons apples to apples, I only include males between ages 23 and 52 in the IPUMS sample who were born in Europe.³⁵

The linked sample shows occupational characteristics relatively close to the overall 1930 IPUMS sample, as seen in Table B1. The matched sample has statistically the same logged occupational score and occupation score as the overall 1930 IPUMS sample. The occupational score is based on median earnings by occupation in 1950 - thus, there could be a bias because the skill prices are measured 20 years after the 1930 census. However, to the extent

³⁵Nobody in the Ellis Island records over the age of 52 were matched later to the census. This is because I dropped those over the age of 65 in the census due to an increase in rounding one’s age to the nearest 5 or 0 as people get older, which makes them more difficult to link.

that height is correlated with occupational score in 1950, it suggests that there should not be large biases in the matched sample that are due to death, common names or changed names. On the other hand, the labor force participation for the matched sample is higher than the rest of the IPUMS sample, which suggests that the linked data is not entirely representative of Europeans in 1930.

Table A1: Regression of Planned Return on Height: Males Only

Ethnicity	All		Italian		English		German	
$Height(m)$	-7.815*** (2.076)	-8.739*** (2.011)	-27.33*** (6.167)	-28.98*** (6.202)	-1.338 (6.071)	-7.838 (7.024)	-4.783 (2.941)	-6.017** (2.984)
$[Height(m)]^2$	2.383*** (0.619)	2.655*** (0.598)	8.170*** (1.866)	8.608*** (1.876)	0.773 (1.839)	2.665 (2.104)	1.461* (0.874)	1.826** (0.885)
Age, Sex, Year FE	X		X		X		X	
Observations	10,430	10,430	2,541	2,541	560	560	2,034	2,034
R-squared	0.083	0.114	0.013	0.124	0.043	0.245	0.004	0.077

Ethnicity	Scottish		Scandinavian		Hebrew		Irish	
$Height(m)$	10.41** (4.880)	10.71** (4.831)	-36.09** (16.97)	-24.25*** (9.271)	2.290 (2.569)	0.576 (2.027)	-13.98 (16.19)	-8.048 (13.98)
$[Height(m)]^2$	-2.887** (1.430)	-2.939** (1.416)	10.64** (5.031)	7.156*** (2.749)	-0.637 (0.785)	-0.142 (0.620)	4.045 (4.726)	2.228 (4.064)
Age and Year FE	X		X		X		X	
Observations	1,647	1,647	569	569	771	771	356	356
R-squared	0.007	0.111	0.074	0.462	0.007	0.143	0.003	0.366

Notes: Data is from Ellis Island Records (1917-1924). The dependent variable is 1 if the migrant plans to return home at arrival, and 0 if the migrant plans to stay permanently. Standard errors are robust. *p<0.10, **p<0.05, ***p<0.01

Table A2: Regression of Planned Return on Height: Drop 1917 and 1918

Ethnicity	All	Italian	English	German
$Height(m)$	-7.604*** (1.368)	-27.80*** (4.890)	-15.70** (6.142)	-3.620* (2.040)
$[Height(m)]^2$	2.304*** (0.413)	8.256*** (1.495)	4.970*** (1.848)	1.093* (0.613)
Age, Sex, Year FE	X	X	X	X
Observations	18,537	3,603	1,247	3,967
R-squared	0.078	0.027	0.033	0.001
				0.047
Ethnicity	Scottish	Scandinavian	Hebrew	Irish
$Height(m)$	0.541 (3.534)	-15.43 (9.644)	1.361 (1.403)	9.705 (7.714)
$[Height(m)]^2$	-0.142 (1.048)	4.617 (2.924)	-0.378 (0.435)	-2.980 (2.326)
Age, Sex, Year FE	X	X	X	X
Observations	2,695	816	1,712	830
R-squared	0.000	0.022	0.004	0.004
				0.222

Notes: Data is from Ellis Island Records (1917-1924). The dependent variable is 1 if the migrant plans to return home at arrival, and 0 if the migrant plans to stay permanently. Standard errors are robust. *p<0.10, **p<0.05, ***p<0.01

Table A3: Regression of Planned Return on Height: Return Certain

Ethnicity	All		Italian		English		German	
$Height(m)$	-6.195*** (1.202)	-6.452*** (1.185)	-18.47*** (4.350)	-24.75*** (4.355)	-8.558* (4.707)	-9.744** (4.672)	-1.326 (1.481)	-1.476 (1.485)
$[Height(m)]^2$	1.889*** (0.363)	1.955*** (0.358)	5.418*** (1.331)	7.245*** (1.332)	2.850** (1.436)	3.156** (1.429)	0.419 (0.448)	0.475 (0.450)
Age, Sex, Year FE		X		X		X		X
Observations	19,042	19,042	3,774	3,774	1,254	1,254	3,967	3,967
R-squared	0.069	0.084	0.020	0.103	0.038	0.173	0.001	0.048

Ethnicity	Scottish		Scandinavian		Hebrew		Irish	
$Height(m)$	-3.456 (3.241)	-3.955 (3.259)	-7.223 (6.893)	-2.983 (4.441)	-0.308 (1.291)	-0.175 (1.240)	9.223 (7.248)	14.68** (6.263)
$[Height(m)]^2$	1.053 (0.961)	1.258 (0.967)	2.130 (2.090)	0.912 (1.349)	0.123 (0.402)	0.0696 (0.384)	-2.781 (2.193)	-4.331** (1.903)
Age, Sex, Year FE		X		X		X		X
Observations	2,911	2,911	819	819	1,715	1,715	833	833
R-squared	0.001	0.048	0.006	0.231	0.003	0.085	0.003	0.209

Notes: Data is from Ellis Island Records (1917-1924). The dependent variable is 1 if the migrant plans to return home at arrival, and 0 if the migrant plans to stay permanently. Standard errors are robust. *p<0.10, **p<0.05, ***p<0.01

Table B1: Representativeness of Linked Data

	I	II	III
	Log (Occ Score)	Occ Score	Labor Force
Matched Sample	-0.0127 (0.0307)	0.212 (0.671)	0.0160* (0.00848)
Constant	3.164*** (0.000980)	24.63*** (0.0253)	1.972*** (0.000441)
Observations	137,353	140,391	140,391
R-squared	0.000	0.000	0.000

Notes: Data is from Ellis Island Records (1917-1924) that were successfully linked to both the 1930 US Federal Census and the 1930 IPUMS 5% sample. Occ score is a measure of median earnings of an occupation based on 1950 data. Labor force is 1 if the migrant is in the labor force and 0 if the migrant is not working.