

ERF 26th Annual Conference
on *Sustainable Development Goals*
(*SDGs*) as a Framework for MENA's
Development Policy

Cairo, June 2020

Do Non-natives Catch-up with the Natives in Terms of Earnings in Jordan? New Evidence from a Distributional Analysis

By

Rabeh Morrar & Hatem Jemmali

Outline

- Introduction
- Data & Methodology
- Stylized facts
- Results
- Conclusions and policy recommendations

Introduction

- Why Studying wage disparities in Jordan ?
 - Jordan didn't escape the consequences of regional political instability and conflicts
 - Forced exile of Palestinians after the creation of the State of Israel in 1948
 - The occupation of West Bank in 1967
 - Lebanese civil war from 1975 to 1990
 - Iraqis wars since the early 1980s,
 - The Syrian conflict in 2011) have caused a large influx of refugees into Jordan.
 - Jordan has received more than 1.2 million of Syrian refugees since the Syrian civil war in 2011
 - Therefore, the Jordanian labor market is very heterogeneous
 - High disparities in wages between natives and non-natives
 - Increasing rate of migrants from neighbouring countries (e.g. Syria)
 - Some studies have been developed in the last few years to understand the consequences of refugees and immigration on the Jordanian labor market (Wahba 2014 and Fallah et al. 2019).

Introduction

Table 1: Number of households and individuals in 2015 Census, by nationality

	Jordanian	Syrian	Egyptian	Other Arabs	Other Nationalities	Total
Households	1,412,157	243,972	96,640	159,534	29,600	1,941,903
Individuals	6,613,587	1,265,514	636,270	818,956	197,385	9,531,712

Source: Krafft and Assaad (2018) in Correspondence with DOS

Introduction

- This study tries to understand the dynamic and background of wage inequality in Jordan between native and non-native workers and decompose the wage gap to reveal if any discrimination against non-native workers.
- It is of great interest to the identification of the persistent and main factors that may narrow or broaden the wage gap between the different groups in the labor market over time.

Data & Methodology

- **Data Sources:**

- We use the 2010 and 2016 waves of the Jordanian labor market panel survey (JLMPS),
- The two surveys provide a nationally representative dataset with comprehensive information on workers' earning as well as a non-native identifier (i.e., individuals with non-Jordanian citizenship).
- The two JLMPS waves were conducted through cooperation efforts between the economic research forum (ERF) in Egypt and the Jordanian Department of Statistics (DoS)
- The JLMPSs allow an in-depth analysis of the critical social and economic developments in Jordan (*Krafft & Assaad 2018*).

Data & Methodology

- **Methodology:**

- We apply the well-known Mincer's (1974) human capital wage equation on a pooled cross-section data constructed independently from the two random sample surveys of the same population for the two periods 2010 and 2016:

$$\ln Y^J = X^J \beta^J + \varepsilon^J ; J = (\text{Native}, \text{migrant})$$

- To take into account the selectivity bias, the Heckman correction term λ (or the inverse of Mill's ratio) was included in the wage equation as follows:

$$\ln Y^J = X^J \beta^J + \lambda^J \beta_\lambda^J + \varepsilon^J$$

Data & Methodology

- **Methodology:**

- In the second phase, we regress the estimated RIF on X using the OLS regression analysis for each group (natives and non-natives) separately:

$$E(\text{RIF}(Y, Q_\theta) | X) = X\beta_\theta$$

- We replace all the unknown components with their sample estimators as follows:

$$\text{RIF}(Y, Q_\theta) = Q_\theta + \frac{(\theta - I\{Y \leq Q_\theta\})}{f_Y(Q_\theta)}$$

Data & Methodology

- **Methodology:**

- After estimating the aforementioned model for different quantiles of the population, we use the unconditional quantile regression to decompose the wage gap between native and non-native workers into:

- A component that refer to the differences in the distribution of characteristics (productivity effect) and
- A component that refers to the differences in the distribution of returns (discrimination effect)

as follows:

$$\bar{Q}_\theta^i - \bar{Q}_\theta^j = \{\bar{Q}_\theta^i - \bar{Q}_\theta^*\} + \{\bar{Q}_\theta^* - \bar{Q}_\theta^j\} = (\bar{X}^i - \bar{X}^j)\bar{\beta}_\theta^i + \bar{X}^j(\bar{\beta}_\theta^i - \bar{\beta}_\theta^j)$$

Stylized facts

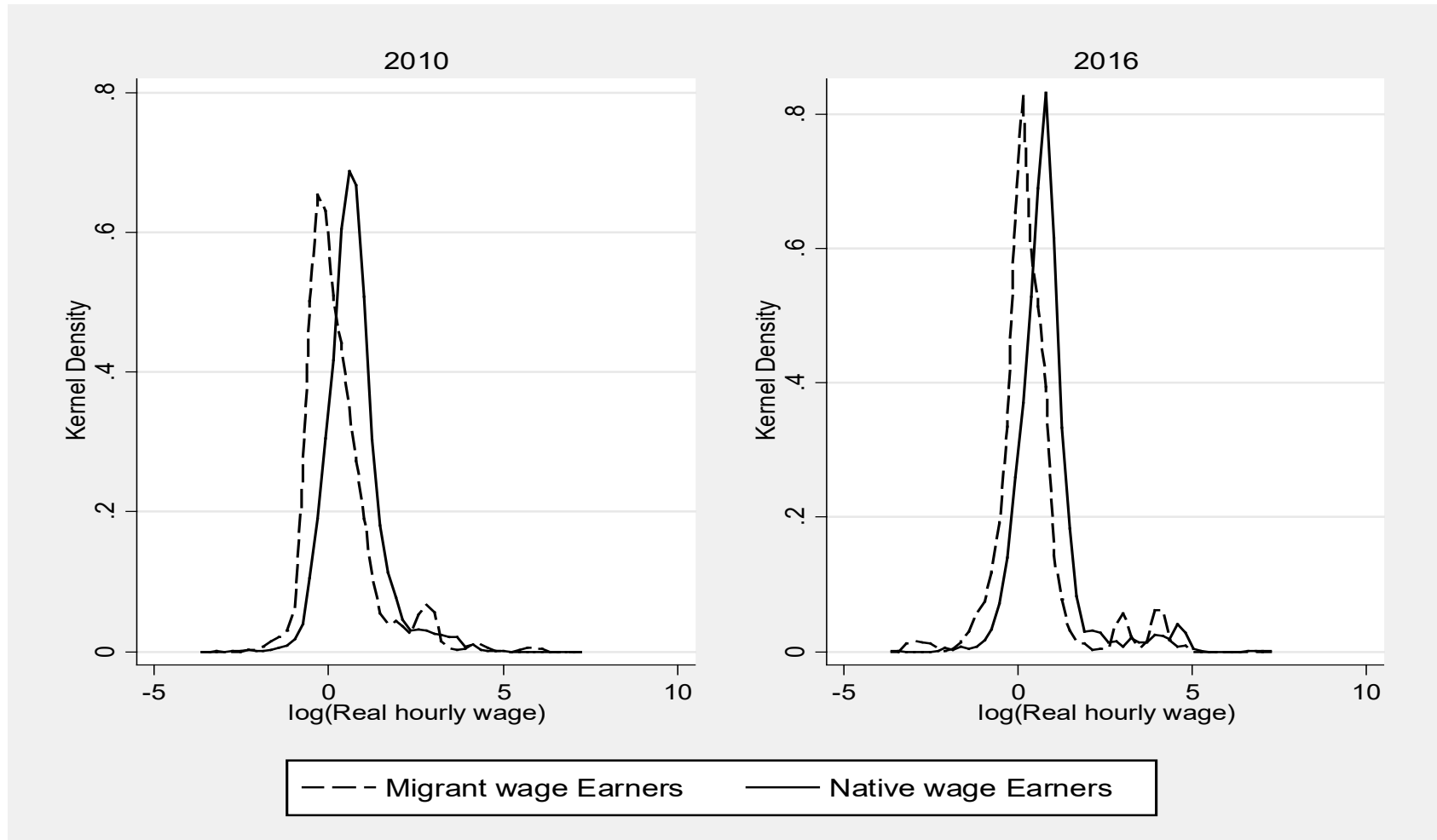


Figure 1. Kernel density estimates of log wage distributions in 2010 and 2016.

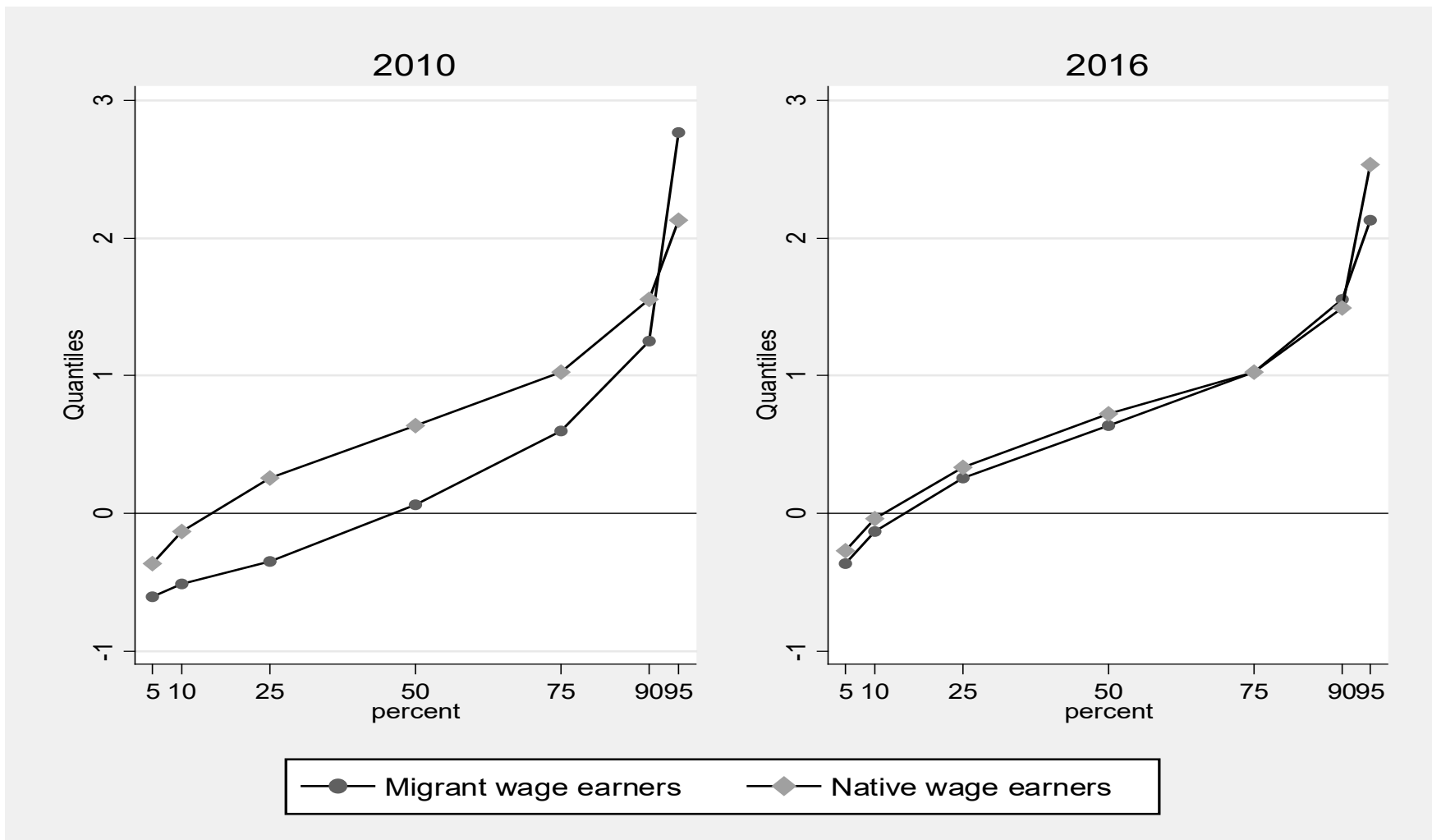


Figure 2. Raw log hourly wage gaps between non-native and natives workers by quantile in 2010/2016.

Note: Authors' Calculations based on JLMPSs 2010 and 2016.

Table 2: Summary statistics by group and year

	2010					2016				
	Natives		Non-Natives		Normalized Difference	Natives		Non-Natives		Normalized Difference
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Household wealth										
1st Quintile	0.16	0.37	0.65	0.48	-0.80	0.08	0.27	0.58	0.49	-0.89
2nd Quintile	0.19	0.39	0.09	0.29	0.20	0.15	0.35	0.25	0.43	-0.18
3rd Quintile	0.21	0.41	0.09	0.28	0.25	0.25	0.43	-0.09	0.28	0.32
4th Quintile	0.22	0.42	0.11	0.31	0.22	0.27	0.45	0.04	0.19	0.48
5th Quintile	0.22	0.41	0.07	0.25	0.31	0.26	0.44	0.05	0.22	0.42
Weekly hours	44.32	12.07	53.51	13.61	-0.50	43.33	19.45	48.68	29.31	-0.15
Hourly wage	3.15	6.60	3.62	21.08	-0.02	5.36	32.23	3.18	9.40	0.06
Log hourly wage	0.70	0.76	0.26	0.92	0.37	0.79	0.87	0.36	0.93	0.34
Age	32.83	9.46	31.31	9.75	0.11	33.48	9.38	34.18	9.54	-0.05
Male	0.80	0.40	0.93	0.25	-0.28	0.81	0.40	0.92	0.28	-0.23
Married	0.60	0.49	0.58	0.49	0.03	0.66	0.47	0.69	0.46	-0.05
Education										
Illiterate	0.02	0.13	0.11	0.31	-0.27	0.03	0.18	0.19	0.39	-0.36
Read & Write	0.13	0.33	0.23	0.42	-0.20	0.11	0.31	0.34	0.47	-0.42
Basic Education	0.33	0.47	0.17	0.38	0.27	0.34	0.47	0.17	0.37	0.29
Vocational	0.01	0.11	0.03	0.18	-0.11	0.01	0.09	0.03	0.17	-0.11
Secondary Educ	0.16	0.37	0.26	0.44	-0.17	0.15	0.36	0.11	0.32	0.08
Post-Secondary	0.12	0.33	0.09	0.29	0.06	0.10	0.29	0.08	0.27	0.03
University	0.20	0.40	0.08	0.28	0.24	0.23	0.42	0.08	0.27	0.31
Post-Graduate	0.03	0.18	0.02	0.14	0.06	0.04	0.19	0.01	0.07	0.15
Experience	6.70	6.05	8.66	7.02	0.21	9.95	7.88	8.29	8.27	0.15
Urban	0.72	0.45	0.80	0.40	0.13	0.69	0.46	0.78	0.41	0.14
Region										
Middle	0.49	0.50	0.67	0.47	-0.26	0.45	0.50	0.38	0.49	0.10
North	0.33	0.47	0.24	0.43	0.15	0.37	0.48	0.52	0.50	-0.22
South	0.18	0.38	0.09	0.29	0.18	0.18	0.39	0.10	0.30	0.17

Table 3: Labor market characteristics by Migration status and year

	2010		2016		Normalized Difference	2010		2016		Normalized Difference
	Natives		Non-Natives			Natives		Non-Natives		
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Formal	0.80	0.40	0.41	0.49	0.61	0.80	0.40	0.31	0.46	0.80
Economic Sector										
Government	0.53	0.50	0.02	0.15	0.96	0.59	0.49	0.07	0.26	0.94
Public	0.02	0.14	0.00	0.06	0.11	0.01	0.09	0.02	0.13	-0.05
Private	0.44	0.50	0.95	0.22	-0.93	0.39	0.49	0.74	0.44	-0.54
Other	0.00	0.05	0.00	0.00	0.05	0.00	0.07	0.07	0.26	-0.25
International	0.01	0.09	0.02	0.15	-0.10	0.01	0.10	0.10	0.31	-0.29
Job Stability										
Permanent	0.93	0.25	0.92	0.28	0.04	0.88	0.33	0.60	0.49	0.47
Temporary	0.05	0.22	0.07	0.25	-0.04	0.06	0.23	0.18	0.38	-0.27
Seasonal	0.00	0.05	0.00	0.00	0.05	0.01	0.09	0.03	0.17	-0.11
Casual	0.01	0.11	0.02	0.13	-0.02	0.06	0.24	0.20	0.40	-0.30
Occupation										
Managers	0.01	0.12	0.00	0.06	0.08	0.01	0.08	0.00	0.00	0.08
Professionals	0.21	0.41	0.08	0.27	0.28	0.26	0.44	0.07	0.26	0.38
Technicians & Ass. Prof.	0.08	0.27	0.02	0.15	0.18	0.07	0.26	0.02	0.14	0.18
Clerical support workers	0.11	0.31	0.02	0.14	0.25	0.07	0.26	0.03	0.17	0.14
Service and Sales workers	0.28	0.45	0.26	0.44	0.03	0.29	0.45	0.28	0.45	0.02
Skilled Agri., for. and fish	0.01	0.11	0.05	0.22	-0.15	0.02	0.13	0.11	0.32	-0.28
Craft and related trades wor.	0.13	0.34	0.31	0.46	-0.31	0.11	0.32	0.27	0.45	-0.30
Plant and machine oper.	0.09	0.29	0.07	0.26	0.05	0.09	0.29	0.07	0.25	0.07
Elementary occupations	0.08	0.26	0.18	0.39	-0.23	0.07	0.26	0.15	0.36	-0.17
Governorate										
Amman	0.23	0.42	0.44	0.50	-0.32	0.21	0.40	0.19	0.39	0.02
Balqa	0.08	0.28	0.05	0.22	0.09	0.08	0.27	0.07	0.26	0.02
Zarqa	0.14	0.34	0.17	0.38	-0.07	0.13	0.33	0.10	0.30	0.06
Madaba	0.04	0.20	0.01	0.10	0.13	0.04	0.19	0.02	0.13	0.09
Irbid	0.17	0.37	0.07	0.25	0.22	0.16	0.37	0.11	0.31	0.12
Mafrsq	0.08	0.26	0.06	0.24	0.05	0.10	0.30	0.19	0.39	-0.18
Jarash	0.05	0.22	0.09	0.29	-0.11	0.07	0.25	0.23	0.42	-0.33
Ajloun	0.04	0.19	0.02	0.13	0.09	0.04	0.20	0.00	0.00	0.20
Karak	0.08	0.27	0.03	0.16	0.16	0.08	0.27	0.01	0.10	0.24
Tafileh	0.03	0.18	0.01	0.18	0.09	0.03	0.00	0.00	0.18	0.19
Ma'an	0.04	0.19	0.03	0.19	0.04	0.04	0.15	0.02	0.19	0.07
Aqaba	0.02	0.16	0.02	0.16	0.02	0.02	0.25	0.07	0.17	0.12

Table 4: Descriptive average Natives/Non-natives earners wage gap.

	2010					2016						
	Native earners (G)		Non-Natives earners (\bar{G})		G- \bar{G}	\bar{G} /G (%)	Native earners (G)		Non-Natives earners (\bar{G})		G- \bar{G}	\bar{G} /G (%)
	N	Mean	N	Mean			N	Mean	N	Mean		
Economic Sector												
Government	2398	2.97	7	2.17	0.80	73.01	2722	4.31	39	6.71	-2.40	155.62
Public	93	5.99	1	1.17	4.82	19.53	37	6.28	9	2.02	4.27	32.13
Private	2025	3.11	273	3.69	-0.58	118.60	1778	6.88	406	3.23	3.65	46.92
Other	11	2.64	0	.	.	.	21	2.71	39	1.36	1.35	50.26
International	34	10.67	7	2.69	7.99	25.16	46	9.53	57	1.87	7.66	19.66
Job Stability												
Permanent	4252	3.13	264	3.80	-0.67	121.37	4031	4.66	329	3.38	1.28	72.51
Temporary	237	3.43	19	1.59	1.84	46.31	263	2.11	97	2.19	-0.08	103.99
Seasonal	12	2.68	0	.	.	.	38	2.15	16	2.69	-0.54	125.01
Casual	60	3.98	5	2.21	1.77	55.42	272	19.32	108	3.54	15.78	18.32
Occupation												
Managers	64	4.99	1	2.81	2.17	56.42	30	3.95	0	.	.	.
Professionals	962	4.08	22	23.34	-19.25	571.63	1186	6.70	38	5.42	1.28	80.90
Technicians & Ass. Prof.	361	3.77	7	2.68	1.09	70.97	340	4.28	11	2.40	1.89	55.98
Clerical support workers	482	3.14	6	0.80	2.34	25.49	340	5.05	17	1.47	3.58	29.15
Service and Sales workers	1278	2.68	76	2.64	0.04	98.44	1317	4.46	150	4.10	0.36	91.95
Skilled Agri., for. and fish	53	2.11	14	0.89	1.22	42.05	79	1.80	62	2.10	-0.29	116.28
Craft and related trades wor.	588	2.47	88	1.61	0.85	65.44	511	5.73	149	2.64	3.08	46.13
Plant and machine oper. and ass.	427	2.98	21	4.26	-1.28	142.91	416	7.75	36	4.34	3.40	56.08
Elementary occupations	346	2.89	53	1.12	1.78	38.62	335	3.50	81	2.36	1.14	67.44
Governorate												
Amman	1049	3.55	126	5.70	-2.15	160.62	945	8.80	106	5.90	2.89	67.13
Balqa	382	3.14	15	1.32	1.82	42.07	356	6.32	39	2.76	3.56	43.68
Zarqa	617	2.60	49	1.89	0.71	72.62	584	6.83	54	1.75	5.08	25.66
Madaba	183	2.69	3	1.52	1.17	56.50	179	11.05	10	10.75	0.30	97.33
Irbid	765	2.86	20	4.37	-1.51	152.68	751	4.64	58	2.60	2.04	56.10
Mafraq	343	2.80	17	1.42	1.38	50.78	450	2.45	102	1.34	1.10	54.89
Jarash	237	3.14	27	1.83	1.31	58.34	305	2.61	126	3.41	-0.80	130.59
Ajloun	174	3.79	5	1.99	1.80	52.41	184	3.13	0	.	.	.
Karak	359	3.85	8	0.89	2.96	23.15	367	2.54	6	1.33	1.21	52.18
Tafileh	153	3.29	4	1.43	1.86	43.58	161	2.63	0	.	.	43.58
Ma'an	173	2.80	8	1.53	1.27	54.70	178	2.79	12	2.21	0.58	54.70
Acaba	126	3.48	6	1.95	1.53	56.13	144	2.45	27	1.68	0.76	56.13

Results

- **OLS estimation results:**
 - The estimated coefficient of the human capital variables (experience, experience squared and schooling) are all significant and have the expected signs.
 - The negative sign for the squared experience coefficient exhibits the widespread inverted U-shape relationship between hourly wages and experience.
 - The positive coefficient for the year dummy indicates an increase in the base wage rate in the year 2016 compared with 2010.
 - On average, native workers earn significantly 0.792 higher log wage than non-native workers
 - No significant variation in the wage differentials depicted by the considered OLS corrected model between the two years.
 - The log gender wage gap between male and female is 0.168 for male
 - Workers in urban regions are found to earn 0.0424 higher wages than their counterparts in rural regions.
 - Also, workers living in the North regions of Jordan earn 5.02% less hourly wage than workers in South.
 - However, no significant differences in wage was found between the central and south regions of Jordan.

Table 5: OLS estimation results Vs Heckman two-stage results

Pooled OLS without Selection correction (Model I) Pooled Heckman two-stage result (Model II)

VARIABLES	log(w)	log(w)	Labor Force Participation	Mills
Year2016	0.0638**	0.0484***		
Non-native	-0.153**	-0.180***		
MigYr	0.0711	0.0633		
Male	0.220***	0.168***		
Experience	0.0286***	0.0247***		
SqrExperience/100	-0.0566**	-0.0351***		
Schooling	0.0269***	0.0284***		
Occupation				
Managers	0.649***	0.567***		
Professionals	0.511***	0.456***		
Technicians & Ass. Prof.	0.259***	0.220***		
Clerical Suupport Workers	0.191**	0.179***		
Service and sales workers	-0.00261	0.0634*		
Skilled Agri. Foresty and Fish.	-0.104	-0.0905		
Craft and related trades Workers	0.0228	0.0743**		
Machine operators and Assemblers	0.195**	0.192***		
Economic Sector				
Government	-0.112	-0.139**		
Public	0.0367	0.0667		
Private	-0.292**	-0.304***		
Other	-0.246	-0.331***		
International	-	-		
Urban	0.0211	0.0425**		
Region				
Middle	-0.00856	-0.0245		
North	-0.0272	-0.0502**		
Married			0.216***	
Number of siblings			0.0110***	
Age			0.00479***	
Attended school			0.693***	

Results

Unconditional quantile regression results:

- The RIF-OLS regression reveals that the gap was dissipated in the 10th and 90th quantile.
- The base wage rate was increased for non-native workers in the year 2016 compared with 2010 (0.583 point) at the 10th quantile, but was eliminated in the 2nd and 3rd quantile.
- The gender wage premium is much higher at the bottom and top.
- The returns to one additional year of experience exhibit an inverted U-shaped pattern in the 10th and 50th quantile, while this effect disappears at the 90th quantile.
- The mean returns may be concealed
- The returns by quantile for managers occupations exhibit a sharp and strictly increasing pattern between the first and third quantiles.
- However, the 90th-10th inter-quantile difference is much higher for managers than professionals

Table 6: Unconditional quantile regression results (RIF-OLS regression)

VARIABLES	10th	50th	90th
Year2016	0.0394	0.036**	-0.0823
Non-native	-0.792***	-0.0373	-0.0202
MigYr	0.583***	-0.0155	0.152
Male	0.279***	0.141***	0.300***
Experience	0.0297***	0.0238***	0.0129
SqrExperience/100	-0.0641**	-0.0477***	0.0126
Schooling	0.0147	0.0175***	0.0366**
Occupation			
Managers	0.459***	0.599***	1.335***
Professionals	0.412***	0.481***	0.607***
Technicians & Ass. Prof.	0.441***	0.319***	0.0540
Clerical Suupport Workers	0.308***	0.179***	0.0561
Service and sales workers	-0.0987	0.0357	0.000465
Skilled Agri. Forestry and Fish.	0.0317	0.120	-0.200
Craft and related trades Workers	0.220**	0.105**	-0.163
Machine operators and Assemblers	0.233**	0.148***	0.0748
Economic Sector			
Government	0.00717	0.0331	-1.026***
Public	-0.00150	0.0496	-0.430
Private	-0.392***	-0.269***	-0.809**
Other	-0.474*	-0.190	-0.845**
Urban Region	0.0138	0.0485*	0.0766
Middle	-0.000264	-0.100***	-0.0320
North	-0.00542	0.00534	-0.0751
Constant	-0.715***	0.103	1.434***
Observations	9,344	9,344	9,344
R-squared	0.138	0.249	0.054

Results

- **Decomposition results**

- The wage differentials are larger in the bottom and median parts of the wage distributions in both 2010 and 2016
- No significant wage gap is found in 2010, while small (0.252) and weak (only significant at 10% level of significance) wage gap in 2016.
- The wage discrimination problem against non-native workers is more severe at the median of wage distribution,
- Discrimination effects contribute more to the wage differential only at the median of the wage distribution for both 2010 (61.5%) and 2016 (52.3%).
- The composition effects dominate in the lower part of the wage distribution in both 2010 and 2016.
- In figures, 61.66% and 64.48% of the overall wage differentials at the 10th quantile in 2010 and 2016 respectively are attributed to the differences in the productivity characteristics between natives and non-natives.
- Occupation differences between native and non-native workers yield the largest contribution (41.08%) to the composition effect at the mean and the 25th (37.4%), 50th (37.7%) and 75th (47%) quantiles of the wage distribution in 2010.

Results

- **Decomposition results:**

- The main drivers of the unexplained component of the wage gap at the mean appears to stem from the education covariate in both 2010 and 2016,
- The compositional differences in occupation explain a significant portion of the average wage differentials in 2010, and
- The compositional differences in Mincerian covariates explain the largest portion of the wage gap in 2016.
- The wage structure effects in 2010 attributed to the differences in general characteristics, occupation and education level between native and non-native workers are different to those observed in 2016
- The contribution of educational differences to the discrimination effect between natives and non-natives exhibits different signs between 2010 and 2016; i.e. it contributes negatively to the discrimination effect in 2010 and positively in 2016.
- The contribution of the general characteristics (Mincerian covariates) to the composition effect displays positive and increasing patterns between 2006 and 2016.

Conclusion & Policy implications

- Non-native workers usually experience discrimination when compared to their native counterparts
- The human capital of non-natives are not similarly rewarded as that of native workers between the two years.
- There is an increasing in mean wage gap between native workers and non-natives over years.
- Wage gap is the highest at the top end of the wage distribution in both 2010 and 2016.
- The mean wage differentials in 2010 are mainly attributable to the composition effect explained by differences in productivity characteristics
- The most of the wage differentials are not the result of differences in workers' characteristics.

- The ratios of composition and discrimination effects exhibit an inverted trend at least at the first part of the wage distribution in both 2010 and 2016.
- The relative wage discrimination, assessed by the ratio of discrimination effects to raw quantile wage differential, is the largest at the median.
- While, the relative wage composition, assessed by the ratio of composition effects to raw quantile wage differential, is the largest among low-wage workers
- The native/ non-native differences in general characteristics and occupation distributions are found to be generally the main contributors to the composition effects through the wage distribution in both 2010 and 2019.
- Returns to education is the most important contributor to discrimination effects at the top end of the wage distribution in 2016 is the differential.
- Differential in returns to general characteristics are found to play a key role in discrimination effects at the bottom and middle parts of the distribution in 2010.

- More light should be shed by Jordanian policymakers to this problem of discrimination more specifically against an increasing part of the non-native population which is the refugees.
- It is evident that the refugees in Jordan and elsewhere coming mainly from Syria since 2011 are bearing the double disadvantages of non-native and the refugee status.
- The government should direct more efforts to increase non-natives educational attainment and overcome the problem of non-native occupation segregation by reducing access barriers for non-natives and more specifically refugees to high-paying occupations and making some better and relevant regulations to guide occupational choices

Thank you

Questions?