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A Storm in A Teacup?

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Migrants from sub-Saharan Africa in Tunisia: a storm in a teacup ? *

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Abstract

This paper investigates the impact of sub-Saharan African immigrants on the Tunisian labour market, as well as their economic, social, and psychological integration patterns, with a focus on the migration influx since the Tunisian uprising of 2010-11. Using annual micro-level household labor force surveys and data from the last two population censuses on the concentration of immigrants by country of origin, we identify the impact of sub-Saharan Africans on the Tunisian labour market. Furthermore, the paper uses the first Tunisia Households International Migration Survey (Tunisia-HIMS) to understand the labor market results of sub-Saharan immigrants and their social integration compared to immigrants of other origin. Using a difference-in-differences (DiD) research design, we find a negative and significant immediate impact of sub-Saharan immigrants on the average annual earnings of local workers in micro-firms in the retail trade and food service sectors between 2011 and 2014. After 2014, there is a significant negative impact on employment in low value-added sectors, particularly in the building sector. The results of the Multidimensional Integration Index show that social and psychological integration is particularly challenging for sub-Saharan immigrants, especially for young people, the uneducated and women.

Keywords: *Sub-Saharan immigrants; Labour market; Unemployment; Wages; Multidimensional Integration; Tunisia.*
JEL Codes : *J15; J21; J31; J61; F22.*

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1 Introduction

The issue of migrants from sub-Saharan Africa in Tunisia has been the subject of a fierce debate, widely reported by national and international media since the Arab uprisings of 2011. The outbreak of the Libyan conflict at the end of February 2011 forced hundreds of thousands of foreign workers to move to Tunisia in the hope of returning to their countries. The lack of control over Tunisian borders in the days following the revolution allowed several thousand people of different nationalities to leave Tunisia for Europe, particularly Italy. The re-establishment of Tunisia's border control and the stricter measures implemented by the European Union to combat irregular migration have gradually transformed Tunisia from a transit country into a host country for many sub-Saharan Africans. According to the Tunisia National Institute of Statistics, the number of sub-Saharan immigrants stood at just 7,000 in 2010, a figure that tripled to 21,000 in 2021 (INS, 2021). However, estimates from the Department of Economic and Social Affairs of the United Nations indicate a much higher number, suggesting that around 57,000 sub-Saharan immigrants were living in Tunisia in 2019 (MMC, 2021).

As a small developing economy experiencing economic and social instability since the Arab uprisings of 2011, Tunisia faces significant challenges due to the rapid increase of sub-Saharan immigrants. Their social and economic integration in Tunisia, as well as their impact on local labour markets, raise significant concerns. The influx of migrants has increased the overall labor supply, the effects of which depend on the degree of substitutability or complementarity between immigrant labour, local labour, and other factors of production (Amuedo-Dorantes and De La Rica, 2011; Borjas, 2003; Borjas, Grogger, and Hanson, 2008, 2011; Card, 2001; Grossman, 1982; Ottaviano and Peri, 2012). Indeed, as documented in many studies, the impact of immigration on native workers is influenced by two opposing forces : the degree of substitutability between natives and immigrants, and the increased demand for native workers as immigrants reduce the cost of production and output expands (Ozden and Wagner, 2014). Despite the extensive empirical literature on the impact of immigration on native labor market outcomes, following the influential work of Altonji and Card (2018), Card (2001), and Borjas (1995), the findings remain inconsistent and inconclusive (Edo, 2019). By synthesizing more than 40 empirical studies, Edo (2019) sought to clarify the nature of the relationship between immigration and na-

tive labor market outcomes. The review led to the following results: In the long run, the average effect of immigration on native wages is neutral or positive, depending on the degree of substitution between natives and immigrants. For example, Ottaviano and Peri (2012) show that the arrival of immigrants in the United States between 1990 and 2006 increased the average wage of native workers but reduced the relative wage of law-skilled native workers. In France (Edo and Toubal, 2015), Germany (d'Amuri, Ottaviano, and Peri, 2010), and Switzerland (Gerfin and Kaiser, 2010), immigration reduced the wage inequality between low- and high-educated workers. However, Borjas (2014) found the opposite result for the United States, where immigration increased wage inequality between low- and high-educated workers. A negative impact of immigration on native labor market outcomes was also found by Edo and Özgüzel (2023) and Card (2001). Edo and Özgüzel (2023) show, for example, that low-educated native workers across European regions experience employment loses due to immigration, whereas high-educated workers are more likely to experience employment gains. Card (2001) argues that immigrant inflows to the United States during the 1980s reduced the wages and employment rates of low-skilled natives in traditional gateway cities such as Miami and Los Angeles by 1-3 percentage points. It should be noted that most studies cited above on the effect of immigration on native labor market outcomes have been conducted in developed countries, with limited empirical literature focusing on developing economies. This gap may be attributed to the tendency of developing countries to experience higher emigration rates than immigration. Furthermore, the absence of specific surveys on migratory patterns in these developing countries hampers a comprehensive analysis of the effects of immigration's effects on the native population.

The Tunisian authorities still lack a comprehensive strategy to manage the inflow of migrants from sub-Saharan Africa.[1] Post-2011 governments have focused on security and short-term measures, neglecting the economic, social, and psychological integration of these immigrants and their impact on native labour market. Given these challenges, this study aims to inform the debate on the relationship between immigration and the local

[1] In August 2013, Tunisia launched its first draft of the National Migration Strategy (SNM). This draft has been revised twice, in 2015 and 2017, respectively. The SNM includes five pillars (Ensari, Kasavan, and Thenot, 2023) : i) strengthening governance in migration management; ii) protecting the rights and interests of Tunisian migrants and facilitate their links to Tunisia; iii) the inclusion of migration in development; iv) promoting regular migration; and v) protecting the rights of migrants in Tunisia, including asylum seekers and refugees.

labour market in developing countries. Specifically, the paper examines the impact of immigrants, particularly those from sub-Saharan Africa, on annual average earnings per Tunisian worker, employment, unemployment, and labour market participation. Additionally, the study explores how well immigrants integrate into the local labour market and social fabric, including access to social services, security, and social protection.

In particular, we seek to answer the following question: Do sub-Saharan migrants pose a potential threat to the local labor force? Do they have access to various services in the same way as the local population? These questions are legitimate because migrants are generally young men with low levels of education who, due to their precarious and sometimes irregular situations, are willing to work for significantly lower wages than the local labor force. They may also accept more difficult working conditions than the local population, such as no contract, no vacations, no social security, and longer working hours per day. As a result, these migrants are a target for both the formal and informal sectors, potentially reducing job opportunities and increasing competition with the unskilled Tunisian labor force. The rest of the paper proceeds as follows: The next section presents the data and identification strategy. The main results and robustness tests are presented in Section 3, and the final section concludes with some policy implications.

2 Data and methodology

2.1 Data and descriptive statistics

This study combines three main sources of data described below.

2.1.1 Census data

To identify the geographical concentration of sub-Saharan Africa immigrants at two different administrative levels (governorate and delegation), we use the last two population censuses date (2004 and 2014). These censuses provide detailed information regarding the nationality and precise location of each immigrant. Immigrants were grouped into five categories according to their origins: immigrants from North African countries (Algeria, Egypt, Libya, Morocco, and Sudan), those from Arab countries (Syria, Palestine, Saudi Arabia, and Oman), immigrants coming from sub-Saharan African countries, those from

European countries, and others from the rest of the world (other immigrants).

In 2004 the foreign population in Tunisia was estimated at 35,192 (0.36 percent of the total population), compared to 37,954 in 1994 and 38,040 in 1984 (see A.1 in the appendix for the distribution of immigrant by country of origin). Of this group, 63 percent came from North Africa (35 percent) and Europe (28 percent), while 24 percent were from sub-Saharan Africa, primarily residing in the Greater Tunis area (94.4 percent) (Table 1).

Table 1: Immigrants' characteristics (15-64 yrs.), (1999-2004)

	North African Countries	Arab. Countries	Sub-African countries	European countries	Others immigrants	All immigrants
Gender						
Male	55.4	70.1	62.9	48.4	59.3	56.2
Female	44.6	29.9	37.1	51.6	40.7	43.8
Marital status						
Single	49.9	21.4	27.8	22.9	22.3	33.8
Married/others	50.1	78.6	72.2	77.1	77.7	66.2
Age groups						
15-24 yrs.	26.5	45.7	38.7	10.3	21.7	25.2
25-34 yrs.	41.7	22.3	26.8	25.5	27.6	31.5
35-44 yrs.	20.4	16.8	15.8	27.5	24.1	21.5
45-54 yrs.	08.9	11.3	14.4	19.9	17.6	14.2
55-64 yrs.	02.6	03.9	04.4	16.8	09.0	07.6
Region						
Great Tunis	59.4	74.8	94.4	55.0	73.8	65.7
North East	13.0	06.9	01.8	13.7	05.2	10.4
North West	01.4	00.8	01.8	03.7	03.4	02.1
Central East	21.2	06.9	00.1	18.2	07.5	15.2
Central West	00.3	05.3	01.6	03.0	04.1	01.7
South East	03.9	05.3	00.3	04.2	01.4	03.4
South West	00.7	0	0	02.2	04.6	01.5
Total number of immigrants	3057	381	2093	2469	819	8819

Note: North African countries include Algeria, Morocco, Mauritania, Egypt, Libya, and Sudan; Arab. Countries (Syria, Palestine, Saudi Arabia, Oman, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Qatar, and Yemen); Sub-African countries (Senegal, Côte d'Ivoire, Togo, Mali, Burkina Faso, Niger, Nigeria, Chad, Benin, Cameroon, Djibouti, Ethiopia, Ghana, Kenya, Liberia, Uganda, Other Sub-African countries); European countries (France, Italy, Germany, United Kingdom, Spain, Belgium, Switzerland, Portugal, Austria, Bulgaria, Hungary, Netherlands, Romania, other European countries).

By 2014 the number of foreign residents increased by approximately 17,808, reaching 53,000, reflecting a 33.6 percent growth rate compared to the 10.8 percent growth rate of the total population during the same period. Most individuals arrived in Tunisia following the 2011 uprisings (see Table A.1 for more details). Over the reference period of 2009-2014, around 14,400 individuals (of which 10,867 are aged between 15 and 64 years) have arrived in Tunisia, specifically after the 2011 popular uprisings (Table 2). Although the proportion of SSA immigrants has not changed since 2004, there have been some changes in their characteristics. First, SSA immigrants tend to be younger on average (84.5 percent are aged between 15 and 34 years compared to 65.5 in 2004), and more concentrated in

the 15-24 year-old brackets. Second, there has been an increase in the proportion of male (67 percent compared to 63 percent in 2004) and single SSA immigrants (46.7 percent in 2014 vs. 27.8 percent in 2004). Third, the Centre-East region has emerged as the second destination for SSA immigrants, following Great Tunis, accounting for 4.2 percent of the total, a substantial increase from the 0.1 percent reported in 2004.

Table 2: Immigrants' characteristics (15-64 yrs.), (2009-2014)

	North African Countries	Arab. Countries	Sub-African countries	European countries	Others immigrants	All immigrants
Arrived year						
2009	1.4	0.3	0.9	2.0	0.5	1.3
2010	8.9	5.2	11.4	13.1	7.1	10.2
2011	18.6	14.7	18.0	16.5	19.6	17.7
2012	23.1	21.7	25.2	22.5	21.2	23.3
2013	31.6	37.8	34.7	29.4	37.9	32.6
2014	16.5	20.3	9.8	16.6	13.8	15.0
Gender						
Male	56.4	61.6	67.0	45.3	47.5	56.4
Female	43.6	38.4	33.0	54.8	52.5	43.7
Marital status						
Single	33.3	25.9	46.7	25.8	34.7	32.3
Married/others	66.7	74.1	53.3	74.2	65.3	67.7
Age groups						
15-24 yrs.	23.5	27.6	52.9	08.8	15.9	27.2
25-34 yrs.	33.1	29.9	31.6	25.9	36.3	31.0
35-44 yrs.	25.5	21.5	8.1	25.2	25.4	20.9
45-54 yrs.	11.9	13.8	5.1	19.9	14.0	12.3
55-64 yrs.	6.1	7.2	02.3	20.2	8.4	8.6
Region						
Great Tunis	65.9	69.4	90.6	64.8	61.4	69.1
North East	9.7	5.7	1.8	11.3	3.2	8.4
North West	1.4	17.4	0.4	2.0	6.0	1.6
Central East	17.3	2.0	4.2	15.8	16.8	14.9
Central West	0.8	2.0	0.2	0.7	5.9	1.1
South East	4.4	3.6	2.2	5.0	06.3	04.2
South West	0.5	0	0.7	0.5	0.5	0.7
Total number of immigrants	4,476	756	2,635	2,518	481	10,867

Note: North African countries include Algeria, Morocco, Mauritania, Egypt, Libya, and Sudan; Arab. Countries (Syria, Palestine, Saudi Arabia, Oman, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Qatar, and Yemen); Sub-African countries (Senegal, Côte d'Ivoire, Togo, Mali, Burkina Faso, Niger, Nigeria, Chad, Benin, Cameroon, Djibouti, Ethiopia, Ghana, Kenya, Liberia, Uganda, Other Sub-African countries); European countries (France, Italy, Germany, United Kingdom, Spain, Belgium, Switzerland, Portugal, Austria, Bulgaria, Hungary, Netherlands, Romania, other European countries).

2.1.2 Tunisian National Survey on Population and Employment

Our second source of data is the Tunisian National Survey on Population and Employment (*Enquête Nationale sur la Population et l'Emploi* - ENPE), publicly compiled and published annually by the National Institute of Statistics (INS) since 2000. Since the number of sub-Saharan Africa immigrants remained relatively small in 2014 and began to significantly

increase thereafter, we consider 2014 as a second treatment date. More specifically, we combine micro-data from a series of ENPE survey spanning the years before and after 2014 (the second treatment date). The two ENPE consecutive waves of 2012 and 2013 are set as pre-immigration period and those relating to 2015, 2016 and 2017 cover the post-immigration period. The ENPE is structured as a repeated cross-sectional survey, with no panel dimension, involving 145,000 households and about 480,000 individuals, providing a representative sample at both the national and regional level (governorate).[2] The surveys include information of individual and household socio-demographics, living conditions, education, and economic characteristics, labor market history and actual status, and wages for employees. It allows to identify the location of individuals up to the governorate level for both rural and urban areas.[3] encompasses only about twenty variables (no information are available about immigrants).[4] Despite this limitation, these variables adequately cover the essential characteristics required for our analysis to test the impact of immigration on Tunisian labor market.

Having wage data is crucial for our study. In fact, an increase in immigration inflows can grow the labor supply and potentially depress wages, particularly for unskilled jobs. Although the ENPE questionnaire includes one section on wages (payment mode, total wage, premiums, in-kind benefits, etc.), the online available data does not cover them. To overcome this limitation at the level of our individual ENPE survey data, we used aggregated delegation-level wage bill from the Tunisian Business Register (*Répertoire National des Entreprises* – RNE)[5] covering three years before and three years after the 2011 Uprising. For each year, we have aggregated delegation wage for firms with less than 6 employees and those with 6 or more employees operating in the following sectors: industry, construction, trade, transport and storage, accommodation and restaurants, and other activities (RNE data set on wage bill does not cover the agricultural sector).[6]

[2]In 2004, the ENPE was harmonized with the concepts of the International Labor Organization (ILO). Later in 2011, the INS started to conduct the ENPE quarterly (see OAMDI (2016) for more details).

[3]The survey lacks representativeness at the delegation level (an administrative division smaller than the governorate).

[4]Including location (governorate and area of residence), genre, age, marital status, labor market status (employed, unemployed, or out of labor market), sector of activity, the weight of the sample, and the duration and reason for unemployment.

[5]The RNE is an annual census providing information on employment, age, and main activity of all registered private non-agricultural firms, as well as information on publicly-owned enterprises.

[6]The employment size was used as one of the selected criteria retained by the Expert Group on Informal Sector Statistics (the Delhi Group) to enhance the international comparability of informal sector statistics. It was about 5 employees for Panama, 6 for Brazil and Tunisia, 10 for the United Republic of Tanzania, Turkey

2.1.3 Tunisia Households International Migration Survey

Our third data source used in this analysis is the first national survey on International Migration (Tunisia Households International Migration Survey – 2021 Tunisia - HIMS). This survey, conducted as part of the Mediterranean program of coordinated surveys on international migration (MED-HIMS), holds crucial importance as it contributes to improve the landscape of international migration in Tunisia. The 2021 Tunisia-HIMS specifically aims to bridge data gaps and pinpoint relevant indicators, thereby contributing to the enhancement of the Tunisian information system on international migration. Notably, the survey provides a dynamic snapshot of migration patterns in Tunisia, offering valuable insights into the evolving demographic composition of the foreign population. According to the definition used by the Tunisia-HIMS survey, an immigrant or foreign resident in Tunisia is a person who has been residing in Tunisia for six months or more, or who expects to stay for more than six months, whatever their residency situation, regular or irregular (INS, 2021).

The 2021 Tunisia-HIMS reveals several trends. Out of an estimated population of 11.7 million in January 2020, 58,990 were foreigners (about 0.5 percent of the total population). Compared to the 2014 census, this represents an increase of approximately 6,000 immigrants, marking an 11.4 percent growth rate, compared to a 6.2 percent growth rate in the general population. In addition, notable differences in the composition of foreign citizens in Tunisia are evident when comparing the figures to the 2014 census. Specifically, there has been a decline in the number of European citizens, dropping from 15,000 to approximately 11,000. Conversely, the number of African nationals, excluding those from Maghreb countries, has seen a substantial increased since 2014. This category has surged from 7,200 to 21,466 individuals (INS, 2021).

Table 3 reports the characteristics of immigrants aged 15 and over according to their country of origin. As can be seen in the Table, nearly 32 percent are of Maghreb origin, 30 percent from sub-African, and 13 percent are from European countries. Among sub-Saharan immigrants aged 15 and older, 67 percent are men, 68 percent are aged 15–29, and 77 percent are single. Approximately 98 percent of sub-Saharan immigrants entered Tunisia after 2011. They are primarily concentrated in Greater Tunis (54 percent) and the

and India, and 11 for Ethiopia and Mali (see Amara (2016) for more details).

central east (41 percent). Ivorians represent one-third of sub-Saharan nationals, while individuals from the Democratic Republic of Congo, Guinea, and Mali each account for about one-tenth (INS, 2021).

Table 3: Immigrants' characteristics (15 and more yrs.), Tunisia-HIMS-2021

	North African Countries	Arab. Countries	Sub-African countries	European countries	Others immigrants	All immigrants
Gender						
Male	36.14	32.31	66.79	51.37	50.66	50.26
Female	63.86	67.69	33.21	48.63	49.34	49.74
Marital status						
Single	53.19	60.93	77.40	26.58	62.10	59.03
Married/others	46.81	39.07	22.6	73.42	37.9	40.97
Age groups						
15-29 yrs.	19.60	46.66	67.53	4.63	39.23	36.89
30-44 yrs.	33.42	05.61	28.77	22.32	31.09	29.25
45-54 yrs.	44.15	20.89	00.79	12.7	13.95	14.57
55 and more	19.24	26.84	02.9	60.35	15.73	19.29
Arrived year						
Before 1970	4.54	0.00	0.00	0.55	0.57	1.57
Between 1970 and 1989	7.30	16.97	0.00	2.02	4.86	4.22
Between 1990 and 2010	21.39	8.25	1.86	25.89	11.03	13.53
After 2011	66.75	74.79	98.14	71.54	83.54	80.60
Region						
Great Tunis	48.68	29.19	53.92	39.35	48.06	48.26
North East	6.20	4.39	2.50	24.08	8.00	7.82
North West and Central West	20.45	59.74	0.00	4.78	5.12	10.11
Central East	17.20	6.68	40.74	20.04	36.41	28.52
South	7.47	0	2.84	11.76	2.41	5.30
Total number of immigrants	16,988	1,592	15,470	6,961	12,295	53,306

Note: North African countries include Algeria, Morocco, Mauritania, Egypt, Libya, and Sudan; Arab. Countries (Syria, Palestine, Saudi Arabia, Oman, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Qatar, and Yemen); Sub-African countries (Senegal, Côte d'Ivoire, Togo, Mali, Burkina Faso, Niger, Nigeria, Chad, Benin, Cameroon, Djibouti, Ethiopia, Ghana, Kenya, Liberia, Uganda, Other Sub-African countries); European countries (France, Italy, Germany, United Kingdom, Spain, Belgium, Switzerland, Portugal, Austria, Bulgaria, Hungary, Netherlands, Romania, other European countries).

2.2 Methodology

2.2.1 Identification strategy

Our empirical strategy relies on comparing individual or aggregated labor market outcomes including employment rate, unemployment rate, annual earnings per worker, and labor market participation, between delegations exposed to larger immigrant inflows (treated group) and those with low concentrations of immigrants (untreated or control group), before and after the two dates of 2011 and 2014. Both dates are strategically significant for understanding migratory dynamics in Tunisia. First, 2011 marked the onset of a substantial influx of sub-Saharan African migrants, primarily driven by the civil war in Libya. Ac-

cording to Boubakri (2015), the conflict triggered massive population displacement. Specifically, 768,372 migrant workers fled Libya during this period, with Tunisia emerging as a critical destination. Of these migrants, 345,238 individuals—representing 45 percent of the total displaced population—entered Tunisia, while an additional 242,797 made their way to Egypt.

Second, the speech delivered by Moncef Marzouki, the former interim President of the Republic of Tunisia (2011–2014), on Thursday, June 5, 2014, at the "Tunisia Forum" explicitly emphasized Tunisia's aspiration to deepen its engagement with the African continent. As a follow-up, a series of concrete measures were implemented to simplify visa procedures for African nationals. Notably, on Monday, April 20, 2015, during a Ministerial Council meeting, Tunisia announced the abolition of visas for several countries, effective May 1, 2015. These countries included Burkina Faso, the Democratic Republic of Congo, Congo-Brazzaville, Botswana, and the Central African Republic.

As discussed above, individual data from both censuses have been used to identify the two groups of delegations (exposed and not exposed to immigrant inflows). More specifically, for each of the five groups, we calculate the proportion of immigrants in the delegation's total population for 2004 and 2014. Our analysis is limited to the working-age population aged between 15 to 64 years. Then, we calculate the difference in these proportions between the two dates. Compared to 2004, delegations that have experienced a significant increase in the number of immigrants among their native population are considered as treated group. While, delegations with a relatively low proportion of immigrants will be included in the control group. Table 4 reports the evolution of the share of immigrants among working-age between the two census dates, while Figures 1 and 2 present their spatial distribution over the 264 delegations in 2004 and 2014, respectively.

Although the overall share of immigrants increased slightly, growing from 0.24 percent in 2004 to 0.35 percent in 2014, immigrants from North African and Sub-Saharan African countries are more concentrated in 2014. For these specific groups, the peak values rose significantly, reaching 1.28 percent and 1.66 percent, respectively, up from 0.68 percent and 0.77 between 2004 and 2014. In contrast, the concentration of European immigrants declined (from 0.88 in 2004 to 0.84 in 2014). Meanwhile, the concentration of Arab immigrants experienced a slight increase, moving from 0.11 to 0.15 from 2004 to 2014.

Table 4: Descriptive statistics of the immigrants' share at the delegation level, 2004 and 2014 censuses

	Mean		Standard Error		Min		Max	
	2004	2014	2004	2014	2004	2014	2004	2014
North African	0.05	0.07	0.08	0.14	0	0	0.68	1.28
Arab. countries	0.01	0.01	0.02	0.02	0	0	0.11	0.15
Sub-African	0.03	0.03	0.10	0.13	0	0	0.77	1.16
European	0.04	0.04	0.10	0.08	0	0	0.88	0.84
Others	0.01	0.01	0.03	0.02	0	0	0.24	0.14
All immigrants	0.24	0.35	0.39	0.58	0	0	3.02	6.19

Figure 1 shows the spread of immigrants aged between 15 and 64 years across 264 delegations in Tunisia according to the 2004 official census data. Coastal delegations, especially those in the chef town of the governorate, have the highest density of immigrants with 3.02 percent of the delegation native population. The delegations of the cities of Tunis, Ariana, Sfax and Sousse have the highest density of sub-African immigrants, while the density of those immigrants in the interior delegations of Tunisia is nearly nonexistent. we can also note a sizable concentration of immigrants from the Maghreb along the borders with Algeria, particularly in the delegations of El Kef governorate.

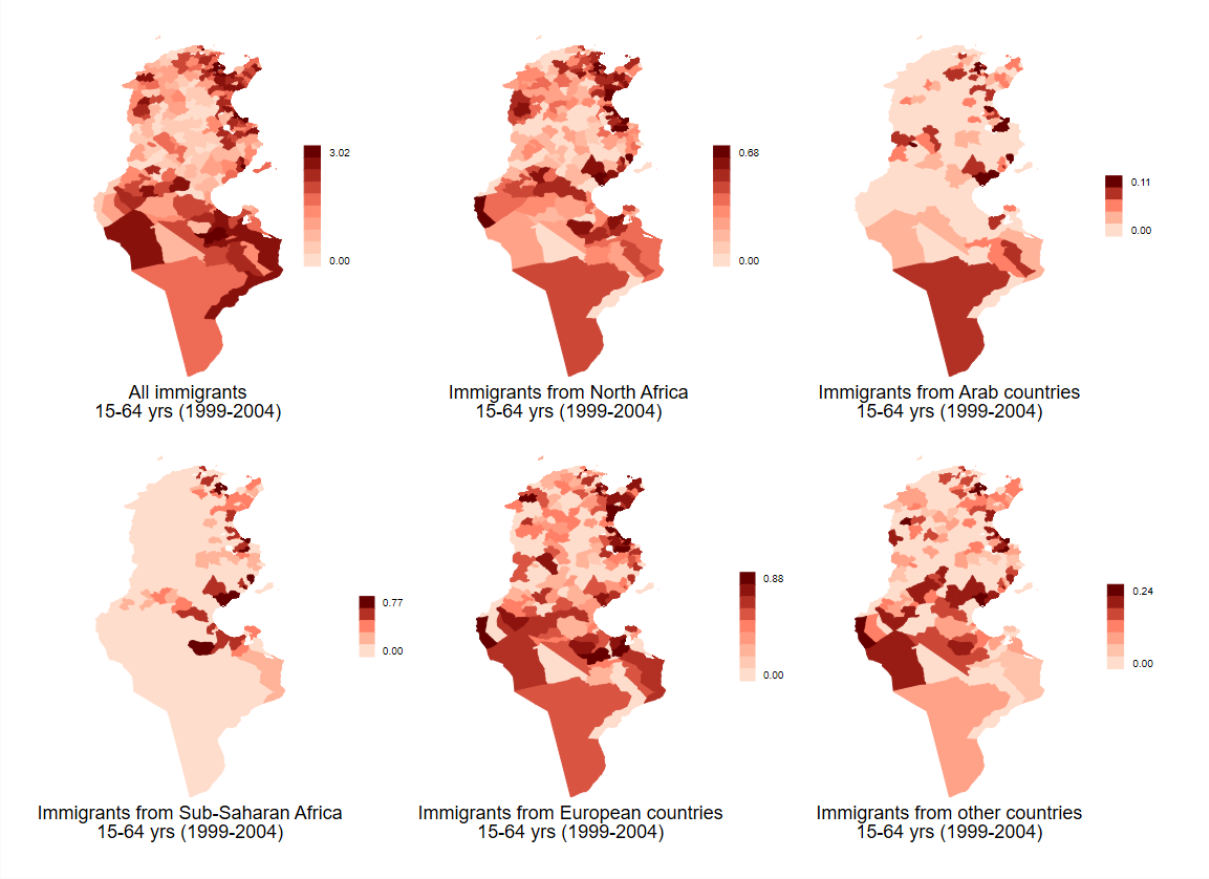


Figure 1: Share of immigrants by delegation and country of origin in 2004, 15-64 yrs.

Similar to the pattern observed for immigrants' distribution by delegation in 2004, the overwhelming majority of immigrants are concentrated in the coastal delegations of Tunisia in 2014. Notably, the concentration of sub-Saharan and North African immigrants exhibits significant increases when compared to other groups, reaching, respectively, 1.16 percent and 1.28 percent of the total local population, compared to 0.77 percent and 0.68 percent in 2004.

The distribution of immigrants across the coastal delegations can be explained by several factors. On the one hand, the Tunisian coat area concentrates the majority of economic activity and infrastructure (freeways, railroads, universities, hospitals, etc.). These factors mainly benefit regular immigrants. According to Borjas (2003) and Card (2009), those economic opportunity factors play a significant role in the endogenous selection of the immigrants' choice of destination (Bağır, 2018). On the other hand, the Tunisian seaboard is an important routes of transit (also known as the Sicily Channel Crossing) for irregular immigrants, coming mainly from the Maghreb and from Sub-Saharan Africa, who are looking

to join the European Union countries. The Tunisian coasts is divided into two distinct zones of traffic: the capital Tunis in the northeast, and Sfax at the central East (Sørensen, 2006). Their location as coastal cities opposite the Italian island of Lampedusa, make them meeting points for migrant trafficking networks and illegal crossings to Italy (Boubakri, 2024).

Figure 2: Share of immigrants by delegation and country of origin in 2014, 15-64 yrs.

As mentioned above, to test the impact of immigrants on the local labor market after 2014, we used data from the ENPE surveys. As these surveys are not representative at the delegation level, we use the same methodology as before but at the governorate level (a higher administrative division than the delegation) to identify the two groups (governorates exposed and not exposed to immigrant inflows in 2014). Figure 3 shows the immigrants' distribution across the 24 governorates of Tunisia in 2014 (see Figure A.1 in the appendix for the distribution of immigrants in 2004). Tunis, the capital, has the highest density of immigrants across all groups, followed by Ariana (bordering the capital). Density distributions by group show that sub-Saharan immigrants are mainly concentrated

in the following four governorates: Tunis and Ariana in the north, and Sousse and Sfax in the center. These four governorates form the treatment group, while the other coastal governorates (Ben Arous, Monastir, Mahdia) form the control group. In addition to these arguments, our choice of control group is also guided by recent work on the presence of sub-Saharan immigrants in Tunisia. For example, according to Boubakri (2024), Sfax and Souse, the second and third Tunisian cities in term of population after the capital Tunis, have attracted several foreigners, the vast majority being Sub-Saharans.

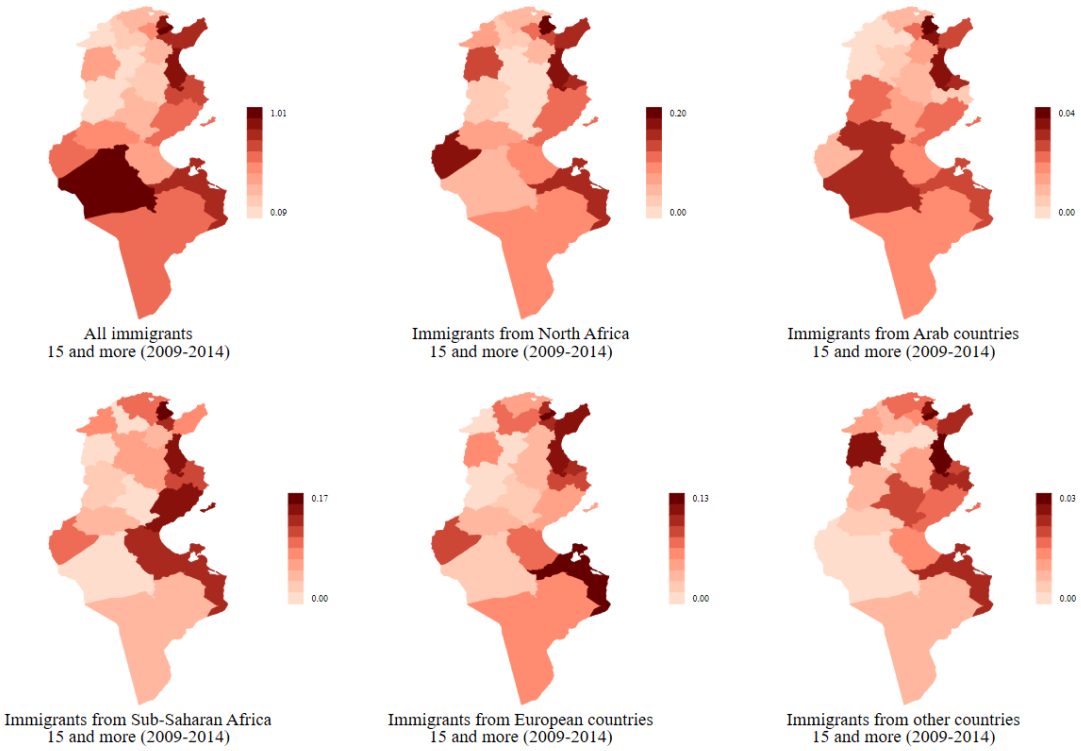


Figure 3: Share of immigrants aged 15 and over by governorate and country of origin in 2014

The strongly represented category in Sfax is the irregular migrants who shoes to settle in the city for economic reasons (workers, cleaning ladies, adventures, graduate students, who extend their stay in Sfax to search a job). In addition to this category of immigrants, Boubakri (2024), adds that there is also a large proportion of immigrants composed of refugees and asylum seekers, who have left their home because of the persistence of conflicts in the horn of Africa, in the Sahel countries up to the Gulf of Guinea. The city of Sousse, like that of Sfax, attracts an increasing number of workers, especially sub-Saharans, working in informal urban services such as hotels, restaurants, construction, industry, se-

curity guards at gas stations and parking lots, car washing, and home services (Boubakri, 2024).

2.2.2 Econometric specification

To evaluate the impact of immigrants on the local labor market outcomes, we employ a difference-in-differences (DiD) estimation, at both regional (delegation) and individual levels. The DiD methodology is widely used in the recent empirical literature to test the causal relationship between immigration and natives' labor market outcomes (Aksu, Erzan, and Kırdar, 2022; Ceritoglu, Yunculer, Torun, and Tumen, 2017; Edo, 2019; Fallah, Krafft, and Wahba, 2019; Peri, 2016; Tumen, 2016), as well as the impact of refugees on housing market (Alhawarin, Assaad, and Elsayed, 2021; Pavlov and Somerville, 2020), education (Assaad, Ginn, and Saleh, 2023), and political participation (Altındağ and Kaushal, 2021; Fisunoğlu and Sert, 2019). See Edo (2019); and Becker and Ferrara (2019), for a detailed survey of recent on the consequences of immigration. Our first model, to be estimated at delegation level, is justified by the fact that some outcome variables are not available at individual level, in particular annual earnings. Following the empirical literature (e.g., Tumen, 2016), we estimate the following specification using aggregated data at the regional level:

$$y_{dt} = \beta_0 + \beta_1.T_d + \beta_2.Post2011_t + \beta_3(Post2011_t.T_d) + \gamma' X_{dt} + \varepsilon_{dt} \quad (1)$$

where y_{dt} is the outcome variable (employment rate, unemployment rate, labor market participation rate, and the average of annual earnings per worker and by sector) at the delegation d at time t (2004, 2014). T is a dummy variable taking 1 for delegations hosting immigrants, and zero otherwise, and $Post2011$ is a dummy variable that takes 1 for post-treatment period (t = 2014) and zero for pre-treatment period (t = 2004). X_{dt} is a vector of exploratory variables including age groups, the delegation share of population according to the education level, the delegation share of population according their marital status, the delegation's urbanization rate, and the share of male. ε_{dt} is the unobserved error term. The key coefficient in equation (1) is β_3 representing the impact of the immigrant influx on the delegation's labor market outcomes for native population aged between 15 and 64 years. When considering average delegation's earnings per worker (in log) as outcome,

equation (1) is estimated for each sector (industry; building civil engineering; trade; transport and communication; accommodation and food services; and other activities), and for both firms with less and more than 6 employees.

For unemployment, employment and labor market participation, we follow Ceritoglu et al. (2017) and Fallah et al. (2019) to estimate the following equation at the individual level:

$$y_{igt} = \alpha_0 + \alpha_1 D_t + \alpha_2 T_i + \delta(D_t.T_i) + \theta' X_{igt} + \phi Z_{gt} + \mu_{igt} \tag{2}$$

where i, g, and t index individual, governorate, and year, respectively. T is a dummy variable taking 1 for treated governorate and 0 in the control governorate, and D is a dummy variable taking 1 in the post-immigration period and 0 in the pre-immigration period. y is the individual's status on the local labor market, X is a vector of individual-level characteristics (age, education level, marital status, ...), Z is a vector of regional-level (governorate) characteristics, and μ is an error term.

For both regional (equation 1) and individual (equation 2) levels, we begin by estimating a single DiD with no covariates. This basic estimation assumes that time-invariant unobserved heterogeneity exclusively contaminates the identification strategy (Villa, 2016). Thereafter, we introduce the control covariates - single DiD with covariates - for both levels (X_{dt} for equation 1 and X_{igt} and Z_{gt} for equation 1, respectively). Finally, we employ the combined entropy balancing reweighting technique and difference-in-differences method (DiD with entropy balancing) to reduce any imbalance on observed covariates between treatment and control groups (see Hainmueller (2012) for more detailed on entropy balancing for causal effects).[7]

[7] According to Hainmueller (2012), entropy balancing relies on a maximum entropy re-weighting scheme to adjust unit weights. This technique ensures that the re-weighted treatment and control groups satisfy a potentially large set of predetermined balance conditions that include information about known sample moments. We have also used, in our study, the Kernel propensity-score matching combined with the DiD matching method (PSM-DiD) to reduce any imbalance between treatment and control groups. Firstly suggested by Heckman, Ichimura, and Todd (1998), DiD matching extends the conventional DiD estimator by defining outcomes conditional on the propensity score. In other words, PSM-DiD aims to design two statistically similar groups, treated and untreated/control, based on the list of available covariates that are assumed to drive selection bias (for more details, see also, Caliendo and Kopeinig, 2008; Smith and Todd, 2005). Compared to the DiD matching method, the entropy balancing technique obviates the need for continual balance checking and iterative searching over propensity score models. In addition, matching and propensity score methods require finding the correct model specification and often fairly large samples (Hainmueller, 2012). Using two real data settings, Hainmueller (2012) shows that compared to other methods (matching or weighting on propensity score that is estimated with a probit regression (PSM and PSW), and Mahalanobis distance matching on the estimated propensity score and orthogonalized covariates (PSMD)), entropy balancing delivers a high degree

2.2.3 Immigrant integration : a Multidimensional approach

The substantial influx of immigrants since 2011, specifically from sub-African countries, and their clustering in four main coastal cities (Tunis and Ariana in the north, and Sousse and Sfax in the center), raises significant challenges for Tunisia as a host country as well as for the hosting communities that are supposed to satisfy the ongoing needs of their populations as well as those of the immigrants. Their integration into the city's economic and social fabric is becoming a matter of urgency for policymakers and practitioners, especially for a country that hasn't experienced this kind of influx like Tunisia.

A number of measures have been proposed in the literature to test the degree of migrants' integration in their country of residence. Recently, the International Organization for Migration (IOM), in partnership with the Immigration Policy Lab (IPL), developed a multidimensional approach – the IPL integration Index – to measure integration outcomes (IOM, 2023). The IOM defines "integration as the degree to which migrants have the knowledge and capacity to build a successful, fulfilling life in the host country". The IPL integration index captures six key dimensions of migrant integration : economic, social, political, psychological, linguistic, and navigational dimensions.

Following IOM's practical guidance on the design, implementation and monitoring of integration assistance, we have developed a Multidimensional Integration Index (M2I) specifically designed to assess the degree of immigrant integration in Tunisia. The methodology used for the M2I is based on the IPL integration Index, as well as on the Multidimensional Poverty Index (MPI) developed by the Oxford Poverty and Human Development Initiative (OPHI) (see Alkire, Kanagaratnam, and Suppa (2020) for more details). Based on the Tunisia-HIMS 2021 survey, we have identified a set of 12 indicators covering three dimensions (economic, social and psychological) of the 6 dimensions captured by the IPL index (Table 5).

of balance, despite the low computational cost (the weighting solution is obtained within seconds). Note that in our study, we only present the results of the entropy balancing reweighting technique, but the PSM-DiD results are also available and can be shared.

Table 5: Multidimensional Integration Index (M2I) dimensions and indicators

Dimension (as defined by IOM 2023)	Indicator (based on Tunisia-HIMS 2021)
Economic: "Captures income, employment, satisfaction with employment situation and the ability to meet different levels of unexpected expenses."	1. Having a job (= 1 if yes) 2. Current work situation is better or unchanged (= 1 if yes) 3. Having a higher level of education (= 1 if yes)
Social: "Captures social ties and interactions with nationals in the host country, as well as bridging social capital as evidenced by participation in organizations with nationals."	4. Having the intention of staying in Tunisia (= 1 if yes) 5. Having healthcare insurance (= 1 if yes) 6. Having excellent/good neighborhood attitude (= 1 if yes)
Psychological: "Captures respondents' feeling of connection with host country, their wish to continue living there and their sense of belonging."	7. Be treated with respect (= 1 if yes) 8. Not to be treated unfairly 9. Some people think they're better than you (= 1 if no) 10. Being subjected threats or harassment (= 1 if no) 11. Racial/Color discrimination (= 1 if no) 12. Heard people making comments about immigrants (= 1 if no)

Note: Based on IOM, (2013) and Tunisia-HIMS (2021).

3 Results and discussion

We now turn our main focus in this study and investigate the impact of the arrival of immigrants, specifically those from the Sub-Saharan Africa, on local labor market outcomes (average annual earnings, employment and unemployment rates, and labor market participation). The results are presented in three steps. First, the results from the difference-in-differences specifications at delegation level with and without entropy balancing technique are presented. These results illustrate the immediate impact of the revolution (just after 2011) of immigrants on the Tunisian labor market. Next, we turn to the difference-in-differences specifications with and without entropy balancing at the individual level, after 5 years of revolution. Finally, some robustness exercises are addressed.

3.1 Impact of immigrants on local labor market outcomes: delegation level

Table 6 shows the results of the DiD estimates of our aggregate model, based on equation 1, with 2011 designated as the treatment date. For each group of immigrants, we analyze two local labor market outcomes at the delegation level : employment rates (the first five columns of Table 6) and unemployment rates (the last five columns). For each outcome variables, we provide three sets of results : the unconditional DiD (panel A), the conditional DiD (panel B), and the DiD combined with entropy balancing (panel C). Our particular focus lies on the estimated coefficient β_3 of equation 1 (β_3 column in Table 6), which reflects the impact of immigration on local labor market outcomes. The estimated coefficient of β_3 is unbiased under the assumption that time-varying delegation level vari-

ables did not change between the pre- and post-treatment period or that they changed in an identical manner in the control and treated delegations. Consider initially the results of the unconditional difference-in-differences (panel A) when the outcome variables are respectively the employment and unemployment rates at the delegation level. For both variables, the β_3 coefficients are not statistically significant and therefore show no effect of the presence of immigrants, whatever their origin, on the local labor market. When controlling for differences in education, age, marital status, sex ratio, and urbanization rate between control and treatment groups, we note that the arrival of immigrants of certain origins significantly decreases employment opportunities for native employees and consequently increases the unemployment rates (panel B). In particular, compared to the control group, delegations experiencing a significant increase in the their immigrant shares from North Africa and European countries reported a significant decrease in their employment rates by 3 percent and 2 percent, respectively. Inverse effects of equal magnitude were observed in the unemployment rates among the native population aged 15 to 64 years in these same delegations. There is no significant difference for the other immigrant groups. It's important to highlight that incorporating covariates (panel B) improves the goodness of fit of the estimated models compared to the models in panel A (unconditional DiD models). Otherwise, the results of panel B show that, in accordance with Roth, Sant'Anna, Bilinski, and Poe (2023); Heckman, Ichimura, and Todd (1997); Abadie (2005); Sant'Anna and Zhao (2020); and Callaway and Sant'Anna (2021), conditional on a rich set of covariates (X_{dt} in equation 1) it is possible to increase the credibility of the parallel trends assumption. Focusing on the estimated coefficient of the DiD with entropy balancing in Panel C, we observe that the estimated β_3 coefficients for North African and European immigrants are highly significant, with an improvement in the goodness-of-fit of estimated models compared to Panel B. As expected, these coefficients are negative when using the local employment rate of native population as the outcome variable and positive when unemployment rate is used as outcome variable. Our estimates suggest that the arrival of immigrants from Noth-African and European regions into the local labor market is associated with, respectively, 3 percent and 2 percent increase in unemployment rate and 3 percent and 2 percent decrease in local employment. Our results show that in the short-term (the first three years after the Tunisian revolution of 2011), sub-Saharan immigrants have no significant impact

on the local labor market.

Table 7 reports the results of the three sets of DiD specifications (unconditional – panel A, conditional – panel B, and with entropy balancing technique – panel C) for two types of firm : micro-firms with less than 6 employees and small and firms with 6 or more employees, known as Small, Medium, or Large enterprises (PMGE) according to the RNE (INS, 2022). The outcome variable used for the three Panels A, B, and C is the earnings per worker at the delegation level. As the results of DiD with entropy balancing outperform the unconditional and conditional DiD (Panel A and Panel B, respectively), we limit our interpretation to the Panel C of Table 7.

Panel C of Table 7 reports the estimates for our main coefficient of interest, β_3. It respectively measure the impact of immigrants on the average of earnings per worker for each group of firms : micro-firms and PMGE-firms. The estimates of β_3 are both negative and statistically significant at the 5 percent level for Sub-Saharan Africa and Europe, specifically for micro-firms with fewer than 6 employees. By combining the relative results for employment and unemployment rates in Table 6 with those in Table 7, we observe that, in the short term, delegations receiving a higher number of immigrants from Sub-Saharan Africa have not experienced a decline in employment, but they have notably adjusted wages downwards, particularly affecting employees in micro-businesses. However, delegations hosting additional labor from European countries recorded a drop in both employment rate and earnings per worker, particularly among those employed in micro-firms. Table 7 also shows that, unlike the findings for micro-firms, the arrival of immigrants, regardless of their origin, does not affect the earnings of native workers in small, medium, or large firms (the estimated coefficients of β_3 are not statistically significant for the 5 immigration groups).

Table 8 displays the results of the difference-in-differences estimation with entropy balancing by firm size and sector for the SSA immigrants using the earnings per worker as outcome variable (see A.3 for other immigrant groups). The majority of β_3 coefficients, measuring the impact of the arrival of foreign labor (SSA immigrants) on the average earnings of local workers, are negative, regardless the size of the company or sector of activity. For micro-firms, we find that SSA immigrants negatively impact the average earnings of native worker employed in one of the two sectors of retail trade and accommodation and

Table 6: Impact of immigrants on employment and unemployment rates (delegation level)

	Employment rate				Unemployment rate			
	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2
Panel A : Difference-in-Differences (unconditional DiD assumption)								
North African	-0.006	0.015*	-0.013	0.016	0.008	-0.014*	0.012	0.017
	(-0.77)	(1.86)	(-1.14)		(0.97)	(-1.78)	(1.08)	
Arab. countries	-0.014*	0.024***	0.003	0.046	0.015**	-0.024***	-0.003	0.048
	(-1.82)	(2.97)	(0.28)		(1.98)	(-2.99)	(-0.28)	
Sub-African	-0.012*	0.021**	-0.002	0.030	0.013*	-0.022**	0.002	0.033
	(-1.68)	(2.52)	(-0.19)		(1.86)	(-2.56)	(0.21)	
European	-0.013*	0.023***	0.001	0.039	0.015**	-0.022***	-0.002	0.040
	(-1.76)	(2.78)	(0.10)		(1.98)	(-2.69)	(-0.17)	
Others	-0.014**	0.026***	0.006	0.050	0.016**	-0.026***	-0.007	0.052
	(-2.16)	(2.99)	(0.50)		(2.37)	(-2.96)	(-0.53)	
Panel B : Difference-in-Differences with covariates (conditional DiD assumption)								
North African	0.020	0.025***	-0.029***	0.340	-0.018	-0.024***	0.029***	0.352
	(1.48)	(3.61)	(-3.03)		(-1.34)	(-3.53)	(3.00)	
Arab. countries	0.013	0.026***	-0.014	0.345	-0.012	-0.026***	0.015	0.357
	(1.04)	(3.84)	(-1.47)		(-0.93)	(-3.86)	(1.53)	
Sub-African	0.015	0.025***	-0.019*	0.339	-0.013	-0.025***	0.019*	0.352
	(1.18)	(3.48)	(-1.83)		(-1.06)	(-3.52)	(1.89)	
European	0.014	0.028***	-0.017*	0.347	-0.012	-0.027***	0.017*	0.358
	(1.11)	(4.07)	(-1.78)		(-0.95)	(-3.95)	(1.74)	
Others	0.012	0.028***	-0.012	0.347	-0.010	-0.028***	0.012	0.358
	(0.92)	(3.75)	(-1.11)		(-0.77)	(-3.69)	(1.09)	
Panel C : Difference-in-Differences using entropy balancing								
North African	0.019	0.025***	-0.028***	0.354	-0.017	-0.024***	0.027***	0.364
	(1.41)	(3.70)	(-2.89)		(-1.25)	(-3.59)	(2.83)	
Arab. countries	0.018	0.023***	-0.010	0.378	-0.015	-0.023***	0.009	0.388
	(1.39)	(3.39)	(-1.00)		(-1.19)	(-3.37)	(0.98)	
Sub-African	0.019	0.024***	-0.013	0.417	-0.016	-0.024***	0.013	0.426
	(1.45)	(3.58)	(-1.43)		(-1.27)	(-3.58)	(1.43)	
European	0.018	0.031***	-0.020**	0.372	-0.016	-0.030***	0.019**	0.381
	(1.37)	(4.64)	(-2.15)		(-1.17)	(-4.45)	(2.03)	
Others	0.018	0.030***	-0.017**	0.390	-0.015	-0.029***	0.016*	0.398
	(1.42)	(4.73)	(-1.97)		(-1.23)	(-4.60)	(1.86)	

Note: All covariates used in panel B and panel C, are at the delegation level. Covariates include age groups, educational attainment, marital status, sex ratio, and urbanization rate. Age groups variable (share of population by age category for only population aged between 15-64 years) presents five modalities : share of population aged between 15-24 years (reference modality); share of population aged between 25-34; share of population aged between 35-44; share of population aged between 45-54; and share of population aged between 55 and 64 years. Education variable presents four modalities: share of population without education (used as reference modality); share of population with primary level education; share of population with secondary level; and share of population with higher level education. Marital status has four modalities : single (reference); married; widowed; and divorced. Sex ratio is the ratio between the number of males and the number of females. Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

Table 7: Impact of immigrants on average annual earnings per employee at the delegation level.

	Average annual earnings Small firms with less than 6 employees					Average annual earnings Firms with more than 6 employees				
	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N
Single Difference-in-Differences (unconditional DiD assumption)										
North African	0.570***	-0.006	0.015	0.683	523	0.760***	0.038	-0.016	0.480	497
	(23.55)	(-0.25)	(0.44)			(15.51)	(0.75)	(-0.23)		
Arab. countries	0.583***	0.024	-0.011	0.684	523	0.762***	0.106**	-0.020	0.487	497
	(24.49)	(0.96)	(-0.31)			(15.77)	(2.12)	(-0.28)		
Sub-African	0.584***	0.039	-0.020	0.685	523	0.762***	0.145***	-0.030	0.492	497
	(27.48)	(1.50)	(-0.55)			(17.69)	(2.77)	(-0.40)		
European	0.585***	0.061**	-0.016	0.689	523	0.751***	0.127**	0.003	0.493	497
	(26.00)	(2.49)	(-0.48)			(16.39)	(2.52)	(0.05)		
Others	0.583***	0.032	-0.017	0.684	523	0.760***	0.097*	-0.024	0.484	497
	(28.50)	(1.17)	(-0.45)			(18.18)	(1.77)	(-0.31)		
Single Difference-in-Differences with covariates (conditional DiD assumption)										
North African	0.473***	0.022	-0.016	0.773	522	0.383***	0.087*	-0.065	0.612	496
	(11.45)	(1.03)	(-0.55)			(4.45)	(1.93)	(-1.03)		
Arab. countries	0.482***	-0.000	-0.029	0.773	522	0.395***	0.060	-0.069	0.610	496
	(11.95)	(-0.00)	(-0.97)			(4.67)	(1.33)	(-1.09)		
Sub-African	0.488***	0.034	-0.048	0.774	522	0.405***	0.120**	-0.084	0.614	496
	(12.42)	(1.50)	(-1.53)			(4.91)	(2.51)	(-1.27)		
European	0.498***	0.075***	-0.060**	0.778	522	0.398***	0.142***	-0.077	0.618	496
	(12.52)	(3.47)	(-1.98)			(4.77)	(3.12)	(-1.20)		
Others	0.482***	0.035	-0.031	0.773	522	0.379***	0.082	-0.040	0.611	496
	(12.07)	(1.45)	(-0.93)			(4.53)	(1.65)	(-0.57)		
Difference-in-Differences using entropy balancing										
North African	0.446***	0.018	-0.013	0.777	522	0.348***	0.060	-0.030	0.618	496
	(10.41)	(0.88)	(-0.44)			(3.99)	(1.39)	(-0.49)		
Arab. countries	0.460***	-0.010	-0.020	0.780	522	0.408***	0.019	-0.024	0.633	496
	(11.27)	(-0.47)	(-0.67)			(5.04)	(0.43)	(-0.41)		
Sub-African	0.479***	0.038*	-0.062**	0.779	522	0.377***	0.103**	-0.054	0.627	496
	(11.37)	(1.69)	(-2.02)			(4.51)	(2.33)	(-0.89)		
European	0.482***	0.071***	-0.070**	0.782	522	0.410***	0.127***	-0.056	0.631	496
	(11.48)	(3.32)	(-2.34)			(4.83)	(2.95)	(-0.93)		
Others	0.432***	0.023	-0.018	0.771	522	0.355***	0.050	0.012	0.639	496
	(9.90)	(1.03)	(-0.59)			(4.31)	(1.21)	(0.21)		

Note: All covariates used in panel B and panel C, are at the delegation level. Covariates include age groups, educational attainment, marital status, sex ratio, and urbanization rate. Age groups variable (share of population by age category for only population aged between 15-64 years) presents five modalities : share of population aged between 15-24 years (reference modality); share of population aged between 25-34; share of population aged between 35-44; share of population aged between 45-54; and share of population aged between 55 and 64 years. Education variable presents four modalities: share of population without education (used as reference modality); share of population with primary level education; share of population with secondary level; and share of population with higher level education. Marital status has four modalities : single (reference); married; widowed; and divorced. Sex ratio is the ratio between the number of males and the number of females. Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

food services. While for small, medium and large firms, only workers in the trade sector have seen a significant decrease in their earnings as a result of the increasingly sub-Saharan workforce in their home delegations.

Table 8: Impact of SSA immigrants on average annual earnings per worker at the delegation level, by sector.

	Average annual earnings Small firms with less than 6 employees					Average annual earnings Firms with more than 6 employees				
	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N
Difference-in-Differences using entropy balancing										
Industry	0.588***	-0.000	-0.037	0.646	518	0.293***	0.128**	-0.043	0.496	454
	(8.67)	(-0.01)	(-0.74)			(2.94)	(2.23)	(-0.55)		
Building and civil engineering	0.266***	0.122**	-0.070	0.535	459	0.672***	0.113**	-0.106	0.665	347
	(2.91)	(2.50)	(-1.05)			(6.36)	(2.04)	(-1.38)		
Trade	0.473***	0.054**	-0.110***	0.740	519	0.566***	0.140***	-0.191***	0.656	397
	(10.90)	(2.34)	(-3.46)			(6.52)	(2.92)	(-2.91)		
Transport and communications	0.178	0.173**	-0.014	0.259	376	0.491***	0.153	-0.157	0.422	221
	(1.16)	(2.04)	(-0.13)			(2.65)	(1.43)	(-1.10)		
Accommodation and food services	0.489***	0.075**	-0.091**	0.521	491	0.369**	0.140*	0.014	0.366	229
	(7.76)	(2.29)	(-2.03)			(2.32)	(1.67)	(0.12)		
Other activities	0.444***	0.081	-0.070	0.463	476	0.941***	0.086	-0.079	0.553	354
	(4.66)	(1.60)	(-1.02)			(6.49)	(1.13)	(-0.76)		

Note: Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

3.2 Impact of immigrants on local labor market outcomes : Individual level

We now turn examine the impact of labor supply shock caused by the arrival of SSA immigrants after 2014 on employment, employment by sector, and unemployment, using individual level data. Panel A of Table 9 reports the effect of the immigrant inflow on the likelihood of employment for natives, all sectors combined. The dependent variable is a binary indicator that takes the value 1 if an individual aged between 15 and 64 years has a job and 0 otherwise. The first row shows the results of the unconditional DiD, the second and third rows report the estimation results of the conditional DiD without and with controlling for sector fixed effects, respectively. The last two rows of Panel A, present the results for the DiD with entropy balancing, without and with controlling for sector fixed effects, respectively. The impact of foreign labor on the employment opportunities offered to the local population is estimated by the δ coefficient of equation 2 (column $\hat{\delta}$ panel A in Table 9). Considering the results provided by the conditional and unconditional DiD without controlling for sector fixed effects, we can see that the immigrant inflow to the treatment governorates in Tunisia (Tunis, Ariana, Sousse, and Sfax) increases the likelihood of having

a job by respectively 1.5 ($\hat{\delta}$ = 0.015 for the unconditional DiD – first row) and 1.4 ($\hat{\delta}$ = 0.014 for the conditional DiD – second row) percentage points for natives in those governorates compared to the natives in the control governorates (Ben Arous, Mahdia, and Monastir). A similar result was also obtained when using DiD with entropy balancing technique (row four of panel A). These results show a beneficial and statistically significant impact on the labor market, all sector combined. In other words, the probability that a native worker finds a job increases with the arrival of immigrants in the treatment governorates. In line with previous studies (Borjas, 2003; Edo, 2019; Ottaviano and Peri, 2012), this result is only true when the foreign labor force does not present a potential substitute for the local workforce (complementary labor force). However, upon controlling for sector heterogeneity for the conditional DiD estimator (third row of Panel A – conditional DiD with sector fixed effects), the previously observed positive impact of both unconditional and conditional DiD becomes statistically insignificant. The last row of panel A in Table 9 shows a completely different result from the other estimates. The estimated effect of immigrants on employment outcomes of the natives becomes negative and statistically significant at the level of 1 percent for the DiD estimator combined with entropy balancing technique and controlling for sector fixed effects. The influx of foreign labor into the governorates of the treatment group, particularly from sub-Saharan African countries, reduces the likelihood of native residents finding employment by approximately one percentage point ($\hat{\delta}$ = -0.008). Although this impact is statistically significant, it remains very limited. Our results confirm those of Ceritoglu et al. (2017) testing the impact of Syrian refugees on natives' labor market outcomes in Turkey. Ceritoglu et al. (2017) show that the forced inflow of Syrian refugees from the Southeastern border of Turkey have negatively affected the employment outcomes of natives in the treatment area relative to the control area. More specifically, they show that the refugee inflow to the treatment area in Turkey reduces the likelihood of having an informal job by 2.2 percentage points for natives in those regions compared to the natives in the control areas. Panel B of Table 9 replicates the conditional DiD with entropy balancing by sector. The estimated coefficients $\hat{\delta}$ are negative and statistically significant for retail trade and transport and communication sectors, which clearly indicates that immigrants negatively impact the employment likelihood of native workers.

Table 10 reports the results of equation (2) using unemployment as the outcome vari-

Table 9: Impact of immigrants on employment and employment by sector at the individual level, (2014 as reference date)

	$\hat{\alpha}_1$		$\hat{\alpha}_2$		$\hat{\delta}$		R^2	N
Panel A: Employment (all sectors)								
Unconditional DiD	0.009***	(4.42)	0.005**	(2.36)	0.015***	(5.25)	0.001	493.551
conditional DiD	-0.001	(-0.32)	-0.012***	(-6.55)	0.014***	(5.89)	0.301	493.546
Conditional DiD, controlling for sector Fixed effects	-0.002***	(-6.85)	-0.000*	(-1.67)	0.001	(1.57)	0.002	230.721
DiD with entropy balancing	0.001	(0.45)	-0.011***	(-5.96)	0.012***	(5.15)	0.304	493.546
DiD with entropy balancing, controlling For sector fixed effects	-0.023***	(-17.51)	-0.005***	(-3.32)	-0.008***	(-4.32)	0.058	230.721
Panel B : Employment by sector (DiD with entropy Balancing)								
Agriculture	-0.012***	(-3.18)	-0.015***	(-3.34)	-0.003	(-0.61)	0.034	16.487
Industry	-0.026***	(-10.00)	-0.016***	(-5.15)	-0.002	(-0.43)	0.034	53.924
Building and civil engineering	-0.039***	(-8.43)	0.001	(0.15)	-0.009	(-1.37)	0.076	31.472
Trade	-0.015***	(-4.17)	-0.005	(-1.32)	-0.023***	(-4.75)	0.052	32.355
Transport and communications	-0.015***	(-3.62)	0.003	(0.72)	-0.011**	(-2.08)	0.041	14.884
Other services	-0.040***	(-9.18)	-0.003	(-0.71)	-0.006	(-1.01)	0.060	36.431

Note: Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

able that takes the value 1 if an individual between 15 and 64 years of age has a job and 0 otherwise. The first column of Table 10 presents the unconditional DiD results, column 2 controls for covariates (conditional DiD), and the last column of the Table reports the results of DiD with entropy balance matching. The estimated coefficients are positive and statistically significant at 1 percent level, showing that the arrival of immigrants in the governorates of the treatment group after 2014 increases the probability of being unemployment for the natives of these governorates. This effect, although statistically significant, remains very limited (the impact does not exceed 0.6 percentage points).

Table 10: Impact of immigrants on unemployment at the individual level, (2014 as reference date)

	Unconditional DiD	Conditional DiD	DiD with Entropy balancing
$\hat{\alpha}_1$	-0.011***	-0.010***	-0.009***
	(-11.15)	(-10.63)	(-9.50)
$\hat{\alpha}_2$	0.001	-0.001	-0.002
	(0.61)	(-1.27)	(-1.49)
$\hat{\delta}$	0.006***	0.007***	0.006***
	(4.38)	(4.83)	(4.43)
R^2	0.000	0.071	0.075
N	493,551	493,546	493,546

Note: Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

3.3 Immigrants' Integration on local labor market and social fabric

Table 11 provides descriptive statistics on M2I, as well as its three dimensions (economic, social, and psychological) and indicators by immigrant groups. About 46 percent of sub-Saharan immigrants were employed at the time of the survey, and 78 percent of them feel that their professional situation in Tunisia is better than before. In terms of skills, 34 percent of SSA immigrants have a higher level of education, compared to 57 percent of Europeans immigrants and 50 percent of those from Arab countries.

Most of the SSA immigrants consider Tunisia a transit country. In fact, only 36 percent of them intend to stay in Tunisia, compared with 97 percent of immigrants from Arab countries, 82 percent of Europeans immigrants and 78 percent of immigrants from North Africa. In terms of access to health services and social protection, Table 11 shows that almost 90 percent of working-age SSA immigrants do not benefit from these services. Only 11 percent claim to have health insurance, compared to 64 percent of migrants from European countries and almost 45 percent of those from Arab or Maghreb countries.

Table 11: Descriptive statistics for M2I's indicators and dimensions

		North African	Arab. Countries	Sub-African	European	Others
Economic dimension						
1	Having a job (= 1 if yes)	31.03	45.73	45.77	25.69	34.99
2	Current work situation is better or unchanged (= 1 if yes)	78.71	34.17	77.87	89.77	81.31
3	Having a higher level of education (= 1 if yes)	25.47	49.61	34.56	57.25	57.68
Social dimension						
4	Having the intention of staying in Tunisia (= 1 if yes)	77.54	96.76	35.74	82.29	49.09
5	Having healthcare insurance (= 1 if yes)	45.71	43.22	10.84	64.37	45.96
6	Having excellent/good neighborhood attitude (= 1 if yes)	67.3	16.2	52.72	74.92	68.31
Psychological dimension						
7	Be treated with respect (= 1 if yes)	92.57	40.26	64.05	92.03	81.23
8	Not to be treated unfairly (= 1 if yes)	93.22	85.06	72.84	98.91	90.66
9	Some people think they're better than you (= 1 if No)	91.27	83.91	61.51	99.21	86.04
10	Being subjected threats or harassment (= 1 if No)	95.48	54.52	81.33	94.93	87.89
11	Racial/Color discrimination (= 1 if No)	97.61	100	50.98	98.49	82.00
12	Heard people making comments about immigrants (= 1 if No)	89.47	99.52	65.02	87.23	84.89
Economic integration		45.07	43.17	52.73	57.57	57.99
Social integration		63.51	52.06	33.10	73.86	54.45
Psychological integration		93.27	77.21	65.96	95.13	85.45
Multidimensional integration		**67.28**	**57.48**	**50.60**	**75.52**	**65.96**

Note: We assume that the three dimensions have equal weights (1/3 for each), and that the indicators of each dimension also have equal weights (1/9 for the indicators of the first two dimensions, economic and social, and 1/18 for the 6 indicators of the psychological dimension). All indicators are binary, taking the value 1 or 0. Each dimension is an arithmetical average of its indicators. The multidimensional indicator is the weighted average of the 12 indicators. The multidimensional M2I indicator and the three dimensions have values between 0 and 1. A value close to 1 indicates that the immigrant is well integrated, while a value close to 0 shows that the immigrant is unable to integrate into the local population.

The lower part of Table 11 shows that SSA immigrants are the least integrated for all three dimensions combined – M2I index. In particular, one sub-Saharan immigrant out of every two (51 percent) is multidimensionally integrated on local market and social fabric,

compared to 57 percent for immigrants from Arab countries, 67 percent for immigrants from North Africa, and 76 percent for European immigrants. Additionally, only 33 percent of SSA immigrants are socially integrated (compared to 74 percent for European immigrants) and 66 percent (95 percent for European ones) say they are psychologically integrated.

Figure 5 reports the results of the Linear Probability Model (LPM), where the M2I is used as dependent variable that takes the value 1 if immigrant is multidimensionally integrated and 0 otherwise. The covariates variables are: gender, marital status, educational attainment, age groups, region, and the origin of immigrant. Men are more likely to be integrated than women and compared to non-educated immigrants, the better educated (those with tertiary education) are more likely to integrate into local labor market and social fabric. Compared to young immigrants aged 15 to 29 years, as age increases, integration becomes much easier. Additionally, immigrants living in the Northwest region find it more difficult to integrate than those in Greater Tunis. Compared to immigrants from North Africa, migrants to Tunisia coming from Sub-Saharan Africa less integrated into the country's labor market and social fabric, while European immigrants are more likely to be integrated. There is no significant difference in terms of integration into the Tunisian's labor market and social fabric between migrants from North Africa and those coming from Arab countries.

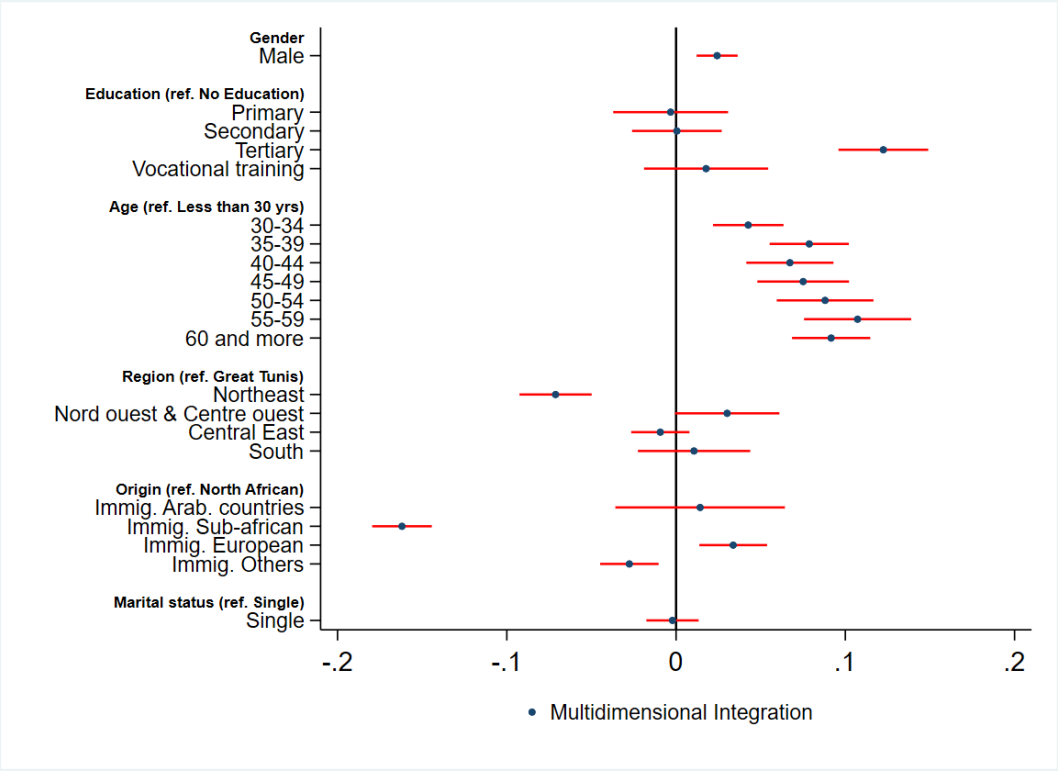


Figure 4: Determinant of multidimensional integration.

3.3.1 Robustness checks

We perform two robustness checks to test the sensitivity of our results. First, since immigrants are mainly concentrated in the chief-towns of the governorates forming the treatment group, where the global population resides in urban areas, we test the robustness of our results if we only consider the urban area. Second, we test whether our results differ by gender. The motivation for this exercise lies in the fact that, in Tunisia, low-paid and less-skilled labor intensive sectors such as agriculture tend to attract primary less educated women. Conversely, the industrial sector is predominantly occupied by male workers. If immigrants, particularly those from Sub-Saharan Africa who are largely low-skilled, enter these sectors, we anticipate a potentially larger negative effect on women's employment compared to that of men. For the immigrant's integration analysis, we test the robustness of our results to different cut-offs of the three dimensions (economic, social, and psychological) as well as for the multidimensional integration.

Table 12, with employment as the outcome variable, and Table 13, focusing on unemployment, replicate Table 9 and Table 10, respectively, but exclusively for urban areas. The

two results (for full sample and for only urban areas) are almost identical, showing that our results are robust and roughly unchanged by this control. The only difference arises for employment in the building sector in urban area (Table 12), where the coefficient has the same sign as that of Table 12 but achieves statistical significance. This finding is explained by the fact that the building sector is more developed in urban than in rural areas, and will be more sensitive to the arrival of low-cost foreign labor force. To conclude, our results suggest that immigration will mostly affect the employment of native population with the same skills as migrants, which is in line with many previous works (e.g., Card, 2001; Edo and Özgüzel, 2023). Edo and Özgüzel (2023) show for example that low-educated native workers across European regions over the 2010-2019 period experience employment loses due to immigration, whereas high-educated ones are more likely to experience employment gains. Card (2001) argues that immigrant inflows to the United States over the 1980s reduced wages and employment rates of low-skilled natives in traditional gateway cities like Miami and Los Angeles by 1-3 percentage point.

Table 12: Impact of immigrants on employment and employment by sector at the individual level, urban areas

	$\hat{\alpha}_1$		$\hat{\alpha}_2$		$\hat{\delta}$		R^2	N
Panel A: Employment (all sectors)								
Unconditional DiD	0.007***	(3.17)	-0.006**	(-2.27)	0.017***	(5.15)	0.000	98,869
conditional DiD	-0.001	(-0.32)	-0.012***	(-6.55)	0.014***	(5.89)	0.301	493,546
Conditional DiD, controlling for sector Fixed effects	-0.002***	(-6.85)	-0.000*	(-1.67)	0.001	(1.57)	0.002	230,721
DiD with entropy balancing	0.001	(0.45)	-0.011***	(-5.96)	0.012***	(5.15)	0.304	493,546
DiD with entropy balancing, controlling For sector fixed effects	-0.023***	(-17.51)	-0.005***	(-3.32)	-0.008***	(-4.32)	0.058	230,721
Panel B : Employment by sector (DiD with entropy Balancing)								
Agriculture	-0.012***	(-3.18)	-0.015***	(-3.34)	-0.003	(-0.61)	0.034	16,487
Industry	-0.026***	(-10.00)	-0.016***	(-5.15)	-0.002	(-0.43)	0.034	53,924
Building and civil engineering	-0.039***	(-8.43)	0.001	(0.15)	-0.009	(-1.37)	0.076	31,472
Trade	-0.015***	(-4.17)	-0.005	(-1.32)	-0.023***	(-4.75)	0.052	32,355
Transport and communications	-0.015***	(-3.62)	0.003	(0.72)	-0.011**	(-2.08)	0.041	14,884
Other services	-0.040***	(-9.18)	-0.003	(-0.71)	-0.006	(-1.01)	0.060	36,431

Note: Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

Panel B and Panel C of Table 14 respectively report the estimation results of the DiD method with entropy balancing for males and females. The outcome variables include employment, unemployment, labor market participation, and employment by sector. The results in both panels are compared to the previous findings obtained using the full sample (Tables 9 and 10 in particular), reported in Panel A of Table 14. For the three panels, we

Table 13: Impact of immigrants on unemployment at the individual level, urban areas

	Single DiD	Single DiD with covariates	Entropy balancing
$\hat{\alpha}_1$	-0.008***	-0.007***	-0.007***
	(-6.96)	(-6.19)	(-6.33)
$\hat{\alpha}_2$	0.005***	0.003***	0.002
	(4.41)	(2.72)	(1.51)
$\hat{\delta}$	0.004***	0.005***	0.005***
	(2.60)	(2.97)	(3.23)
R^2	0.000	0.073	0.077
N	398,869	398,867	398,867

present only the coefficient reflecting the impact of immigrants on the labor market – the coefficient. For unemployment outcome variable by gender, Table 14 shows similar results in terms of sign to those found for the entire sample population : the estimated coefficients are negative and positive for both male and female natives. However, the impact of immigrants on the unemployment is twice as high in males as in females (0.9 percentage points for males vs. 0.4 for females). When accounting for sector heterogeneity, the results reveal that immigration has a negative impact on the employment of the native population, particularly among females (1.2 percentage points for females vs. 0.6 for males).

The findings across different sectors of activity broadly support the negative relationship between immigration and native employment, yet they show notable distinction between genders. Specifically, immigration negatively impacts women's employment within the agricultural, industrial and trade sectors. These results suggest that, for governorates forming the treatment group, foreign labor serves as a viable substitute for low-skilled female labor (female workers in industry are the least affected). It's noteworthy that, in contrast to the impact of female's employment in industrial sector, a positive and significant (at 10 percent level) effect of immigration on employment in the industrial sector is observed for male workers (panel B of Table 14). This finding indicates that for industrial sector, the native male labor force benefits from a complementary foreign workforce rather than facing direct competition. A negative effect of immigration on native male labor force is detected for trade and transport and communication sectors.

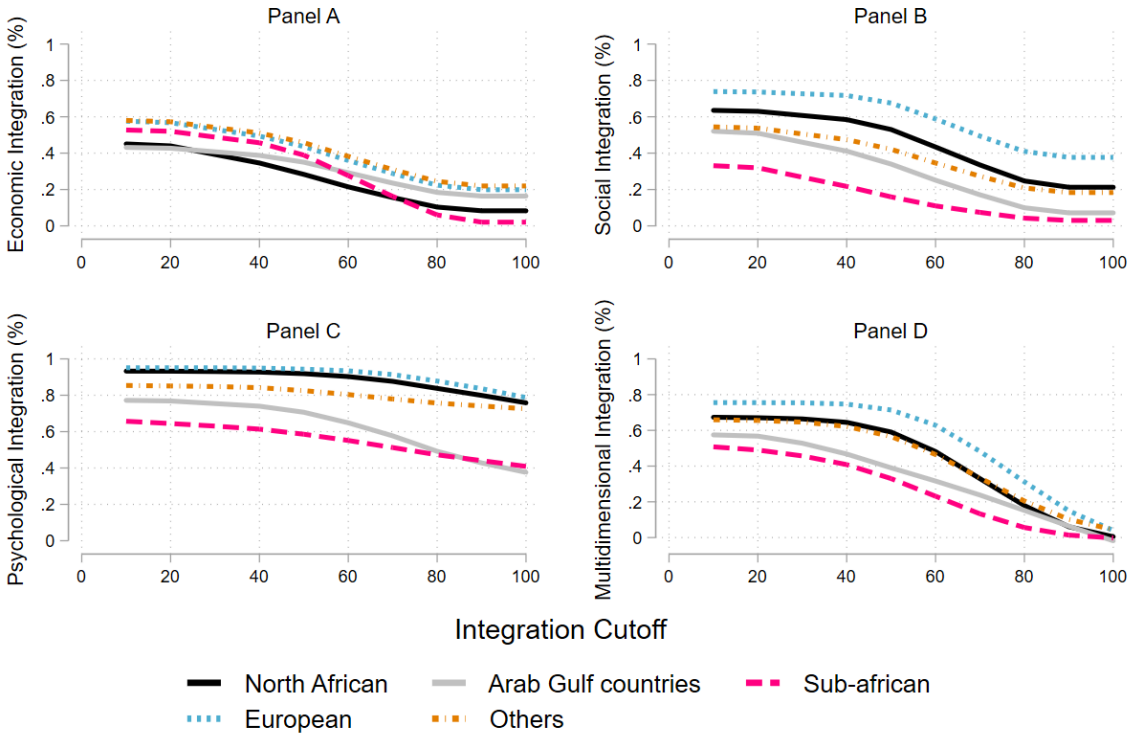
Table 14: Impact of immigration on local labor market, by gender (15-64 yrs)

	Panel A : All sample (Male and female) DiD with Entropy Balancing			Panel B : Male DiD with Entropy Balancing			Panel C : Female DiD with Entropy Balancing		
			N			N			N
Employment	0.012***	0.304	493.546	0.007**	0.341	243.019	0.020***	0.119	250.527
	(5.15)			(2.26)			(5.86)		
Unemployment	0.006***	0.075	493.546	0.009***	0.071	243.019	0.004**	0.094	250.527
	(4.43)			(4.21)			(2.04)		
labor market Participation	0.019***	0.332	493.546	0.016***	0.343	243.019	0.023***	0.187	250.527
	(7.81)			(5.40)			(6.81)		
employment, with Sector Fixed effects	-0.008***	0.058	230.721	-0.006***	0.069	165.531	-0.012***	0.042	65.19
	(-4.32)			(-2.82)			(-3.31)		
Employment by sector									
Agriculture	-0.003	0.034	16.487	0.002	0.036	12.899	-0.019*	0.034	3.588
	(-0.61)			(0.31)			(-1.76)		
Industry	-0.002	0.034	53.924	0.009*	0.049	30.691	-0.018***	0.028	23.233
	(-0.43)			(1.71)			(-2.74)		
Building	-0.009	0.076	31.472	-0.010	0.077	30.881	0.017	0.044	591
	(-1.37)			(-1.40)			(0.29)		
Retail trade	-0.023***	0.052	32.355	-0.020***	0.051	25.611	-0.030**	0.048	6.744
	(-4.75)			(-4.10)			(-2.19)		
Transport and Communication	-0.011**	0.041	14.884	-0.010*	0.040	13.212	-0.019	0.041	1.672
	(-2.08)			(-1.87)			(-0.88)		
Other services	-0.006	0.060	36.431	-0.008	0.073	25.126	0.001	0.046	11.305
	(-1.01)			(-1.23)			(0.06)		

Note: t-statistics in parentheses. *** p¡0.01, ** p¡0.05, * p¡0.1. Robust statistics t of student in parentheses.

Moving to examine the sensitivity of our M2I's results to the choice of different levels of integration cut-offs. Figure 6 compares the level of integration of Sub-Saharan immigrants with that of other groups across the three dimensions : economic, social, and psychological (Panels A, B, and C, respectively), as well as for the overall M2I index (Panel D). Except for the economic dimension, Figure 6 illustrates that SSA immigrants exhibit the lowest level of integration across the social and psychological dimensions (Panel B and Panel C, respectively). Additionally, they consistently rank lower in the multidimensional integration index regardless of the chosen cut-off level, as indicated by the curve representing SSA immigrants lying below the other curves, affirming a pattern of dominance behavior (Panel D).

Figure 5: Immigrants' Integration on local labor market for different cut-offs



4 Conclusion

This paper has examined the impact of immigration on the local labor market outcomes in the context of Tunisia after the 2010-11 uprising, as well as the multidimensional integration of immigrants into the Tunisian society. It combines different sources of data,

including censuses and labor force surveys to see if native population has been affected by the arrival of immigrants, in particular those from Sub-Saharan Africa. Additionally, the study employs the international migration survey to assess the extent of immigrant's integration across economic, social, and psychological dimensions in Tunisia. The paper uses difference-in-differences combined with entropy balancing technique to address parallel tend assumption violations. The two dates, 2011 and 2014, have been used as two treatment times. Comparing the local labor market outcomes (annual average earnings per worker, employment rate, employment rate by sector, unemployment, and labor market participation) of control and treated delegations before and after 2011, the results show that the arrival of immigrants from North-African and European regions into the local labor market is associated with, respectively, 2-3 percent increase in unemployment rate and 2-3 percent decrease in local employment. Sub-Saharan immigrants have no significant impact on both native employment and unemployment rates, but they have notably adjusted wages downwards, particularly affecting employees in micro-firms. Unlike the findings for micro-firms, the arrival of immigrants, regardless of their origin, does not affect the earnings of native workers in small, medium, or large firms. The findings at the individual level, using 2014 as treatment date, show that the influx of foreign labor from Sub-Saharan African countries, reduces the likelihood of native population aged between 15 and 64 years finding a job by approximately one percentage point. Our results show also that immigration will mostly affect the employment of native population with the same skills as migrants, which is in line with many previous studies such as Edo and Özgüzel (2023) and Card (2001). When accounting for sector heterogeneity and gender, the results reveal that immigration has a negative impact on the employment of the native population, particularly among females (1.2 percentage points for females vs. 0.6 for males). Specifically, immigration negatively impacts women's employment within the agricultural, industrial and trade sectors, suggesting that foreign labor serves as a viable substitute for low-skilled female labor. In contrast to the impact of female's employment in industrial sector, a positive and significant effect of immigration on employment in the industrial sector is observed for male workers. This finding indicates that for industrial sector, the native male labor force benefits from a complementary foreign workforce rather than facing direct competition. The results on immigrant integration show that migrants

from the sub-Saharan African countries are the least integrated, especially on the social and psychological dimensions. In addition, male migrants, the most educated, and the oldest find fewer difficulties to integrate into the local labor market and social fabric than the young and uneducated migrants.

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A Appendix

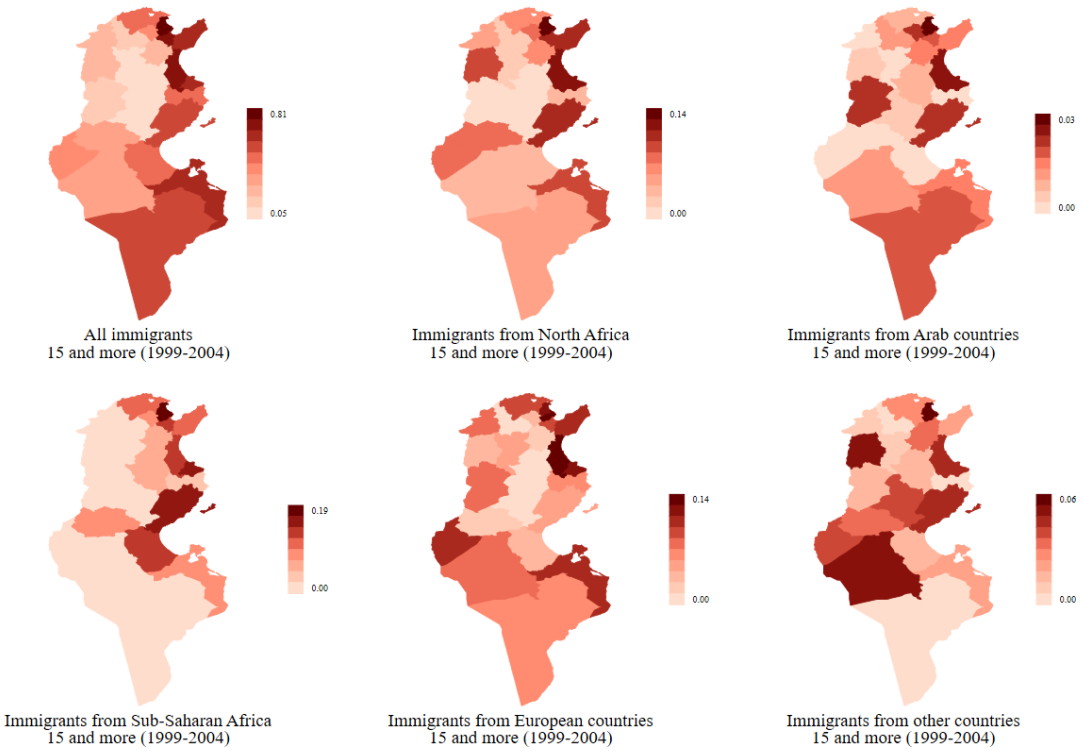

Figure A.1: Share of immigrants aged 15 and over by governorate and country of origin in 2004

Table A.1: Distribution of immigrant by country of origin in 2004 and 2014

	Country's name	2004 census	2014 census
Arab countries			
	Algeria	9,612	9,996
	Libya	1,738	8,772
	Morocco	6,363	5,565
	Mauritania	417	508
	Egypt	672	1,093
	Syria	416	1,024
	Irak	–	550
	Palestine	652	494
	Others	1,330	478
Total		21,210	28,480
Sub-African			
	Mali	222	958
	Cameroon	–	689
	Cote d'Ivoire	604	607
	Niger	124	522
	Senegal	360	394
	Others	1,697	4,354
Total		3,007	7,524
Europe, United States and rest of the world			
	France	4,612	8,284
	Italy	1,560	2,118
	Germany	1,000	1,393
	Other European countries	2,495	3,212
	United States	261	584
	Rest of World	1,047	1,895
Total		10,975	17,486
All countries		35,192	53,490

Table A.2: Impact of immigrants on labor market participation at the delegation level

	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2
Unconditional DiD				
North African	0.046***	0.005	-0.002	0.108
	(5.77)	(0.59)	(-0.17)	
Arab. countries	0.035***	0.015*	0.019*	0.144
	(4.67)	(1.87)	(1.75)	
Sub-African	0.044***	0.021***	0.003	0.133
	(6.36)	(2.59)	(0.24)	
European	0.039***	0.016**	0.013	0.137
	(5.40)	(2.07)	(1.14)	
Others	0.041***	0.009	0.013	0.119
	(6.17)	(0.98)	(1.04)	
Conditional DiD				
North African	0.004	0.015**	-0.016*	0.483
	(0.37)	(2.41)	(-1.86)	
Arab. countries	-0.007	0.006	0.007	0.482
	(-0.56)	(0.91)	(0.83)	
Sub-African	0.003	0.018***	-0.011	0.486
	(0.26)	(2.72)	(-1.22)	
European	-0.002	0.016**	-0.003	0.488
	(-0.13)	(2.57)	(-0.34)	
Others	-0.008	0.001	0.011	0.480
	(-0.66)	(0.11)	(1.11)	
Difference-in-Differences using Entropy Balancing				
North African	0.000	0.012**	-0.012	0.477
	(0.01)	(2.02)	(-1.33)	
Arab. countries	0.013	0.010*	-0.002	0.513
	(1.10)	(1.68)	(-0.19)	
Sub-African	0.017	0.018***	-0.016*	0.481
	(1.37)	(2.81)	(-1.81)	
European	0.008	0.016**	-0.005	0.478
	(0.65)	(2.54)	(-0.60)	
Others	-0.016	-0.003	0.015	0.486
	(-1.24)	(-0.44)	(1.62)	

Note: Statistical significance level : *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. t-statistics in parentheses.

Table A.3: Impact of immigrants on average annual earnings per worker at the delegation level - DiD using entropy balancing

	Firms with less than 6 employees					Firms with more than 6 employees				
	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N
North African										
industry	0.562***	0.012	-0.005	0.643	518	0.288***	0.135**	-0.086	0.495	454
	(8.02)	(0.36)	(-0.11)			(2.76)	(2.46)	(-1.13)		
Building and civil engineering	0.177	0.015	-0.016	0.456	459	0.619***	0.117**	-0.047	0.667	347
	(1.63)	(0.28)	(-0.21)			(5.71)	(2.23)	(-0.63)		
Trade	0.453***	0.026	-0.027	0.736	519	0.525***	0.135***	-0.121*	0.655	397
	(10.03)	(1.17)	(-0.86)			(5.84)	(2.95)	(-1.91)		
Transport and communications	0.263	0.018	-0.108	0.238	376	0.394**	0.120	-0.045	0.422	221
	(1.57)	(0.21)	(-0.93)			(2.09)	(1.16)	(-0.32)		
Accommodation and food service	0.442***	0.077**	-0.083*	0.530	491	0.329*	0.087	0.012	0.354	229
	(6.97)	(2.52)	(-1.90)			(1.92)	(1.05)	(0.10)		
Other activities	0.321***	-0.016	0.079	0.443	476	0.992***	0.146**	-0.191*	0.557	354
	(3.21)	(-0.32)	(1.13)			(6.70)	(2.02)	(-1.91)		
Arab. countries										
industry	0.516***	-0.066*	0.057	0.652	518	0.250**	0.053	0.020	0.491	454
	(8.02)	(-1.95)	(1.21)			(2.43)	(0.96)	(0.26)		
Building and civil engineering	0.327***	0.096*	-0.107	0.511	459	0.652***	0.054	-0.068	0.662	347
	(3.44)	(1.87)	(-1.53)			(6.00)	(1.02)	(-0.90)		
Trade	0.464***	0.014	-0.077**	0.750	519	0.520***	0.044	-0.086	0.649	397
	(11.00)	(0.61)	(-2.46)			(5.84)	(0.95)	(-1.35)		

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Table A.3 – continued from previous page

	Firms with less than 6 employees					Firms with more than 6 employees				
	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N	$\hat{\beta}_1$	$\hat{\beta}_2$	$\hat{\beta}_3$	R^2	N
Transport and communications	0.120	0.005	0.101	0.232	376	0.387**	0.043	0.045	0.419	221
	(0.75)	(0.06)	(0.85)			(2.06)	(0.41)	(0.32)		
Accommodation and food services	0.533***	0.031	-0.079*	0.525	491	0.462***	0.125	-0.136	0.354	229
	(8.51)	(0.94)	(-1.75)			(2.86)	(1.51)	(-1.18)		
Other activities	0.391***	-0.031	0.055	0.448	476	0.898***	-0.044	-0.025	0.553	354
	(4.09)	(-0.62)	(0.79)			(6.08)	(-0.60)	(-0.24)		
European										
Industry	0.560***	0.046	-0.050	0.658	518	0.293***	0.163***	-0.071	0.501	454
	(8.40)	(1.35)	(-1.05)			(2.91)	(2.95)	(-0.93)		
Building and civil engineering	0.256**	0.162***	-0.169**	0.476	459	0.676***	0.168***	-0.129*	0.671	347
	(2.46)	(3.03)	(-2.29)			(6.49)	(3.18)	(-1.75)		
Trade	0.499***	0.077***	-0.098***	0.753	519	0.558***	0.189***	-0.185***	0.662	397
	(11.65)	(3.56)	(-3.20)			(6.47)	(4.12)	(-2.93)		
Transport and Communications	0.160	0.202**	-0.122	0.240	376	0.482***	0.336***	-0.170	0.454	221
	(1.00)	(2.37)	(-1.07)			(2.70)	(3.28)	(-1.25)		
Accommodation and food services	0.450***	0.082***	-0.067	0.526	491	0.395**	0.102	-0.041	0.353	229
	(7.05)	(2.59)	(-1.51)			(2.47)	(1.22)	(-0.35)		
Other activities	0.424***	0.019	-0.066	0.442	476	0.985***	0.111	-0.174*	0.555	354
	(4.21)	(0.37)	(-0.92)			(6.82)	(1.50)	(-1.72)		

Note: ***; **; and * indicate significance at 1, 5 and 10% levels, respectively.