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Earnings and Sectoral Choice of Low-Skill Afghan Workers in Iran: Evidence from Micro-Level Survey Data

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Abstract

Iran hosts the world's second largest Afghan population, consisting of both refugees and undocumented migrants. As a consequence, Afghans have an established presence in the labor markets of certain provinces in Iran that is likely to persist into the foreseeable future. Utilizing data from the ILO on establishments that employ both Afghan and Iranian labor, we test for earnings differentials between the two groups using a selection-bias correction model. This specification is proposed under the assumption that workers may be heterogenous with respect to the strength of their labor market contacts, which would have consequences for both the choice of sector and earnings upon employment. Under this specification, we find that while a raw wage gap exists between Iranian and Afghan workers engaged in similar work, measures of human capital explain away this differential, suggesting the absence of wage discrimination against Afghans in these markets.

Keywords: Migration, Refugee Crisis, Wage discrimination, Sectoral Choice, Selection Bias, Afghanistan, Iran

1. Introduction

Forty percent of the world's refugee population originates from Afghanistan, making it the largest source country of refugees in the world. Decades of economic adversity resulting from periodic upheavals caused by wars and severe droughts have resulted in a large exodus of Afghans to its neighboring countries of Pakistan and the Islamic Republic of Iran. These circumstances, both natural and man-made, have cumulated over the last three decades, and Iran today hosts the world's second largest refugee population after Pakistan, and is currently home to more than a million Afghan refugees and approximately 2 million undocumented Afghans. (Koepke, 2011 and UNHCR, 2010) Over the last decade, the constantly evolving circumstances in Afghanistan have resulted in ebbs and flows in cross-border migratory patterns, posing serious challenges to Iran's regulatory framework[1] overseeing issues related to its Afghan population. The initial successes of a voluntary repatriation program instituted in 2002 quickly receded in the later part of the decade with the unsteady and often deteriorating security situation in Afghanistan[2]. The added complexity of early refugee cohorts who have assimilated in Iran to greater degrees (and who may have little to no ties to Afghanistan) compounds the problems for voluntary repatriation, and the majority of refugees still remain in Iran, along with twice their number who work without documents. In the face this emergent reality, the Iranian government has displayed a notable degree of pragmatism, recently taking extensive measures to renew documentation of its refugees, issue updated work permits, and has even announced its intention to formulate a framework for regularizing its illegal Afghan work force. (Koepke, 2011) In light of current circumstances, the presence of afghan workers in certain regions and sectors of Iran is likely to persist into the foreseeable future.

This paper explores the labor market choices and outcomes of workers in provinces of Iran with high concentrations of Afghan workers. Utilizing cross sectional worker-level data on small establishments

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[2] The Voluntary Repatriation Program was a result of a tripartite agreement between the governments of Iran, Afghanistan and the United Nations High Commissioner for Refugees (UNHCR). A similar program was instituted following the end of Soviet occupation of Afghanistan that had resulted in the first Afghan refugee crisis; its success, too, was short lived as the tide turned over the years of the ensuing civil war in Afghanistan.(Wickramasekara et al., 2006)

collected through field surveys by the ILO in Iran in 2005, we estimate earnings equations for Afghan and Iranian workers through a self-selection model, assuming that the sector of work is endogenous to the worker. In the first stage of this estimation, the probabilities of employment in different sectors are estimated as functions of different worker characteristics. Correcting for selection bias by accounting for the issue of sectoral choice, we estimate earnings equations in the next stage. We find that after controlling for education, years of work experience and the sector of employment, there is no significant difference in the earnings of Iranian and Afghan workers. Section 2 presents a brief history of Afghan migration to Iran, the Iranian government's evolving policy in regard to this population and the successes and failures of the Voluntary Repatriation Program. Section 3 discusses the data used for the empirical analysis in the study and provides summary statistics for variables of interest. Section 4 describes the methodology used for the estimations and summarizes the main findings. Section 5 concludes.

2. Afghans in Iran: Recent History

Events over the last three decades have made Iran home to one of the largest refugee populations in the world. Many more Afghans who do not have official refugee status live and work in Iran without documents, with official estimates putting this number between 1.5 to 2 million. (Koepke, 2011) Aside from the dramatic and significant push-factors, such as the decade of Soviet occupation, the ensuing civil war and the political instability following the overthrow of the Taliban regime, the history of Afghan migration to Iran includes a more even and predictable element. Temporary and seasonal migration from areas with high unemployment rates in Afghanistan have also been a part of this timeline, even predating the decades of its economic and political turmoil. In addition to the compounding effect of the persistent disparity in economic prospects in these two neighboring countries, individually distinct pull-factors in Iran's economic history may be identified. The increased demand for labor in public works projects undertaken following the positive effects of the oil shocks in the 1970s and labor shortages caused by the Iran-Iraq war in the 1980s are two such instances. (Karimi, 2003)

The cumulative effect of these waves of migration has resulted in a complex mix of Afghan workers in Iran, consisting of early refugee cohorts displaced by the Soviet occupation and its aftermath, their Iranian-born children who have come of age with little to no ties to Afghanistan and more recent migrants with a lower rate of acculturation into Iranian society and substantive connections to their home. (Abbasi-Shavazi et. al, 2008, Wickramasekara et al., 2006) Along with concerns about Afghanistan's security situation, this has proved recent repatriation efforts quite difficult. A tri-partite agreement between the governments of Iran, Afghanistan and the UNHCR set up a voluntary repatriation program for Afghan refugees, and successfully assisted the return of close to 900,000 refugees from 2002 to 2010. The bulk of these repatriations took place from 2002-2005, a period known as the "era of mass return", that was characterized by relatively recent refugees returning home, making their re-integration into Afghanistan fairly uncomplicated[3]. (UNHCR, 2009) This initial phase of successful returns was followed by a dramatic slowdown in returnee numbers. This setback was not only attributable to the precarious and often deteriorating situation in Afghanistan, but also due to the fact that the vast majority of the remaining refugees have been in exile for nearly three decades, with well-established social networks in Iran and few to no incentives to return to Afghanistan.[4]

Moreover, the situation in Afghanistan has only added to Iran's ranks of undocumented workers, primarily single Afghan men who migrate temporarily for work for one to two years. While deportations of illegal migrants take place on a daily basis, an equal number of illegal entries offset these measures. Rough estimates of remuneration rates of "people smugglers" who aide in illegal crossings put the price per crossing at 300 Euros. (Koepke, 2011) Entwined with the issue of undocumented migrants entering through illegal crossings of Iran's eastern border is the concern of

[3] For a comprehensive assessment of the issues underlying successful re-integration of Afghan returnees, see Schmeidl, 2011.

[4] A stalemate in the Tripartite Commission overseeing repatriations from 2008-2010 further complicated the situation (Koepke, 2011). Although 2010 brought about a renewed commitment by the Commission to restart official repatriations, a large second wave of repatriations in the foreseeable future seems unlikely.

drug-trafficking; this region remains a major corridor for narco-traffickers to the Middle-East and Europe. Several instances of Afghans illegally crossing the border for seasonal work being caught in the cross-hairs of Iranian border security agents have been documented. (Nazar and Recknagel, 2011) The tense situation in the area has prompted the Iranian government to announce the completion of a wall sealing off its entire eastern border with Afghanistan and Pakistan by 2015. (The Independent, July, 2011)

Given the complex nature of the problem, the Iranian government has found it difficult to formulate a time-consistent policy with regards to its Afghan population. While Iran has been known to host its Afghan refugees with notable generosity, providing access to basic health services, education and employment opportunities (Rajaee, 2000), its stance on undocumented workers has, as expected, been less charitable. Aside from deportations, stringent sanctions against those renting property to undocumented Afghans and Iranian establishments who employed illegal workers were put in place in 2001.

Recently, there has been a detectable shift in the Iranian government's general position away from a singular commitment to encouraging repatriation. Policy initiatives in the last three years point to a more broad-based and pragmatic stance, with renewed attempts to manage its resident Afghan population within a clear regulatory framework. A 2009 decree allowing children of undocumented Afghans to enroll in Iranian schools upon registration (an opportunity previously only available to children of official refugees) and a 2010 announcement of the approval of a plan by Iran's Supreme National Council for BAFIA to regularize illegal workers through the issuance of work permits are indicative of such a shift. (Koepke, 2011) This evolution seems to reflect the government's recognition of the fact that the presence of Afghan workers in certain regions and sectors is likely to continue into the foreseeable future, necessitating a realistic, long-term approach to the problem.

3. Data and Summary Statistics

The data used in the analysis come from an extensive survey by the ILO of 1050 establishments in Iranian provinces with the highest concentrations of Afghans in 2005. Information was collected from both employers and employees in these establishments, of which we use the data generated from employee surveys given to both Afghan and Iranian workers. Surveys of 3364 workers from 1050 establishments provide demographic profiles and labor market characteristics including wage information, education, years of experience, etc. In sum, 2103 Afghan and 1260 Iranian workers were sampled. Table 3.1 presents the numbers for workers sampled by city, with Tehran that has the strongest presence of Afghans, representing 54.7 percent of the sample.

The majority (78 percent) of the establishments surveyed by the ILO were small establishments, defined as firms employing 10 or fewer workers. 95 percent of these establishments employed a mix of Afghan and Iranian labor. (Out of 1050 establishments, 44 relied only on Afghan workers, while six hired only Iranians.) A large proportion of visited establishments with large number of Afghan workers were those involving low skilled jobs.

Table 3.1: Workers Sampled By City

Location	Afghan workers		Iranian workers	
	Number	Percent	Number	Percent
Efsahan	392	18.6	368	29.2
Khorasan	435	20.7	248	19.7
Sistan	126	6.0	51	4.0
Tehran	1150	54.7	593	47.1
Total	2103	100.0	1260	100.0

Source: ILO, 2006

Table 3.2 provides summary statistics for selected worker characteristics of Afghans and Iranians employed in these establishments. The clearest dimension along which the two groups differ is in the

level of education, with Afghans in general having much lower rates of educational attainment. More than 45 percent of Afghans reported having no education, much higher than the comparable figure for Iranians at 12 percent. More than 98 percent of Afghans spoke Farsi indicating that language is not a major concern for workers. (However, the survey did not account for a dialectically different form of Farsi typically spoken by first generation Afghan immigrants.)

Table 3.2: Labor Market Characteristics

	Afghan workers	**Iranian workers**
Total Sampled	2103	1260
Characteristics	Mean	Mean
Female (percent)	2.3	1.2
Married (percent)	56	60
Age in years	28.1	29.4
No education (percent)	45.6	12.3
Educated: High school and above (percent)	6.2	22.7
Ability to speak Farsi – No (percent)	1.7	
Number years of education	5.5	6.8
Period of stay in Iran (years)	9.9	.
Total work experience (Years)	11.6	10.5
Sector (percent)		
Agriculture	2.7	1.8
Manufacturing	11.3	13.1
Services	35.7	21.3
Construction	50.4	63.7
Total	100.0	100.0
Wage per month in USD	179	215

Source: ILO, 2006

Finally, there exists a significant wage differential between Afghan and Iranian workers, which we explore in the next section, asking if worker characteristics can explain away this gap.

4. A Self-Selection Model of Sectoral Earnings

4.1 *Motivation*

Perhaps the most familiar earnings model in economic literature is the human-capital model advanced through successive developments by Mincer (1974) and Becker and Chiswick (1966) in the following form:

$$y_i = \beta_0 + \beta_1 s_i + \beta_2 t_i + \beta_3 t_i^2 + \mu_i \qquad (4.1)$$

Where y_i are the log of earnings, s_i the years of schooling, t_i and t_i^2 the years of experience and experience squared of worker i. The returns to an additional year of schooling and experience are represented by β_1 and β_2 respectively, while β_3 captures if the returns to experience diminish. For this study, we consider if earnings of Iranian and Afghan workers are significantly different after controlling for factors such as education, experience, sector of work, etc. In other words, if a wage gap between these workers exists that cannot be explained away by differences in proxies for productivity and other observable information. The presence of a large unexplained differential would suggest that either i) Afghan workers face wage discrimination in Iranian labor markets or ii) they differ in unobservable ways (that are pertinent to productivity and wage determination) from their Iranian counterparts.

In order to implement this procedure, we may divide our data by sector of employment into 4 sub-samples, estimate separate earnings equations for each, and test for an earnings differential in each sub-sample. This procedure would yield unbiased estimates under Ordinary Least Squares (OLS) as long as workers are randomly distributed across the four sectors. However, if the sector of work is not exogenous to the worker, (an assumption extremely likely to be true) and instead dependent on heterogenous worker characteristics and preferences, the problem of selection bias would lead to inconsistent estimates under OLS. If workers freely choose their sector of work, the wage and the sector may be simultaneously determined and the same particulars which affect one outcome may also affect the other. For instance, it is quite likely that the strength of a worker's contacts in the labor market (that is unobserved in our sample) has a consequential impact on both. Given the reasonable assumption that network effects in labor markets are characteristically important for immigrant populations, and our population of interest includes many engaged in informal employment where such effects are particularly strong, we apply a bias correction procedure in our estimations.

We use a generalization of Heckman's selection bias model proposed by Bourguignon, Fournier and Gurand (BFG, 2004) for this study. In order to estimate unbiased βs from Equation 4.1, Heckman (1979) proposed a two stage estimation method when the choice was dichotomous. (In his seminal example, instead of choosing between different sectors of work, the individual chose to work or not work.) The first stage of the Heckman procedure estimates a binary choice model (such as the Probit) that specifies the selection equation. The second stage estimates an earnings equation, with a correction for the selection bias. In a widely referenced paper, Lee (1983) proposed a generalization of Heckman's work that allowed for multiple choices in the selection stage (applicable to our study, where the selection is between four sectors) with selectivity modeled as a multinomial Logit. The BFG model presents a modification to Lee's work and produces consistent estimates under less restrictive conditions.

Consider the following specification (with the worker subscript suppressed):

$$y_i = X\beta_i + \mu_{i,}\ S_j^* = Z\delta_j + \eta_j, j = 1 \dots M$$

where y_i is the log of earnings for each worker that is only observed for sector i if that sector is chosen (out of M sectors) or if $S_i^* > \max_{j \neq i} S_j^*$, where S^* is a latent variable that measures the desirability of working in a particular sector. X contains variables that determine earnings, while Z contains variables that affect the choice of sector. If unobserved worker characteristics (such as contacts in the labor market) that determine sector of employment also affect earnings, the error term from the earnings equation (μ_i) would be correlated with the error terms from the selection equations (η_j), producing a selection bias. Following Heckman's original work, BFG make use of the covariance structure of μ_i and η_j (by estimating the selection process through a multinomial logit in the first stage) to consistently estimate the second-stage earnings equation.[5] We implement their methodology in our estimations and discuss the results from each stage in turn.

4.2 *Estimation Results*

Table 4.1 Sectoral Choice: First Stage Estimates from Multinomial Logit

	Manufacturing	***Services***	***Construction***	
	Odds Ratio	Odds Ratio	Odds Ratio	Prob(coeff.)=0 across sectors ($P>\chi^2$)
Afghan worker (Yes=1)	0.93 (0.38)	2.2** (0.83)	0.21*** (0.08)	0.00
Years of Work Experience	0.98 (0.02)	0.99 (0.02)	0.91*** (0.14)	0.00
Years of Education	1.20*** (0.04)	1.16*** (0.04)	1.0 (0.03)	0.00

[5] By observing how a set of worker characteristics are distributed across the 4 sectors, we are able infer the extent to which unobserved characteristics play a role in this selection process and use this information in the second stage estimation.

Gender (Female=1)	0.02***	(0.02)	0.47	(0.22)	0.01*** (0.13)	0.00
Marital Status (Married=1)	0.82	(0.27)	1.1	(0.33)	0.92 (0.27)	0.29

*** ,** Coefficients significant at the 1% and 5% level respectively, Standard Errors in Parentheses.
Base Category: Agricultural Sector.

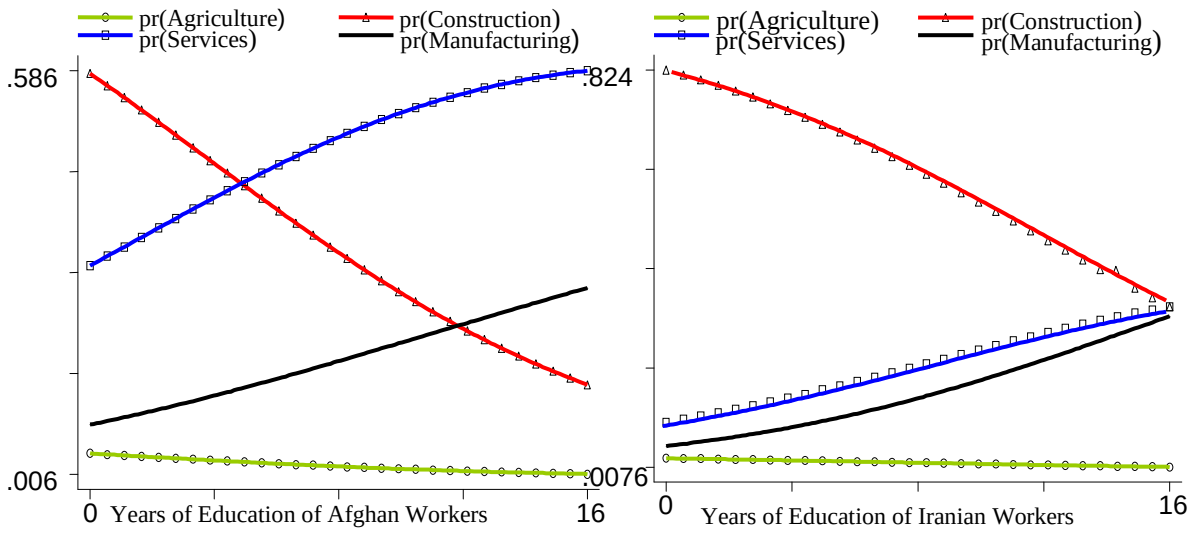
4.21 First Stage Estimation: Choice of Sector

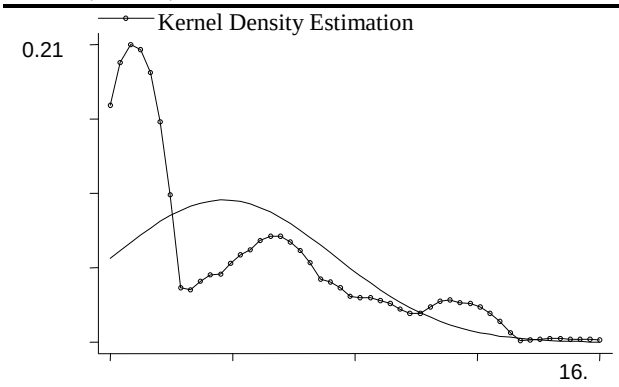
The results of the first stage of estimation through a multinomial logistic model are presented in table 4.1. The variables considered in the regression are if the worker is Afghan or Iranian, the number of years of work experience, years of education, gender and marital status. Whether sectoral choice is explained by these characteristics is examined by a Likelihood ratio test, the results of which provided in the last column of Table 4.1. We test if the true coefficients of the variables in the specified model are zero for all sectors, and find that other than marital status, all other variables affect the selection decision.

The Multinomial logit model breaks up the regression into a series of binary regressions that compare each group to a baseline group. In our specification, we use the Agricultural sector as this base category. The odds ratios in table 4.1 assess how a variable affects the odds of selecting a sector over the agricultural sector. For example, we find that an additional year of schooling multiplies the odds of joining the manufacturing sector (as compared to the agricultural sector) by a factor of 1.2 or that it increases the odds by about 20 percent. Similarly, the effect of the same is 1.16 for the Services sector. Since odds-ratios do not lend themselves to direct intuitive interpretations, we illustrate the effect of education on sectoral choice in Figure 4.1.

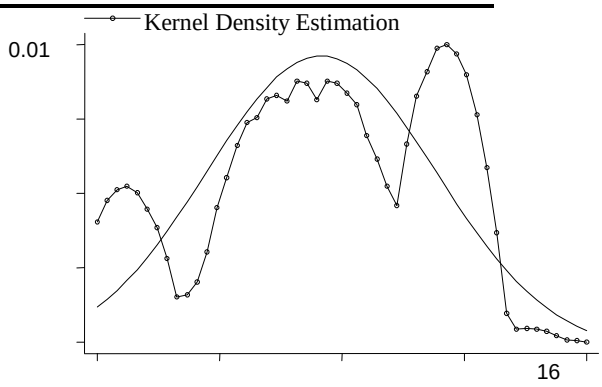
Using the results of the Multinomial Logit, we plot the predicted probabilities of choosing each of the four sectors against the years of education, holding the remaining variables constant at their median levels. The top left panel in Figure 4.1 illustrates how these probabilities change with education for Afghan workers and the top right panel repeats the analysis for Iranian workers. The bottom panels in Figure 4.1 present estimated densities of educational attainment for the two groups for reference to how this variable is distributed in the sample.

Figure 4.1: Predicted Probabilities of Sectoral Choice and Educational Distribution





Estimated Density of Years of Education of Afghan Workers



Estimated Density of Years of Education of Iranian Workers

For Afghan workers, the probability of working in the agricultural sector is low over the entire range of educational attainment and decreases as the years of education rise. The likelihood of working in the manufacturing sector is also very low for uneducated workers (though still higher than the agricultural sector) and rises steadily with education. However, this probability is much lower (for the entire education range of 0-16 years) than that of the services sector. In fact, for workers with sixteen years of education or more, the services sector is the most probable choice. This probability also rises with education unlike for construction, whose probability is the highest for the lowest education levels (approximately 0.5) but falls steadily with the years of education.

In the case of Iranian workers, we find some similarities as well as some differences. It is important to note that for the population of Iranian workers we may generalize our findings to are those that work similar jobs to Afghans, and not the entire Iranian labor force. In this group, the probability of choosing the agricultural sector is low and falls practically to zero as the years of education rise. The construction probability is very high for low levels of education (more than 0.8), falling steadily with more years of education. These results are similar to the observed choices of Afghan workers. An interesting finding in the Iranian case is that sectoral probabilities converge for education levels of 16 or more (except for agriculture) unlike for Afghan workers, who are less than half as likely to be in the services sector in this range.

To better understand which spread of probabilities are most pertinent to our study, we consider the actual distribution of education in our sample. In the bottom panel of figure 4.1, we provide estimated densities for educational attainment (with normal densities overlaid for comparison) for the two groups. These offer a more complete picture of educational distribution in the sample than summary statistics are able to provide in Table 3.2. The estimated densities differ quite significantly for the two groups. In addition to Iranian workers having a much more even distribution of education, their mean years of education is more than twice that of Afghans, while the median is four times as large. For Afghan workers, the mass of the density is in the range of 0-7 years of schooling, so estimated sectoral probabilities (from the top left panel of Figure 4.1) in this range are more characteristic of this population.

4.22 Second Stage Estimation: Earnings Equation

We use the methodology developed by Bourguignon, Fournier and Gurand (2004) to estimate earnings equations that correct for selection bias, the results of which are presented below. The dependent variable in the analysis is the natural logarithm of monthly earnings and independent variables include the nationality of the worker, their educational attainment, the years of work experience and its square. Each sector's earnings equation also includes a separate selection term for each categorical latent expression (associated with each sector) which are designated M_1 to M_4. These are "synthetic regressors" constructed using information on the error terms obtained from the first stage logit, since they pick up the effect of unobservables that affect the selection decision, or choice of sector. (See

Bourguignon et al., 2001 for a detailed exposition of this methodology.) We may ignore the values of the estimated coefficients on these terms as they do not have very useful interpretations for analysis, but their statistical significance indicates if unobservables that drive the sectoral decision are also pertinent for wage determination. A test of these coefficients being simultaneously zero was rejected for all sectors except the agricultural sector, validating our correction for selection-bias.

Table 4.2: Earnings Equations: Second Stage Estimation through BFG Selection Bias Correction

	Manufacturing		***Construction***		***Services***		***Agriculture***	
Dependent Variable: Ln(Earnings)	**β**	**S.E**	**β**	**S.E**	**β**	**S.E**	**β**	**S.E**
Iranian worker (Yes = 1)	0.00	(0.07)	0.016	(0.03)	-0.01	(0.04)	0.09	(0.11)
Years of Education	0.01	(0.01)	0.016***	(0.003)	0.02***	(0.003)	0.02*	(0.01)
Years of Work Experience	0.005	(0.01)	0.019***	(0.003)	0.02***	(0.003)	0.00	(0.01)
Years of Work Experience^2	-.001***	(0.00)	-.0004***	(0.00)	-0.00	(0.00)	0.00	(0.00)
M_1	-1.36	(2.57)	-0.17	(0.88)	2.78***	(0.75)	0.20	(0.29)
M_2	-4.63***	(0.91)	-6.21***	(0.93)	-2.79***	(1.06)	-2.55*	(2.99)
M_3	2.59***	(1.24)	-0.75*	(0.42)	-0.04*	(0.16)	-1.34	(1.55)
M_4	4.99***	(1.91)	-0.09	(0.28)	1.09***	(0.50)	-0.63	(1.81)
Intercept	15.77	(2.81)	3.68	(0.12)	5.00	(0.15)	3.07	(1.45)
Adjusted R^2	0.23		0.24		0.14		0.24	

*** ,**,* Coefficients significant at the 1% , 5% and 10% level respectively, Standard Errors in Parentheses.

While we found a difference in the raw wages of Afghan and Iranian workers in establishments that hire both types of workers, (see Table 3.2) after controlling for education and years of work experience, this difference disappears. The coefficient on the indicator variable marking nationality (Iranian worker = 1) that estimates this difference is found to be statistically insignificant. This result is robust across all sectors (see 1st row of Table 4.2) and across specifications that allowed for the returns to education and experience to vary across the two groups.[6] We also find education and work experience to significantly affect earnings in the Construction and Services sectors, while the returns to experience diminish in the Construction and Manufacturing sectors. In conclusion, for each of the four sectors under consideration, the estimation results show no difference in the earnings of Iranians and Afghans once we control for productivity differences through education and experience; neither do the data support any differences in returns to these measurable components of human capital.

5. Conclusion

Iran hosts the second largest refugee population in the world, which originates from Afghanistan, the largest source country of all refugees. As a consequence, Afghans have an established presence in the labor markets of certain provinces of Iran, which is likely to continue into the foreseeable future. These workers consist of both official refugees who came to Iran over successive waves of migration over the last thirty years, and more recent undocumented migrants who cross Iran's eastern border seeking temporary stints of employment. After an initial wave of repatriation of refugees back to Afghanistan in the first half of the last decade, (overseen by a Tripartite Commission formed by the UNHCR and the governments of Iran and Afghanistan) return migration came to a near halt over the next few years. The unsteady and often deteriorating conditions in Afghanistan coupled with the fact that most of the remaining refugees have been in exile for close to three decades makes a large second wave of voluntary repatriations unlikely. The Iranian government has responded to this emergent reality by taking unprecedented steps over the last three years that are suggestive of a general policy

[6] This was implemented through inclusion of interaction terms between the nationality variable and the continuous regressors.

shift on this issue, away from a singular commitment to repatriation to a more pragmatic and long-term attempt to manage its Afghan population within a clear regulatory framework. Notably, these initiatives include the establishment of an agenda to regularize its illegal Afghan population.

This paper explores the labor market choices and outcomes for Afghan workers in provinces of Iran with high concentrations of Afghan workers. Utilizing data from the ILO on Iranian establishments that employ both Afghan and Iranian labor, we explore the joint issues of earnings and sectoral choice for these workers. We use a selection-bias correction model to estimate earnings differentials for Afghan and Iranian labor when the sector of work is endogenous to the worker. This is motivated by the simple assumption that workers may be heterogenous with respect to the strength of their labor market contacts, which would have consequences for both the choice of sector and earnings upon employment. A formal test suggests the presence of such unobservables, validating the use of a bias-correction in our estimations. We find that while a raw wage gap exists between Iranian and Afghan workers engaged in similar work, education and work experience explain away this differential, suggesting the absence of wage discrimination against Afghans in these markets.

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