Consequences of Immigrating During a Recession: Evidence from the US Refugee Resettlement Program

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Abstract

I examine long-term employment and wage consequences for refugees who immigrate to the United States under different business cycle conditions. It is difficult to causally identify the relationship between initial economic conditions and subsequent outcomes for most immigrants because they can choose when and where they immigrate. However, refugees offer a unique opportunity to empirically measure these outcomes because their dates of arrival and states of placement are exogenously chosen through the US Refugee Resettlement Program. For every one percentage point increase in the national unemployment rate at arrival, refugees on average experience a 2.99% reduction in wages five years later and a 1.8 percentage point reduction in employment four years later. Estimates using state unemployment rate at arrival show less persistence suggesting mobility or differential economic improvement across states may be important in mitigating these effects. I also divide the sample across gender and educational attainment. I find no evidence of wage scarring for uneducated males but observe a 4.85% reduction in wages five years later for high school-educated males and a 5.29% reduction in wages four years later for college-educated males.

Keywords: Immigration, Labor Market Outcomes, Settlement Policies, Recession

JEL Codes: J15, J24, J31, J41, J61

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1 Introduction

How do initial economic conditions affect long-term employment and wage outcomes for refugees who immigrate to the United States? This question is important because it provides insight into how initial economic conditions affect long-term assimilation outcomes for immigrants in general. Although refugees are a subset of all immigrants, they represent a very diverse group of origin countries, educational backgrounds, age groups and family dynamics. It is difficult to credibly estimate the impact of initial economic conditions on long-term assimilation outcomes for most immigrants because they are able to choose exactly when and where in the US they would like to immigrate. Some immigrants may choose not to immigrate to the US if economic conditions are not favorable. However, refugees do not have this choice. Refugees, by definition, are unable to stay in their country of origin due to political persecution, conflict, famine or general lack of security. Yet, they are also unable to immediately migrate to the US. The US Refugee Resettlement program requires that refugees undergo extensive background checks and screening that can last for 18-24 months before arrival. Refugees are also subject to annual quotas proposed by the State Department's Bureau of Population, Refugees, and Migration and certified by the President that can change their eligibility from year to year. They are also unable to choose the state within the US that they are initially resettled unless they already have family living in the country. These institutional features provide exogenous variation that make it possible to empirically measure how various initial business cycle conditions can affect assimilation outcomes over the long term.

I take advantage of a comprehensive, government-administered household survey sample of 18,853 refugees who immigrated to the US between May 1988 and May 2004 in order to conduct my analysis. Using two fixed-effects models whereby national and state unemployment rates at the times of arrival of each refugee are separately interacted with potential experience, I empirically estimate the effect of initial economic conditions on employment

and wages for up to five years later. The national unemployment rate at arrival is used to measure general economic conditions a refugee faces upon arrival. The unemployment rates of the states where refugees resettle upon arrival are used to provide context about how mobility can mitigate the persistence of negative outcomes from initial economic conditions. Refugees can move from their initial state of placement to states with more favorable economic conditions, but they are unable to move countries in order to escape economic conditions affecting the entire country. I control for a variety of factors including country of origin, age, gender, educational background, family dynamics, potential experience and contemporaneous time fixed effects. Therefore, estimates using the national unemployment rate at arrival characterize how initial economic conditions affect employment and wages that are not otherwise explained by the persistence of initial economic conditions or potential experience. In my model that uses the unemployment rates of the states where refugees initially resettle, I also control for national economic trends and state of placement fixed effects. This model estimates how initial local economic conditions that deviate from national economic trends affect long term employment and wage outcomes that are otherwise unexplained by the persistence of economic conditions, experience, and idiosyncratic differences between states.

This paper is related to a larger literature on the long-term employment and wage consequences of entering the job market during a recession, commonly referred to as scarring. Although much of this literature focuses on natives, particular college graduates, there is a small but growing literature that examines this phenomenon among immigrants. Chiswick et al. (1997) use Current Population Survey samples from November 1979, April 1983, June 1986, and June 1988 to examine immigrant employment outcomes and find no evidence of a long-term scarring effect. Given the concern that selective migration may play in estimating these effects for general immigrant groups, Åslund and Rooth (2007) examine refugees in Sweden to measure this effect. Similar to the US context, refugees in Sweden in the early 1990s were exogenously chosen and placed in a variety of geographic settings within Sweden

at different periods of time. They find that poor initial economic conditions can affect wages for refugees for up to 10 years. Godøy (2017) also examines this question in Norway and finds no evidence of a long-lasting wage scarring effect among refugees. This paper specifically builds on this body of literature by examining refugees that immigrate to the United States.

There are several reasons why the US provides an interesting setting to understanding this potential scarring effect among refugees. The US takes roughly half of the refugees that resettle to a third country. The refugee population in the US can range between 50,000 to 200,000 per year depending on the time period. The US also has much more geographic variation and ethnic diversity, which makes the employment choice set for refugees who immigrate much larger. Finally, the US Refugee Resettlement program has enjoyed relative stability since its inception in 1980. Given that the US is geographically isolated from many of the world's largest refugee crises that have occurred since 1980, the refugee resettlement program has not made significant adjustments to its institutional features since its inception. One of the problems with examining refugee groups in Europe, particularly in the 1990s, is that the breakup of the Soviet Union and Yugoslavia caused many individuals to illegally cross borders and seek asylum, instead of working through the formalized refugee resettlement process. For instance, in Sweden, as noted by Åslund and Rooth (2007), the Swedish refugee resettlement program essentially broke down in the early 1990s because the government had to divert resources to accommodate the growing asylum seeking population. The long-term stability of the US refugee resettlement program allows me to examine refugees who enter the country under multiple business cycles as opposed to only one period of economic decline. I also extend upon Åslund and Rooth (2007) and Godøy (2017)'s work by examining heterogeneity within these effects across gender and education attainment.

I find that for every one percentage point increase in the national unemployment rate at arrival, refugees on average experience a 2.99% reduction in wages five years later and a

1.8 percentage point reduction in employment four years later. For every one percentage point deviation in the state of initial placement unemployment rate from the national unemployment rate at arrival, I find that refugees on average experience a 1.04% reduction in wages four years later and a 1.25 percentage point reduction in employment up to two years later. The results found using state unemployment rates are less persistent than those found using the national unemployment rate, suggesting that mobility across states or differential rates of economic improvement across states may be important factors in mitigating these effects. I also examine heterogeneity across these findings by breaking my sample into groups based on gender and educational attainment in their country of origin. I find no evidence of a wage scarring effect for uneducated males using the national unemployment rate at arrival. For high school educated males (defined as those who have completed high school or secondary school in their country of origin), there is a 4.85% reduction in wages five years later for every percentage point increase in the national unemployment rate at arrival. For college-educated males, there is a 5.29% reduction in wages up to four years later. Lastly, I observe a large disparity in labor force attachment for females in response to initial economic conditions. For every one percentage point increase in the national unemployment rate at arrival, uneducated females are 5.72 percentage points more likely to be employed two years later while college-educated females are 5.84 percentage points less likely to be employed five years later.

2 Institutional Details

In most circumstances individuals or families seeking to resettle in the US as refugees must first go through the United Nations High Commission for Refugees (UNHCR). The UNHCR determines the need for permanent resettlement of refugees through seven criteria: "legal and/or physical protection needs, survivors of torture and/or violence, medical needs, women and girls at risk, family reunification, children and adolescents at risk and lack of foreseeable

alternative duration solutions."[1]. The UNHCR makes a determination of where to refer these individuals based on country refugee acceptance quotas, family presence and cultural affinities. If the individual or family is referred by UNHCR to resettle in the United States, they must undergo a screening process through the US Department of Homeland Security. This screening process involves multiple interviews, submission of biometric information and background checks. On average, applicants must wait 18 to 24 months before being granted admission to the United States.

The State Department partners with nine domestic non-profit voluntary resettlement agencies (VOLAGs) in order to determine placement once a refugee or family has been granted admission to the US. These organizations have 315 affiliates in 180 communities throughout the US. In Figure 2, each affiliate's office is mapped by its corresponding VOLAG. The State Department meets with these organizations weekly to review information on incoming refugees, and assigns refugees to a particular organization based on availability and resources [2]. If an individual or family has family currently living in the US, every effort is made to resettle them with or near their family. Otherwise, a resettlement agency agrees to sponsor an individual or family based on available resources[3].

The nine VOLAGs are responsible for providing initial reception services for refugees during the first 90 days of arrival, including providing safe and affordable housing, furnishings, and services to acclimate them to their new environment. After 90 days, the Office of Refugee Resettlement works with individual states and non-govermental organizations (NGOs) to provide longer-term services like medical assistance and social welfare benefits. Refugees are allowed freedom of movement, so they are not bound to stay in the state they were initially resettled. However, their financial assistance may in jeopardy if they move to a state that does not offer the same benefits as their initial state of resettlement[4].

[1] http://www.unhcr.org/en-us/information-on-unhcr-resettlement.html
[2] https://fas.org/sgp/crs/misc/RL31269.pdf
[3] https://www.pbs.org/newshour/world/asked-refugees-referred-live-u-s
[4] https://www.state.gov/j/prm/ra/receptionplacement/

There are exceptions to this resettlment process. Some individuals who eventually resettle in the United States as refugees are referred through a US embassy or human rights group. Nevertheless, these individuals must still undergo the same screening process as refugees referred by UNHCR. There are also individuals who cross the border to the US, either by legal or illegal means, and request asylum afterward. This asylum process is significantly different than the formal refugee resettlement process because these individuals must undergo court proceedings to gain asylum and are not afforded the same benefits and support. For the purposes of this paper, the term "refugee" will refer to individuals who undergo the formalized refugee resettlement process. This distinction is important because my identification strategy will rely on the fact that refugees who undergo this formalized process cannot choose when or where they migrate within the United States.

3 Theory

The term "scarring" was first coined by David Ellwood (1982) as a way of characterizing negative consequences from entering the job market in a bad economy that persist well beyond the transitory period. Although there is no clear distinction for the time required for an effect to be considered a permanent scar, Oreopoulos et al. (2012) and Kahn (2010) find large and persistent negative wage effects lasting 10 and 20 years for college graduates, respectively. This phenomenon has also been observed in individuals who are displaced from their jobs during a recession: Ruhm (1991) finds that such displaced workers experience a 10-13% drop in wages less than five years after displacement.

There are several theories predicting why a person entering the job market during a recession may experience long term consequences in the form of lower employment or depressed wages. One potential explanation is labor market friction. If employment and wages are influenced by labor market conditions in a spot labor market, where wages are determined by current supply and demand, then we would expect to not observe any differences between similar

individuals who enter the economy during different business cycle conditions once economic conditions are similar. This is because productivity between these individuals should not differ apart from slight experience disparities. If the relationship between current employment and wages is influenced by labor market conditions in a contract model, where individuals agree on future wages with their employer in prior periods, then persistence of detrimental wage and employment could be explained by mobility. If an individual cannot easily move between firms once labor market conditions improve then there could be persistent effects. Beaudry and Dinardo (1991) examine how wages are affected by market conditions and find that a contract model with costless mobility fits this relationship better than a traditional spot labor market. In my analysis, I use national unemployment rates at arrival to measure how persistent these effects are when mobility is not necessarily an option. A refugee can move states to escape tighter labor market conditions between states, but if the entire country is in a recession, mobility is less important. I compare these results with those found using deviations in the state unemployment rate from the national unemployment rate and find that using the state unemployment rate where mobility is an option, the persistence of these effects is shorter.

The disparity between employment and wages for individuals who enter the job market in a recession could also be explained through human capital accumulation. If an individual enters the job market when opportunities are scarce, they might be forced to spend more time in a bad match. As noted in Kahn (2010), if human capital accumulation is important, particularly in the first few years of an individual's career, then an individual's inability to switch jobs and find a better match could yield persistent, long-term detrimental outcomes. One way to isolate the importance of human capital accumulation is to look at the wage-scarring effect across education groups. If we assume that on-the-job training is more important for jobs that require less education, then larger and more persistent effects should be observed for lower-educated individuals. In Appendix Table A2, I dis-aggregate my sample across gender and education to see how the wage-scarring effect differs across these groups. I find

that males with little or no education experience no wage-scarring effect, while males with a college or high-school education experience a reduction in wages for up to four years or five years after immigrating, respectively.

Employment and wage scarring might also be explained using a signaling model. If an individual's education is the most important signal to employers of an individual's productivity, we should expect to see no difference between similar individuals who enter the job market under different economic conditions once economic conditions are similar. However, if prior experience is also an important signal, then there could be a disparity. Using refugees to measure these effects is informative to this question because foreign education represents a weaker signal in the US than native education. Given that a refugee's education level is likely a much weaker signal in US labor markets than a native college graduates, the fact that I still find persistent effects means that employers likely use previous experience as a signal to partially determine wages and employment.

4 Data

The data set I use in my analysis is the Annual Survey of Refugees. This survey was started in 1975 as a way for refugee resettlement groups to assess assimilation outcomes for Asian refugees, particularly those from Vietnam. In 1980, with the passage of the Refugee Act, the survey became an important tool for the newly-created Office of Refugee Resettlement (ORR) to produce an annual report on refugee outcomes to Congress as required by the new law. In 1993, the survey was expanded to include all refugee groups[5]. I use the 1993 through 2004 versions of these data to conduct my analysis. These data were previously used in Beaman (2011) to provide intuition on the magnitude of her results derived from another data set. More recent versions of the Annual Survey of Refugees data were provided by ORR through Freedom of Information Act requests (Arafah 2016), but do not contain

[5]https://archive.acf.hhs.gov/programs/orr/data/04arc8.htm8

information on the initial state of resettlement or country of origin for individuals in the data.

The survey in its current form is a five-year rolling panel, whereby 1000-2000 refugee households are contacted in their initial year of resettlement and followed for a period of five years. Each year an additional cohort is added and the cohort entering its sixth year is dropped. The survey is broken into two parts: an individual family member portion that is given to all individuals in the household that are over the age of 16, and a household level portion. The individual portion asks basic demographic information including gender, age, years of education prior to arrival, disability, fluency in English upon arrival, marital status, parental status, family size, country of birth, month and year of entry, and original state of resettlement. The remainder of the individual survey includes questions about work and mobility. With regard to labor outcomes, the survey asks respondents about current employment, hourly wages, and annual earnings[6]. The household portion of the survey includes questions on utilization of means tested welfare programs like the Supplemental Nutrition Assistance Program (SNAP), the Temporary Assistance for Needy Families program (TANF), Supplemental Security Income (SSI), General Assistance (GA), and public housing.

The data originally contain 66,975 observations of approximately 30,478 individuals. The indicator variable for individuals (f1id) is somewhat inconsistent because the numbers are most likely reused after an individual has been dropped from the survey after five years. I find that for some individuals identified with the original indicator variable, there are six or seven years of data. Upon further inspection, I find that these are in fact new individuals because the gender, country of origin, and date of birth variables are not consistent. For this reason, I construct a new individual indicator variable that groups individual records on the basis of the data set's original indicator variable, gender, date of arrival, country of birth and original state of resettlement. References in this paper to individuals in the data

[6]The survey is conducted over a period of several years. Therefore wages and annual earnings are inflation-adjusted to constant 2000 US dollars to allow for comparison across years in my analysis.

set are based on this variable rather than the original individual indicator.

In order to create a sample that is best suited for my analysis, I limit my sample to working-age individuals who go through the formalized refugee resettlement process. The Office of Refugee Resettlement is responsible for both Cuban and Haitian asylees as well as refugees[7]. The data do not distinguish whether Cubans and Haitians in the data are asylees or refugees, so I drop these individuals (4,368 observations). I also drop individuals that did not arrive to the US during the target period of zero to five years prior to being surveyed (3,846 observations). Since the survey participants are determined on a household basis instead of an individual basis, some individuals appear in the data that did not arrive during the target period. Finally, I limit the sample to individuals between the ages of 16 to 65 in order to analyze individuals of working age in the US. The final sample used in my analysis contains 39,047 observations of 18,853 individuals who resettled in the US between May 1988 and May 2004. Table 1 contains summary statistics of the sample broken down by intervals of year of arrival.

5 Empirical Strategy

My empirical strategy is based on two plausibly exogenous features of the refugee resettlement program: month and year of arrival and initial state of placement. I use seasonally-adjusted civilian unemployment rates for both the nation and placement-state as measures of initial economic conditions. The national unemployment rate at date of arrival is used to measure the general effect that initial economic conditions may have on long-term assimilation outcomes. In Figure 1, I provide evidence that annual migration totals for refugees do not respond negatively to increases in national unemployment rates. While total immigration decreases at a statistically significant rate of 196,141 individual migrants per one percentage point increase in the annual national unemployment rate in the year of arrival,

[7]https://www.acf.hhs.gov/orr/resource/who-we-serve-cuban-haitian-entrants

annual refugee totals show a slightly positive but statistically insignificant response of 13,981 more refugees immigrating per percentage point increase. The state unemployment rate is used to introduce a mobility element into the analysis. Since the refugee resettlement program has the added feature of exogenously placing a refugee in a particular state, I use the state unemployment rate to measure how initial economic conditions coupled with mobility can affect long-term assimilation outcomes. If a refugee migrates to the US in a recession, moving to a different state will not change their exposure to national labor market conditions. However, if a refugee migrates to a particular state that has tighter labor market conditions than a neighboring state, they could move and potentially have better long-term outcomes than they would otherwise.

Borrowing from Kahn (2010) and Godøy (2017)[8], I rely on an interaction between unemployment rate at arrival and years since migration to measure how initial economic conditions affect assimilation outcomes over time. The specification using the national unemployment rate at date of arrival is:

$$y_{itk} = \alpha + \beta_{ik}(ue_i \times ysm_k) + \delta X_i + ysm_k + \Phi_t + \varepsilon_{itk}$$

The identifying assumption in this specification is that the date of arrival, and by extension the initial economic conditions a refugee faces, is as good as random conditional on country of origin. y_{itk} can represent a variety of assimilation outcomes. This paper focuses primarily on current employment and log wages, but I also show the effect of initial economic conditions on annual earnings, welfare utilization and mobility between states.[9] The subscript i denotes variation across individuals, t denotes variation across survey years and k denotes variation across years since moving to the US (analogous to experience). β_{ik} represents an

[8]Godøy (2017) uses immigrant employment rates instead of unemployment rates because Norway measures unemployment based on the number of registered jobseekers. Refugees in Norway have little incentive to register as jobseekers. This is not a concern in the US context because unemployment rates are derived from randomized sampling of the entire population.

[9]The log wage estimates are based only on those individuals who are employed at the time they are surveyed. This is a classic selection bias issue. In order to verify results, I also estimate the effect of initial economic conditions on wages for all individuals in the sample using a Poisson model and find qualitatively similar results. These results are not reported for reasons of brevity but are available upon request.

interaction between the national unemployment rate at the month and year of arrival and k years since the refugee migrated to the US. This interaction measures how the unemployment rate at arrival affects assimilation outcomes as the refugee gains experience in the US. The national unemployment variable, ue_i, is calculated by taking the national unemployment at the month and year of arrival for each refugee. The years since migration variable, ysm_k, divides the number of days since migration into intervals. The earliest a refugee is surveyed in the ORR data is six months post arrival. Therefore, a value of 0 for k would represent a refugee who has been in the US between six months and one year. A value of 1 for k would represent a refugee who has been in the US for one to two years. A value of 2 for k would represent a refugee who has been in the US for two to three years. These intervals continue up to a value of 5 for k which represents refugees who have been in the US for five years to 2,191 days, the longest-tenured refugees in the sample. To allow for full flexibility, I do not make any linearity assumptions regarding the interaction between years since migration and the initial unemployment rate. ysm_k is broken down into dummy variables for each k and interacted separately with ue_i.

Given that the national and state unemployment rates at the time of arrival never change for a refugee, it is not possible to measure a scarring effect by comparing an individual across time. Therefore, I control for individual characteristics to create comparisons between individuals with similar backgrounds. X_i contains a vector of controls that includes country of origin, age, age^2, disability status, English ability at arrival, years of education in origin country, marital status, family size, parental status and gender. I also control for years since migration, ysm_k, in order to separate the effects of initial economic conditions with experience from experience itself. Finally, I control for contemporaneous year by month fixed effects, Φ_t, in order to account for persistence of economic conditions. It is expected that poor initial economic conditions would persist over the next few years as the economy is recovering. By controlling for contemporaneous year-by-month fixed effects and years since migration, the effect measured from the interaction between initial unemployment rate and

years since migration represents only those effects that are unexplained by persistence of economic conditions or experience.[10] This measure is the best representation of "scarring" as consistent with the literature.

The specification using the state unemployment rate at date of arrival is:

$$y_{istk} = \alpha + \beta_{ik}(ue_i^{state} \times ysm_k) + \delta X_i + ysm_k + \Phi_t + \Phi_0 + \Phi_s + \varepsilon_{istk}$$

The identifying assumption in this specification is that the date of arrival and state of placement is as good as random, conditional on country of origin. This specification is similar to the specification using the national unemployment rate with the exception of two additional controls. Φ_0, date of arrival fixed effects, controls for national economic trends at time of arrival and Φ_s, state fixed effects, controls for general differences between states. The subscript s denotes variation across states while the 0 subscript denotes that the date of arrival fixed effects variable is fixed to the initial time period. With these controls, the interaction between state unemployment rate at arrival and years since migration should be interpreted as the effect of initial labor market conditions deviating from the national average that is unexplained by the persistence of economic conditions or experience.

I do not have information on whether a refugee has family already living in the country. Therefore, the state unemployment rate specification could be biased upwards. If a refugee is placed with family members who have already moved to a state with better economic conditions, it may appear that the state of placement is responsible for better assimilation outcomes when it is actually the added benefits of having family already living in the country. This potential for bias does not exist for the specification using the national unemployment rate because familial ties do not determine when a refugee will arrive. Despite the potential for bias, which may be small given that most refugees do not have family already living the US, the state unemployment estimates are still very informative because they help to explain

[10]Many papers in the wage scarring literature use the contemporaneous year unemployment rate to control for persistence of economic conditions. However, this control may not reflect whether contemporaneous economic conditions are improving or declining.

how mobility can help alleviate this scarring effect. These estimates should be less persistent than those found using the national unemployment rate because refugees are able to move states to escape unfavorable local labor market conditions.

6 Results

Table 2 shows the main results of my analysis. The table is split into two parts. The first two columns represent estimates found using the national unemployment rate at arrival interacted with years since migration. The third and fourth columns model estimates found using the state unemployment rate at arrival interacted with years since migration. The first and third columns model current employment at the time the refugee was surveyed and are measured in percentage point changes. The second and fourth columns model log wages of employed individuals at the time the refugee was surveyed and are measured as (approximate) percentage changes. The first row represents individuals who have been in the United States for six months to a one year. The earliest that individuals are surveyed in the data is six months after arrival. The final row represents individuals who have been in the United States for over five years with the longest-tenured refugees in the sample having been in the country for 2,191 days.

In Table 2, Column 1, I observe that refugees who have been in the country for two years or more experience a 1-2 percentage point decrease in current employment for every one percentage point increase in the national unemployment rate in the month and year of their arrival. Given that I control for both contemporaneous month-by-year fixed effects and years since migration, these estimates represent the effect of labor market conditions at arrival that are unexplained by the persistence of economic conditions or experience. Standard errors are clustered at the month by year level and remain statistically significant at the 10% level until year five.

In Table 2, Column 3, I only find slight evidence in the second year post-arrival of a nega-

tive relationship between the state unemployment rate in the month and year of arrival for current employment. This specification controls for both national economic trends in the year and month of arrival and state fixed effects, so the interpretation is that refugees who have been in the country for one to two years experience a one percentage point decrease in current employment for every one percentage point difference in the state of arrival unemployment rate from the national unemployment rate.

In Table 2, Column 2, I find that after four years in the United States, refugees experience a nearly 3% decrease in wages for every one percentage point increase in the national unemployment rate in the month and year of their arrival. As with the other estimates, given that I am controlling for contemporaneous year and month fixed effects, these estimates represent the effect of national labor market conditions at arrival that are unexplained by the persistence of economic conditions or experience. Given that the estimates are still significant after a refugee has been in the country over five years, they provide evidence that initial national economic conditions have a long term persistent effect on wages.

In Table 2, Column 4, I find that refugees experience a 2-3% decrease in wages for up to three years after migration for every one percentage point increase in the difference from the state unemployment rate and the national unemployment rate in the month and year of arrival. The estimates after year four still represent nearly a 1% decrease and remain significant at the 10% level. As predicted, the estimates dissipate faster than what I observe using the national unemployment rate at arrival because refugees are able to move out of states that are experiencing tighter labor market conditions than other states. However, even with the option of moving to better labor market conditions, the wages for refugees who experience tighter labor market conditions at arrival are still lower for up to four years after arrival.

In Table 3, I show how national and state unemployment rates at arrival affect log annual earnings, welfare use and mobility. The annual earnings variable in my data has a large amount of missing data (>30% of those who stated they are currently working reported an

hourly wage but did not report annual earnings), so I will consider the estimates to be more suggestive than causal. The welfare use variable is constructed by assigning 1 to anyone who collected any amount of money with TANF (or its predecessor, the Aid to Families with Dependent Children [AFDC]), SSI, SNAP, GA, or public housing in the previous year. If a refugee reported not collecting any amount of money with any of these programs in the past year, then the variable is coded as 0. The variable "moved" is based on a question in the survey of whether or not a refugee moved states in the past year. Given that all of these variables reflect responses for the past year, I do not include the six months to one year interaction as these refugees have not been in the US long enough to answer these questions. Similar to Table 2, the table is divided into two parts with columns 1-3 reflecting the national unemployment rate at arrival and columns 4-6 reflecting the state unemployment rate at arrival. The state results additionally control for national economic trends and state of placement fixed effects. All specifications control for contemporaneous year and month fixed effects.

In Table 3, Column 1, I see that log earnings are negatively affected by a higher initial national unemployment rate for up to four years, but none of the estimates are statistically significant. When I use the state unemployment rate in column 5, I see very large percent decreases in log earnings that last up to five years after arrival. For every percentage point increase in the state unemployment rate above the national average at time of arrival, refugees see, four to five years after arrival, a 5.75% decrease in their annual earnings that is not explained by persistence in economic conditions or experience. However, given that this variable has a large amount of missing data, I am hesitant to lean on these estimates heavily. I observe similar results for welfare use using both the national and state unemployment rates at arrival. The estimates fluctuate between a 1-3 percentage point increase in welfare usage for every percentage point increase in unemployment at arrival with results statistically significant for up to five years post arrival. The estimates for mobility show very different results between the exposure of national economic conditions and state economic

conditions. Refugees who are exposed to a higher national unemployment rate at arrival are more likely to have moved states after four years of being in the United States. However, refugees who are placed in states with a higher unemployment rate than the national average at the time of arrival are less likely to move states during the first few years. This is likely because most refugees do not arrive to the US with significant financial resources so they may find it more difficult to move than those individuals who are placed in states that have better labor market conditions.

In Appendix Tables A.1 and A.2, I split the employment and log wage estimates from the Main Results table (Table 2) into groups by gender and educational attainment in the origin country. Educational attainment is classified as "No High School" for refugees with no secondary school, college diploma or medical school diploma from their country of origin. I classify refugees who report having completed secondary school but not college or medical school in their country of origin as "High School". Lastly, I classify refugees who attended college or medical school in their country of origin as "College". The findings in these tables will be further investigated in future work, but casual observation reveals there exists lots of heterogeneity across estimates found in the Main Results table.

In Appendix Table A.1, I examine heterogeneity across employment estimates found in the Main Results table, Table 2. I observe in column 3 of the National Unemployment Rate table that college-educated males are five percentage points less likely to be employed two years after arriving to the United States for every one percentage point increase in the national unemployment rate at arrival but that this effect dissipates after the second year. For non-high-school-educated and high-school-educated males, this effect is somewhat smaller but much more persistent. In column 1 of the National Unemployment Rate table, non-high-school-educated males are nearly five percentage points more likely to be employed in the first year post arrival for every percentage point increase in the national unemployment rate at arrival, but 2.66 percentage points less likely to be employed three to four years

later. In column 2 of the National Unemployment Rate table, high-school-educated males are 3.28 percentage points less likely to be employed for up to five years post-arrival for every percentage point increase in the national unemployment rate. For female refugees, employment is highly responsive to initial economic conditions. In column 4 of the National Unemployment Rate table, non-high-school-educated female refugees are nearly six percentage points more likely to be employed for up to two years after arrival for every percentage point increase in the national unemployment rate at arrival. In columns 5 and 6 of the National Unemployment Rate table, high-school-educated females are 3.5 percentage points less likely to be employed after five years for every percentage point increase in the national unemployment rate at arrival while college-educated females are nearly six percentage points less likely. The results from the State Unemployment Rate table exhibit the same patterns across gender-education groups but are smaller and less persistent.

In Appendix Table A.2, heterogeneity across log wage estimates reveal that education plays a significant role in the size and persistence of the wage-scarring effect. In column 1 of the National Unemployment Table, I observe that for non-high-school-educated males, there is little evidence of a wage-scarring effect. However, for high-school-educated and college-educated males, the wage-scarring effect is large and very persistent. In column 2, high-school-educated males on average experience nearly a 5% decrease in wages after five years for every one percentage point increase in the national unemployment rate at arrival. In column 3, I observe that college-educated males experience a 5.29% decrease in wages for up to four years after arrival for every one percentage point increase in the national unemployment rate upon arrival. For female refugees, I observe a persistent wage-scarring effect for those who are non-high-school educated and high-school-educated. In columns 4 and 5 of the National Unemployment rate table, for every one percentage point increase in the national unemployment rate upon arrival, I observe that after five years in the US, non-high-school educated females experience a 3.74% decrease in wages and high-school-educated females experience a 4.18% decrease in wages. There does not appear to be much evidence of a wage

scarring effect for college-educated females. This may be related to the fact that employment among this group is significantly smaller when initial economic conditions are poor. In terms of local employment conditions, I observe in the first three columns of the State Unemployment Rate table that all three education groups of males experience a wage-scarring effect. However, this effect is less persistent for non-high-school educated males than high school and college-educated males. For female refugees, there is little evidence of a wage-scarring effect due to local economic conditions with the exception of high-school-educated females. In column 5 of the State Unemployment Rate table, I observe that high-school-educated females experience a 2.88% decrease in wages for every one percentage point increase in the state unemployment rate from the national unemployment rate, but this effect is not observed in later years.

7 Discussion

In this section, I discuss two potential issues with my results. First, in Table 3, column 6, I observe that mobility across states is lower in the first three years for refugees who are placed in states with a higher state unemployment than the national average. However, in Table 2, columns 3 and 4, I observe that employment and wage scarring is much less persistent for increased deviations in the state unemployment rate at arrival from the national unemployment rate at arrival than increases in the national unemployment rate. If this lack of persistence in the state unemployment estimates were explained by refugees moving states to escape poorer initial local economic conditions, I would expect to see this reflected in the mobility measures in Table 3, column 6. Given that this is not the case, I examine whether mean reversion might provide a better explanation. The idea here is that states with higher unemployment rates than the national average may recover faster than states with lower unemployment rates than the national average would revert back the mean.

In order to test this hypothesis, I regress the current state unemployment rate on an inter-

action between the state unemployment rate at arrival and years since migration controlling for years since migration. In Figure 3, I plot the coefficients based on two initial unemployment rates: 2.7% for a low state unemployment (blue line) rate and 8.2% for a high state unemployment rate (red line). I choose these values as they represent the minimum and maximum values for state unemployment rate in the data. The gap between the two lines is calculated by taking the coefficients from the regression and calculating the multiple of those coefficients by the number of percentage points from the mean. The red and blue shading around the lines represent a 95% confidence interval. As refugees spend more time in the United States, the extremes of state unemployment rates in the data revert back towards the mean. The high state unemployment rate falls 2.37 percentage points while the low state unemployment rate rises only 1.89 percentage points. Therefore, refugees who are placed in states with higher unemployment rates than the national average at the year and month of arrival experience economic conditions that improve faster than those refugees who are placed in states with lower unemployment rates. This provides evidence that mean reversion is the reason why scarring in state unemployment rate estimates are less persistent than in national unemployment rate estimates.

Another potential concern is attrition bias. Attrition can take many different forms within individuals in the data. The Annual Survey of Refugees targets families, not individuals, so there are some individuals who appear in the data in some years and not in others, even though the family itself may be included in all five years. This could bias estimates downward if individuals are more likely to participate in the survey if they are unemployed. If refugees are more likely to be employed under better initial economic conditions, and those who are employed are less likely to participate in the survey, then comparisons between similar refugees entering the US under different economic conditions would reflect differences predominantly between the unemployed individuals of each group.

Attrition can also occur in the data because families may move and thus become harder to

find for subsequent surveys. For some years of the data, this can be particularly problematic as fewer than 10% of the families included in the original survey are re-surveyed in the fifth year. If individuals who have a harder time finding a job are more likely to move, then this could bias results upwards. It may the case that refugees who immigrate to the US under poorer economic conditions are more likely to move in their first few years and achieve better assimilation outcomes as a result. However, given that these individuals are less likely to participate in the survey given that they have moved, my estimates would reflect differences among refugees who enter the US under better economic conditions and only those refugees who could not afford to move would be reflected in the group who entered the US under worse economic conditions.

In order to see if attrition is problematic for my results, I first regress current employment and log wages on fixed characteristics of the individuals: age, age^2, disability status, English at arrival, years of education at arrival, marital status, family size, whether or not an individual has children and gender. I then take the predicted values of this regression and plug them into my original specifications. For example, I take the predicted values of current employment on covariates and regress those predicted values on an interaction between the national unemployment rate at month and year of arrival and years since migration, controlling for country of origin, years since migration, and contemporaneous year and month fixed effects. If the interaction between the national unemployment rate at the month and year of arrival and years since migration show any significant effects on the predicted values, I would be concerned that the general makeup of individuals in later years is different and that attrition may be driving my results.

Table 4 shows the results of this analysis. Using the state unemployment rate specification, the results are all statistically indistinguishable from zero. This provides evidence that there are no changes in the characteristics of individuals over different years in the interaction between the state unemployment rate at the year and month of arrival and years since mi-

gration. Thus, attrition is likely not driving the results for the state unemployment rate specification for either the employment or log wage outcomes. Using the national unemployment rate specification, there is some evidence of changes in characteristics of the individuals for those refugees who have been in the US between six months to one year and those who have been in the US for over five years. However, these estimates are the opposite sign of the main results. This means that I should actually expect larger estimates for these years given that attrition is driving the estimates in the opposite direction. Given that overall, the national and state unemployment specifications in Table 4 do not predict the outcomes from the main specifications, I am confident that attrition is not driving my results.

8 Conclusion

I find evidence of both wage and employment scarring among refugees who immigrate to the United States. On average, refugees experience a 2.99% decrease in wages five years later and a 1.8 percentage point decrease in employment four years for every one percentage point increase in the national unemployment rate at arrival. Additionally, I find evidence that these effects differ across gender and educational attainment. I find no evidence of wage scarring for uneducated males, but I observe 4.85% decrease in wages five years later for high-school-educated males and a 5.29% decrease in wages up to four years later for college-educated males. For female refugees, I find a large disparity in labor force attachment between uneducated females and college-educated-females as a result of initial economic conditions. For every one percentage point increase in the national unemployment rate at arrival, I find that uneducated females are 5.72 percentage points more likely to be employed two years later while college-educated females are 5.84 percentage points less likely to be employed five years later.

In future work, I plan to focus primarily on heterogeneity within my average estimates found on Table 2. I plan to divide my sample across more parameters than gender and educational

attainment to see if average estimates found in Table 2 and Appendix Tables A.1 and A.2 are the result of a particular set of individuals within these refugee groups. In terms of data, I currently have an open Freedom of Information Act request with the Department of Health and Human Services and the Office of Refugee Resettlement to obtain more years of the Annual Survey of Refugees data. The United States experienced an abnormally large and persistent recession in 2008-2009. Therefore, data from the 2005-2018 period may provide additional insight into the effect of initial economic conditions on long term assimilation outcomes for refugees.

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Tables

Table 1: **Summary Statistics by Year of Arrival**

Demographics	**1988-1991**	**1992-1995**	**1996-1999**	**2000-2004**	**All Years**
% Female	50.60	50.91	49.52	43.91	**49.34**
Age at Arrival	31.67	33.06	32.15	30.71	**32.22**
Years Of Education	10.29	10.48	10.73	9.95	**10.40**
% Disabled	19.21	20.53	12.70	11.03	**17.21**
% Fluent in English	9.22	7.60	10.55	20.00	**10.32**
% Married	61.11	54.65	58.75	50.39	**55.77**
% Have Children	56.63	61.80	64.43	59.75	**60.84**
Family Size	5.40	5.48	4.95	5.22	**5.33**
% from Africa	1.56	4.96	10.10	29.85	**9.72**
% from Asia	87.90	79.94	43.63	39.21	**68.13**
% from Europe	10.54	15.09	45.65	29.79	**21.83**
% from S. America	0	0	0.63	1.15	**0.32**
Individuals	3652	8680	3025	3496	**18853**

Table 2: **Main Results**

	National Unemployment Rate		State Unemployment Rate	
	Employment	Log Wages	Employment	Log Wages
6 mos to 1 year, ue_0	0.0147	-0.000718	-0.00702	-0.0248***
	(0.0163)	(0.0121)	(0.0110)	(0.00657)
1 to 2 years, ue_0	0.000284	-0.0140	-0.0125+	-0.0288***
	(0.00819)	(0.0106)	(0.00716)	(0.00627)
2 to 3 years, ue_0	-0.0118+	-0.0143	-0.00877	-0.0200**
	(0.00641)	(0.00935)	(0.00717)	(0.00659)
3 to 4 years, ue_0	-0.0244*	-0.000146	-0.00111	-0.00989
	(0.0104)	(0.0117)	(0.00735)	(0.00661)
4 to 5 years, ue_0	-0.0180+	-0.0259**	0.0107	-0.0104+
	(0.00982)	(0.00901)	(0.00665)	(0.00611)
Over 5 years, ue_0	-0.0115	-0.0299**	0.0136	-0.00539
	(0.0159)	(0.0107)	(0.00865)	(0.00697)
Observations	32516	14230	32516	14230
Adj. R^2	0.278	0.259	0.307	0.291

+ 0.1, * 0.05, ** 0.01, *** 0.001

Note: Standard errors are clustered at month and year of arrival level for national unemployment rate estimates. Standard errors are clustered at state of arrival by month and year of arrival level for state unemployment rate estimates.

Table 3: **Other Outcomes**

	National Unemployment Rate			State Unemployment Rate		
	Log Earnings	Welfare Use	Moved	Log Earnings	Welfare Use	Moved
1 to 2 years, ue_0	-0.0370	-0.00651	0.00632	-0.109**	0.00613	-0.0119+
	(0.0482)	(0.0119)	(0.0152)	(0.0357)	(0.0109)	(0.00617)
2 to 3 years, ue_0	-0.0292	0.0287*	0.00350	-0.0683*	0.0270*	-0.00767
	(0.0319)	(0.0126)	(0.00785)	(0.0267)	(0.0109)	(0.00482)
3 to 4 years, ue_0	0.0216	0.000576	0.0146	-0.0389	0.00882	-0.00703+
	(0.0326)	(0.0145)	(0.00978)	(0.0260)	(0.0106)	(0.00387)
4 to 5 years, ue_0	-0.0163	0.0403*	0.0270**	-0.0575*	0.0129	-0.00236
	(0.0320)	(0.0171)	(0.00788)	(0.0275)	(0.0108)	(0.00363)
Over 5 years, ue_0	0.0323	-0.00901	0.0230**	-0.0177	-0.0152	-0.00205
	(0.0409)	(0.0200)	(0.00656)	(0.0305)	(0.0142)	(0.00351)
Observations	9234	31814	19847	9234	31814	19847
Adj. R^2	0.241	0.225	0.096	0.270	0.279	0.167

+ 0.1, * 0.05, ** 0.01, *** 0.001

Note: Standard errors are clustered at month and year of arrival level for national unemployment rate estimates. Standard errors are clustered at state of arrival by month and year of arrival level for state unemployment rate estimates.

Table 4: **Specification Check for Attrition Bias**

	National Unemployment Rate		State Unemployment Rate	
	Employment	Log Wages	Employment	Log Wages
6 mos to 1 year, ue_0	-0.0184***	-0.00979**	-0.00203	-0.00180
	(0.00487)	(0.00328)	(0.00528)	(0.00239)
1 to 2 years, ue_0	-0.00455	-0.00113	-0.000392	-0.000154
	(0.00314)	(0.00229)	(0.00446)	(0.00222)
2 to 3 years, ue_0	-0.00461	-0.00211	-0.00107	-0.00124
	(0.00432)	(0.00240)	(0.00421)	(0.00233)
3 to 4 years, ue_0	0.000124	-0.00133	-0.000453	-0.000136
	(0.00392)	(0.00249)	(0.00454)	(0.00242)
4 to 5 years, ue_0	-0.000854	-0.00139	-0.00303	-0.000675
	(0.00522)	(0.00303)	(0.00428)	(0.00246)
Over 5 years, ue_0	0.0141+	0.00537+	-0.000305	0.00189
	(0.00748)	(0.00316)	(0.00516)	(0.00273)
N	32655	32655	32655	32655
adj. R^2	0.065	0.158	0.081	0.181

+ 0.1, * 0.05, ** 0.01, *** 0.001

Note: Standard errors are clustered at month and year of arrival level for national unemployment rate estimates. Standard errors are clustered at state of arrival by month and year of arrival level for state unemployment rate estimates.

Figures

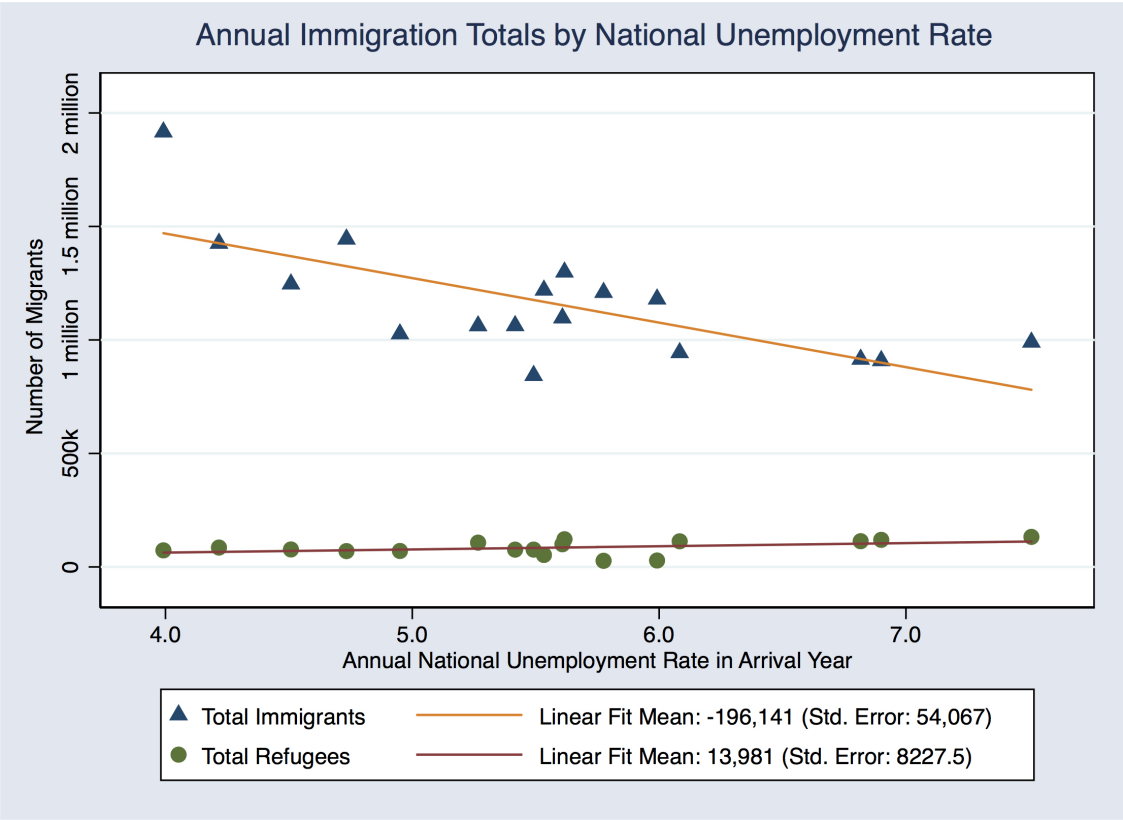

Figure 1: Annual Immigration Totals by National Unemployment Rate (1988-2004)[11]

[11]Immigration totals for all immigrants are based on author estimates using IPUMS American Community Survey data for 2014 (Ruggles et. al 2017). Immigration totals for refugees are based on reported estimates from the Migration Policy Institute (Zong J. et. al 2017).

Figure 2: Resettlement Sites by Volunteer Agency[12]

[12]Source: https://www.acf.hhs.gov/orr/resource/fy2014-reception-and-placement-rp-network-affiliates-map

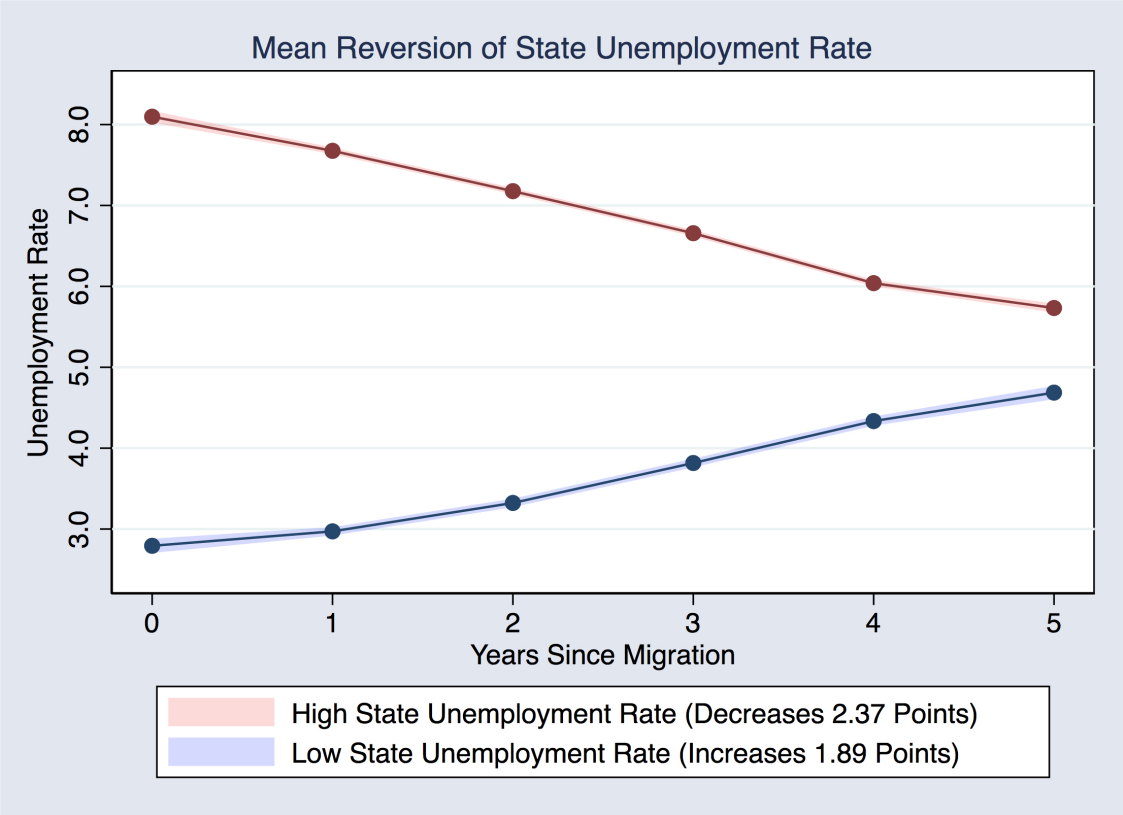

Figure 3: Mean Reversion of State Unemployment Rate

Appendix

Table A.1: **Heterogeneity within Employment Estimates from Main Results**

National Unemployment Rate

	No HS Males	HS Males	College Males	No HS Females	HS Females	College Females
6 mos to 1 year, ue_0	0.0481+	-0.00679	-0.0640	0.0742**	0.0432+	-0.129**
	(0.0257)	(0.0197)	(0.0422)	(0.0273)	(0.0255)	(0.0469)
1 to 2 years, ue_0	0.00498	0.00685	-0.0522*	0.0572***	0.00146	-0.0643*
	(0.0138)	(0.0149)	(0.0238)	(0.0157)	(0.0169)	(0.0281)
2 to 3 years, ue_0	-0.0191	-0.0153	-0.00262	0.00797	-0.00513	-0.0280
	(0.0158)	(0.0132)	(0.0206)	(0.0156)	(0.0118)	(0.0228)
3 to 4 years, ue_0	-0.0266+	-0.0377*	0.00188	-0.00512	-0.0377*	-0.0229
	(0.0143)	(0.0140)	(0.0212)	(0.0155)	(0.0172)	(0.0267)
4 to 5 years, ue_0	-0.00328	-0.0328**	0.0173	-0.0177	-0.0262+	-0.0333
	(0.0180)	(0.0117)	(0.0213)	(0.0179)	(0.0155)	(0.0290)
Over 5 years, ue_0	-0.0224	0.00141	0.0157	-0.000970	-0.0350+	-0.0584+
	(0.0261)	(0.0201)	(0.0247)	(0.0366)	(0.0185)	(0.0325)
N	4588	8570	2716	5654	7745	2467
adj. R^2	0.307	0.247	0.326	0.259	0.238	0.292

State Unemployment Rate

	No HS Males	HS Males	College Males	No HS Females	HS Females	College Females
6 mos to 1 year, ue_0	0.000487	-0.0289	-0.0317	0.0122	-0.0109	-0.0801**
	(0.0175)	(0.0187)	(0.0269)	(0.0164)	(0.0198)	(0.0278)
1 to 2 years, ue_0	0.00190	-0.0214	-0.0301+	0.00927	-0.0337*	-0.0466*
	(0.0131)	(0.0138)	(0.0180)	(0.0142)	(0.0137)	(0.0218)
2 to 3 years, ue_0	-0.0148	-0.0164	0.00769	-0.000699	-0.0171	-0.0336
	(0.0148)	(0.0142)	(0.0152)	(0.0140)	(0.0145)	(0.0204)
3 to 4 years, ue_0	-0.0219+	-0.0119	0.00997	0.00381	0.000286	-0.0341
	(0.0127)	(0.0124)	(0.0166)	(0.0140)	(0.0146)	(0.0216)
4 to 5 years, ue_0	-0.000856	-0.00304	0.0331+	0.00822	0.00897	-0.0153
	(0.0131)	(0.0116)	(0.0175)	(0.0125)	(0.0130)	(0.0225)
Over 5 years, ue_0	-0.0110	0.00584	0.0149	0.0206	0.0105	-0.0157
	(0.0161)	(0.0130)	(0.0193)	(0.0145)	(0.0159)	(0.0255)
N	4588	8570	2716	5654	7745	2467
adj. R^2	0.343	0.286	0.374	0.301	0.279	0.343

+ 0.1, * 0.05, ** 0.01, *** 0.001

Note: Standard errors are clustered at month and year of arrival level for national unemployment rate estimates. Standard errors are clustered at state of arrival by month and year of arrival level for state unemployment rate estimates.

Table A.2: **Heterogeneity within Log Wage Estimates from Main Results**

National Unemployment Rate

	No HS Males	HS Males	College Males	No HS Females	HS Females	College Females
6 mos to 1 year, ue_0	-0.0140	-0.00491	-0.0351	0.0109	0.0275	-0.0230
	(0.0261)	(0.0229)	(0.0491)	(0.0258)	(0.0179)	(0.0614)
1 to 2 years, ue_0	-0.00597	-0.00727	-0.0676**	0.0155	0.000250	-0.0305
	(0.0184)	(0.0155)	(0.0196)	(0.0130)	(0.0146)	(0.0319)
2 to 3 years, ue_0	0.00759	-0.0220+	-0.0626*	-0.0184	-0.00487	-0.0260
	(0.0147)	(0.0129)	(0.0281)	(0.0133)	(0.0131)	(0.0322)
3 to 4 years, ue_0	0.0117	0.00815	-0.0529+	-0.00901	-0.0135	0.0184
	(0.0184)	(0.0154)	(0.0294)	(0.0172)	(0.0119)	(0.0324)
4 to 5 years, ue_0	-0.0107	-0.0440***	0.00548	-0.0333+	-0.0141	-0.0261
	(0.0179)	(0.0122)	(0.0254)	(0.0171)	(0.0105)	(0.0377)
Over 5 years, ue_0	-0.0129	-0.0485**	0.0263	-0.0374*	-0.0418**	0.0177
	(0.0254)	(0.0149)	(0.0428)	(0.0143)	(0.0134)	(0.0541)
N	1843	4614	1276	1844	3424	929
adj. R^2	0.183	0.225	0.273	0.274	0.172	0.208

State Unemployment Rate

	No HS Males	HS Males	College Males	No HS Females	HS Females	College Females
6 mos to 1 year, ue_0	-0.0213	-0.0249*	-0.0359	-0.0244+	-0.0206+	-0.0218
	(0.0178)	(0.0106)	(0.0440)	(0.0136)	(0.0123)	(0.0544)
1 to 2 years, ue_0	-0.0397*	-0.0361**	-0.0412	-0.0132	-0.0288*	-0.0301
	(0.0154)	(0.0110)	(0.0338)	(0.0133)	(0.0112)	(0.0345)
2 to 3 years, ue_0	-0.0176	-0.0317**	-0.0326	-0.0141	-0.0176	-0.0237
	(0.0160)	(0.0102)	(0.0323)	(0.0137)	(0.0125)	(0.0307)
3 to 4 years, ue_0	-0.00378	-0.0179+	-0.0549+	0.00766	-0.00297	-0.0226
	(0.0155)	(0.0101)	(0.0329)	(0.0137)	(0.00978)	(0.0321)
4 to 5 years, ue_0	-0.00190	-0.0193+	-0.0528+	0.00613	0.00281	-0.0297
	(0.0156)	(0.00983)	(0.0308)	(0.0131)	(0.00970)	(0.0302)
Over 5 years, ue_0	0.00650	-0.0185+	-0.0329	0.00947	-0.00302	0.0111
	(0.0161)	(0.0106)	(0.0367)	(0.0141)	(0.0114)	(0.0395)
N	1843	4614	1276	1844	3424	929
adj. R^2	0.264	0.286	0.323	0.334	0.227	0.283

+ 0.1, * 0.05, ** 0.01, *** 0.001

Note: Standard errors are clustered at month and year of arrival level for national unemployment rate estimates. Standard errors are clustered at state of arrival by month and year of arrival level for state unemployment rate estimates.