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Between Hope and Despair: Egypt's Revolution and Migration Intentions

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Between Hope and Despair: Egypt's Revolution and Migration Intentions

Abstract

We study the effect of the 2011 Egyptian revolution and its aftermath on migration intentions of the Egyptian youth. We measure revolution intensity using the spacial variation in the number of deaths during the revolution from the Statistical Database of the Egyptian Revolution Wikithawra and combine it with data on migration intentions from the Harmonized Survey of Young People in Egypt (HSYPE). Difference-in-difference estimations show that the revolution significantly decreased the migration intentions of youth, especially young men. Single women did not change their migration intentions, mainly due to their financial dependence. Results also show that the youth living in informal slum areas experienced stronger effects. We describe two opposing channels: the insecurity channel, which positively affects migration intentions, and the optimism channel, which negatively affects migration intentions by inducing hope in a better Egyptian future. Youth in rural and slum areas were more sensitive to the optimism channel, due to their higher threshold of insecurity perception.

JEL-Codes: D740, F220, O150, P160.

Keywords: political instability, migration, Egypt, revolution.

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1 Introduction

How did the 2011 revolution and its aftermath affect the migration intentions of young people living in Egypt? The revolution in 2011 is thought of as a “youth revolution” (Population Reference Bureau 2011) driven by young people protesting against the regime. After the revolution, young people indeed witnessed more inclusion in politics, as several new political parties representing them were founded (Abdalla 2013). The revolution could therefore have reduced migration intentions, giving young people hope in a prospering and democratic future, providing incentives to stay and contribute to building the country’s future. However, after the revolution many Egyptian youth also felt despair, as high unemployment rates, inflation and a lack of affordable accommodation aggravated their economic conditions (ERF Policy Portal, 2018). Hence, the revolution could also have acted as a push factor to emigrate, especially among those strongly affected by the political and economic instability.

Combining these two opposing effects of the revolution and its aftermaths, we ask the following research question: Did the revolution intensify the push factors to migrate or the pull factor to stay in Egypt? We create a measure for revolution intensity that uses the spacial variation in the number of deaths during the revolution from the Statistical Database of the Egyptian Revolution Wikithawra and create a treatment and a control group according to the revolution intensity. We combine this with data on migration intentions from the Harmonized Survey of Young People in Egypt (HSYPE) at the municipality level. Difference-in-difference estimations show that the revolution significantly decreased the migration intentions of youth, especially young men. Results also show that youth, both men and women, living in informal slum areas experienced stronger effects. We then highlight two opposing channels: the economic insecurity channel, which positively affects migration intentions, and the optimism channel, which negatively affects migration intentions by inducing hope in a better Egyptian future. We show that the youth in slum areas were not significantly affected by the insecurity channel, mainly due to their high threshold of insecurity perception compared to youth in rural and urban areas.¹

We contribute to previous literature that examines the impact of exposure to social and political unrest on different social and economic behavior. While the causes of social unrest are usually case specific and thoroughly studied, their consequences on the economy and on individuals’ behavior did not receive adequate attention (Verwimp et al. 2018; Day 2018; Baysan et al. 2018). Riots can disrupt economic activity through destruction of physical capital and halting of work. Furthermore, riots can raise production costs through higher interest rates on business loans and higher insurance costs (Aldrich and Reiss Jr 1970). These channels, among others, can have significant negative consequences on the labor market, which poses long term

¹It is important to mention that we control for income so that we do not capture the effects from changes in available resources.

difficulties. In line with these results on economic outcomes, Phan and Kent (2014) show that episodes of unrest are associated with significant accumulated losses in GDP growth, as well as increases in economic uncertainty, which takes years to recover to pre-unrest levels. In the same vein, Aisen and Veiga (2013) show that higher degrees of political instability are associated with lower growth rates of GDP per capita. Collins and Margo (2004) study how the violent, race-driven 1960s civil disturbances in the United States affected “black-owned” property values by widening the racial gap in riot areas. Voors et al. (2012) conduct a field experiment in rural Burundi that shows that individuals exposed to violence display more altruistic behavior towards their neighbors, are more risk-seeking, and have higher discount rates.

Since 2011, there has been research focusing on exploiting the Egyptian revolution to measure its effect on different variables of interest. For instance, Acemoglu et al. (2017) analyze the effect of the Arab Spring on stock market returns in Egypt. They use a constructed daily estimate of the number of protests in Tahrir Square, the heart of the Egyptian revolution, as a measure for revolution intensity. The distinct characteristic of their measurement is that they exploit daily variation in one location - Tahrir Square. Other works have exploited state-level variation in the Arab Spring revolution intensity to conduct a difference-in-difference estimation on the impact of the revolution on household behavior. Giesing and Musić (2019) show that more affected households increased their spending on education, especially on boys. El-Mallakh et al. (2018) focus on the impact of the revolution on the labor market participation of Egyptian women. They find that the protests reduced intra-household difference in labor force participation by increasing women’s employment. Bargain et al. (2019) further show that intra-household empowerment of women has improved.

The focus of this paper is to unravel the causal relationship between the social and political unrest caused by the revolution and the international migration intentions of youth. Effects of violence on migration has been thoroughly researched, however the focus typically relied on forced or irregular migration. Shrestha (2017) uses a panel of towns in Nepal to find that an increase of the death rate caused by the Maoist insurgency in urban areas raises the rate of emigration to India, Malaysia, and the Gulf. Other literature study the correlation between national-level violence and migration. Shellman and Stewart (2007) investigate the relationship between the outbreak of civil conflicts in Haiti from 1990-2004 and the interdiction of irregular Haitian migrants from the United States. Williams and Pradhan (2008) shows how specific incidences of violence in Nepal affect individual migration patterns. Recent work includes Clemens (2017), who examines the effect of violence in Honduras, El Salvador, and Guatemala on the apprehension of unaccompanied child migrants to the US and found a positive causal relationship between the homicide rates in the home country and the apprehension of child migrants. In contrast, Agadjanian Victor (2018) finds no significant relationship between increasing political instability in Kyrgyzstan and either internal or international migration intentions. People living in areas close to violence in Mexico resort more to internal migration than

international migration (Atuesta and Paredes 2016). Furthermore, violence does not only affect the welfare of people through shortened life expectancy and insecurity (Soares 2006), but indirectly through the economy (Bozzoli et al. 2010; Skaperdas 2011; Besley and Persson 2014; Jaitman et al. 2017). This implies that the relationship between violence and migration is complex, as it is not directly measurable through the level of insecurity without taking the other indirect channels (e.g. local economic conditions, increasing migrants network) into consideration. Moreover, revolutions like the Arab Spring in Egypt did not only incur violence, but also political change, (short-lived) democracy and political euphoria as well as a wave of optimism with it. Thus, the sophisticated relationship between revolutions and migration has not received enough attention in the literature.

We contribute to the literature in three distinct ways. First, a novelty of this paper lies in its focus on the youth. While revolutions exhibit violence and deaths, they bring about feelings of hope, optimism and achievement - or despair depending on the circumstances of the individual. We focus on the impact of the revolution on the migration intentions of the Egyptian youth population. The youth demographic differs from the general public in many respects, when it comes to unemployment, education, migration options, and political stances. The uprising in Egypt has been led to a large extent by Egyptian youth (Global-Post 2017). The youth who led the revolution feel that the state betrayed their revolution (Guardian 2016), which could intensify their migration aspirations or reduce it in hope of political, social, and economic change. Second, we can improve the measurement of the revolution by using the precise location of a death (as opposed to the state only) and can therefore create a more accurate measure than the previous literature. Studying granular geographical units helps account for spillovers and allows interesting heterogeneity analyses. We conduct our analyses on 238 geographical units, that we have geo-coded alongside the exact location where people lost their lives during the revolution. Third, Egypt is a diverse country with slum, urban, and rural population, as well as vast differences in education levels and employment. Our dataset includes slum and informal geographical areas, that are often disregarded in data collection and microdata. We pay special attention to the most vulnerable populations and show results for slum areas.

We focus on measuring migration intentions, as opposed to actual migration. Migrating from Egypt is not easy to implement and requires plenty of planing and human and financial capital. Hence, the action typically does not occur right after the violence, but rather lagged a few years. This would make the measurement of the causal effect hard to distinguish from other factors. Tjaden et al. (2019), however, show that there is a high correlation between migration intentions and actual migration.

This paper is structured as follows. Section 2 provides background information about the social and political developments in Egypt, as well as an overview of the 2011 revolution. Section 3 introduces the measurement of revolution intensity and the Survey of Young People in Egypt, as well as descriptive statistics

about the survey sample. Section 4 and 5 encompass the empirical identification strategy and the estimation results. Section 6 summarizes the channels through which the revolution could have impacted the migration intentions of youth and Section 7 shows robustness checks. Lastly, Section 8 summarizes the findings and concludes with policy implications.

2 Background

2.1 Political Background

The popular 2011 uprising gave Egyptians hope that at last democracy was dawning. The Tahrir Square became the iconic symbol of the Arab Spring advocating for “bread, freedom, and social justice” (Weinberger 2011). After two weeks of protests and intense clashes with the police, Hosni Mubarak stepped down on the 11th of February 2011, ending his 30-year presidency. The protests included people from different ideological and social backgrounds. The Supreme Court of Armed Forces (SCAF) assumed interim power until new elections were organized. This transitional period under the rule of the SCAF was marked by major protests in the country, partly due to discontent with military rule and partly due to chaos in the country: civilian curfew was enforced, prisons were stormed and prisoners escaped.

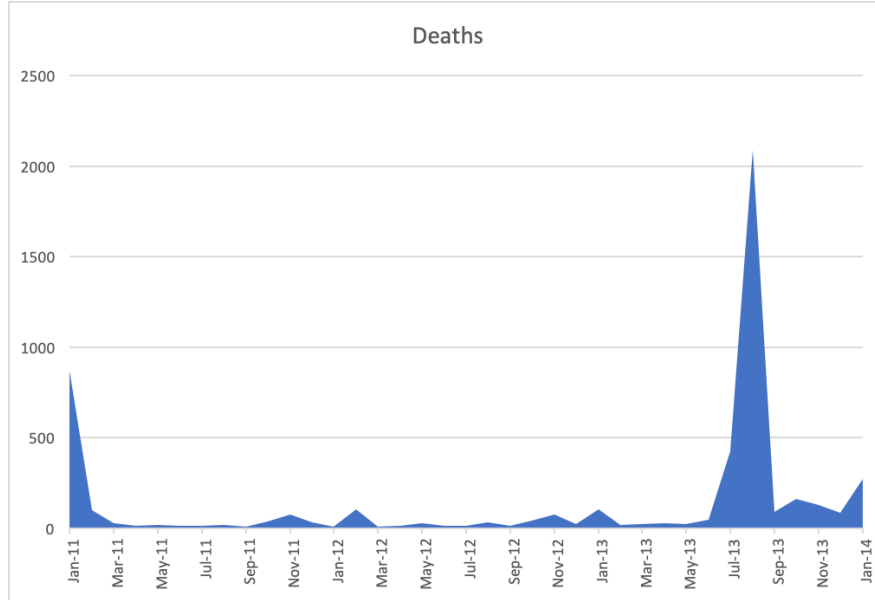
In June 2012, the first free elections in Egypt were held, in which Mohamed Morsi of the Muslim Brotherhood won. In his first year he started granting himself powers that were controversial, like the power to protect the constitution-writing committee from dissolution by the court, and the power to legislate without judicial oversight or review of his acts until a new parliament is elected. He also pushed a referendum on an Islamist-supported draft constitution. This resulted in mass protests that demanded Morsi to step down. The escalations led to a military intervention, where on 3rd July 2013 the Egyptian Armed Forces, headed by General Abdelfatah El-Sisi, acted on its 48 hours ultimatum to intervene “on behalf of the people” by ousting President Morsi. President El-Sisi was sworn into office on the 8th of June 2014 and has been serving as President of Egypt since then.

According to Wikithawra - an independent statistical database of the Egyptian revolution - in the 3-year period from 2011 to 2014 more than 5,000 people lost their lives due to the unrest.² In the first 18 days of the revolution (25.01.2011-11.02.2011) more than 1.000 people lost their lives. In the interim period before President Morsi took office more than 400 people died, and almost 500 people died during the presidency of Mohamed Morsi that ended on the 30th June 2013. The highest number of deaths due to unrest was during the interim period after Mohamed Morsi was forced to step down. This was mainly due to the crackdown of

²Wikithawra collects information on deaths, arrests and injuries that occurred due to the revolution. The sources are accounted for and mentioned. Website URL: wikithawra.wordpress.com

the “Rabaa” protests where more than 2,000 people lost their lives protesting the decision to force President Morsi to step down. Figure 1 shows the deaths occurrences over time.

Figure 1: Number of deaths due to the revolution from 2011-2014



Source: Wikithawra, 2020

2.2 Economy and Demographics

The three years following the revolution witnessed ample economic and political turmoil which proved very costly to the economy and labor market. The post-revolution instability and uncertainty have resulted in disinvestment of foreign-owned firms, a decline in the value of the Egyptian pound, and a debt crisis that the government is still struggling to curb (Kirkpatrick and Amer 2011). Moreover, there was an enormous drop in tourism revenues, which is a cornerstone of the Egyptian economy. Return migration from neighboring countries that witnessed the Arab Spring like Libya has intensified the pressure on the Egyptian labor market. Economic growth during this period averaged 2.5 percent per year and by 2015 the unemployment rate had risen to 12.9 percent. Figure 2 and 3 depict the timeline of GDP growth and unemployment rates, respectively. The GDP growth dropped by more than half in 2011, which is largely due to the outbreak of the revolution. There is a clear drop in the GDP growth starting 2011, that only started converging to the pre-revolution state four years after the revolution in 2015.

The Egyptian population is exceptionally young with more than 60% under the age of 30. The population between the ages of 10 and 29 makes up 41% of Egyptians. Youths between the ages of 18 and 29 are estimated at 20.2 million, representing 21% of the country’s population (CAPMAS 2018). While such a

young population is beneficial to the economy, it is challenging for the government in terms of providing education, health services, housing and employment opportunities. Although more highly educated than previous generations, this population of young people has struggled to achieve economic stability (Elbadawy, Roushdy, et al. 2009). Even prior to the 2011 uprisings, Egypt's youth constituted an estimated 90% of the country's unemployed (UNDP 2010). Youth unemployment is exceptionally high in Egypt with its lowest rate since 2005 at approx. 25% in 2010. As seen in Figure 4, youth unemployment rose after the revolution and has not returned to its pre-revolution state. The youth unemployment rate remains around 35%, which is a 10 percentage points increase compared to the pre-revolution rate of approx. 25%.

Looking at the unemployment rate by education group, it becomes clear that the highly educated are the driver of the high unemployment rate. Figure 5 depicts the unemployment by education level from 2009-2016. The unemployment rate for people with advanced education is the highest and the gap has widened over time. As shown in Figure 5, people with a basic education witnessed a dramatic increase in their unemployment rate since the revolution, however, now the unemployment rate is converging to the pre-revolution rate. It is interesting to note that the rate for people with an intermediate or advanced education seems to have remained stable (but high) through the turmoil of the Arab Spring.

Figure 2: Real GDP Growth 2005-17, in percentage

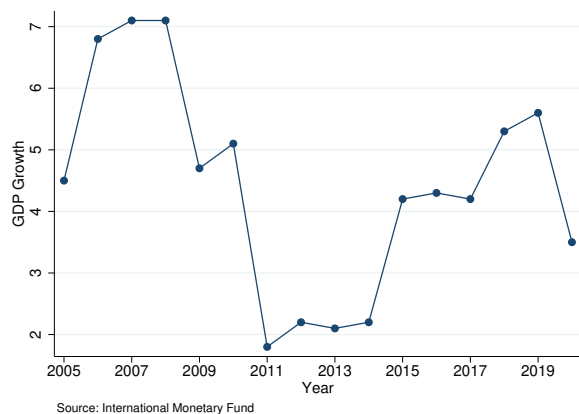


Figure 3: Unemployment 2005-20 (percentage of total labor force)

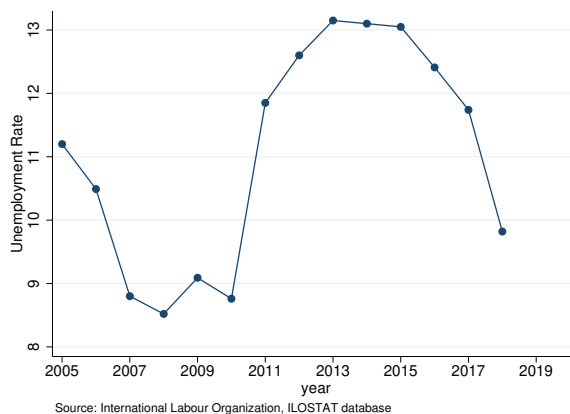


Figure 4: Youth Unemployment, total (% of total labor force ages 15-24)

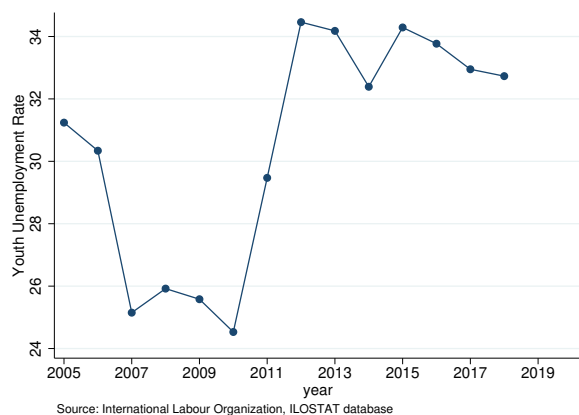
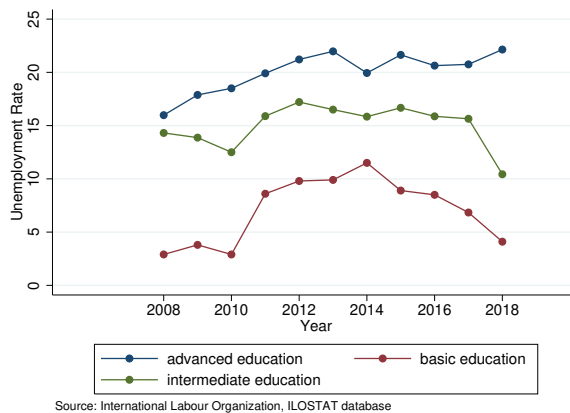


Figure 5: Unemployment by education group: advanced, intermediate, basic education (% of total force with the respective education)



3 Data

3.1 Dependent Variable: Migration Data

In 2009 the Egyptian Population Council in partnership with the Central Agency for Public Mobilization and Statistics (CAPMAS) and the Information and Decision Support Center of the Egyptian Cabinet collected the first round of data for the Survey of Young People in Egypt (SYPE) followed by the second round in 2014. The SYPE 2009 is a nationally representative sample of 15,029 young people aged 10-29. Around 73% of the respondents in 2009 were interviewed again in 2014 (10,916 out of 15,029)³. The two SYPE data sets from 2009 and 2014 were harmonized in one data set: the Harmonized Survey of Young People in Egypt (HSYPE). The sample is nationally representative, but most importantly representative of Egypt's six major administrative regions: the Urban Governorates, rural Upper Egypt, urban Upper Egypt, rural Lower Egypt, urban Lower Egypt, and the Frontier Governorates. The novelty of this dataset relies in its inclusion of the overlooked rural and slum regions in Egypt. The data is a unique source of information on the situation of youth in Egypt, covering a broad set of areas. It includes questions on education, employment, migration, health, social issues, and civic and political participation. Given the unprecedented series of political changes that have occurred since 2011, the data offers a chance to observe the consequences and impact of the Arab Spring on Egyptian youth. The dependent variable of our analysis is a binary variable measuring the intention to migrate.

3.2 Explanatory Variable: Revolution Intensity

Measuring political instability is not straightforward, as the concept is multidimensional (Jong-A-Pin 2009). The first dimension is instability within the regime. President Mubarak and his government stepped down on 11th February 2011, leaving a power vacuum until the election of Morsi in June 2012. The second dimension is the incidence of political upheaval or mass civil protests, i.e protests and casualties, which is the main measure in this paper. Wikithawra is an independent statistical database of the Egyptian Revolution that was collected by the Egyptian Center for Economic and Social Rights and contains the number and location of death incidents from 14.01.2011 until 31.12.2014. Using this data, we extend the work of El-Mallakh et al. (2018) and Giesing and Musić (2019). They use the Wikithawra database containing information on deaths to measure the revolution intensity per governorate, assuming that people living in closer proximity to the violent demonstrations and deaths are more sensitive to the unrest. These people have a higher sensitivity to the unrest because they themselves might feel more threatened or directly affected by the situation compared to those who only hear about the events in the media.

³The remaining sample could not be reached.

We improve this measurement by going on a geographically more detailed level. As a first step, we geo-coded the locations of the death occurrences in the Wikithawra dataset. This left us with 567 locations of death occurrences across Egypt. In the HSYPE dataset there are 238 sampling units that are representatively distributed in rural, urban, and slums areas in the survey data, which we geo-coded, as well. This allows us to merge the two data sets on small geographical units, which is an addition to existing literature that has focused mainly on the rather imprecise governorate level⁴ due to data constraints.

Using the geo-codes of both HSYPE and Wikithawra locations, we develop a value for the revolution intensity of a geographical unit. Residents of an area are not only affected by deaths in their own area, but also by the instability in neighboring areas. Most of the news were centered on the protests in Tahrir Square - the heart of the revolution. Even though the Tahrir Square is in Cairo, people nearby followed the news regularly and felt unease due to the crackdown of the protests. We assume that the impact of an incident is a function of both the distance of the incident to the residence of an individual and of the number of deaths that have occurred in that incident.

The value of the revolution intensity (RI) is constructed as follows:

$$RI_i = \sum_{j=1}^{238} \frac{n_{deaths_j}}{distance_{i,j}^2} \quad (1)$$

where n_{deaths_j} represents the number of deaths in one location j and $distance_{i,j}^2$ is the distance from the respondents location to the location of the deaths occurrence. Including $distance^2$ in the denominator puts less weight on distances that are very large. There is one RI specified for each of the 238 residency locations of the respondents specified in the survey data⁵. We use the main police station in the district to geocode the residency location, as no exact addresses were specified in the survey data. The RI for a given location includes all death occurrences. However, the further the location of the death occurrence, the less weight is put on it. The RI treats the effect of the distance from the occurrence of death as exponential. If the RI had linear distances, a death that occurs 5 km away would have the RI of 0.2, while a death that occurs 10 km a RI of 0.1. Using the exponential RI, a death that occurs 5 km away has a RI of 0.04, while a death that occurs 10 km only 0.01. Using exponential distances in the denominator puts diminishing weights on larger distances. This measurement is better suited to reflect perceived revolution intensity, because the larger the distance, the smaller the perception of unrest. The heat map in Figure 6 depicts the intensity of the revolution based on the RI. Table 1 shows the RI mean in every governorate.

⁴There are 27 governorates in Egypt.

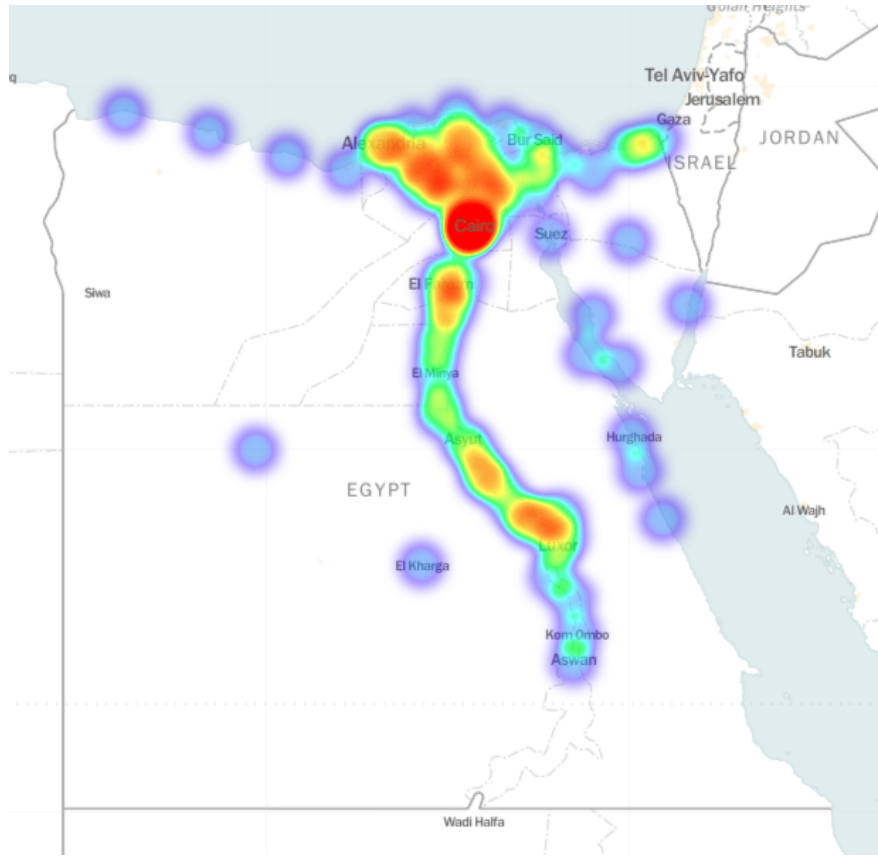
⁵The locations are the residency locations of the respondents specified in the survey data.

Table 1: Value of Revolution Intensity (RI)

Governorate	Mean of RI	Std. Dev.	Min.	Max.	N
Cairo	122.997	109.092	5.582	493.937	955
Giza	99.645	61.821	25.198	236.348	253
Port Said	77.644	36.968	41.82	126.853	42
Helwan	51.232	0	51.232	51.232	172
Suez	40.528	38.18	5.324	89.316	109
Alexandria	30.441	16.297	3.245	85.874	522
North Sinai	24.017	30.797	0.32	76.454	332
Qalioubia	23.022	21.151	4.14	57.378	548
Fayoum	19.602	21.831	0.759	54.139	302
Ismailia	16.925	15.276	0.48	34.266	139
Menia	16.81	10.815	3.461	40.778	609
New Valley	7.517	4.884	1.022	11.93	160
Qena	5.562	6.531	0.034	14.037	444
Bani Suef	5.041	4.385	0.645	10.003	329
Assiut	4.713	2.792	1.316	9.391	363
Gharbia	4.679	6.008	0.505	28.32	588
Damietta	4.583	7.446	0.419	20.14	173
Aswan	4.428	5.045	1.021	13.906	191
Beheira	4.379	6.287	0.425	21.98	571
Matrouh	3.555	4.912	0.111	11.028	260
Sharkia	3.489	4.226	0.512	16.466	934
South Sinai	3.365	3.296	0.046	7.058	79
Dakahlia	3.091	5.073	0.424	25.328	687
6 of October	2.235	0	2.235	2.235	334
Monofia	2.129	1.675	0.969	19.178	590
Sohag	1.877	2.607	0.061	7.533	448
Kafr El Sheikh	1.169	1.114	0.191	4.394	329
Luxor	0.685	0.615	0.051	1.444	240
Red Sea	0.181	0.32	0.035	1.015	119
Overall	21.999	50.512	0.034	493.937	10822

Note: The table shows the mean, standard deviation, minimum and maximum value and the number of observations of the RI. Helwan and 6 October are no longer official governorates since 2011. Helwan was incorporated into the governorate of Cairo, while the governorate of 6 October in Giza. Thus we were unable to obtain the exact geolocation of the respondents within these two governorates. We use the city center of both governorates as a proxy for the geolocation. Thus the Standard Deviation in column 2 are 0 for Helwan and 6 October. Source: Wikithawra.

Figure 6: Heat map of the RI



Note: The figure is a heat map of the RI in Egypt. Warmer colors represent a higher revolution intensity. Source: Wikithawra and SYPE.

3.3 Descriptive Statistics

3.3.1 Harmonized Survey of Young People in Egypt (HSYPE)

The HSYPE 2009 and 2014 only cover those individuals who were interviewed in both time periods. The second survey was conducted 5 years later in 2014, which means that all respondents are 5 years older and a smaller share is still in education and respectively a higher share in employment. The share of married people has also increased, and the share of the sample that intends to migrate decreased by almost by 50%. We show that the results are not driven by selective attrition in Section 5. Table 2 shows the descriptive statistics for HSYPE 2009 and 2014.

Table 2: Weighted Summary Statistics, HSYPE 2019 and 2014

	2009			2014		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Female	0.536	0.499	10916	0.536	0.499	10916
Age	18.676	5.655	10916	23.286	5.712	10916
Married	0.237	0.425	10916	0.418	0.493	10916
Rural	0.596	0.491	10916	0.596	0.491	10916
Urban	0.304	0.46	10916	0.304	0.46	10916
Slums	0.101	0.301	10916	0.101	0.301	10916
Migration Intentions	0.139	0.346	5835	0.077	0.266	8712

Source: HSYPE 2009 and 2014.

4 Empirical Identification Strategy

This paper provides evidence on how the Egyptian youth altered their migration intentions to respond to political and social instability caused by the revolution in 2011. To be able to disentangle the effect of the revolution, we need to know how the migration aspirations of the youth would have been in the absence of the revolution. Even though this is impossible to observe, it is possible to measure the effect of the revolution by separating the youth into two groups: a group more affected by the revolution and a group less affected by the revolution. It is clear that the revolution had an impact on the country as a whole, however, we assume that there are areas that were more affected than others. We determine the revolution intensity by using the RI explained in Section 3. We assume that youth, living in areas where the RI is below average, were not severely affected by the revolution and can hence constitute the counterfactual. We then analyze the effect of the revolution on the migration pattern of youth, using a difference-in-difference estimation. Individuals with a high RI that have been exposed to a high intensity of unrest will comprise the treatment group, while individuals in regions with low RI the control group. The threshold that separates the two groups is the median RI in each governorate. Thus there is a treatment and control group within every governorate and we avoid that results are driven by specific governorates. The treatment is binary: either strong RI ($D=1$) or weak RI ($D=0$). We observe individuals in two time periods, $t=0$ (2009 before the revolution) and $t=1$ (2014 after the revolution).

The difference-in-difference model is the following:

$$y_{i,t} = \alpha + \beta_1 D + \beta_2 t + \beta_3 (D * t) + \beta_4 \mathbf{X}_{i,t} + \varepsilon_{i,t} \quad (2)$$

where i and t are individual and time indices, $\mathbf{X}_{i,t}$ is a vector of control variables, D is the treatment

dummy of living in an area with a high RI, and $\varepsilon_{i,t}$ is the error term. The β_3 coefficient of the interaction term ($D * t$) is the coefficient of interest, as it captures the effect post-treatment on the treatment group. The aim of this identification is to find the difference in the average outcome between the treatment group before and after the treatment and subtract the difference in the control group before and after the treatment.

4.1 Balancing Test

To be able to measure the true effect of the revolution using the difference-in-difference estimation, we need to ensure that the treatment and control group follow the same trend in the absence of the treatment. The common trend assumption (or the parallel trend assumption) is usually conducted by investigating the variables of interest over time and checking if their trend is similar across the control and treatment group. This is, however, not feasible, as we only have two time periods (2009 and 2014). We assume that the two groups take the same trend because they are balanced across most covariates, as seen in the balance tests in Table 3 which shows the means of various characteristics of the control and treatment group and the t-test. Importantly, there is no significant difference in migration intentions before the revolution in treatment and control areas. We control for all variables shown in the balance test in all further regressions.

Table 3: Balance Test

	Control Mean	Treatment Mean	t-test	Mean Difference
Travel Intentions	0.13 (0.006)	0.147 (0.006)	-1.9 (0.009)	-0.017
Unemployment	0.297 (0.008)	0.318 (0.008)	-1.895 (0.009)	-0.02
Education Level	1.301 (0.009)	1.361 (0.009)	-4.476*** (0.01)	-0.06***
Age	18.68 (0.077)	18.672 (0.075)	0.069 (0.013)	0.007
Gender	0.544 (0.007)	0.527 (0.007)	1.852 (0.108)	0.018
Income	252.247 (186.945)	85.89 (6.817)	0.906 (183.514)	166.36
Marital Status	0.342 (0.007)	0.325 (0.007)	1.549 (0.01)	0.0166
Slum	0.089 (0.0038)	0.112 (0.004)	-3.943*** (0.006)	-0.023***
Rural	0.646 (0.006)	0.548 (0.007)	10.469*** (0.009)	0.098***
Urban	0.265 (0.006)	0.34 (0.006)	-8.57*** (0.009)	-0.075***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Balance test from the base year 2009. Columns (1) to (3) show the means and standard errors in parenthesis. Education Levels: No Education (=0) less than secondary Education (=1), secondary education (=3) and tertiary education or higher (=4). Source: HSYPE.

5 Results

5.1 Effect on Migration Intentions

In this section, we show the effect of the revolution on migration intentions of the youth and different heterogeneous effects. Table 4 provides the baseline results. After that, we analyze the effect by gender in Table 5, followed by education in Table 6 and residency area in Tables 7, 8 and 9.

Table 4 provides the results of the difference-in-difference estimation of the revolution effect on the migration intentions for youth. Columns (1) and (2) provide cross section results for the estimation, while column (3) and (4) show the panel data results with individual fixed effects. The difference-in-difference estimator is negative and significant for all estimation models. The results suggest that the revolution decreased the migration intentions of youth by 4.2 percentage points.

5.1.1 Migration intentions by gender

Table 5 provides the results of the difference-in-difference estimation of the revolution effect on the migration intentions of youth by gender. The fixed effects estimation results show that the revolution decreased the

Table 4: Migration Intentions

	(1)	(2)	(3)	(4)
2014 * Strong RI	-0.0303* (0.0135)	-0.0290* (0.0132)	-0.0393** (0.0142)	-0.0420** (0.0150)
Strong RI	0.0213 (0.0116)	0.0151 (0.0113)	0.00455 (0.0335)	0.0142 (0.0353)
2014	-0.0641*** (0.00956)	-0.0557*** (0.00953)	-0.0610*** (0.00990)	-0.0343* (0.0154)
Constant	0.155*** (0.00811)	0.172*** (0.0167)	0.165*** (0.0175)	0.149*** (0.0306)
Fixed Effects			Yes	Yes
Controls		Yes		Yes
R-Squared	0.0314	0.0948	0.0347	0.0347
Observations	14546	13058	14546	13058

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controlling in column (2) and (4) for education, gender, marital status, age, employment, income and residency area. Column (3) and (4) include individual fixed effects. Source: HSYPE and Wikithawra.

migration intentions of young men by almost 6.5 percentage points and had no significant effect on the migration intentions of women. A potential explanation for this gender gap is risk-aversion. Research shows that women are more risk-averse compared to men (Gneezy and Charness 2012). Furthermore, there is a negative correlation between migration and risk aversion (Akgüç et al. 2016; Goldbach and Schlüter 2018; Huber, Nowotny, et al. 2018). More risk-averse people are usually the "stayers" when it comes to out-migration, rural-urban migration, and international migration. Therefore, women had very low migration intentions from the start and there was less potential for a reduction.

Table 5: Migration Intentions by gender

	Female	Male
2014 * Strong RI	-0.0153 (0.0102)	-0.0645* (0.0285)
Strong RI	0.0137 (0.0240)	-0.000870 (0.0605)
2014	-0.00519 (0.0112)	-0.0851** (0.0288)
Constant	0.0434* (0.0176)	0.245*** (0.0624)
Fixed Effects	Yes	Yes
Controls	Yes	Yes
R-Squared	0.0171	0.0617
Observations	7311	5747

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controlling for education, marital status, age, employment, income and residency area and individual fixed effects. Source: HSYPE and Wikithawra.

Neither single nor married women changed their migration intentions due to the revolution in 2011. Cultural factors play a role in the different reaction mechanisms of young women. Decisions in the household are culturally male-dominated in Egypt; women might not hold as much decision making power in the households as their husbands. Thus, women could reach a decision to migrate with their husband or with their guardians, but might find it harder to reach that decision for themselves due to financial and cultural constraints. For instance, a CAPMAS report shows that most women depend on their father or husband as their main source of income and consider their own income as secondary (Khairy and Amin 2014). Financial dependence, coupled with cultural factors, might deter women from independently considering migration decisions.

5.1.2 Migration intentions by education level

Table 6 presents the effect of the revolution on the migration intentions of different education groups. The migration intentions of youth with a secondary education were significantly decreased by more than 5 percentage points. Migration intentions for the highest education level decreased even more but the coefficient is insignificant due to the smaller sample size. Previous research finds a positive correlation between higher education attainment and migration (Williams 2009; Haapanen and Bockerman 2013).

Table 6: Migration intentions by education

	Edu ₁	Edu ₂	Edu ₃	Edu ₄
2014 * Strong RI	-0.0271 (0.0286)	-0.0380 (0.0355)	-0.0538* (0.0252)	-0.0993 (0.0545)
Strong RI	-0.0335 (0.0867)	0.0392 (0.0415)	0.0205 (0.0527)	0.00923 (0.201)
2014	-0.0171 (0.0289)	-0.0564 (0.0340)	-0.0543* (0.0268)	-0.00285 (0.0684)
Constant	0.103* (0.0445)	0.0843** (0.0315)	0.184*** (0.0334)	0.240 (0.130)
Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
R-Squared	0.0314	0.0208	0.0488	0.1011
Observations	1756	3313	6556	1433

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area and income. Column 1: No Education, Column 2: Less than High School, Column 3: High School or Vocational and Column 4: University or higher. Source: HSYPE and Wikithawra.

5.1.3 Migration intentions by residency area

Residential areas in Egypt can be divided into three groups: urban, rural, and slum areas. The four urban governorates (Cairo, Alexandria, Port Said, and Suez) have no rural population. Each of the other 22 governorates is subdivided into urban, rural and slum areas. Nine of these governorates are located in the Nile Delta (Lower Egypt), eight are located in the Nile Valley (Upper Egypt), and the remaining five frontier governorates are located on the eastern and western boundaries of Egypt. Slum areas exist in all governorates, however in the HSYPE sample not all governorate have surveyed slum populations.⁶ Egypt's slum areas exhibit a complete lack of urban planing and building control, as well as infrastructure. According to the United Nations for Disaster Risk Reduction (UNISDR), there are 40 million informal settlement dwellers in Egypt, summing up to more than 40% of the population (UNISDR, 2015). Sixty percent of the slum dwellers live in Greater Cairo alone.

Studying the effect of the revolution on the migration intentions of youths in the three residency types in Table 8, it is evident that only the slum sample shows significant results. The revolution has decreased the migration intentions of people living in slum areas by almost 14 percentage points. The finding that the migration intentions of the urban sample was not affected by the unrest calls for further investigation, since international migration is usually more prevalent in urban samples (Lerch 2016). A study on migration flows in Nairobi slums shows that a circular migration system is at play, where the majority of slum dwellers are short-term migrants spending on average less than 3 years in the area (Beguy et al. 2010). This would imply that slum residents are more tolerant to changing residence areas and hence, would consider migration decisions more frequently than permanent rural or urban residents. In addition, feelings of hope and a change in government that would prioritize their needs incentivizes slum dwellers to decrease their migration intentions. For instance, "Slum-Free Egypt by 2030" - a plan aimed at eradicating slum areas in Egypt by 2030 - was launched after the revolution which signaled hope and optimism to slum dwellers in Egypt and their living conditions⁷. Furthermore, people living in informal areas in Egypt have less resources than people living in more formal areas and would therefore have more incentives to migrate (Sabry 2010). The literature on slum residents and their behavioral attitudes is relatively scarce. Marx et al. (2013) discuss whether slum areas are stuck in a poverty trap, or whether they act as an indicator of a fast growing economy of a developing country. The authors use many developing countries, including Egypt, in their research and they show that the urbanization of slum areas in Egypt has been increasing from 1990-2007. It is still unclear in the literature whether slum areas are considered a temporary stop or a permanent residence. However, slum areas are poorer and exhibit very poor living conditions all over the world. This could explain why the

⁶Port Said, Suez, 6 October, Assiut, Qena, Aswan, Luxor, Red Sea, New Valley, Matrouh, North Sinai, and South Sinai did not sample slums in the HSYPE data.

⁷Source: Informal Settlement and Development Fund (ISDF)

slum sample is most affected by the optimism channel and by a hope of a better future in Egypt.

Table 7: Migration Intentions by residency

	Urban	Rural	Slums
2014 * Strong RI	-0.0323 (0.0276)	-0.0339 (0.0194)	-0.135** (0.0489)
Strong RI treatment_q	0.0166 (0.0479)	0.0147 (0.0517)	-0.120 (0.144)
2014	0.0129 (0.0252)	-0.0515* (0.0200)	-0.0297 (0.0503)
Constant	0.163* (0.0728)	0.157*** (0.0370)	0.159 (0.125)
Fixed Effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
R-Squared	0.0272	0.0387	0.0988
Observations	3958	7710	1391

Note: t statistics in parentheses. Standard errors are robust.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area and income. Source: HSYPE and Wikithawra.

It is very interesting to see such a high difference for the effect of the revolution of migration intentions between formal and informal areas. The urban and rural sample seem to not be affected by the revolution directly. When conducting the difference-in-difference estimation for just the urban and rural sample, the estimator is not significant for almost any subgroup.⁸ However, when analyzing the slum sample in Table 8, the results are significant and negative for the highly educated. For the rural sample, no education group was affected by the revolution in their migration intentions. Rural areas are usually dominated by low-skill work like farming and agriculture (Campbell and Ahmed 2012), which could explain the lack of education effects. In the slum sample the two most educated groups were heavily affected by the revolution in their migration intentions. The youth with a university degree or higher decreased their migration intentions by more than 35 percentage points and the youth with a secondary education by almost 19 percentage points. Keeping in mind the correlation between high education attainment and migration intentions, the highly educated group had more scope for migration intentions reduction as seen by the results. Irrespective of the revolution, economic incentives have driven highly educated Egyptian youth to seek a better future abroad. The revolution has given the respective slum dwellers the hope that this better life could be achieved within their borders.

It is evident from Table 9 that the migration intentions of the young men living in slums areas were extremely affected by the revolution. More affected men in slum areas decreased their migration intentions by 20 percentage points due to the revolution, whereas women only by less than 9 percentage points.

⁸The tables with the regression results for the urban sample can be found in the appendix in tables 13 and 14

Table 8: Migration Intentions by education: slum sample

	Edu ₁	Edu ₂	Edu ₃	Edu ₄
2014 * Strong RI	-0.202 (0.172)	-0.0478 (0.0995)	-0.189* (0.0753)	-0.354* (0.166)
Strong RI		0.0242 (0.0515)	0.0150 (0.131)	
2014	-0.0408 (0.175)	-0.0306 (0.0801)	-0.0611 (0.0828)	0.179 (0.244)
Constant	-0.0148 (0.184)	0.0251 (0.0625)	0.171 (0.101)	0.192 (0.152)
Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
R-Squared	0.1484	0.0869	0.1123	0.3683
Observations	123	302	755	210

Note: The first row shows the coefficients for the difference-in difference estimator (2014 * Strong RI), t statistics in parentheses. Standard errors are robust.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area and income. Source: HSYPE and Wikithawra.

Table 9: Migration intentions by gender: slum sample

	Female	Male
2014 * Strong RI	-0.0885* (0.0396)	-0.196* (0.0905)
Strong RI	0.0513 (0.0381)	-0.393 (0.320)
2014	0.0346 (0.0432)	-0.0678 (0.0851)
Constant	0.126 (0.0671)	0.122 (0.279)
Fixed Effects	Yes	Yes
Controls	Yes	Yes
R-Squared	0.1156	0.1445
Observations	793	597

Note: The first row shows the coefficients for the difference-in difference estimator (2014 * Strong RI), t statistics in parentheses. Standard errors are robust.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area and income. Source: HSYPE and Wikithawra.

6 Potential explanations

In this section, we outline two potential channels that might explain the link between revolution intensity and migration intentions.

6.1 Optimism channel

This channel is time-variant and highly dependent on the political identification of the people. We expect this channel to have a negative effect on migration intentions on the premise that the revolution induced feelings of hope in the youth. Feelings of hope in the country incentivizes them to stay and "rebuild" it and witness a prosperous Egypt. The years after the revolution, however, witnessed a lot of changes. The euphoria ended when Egypt went from one political extreme to the other: Mubarak, followed by Morsi of the Muslim Brotherhood, followed by the military president El-Sisi (Fantz 2016). Hope in the country is a matter of perception that is dependent on the characteristics of the beholder. Religious people felt hope when the Muslim Brotherhood took power, while liberals felt despair. Supporters of the Muslim Brotherhood felt betrayal and utter despair when Morsi was ousted in 2013 and their protests were violently shut down, while liberals felt that the military was rescuing them from a religious autocratic regime. Keeping in mind that the survey data do not ask political affiliations or religious beliefs, it is not possible to allocate possible political views to the respondents to anticipate the direction of the optimism channel.

However, looking at the perception of bribery and nepotism of respondents, there is a clear correlation between migration intentions and increased perceptions of corruption and thus a loss of hope in the integrity of Egyptian systems and institutions. Figures 7, 8 and 9 show that youth with an intention to migrate perceive a higher degree of corruption in the respective years before and after the revolution. Thus, as people became more optimistic about better Egyptian institutions, they might have reduced their migration intentions. And those that believed that the Egyptian revolution will improve the institutions might have been correct, as the overall perception of corruption decreased in the years after the revolution (2015-2016) as seen in Figure 9.

6.2 Economic channels

Economic channels that cause the revolution to have an impact on youth migration intention are employment or income. This would not be a direct effect of the social and political unrest but rather its ramifications on the economy. This is an important channel, as the main incentive for migration for young Egyptian men are economic reasons. Egypt's economy declined after the revolution and is hence expected to have a positive effect on migration intentions. A survey conducted by the International Organization for Migration in 2011 reveals that employment, security, wages and corruption are the most important issues for young Egyptians after the revolution. Almost 70% of respondents had trouble with their current employment after the revolution: some lost their employment and some were sent on unpaid or forced leave (De Bel-Air 2016). However, the unemployment rate was not directly affected by the revolution intensity but rather by

Figure 7: Perception of Bribery and Nepotism in 2009. Source: Harmonized Survey of Young People 2009

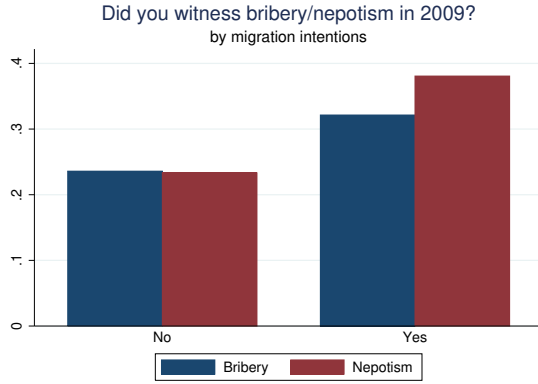


Figure 8: Perception of Bribery and Nepotism in 2013-2014. Source: Harmonized Survey of Young People 2014

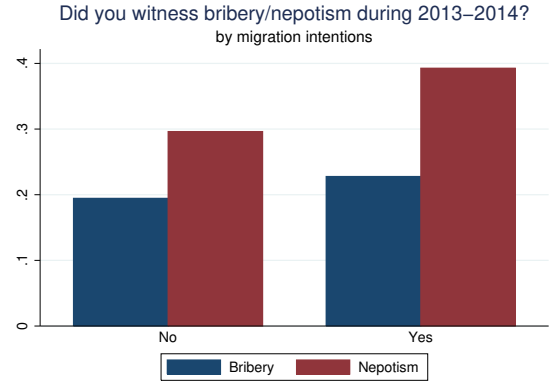
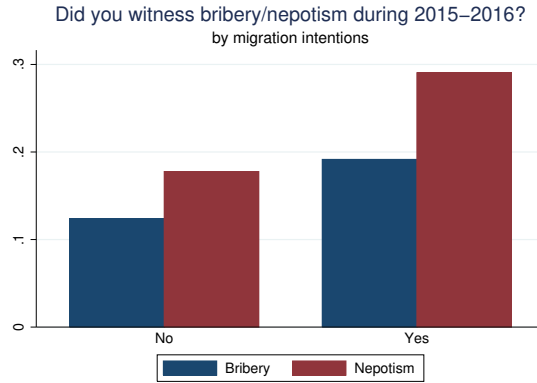


Figure 9: Perception of Bribery and Nepotism in 2015-2016. Source: Survey of Young People in Informal Urban Areas of Greater Cairo, SYPE-IGC 2016



its following consequences like changes of government, decline of FDI and tourism, and devaluation of the Egyptian pound. For instance, the tourist regions along the red sea were hit hard economically due to a reduction in tourism, not due to a strong revolution intensity. Therefore these general economic channels cannot explain our findings given that they are taking place in the whole country. In addition, we control for unemployment in our regressions.

7 Robustness Check

We implement three robustness checks that corroborate our results. First, we conduct the difference-in-difference analysis with a revolution intensity measurement that does not account for quadratic distances.

Furthermore, we conduct the difference-in-difference analysis without Cairo as well as Greater Cairo. The estimations yield the same results, as shown in Tables 10 and 11. Third, we provide some additional information on attrition and sample selection.

The value of the revolution intensity (RI) for the robustness check is now constructed as follows:

$$RI_i = \sum_{j=1}^{238} \frac{n_{deaths_j}}{distance_{i,j}} \quad (3)$$

Table 10: Migration Intentions, non-quadratic distance

	Total Sample	Total Slum Sample	Slum Sample: Female	Slum Sample: Male
2014 * Strong RI	-0.03* (0.0149)	-0.175*** (0.0503)	-0.106** (0.0387)	-0.243** (0.0923)
Strong RI	-0.0122 (0.0638)	-0.106 (0.163)	0.0831* (0.0397)	-0.392 (0.302)
2014	-0.0405** (0.0151)	-0.0274 (0.0477)	0.0290 (0.0377)	-0.0628 (0.0840)
Constant	0.160*** (0.0408)	0.136 (0.116)	0.114 (0.0641)	0.0753 (0.238)
Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
R-Squared	0.0336	0.1111	0.1233	0.1580
Observations	13058	1390	793	597

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controlling in column (2) and (4) for education, gender, marital status, age, employment, and residency area. Source: HSYPE and Wikithawra.

Second, we show the results for the sample excluding Cairo and Greater Cairo. This illustrates that the results are not solely driven by the capital. On the contrary, results are slightly larger if Cairo and Greater Cairo is excluded.

One challenge that often limits migration studies is attrition. In this analysis, we work with a balanced panel, i.e. we only analyse individuals that we observe both in 2009 and in 2014. Therefore our analysis is internally valid and the causal interpretation is not affected by attrition. However, we could have a selected sample as we only include individuals in our analysis that are still in Egypt in 2014. Thus, we only analyze the stayers and the causal effect of individual stayers on their migration intention. Appendix Table 15 provides some information about sample selection. We can see that differences between the complete 2009 sample (left columns) and the harmonized panel sample (right columns) are negligible. Most variables are very similar, with some differences only in the rural/urban split and the proportion of students. It seems that attrition is slightly higher in urban areas, maybe because people are more mobile. Migration intentions only differ by 0.7 percentage points. Therefore we do not expect our sample to be very selected.

Table 11: Migration Intentions without Cairo and Greater Cairo

	Without Cairo	Without Greater Cairo
2014 * Strong RI	-0.0452** (0.0159)	-0.0420** (0.0150)
Strong RI	0.0171 (0.0359)	0.0142 (0.0353)
2014	-0.0427* (0.0166)	-0.0343* (0.0154)
Constant	0.147*** (0.0315)	0.149*** (0.0306)
Fixed Effects	Yes	Yes
Controls	Yes	Yes
R-Squared	0.0405	0.0347
Observations	11853	13058

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area. Greater Cairo includes the governorates Helwan, 6 October, and Giza. Source: HSYPE and Wikithawra.

8 Conclusion

The revolution was unprecedented for Egypt. While the effects on the economy and politics have been thoroughly studied, the effects on the society and individuals remains to be fully understood. The HSYPE data-set offers an opportunity to examine how the revolution affected their migration aspirations. This paper shows that the revolution decreased the migration intentions of young men by more than 5% and only affected women in slum areas by decreasing their intentions by 8%. The effect on young men is four times higher when just looking at the slum sample. The slum youth in Egypt exhibit different perceptions of the revolution effects than the urban sample. For instance, the migration intentions for the highly educated youth decreased by more than 35% for the slum sample, while the highly educated youth with a post-secondary degree in all residential areas were unaffected. The optimism channel seems to be driving the migration intentions of the slum population.

Unexpectedly, the migration intentions of the urban sample, single women, and youth with less-than-secondary education were completely unaffected. Women might not have been affected due to their financial and societal dependence on their family or husband (Khairy and Amin 2014). Slum areas were more affected because they lack basic infrastructure and protection by police precinct, are more hopeful that a new regime would improve their situation and hence the optimism channel was more prevalent. The reaction and behavior of the slum population differs significantly from the more formal areas. This calls for more research focusing on slum areas to better understand their reaction mechanisms to societal and policy changes, as well as shocks.

Our post-treatment analysis is in 2014, the last year of the comprehensive survey and one year before Egypt experienced very high inflation rates. Hence, we expect that analyzing the migration intentions of youth at a later time will offer further interesting results. We expect that the effect of the optimism channel diminishes with time. Moreover, with the inflation increase in 2015, we expect the effect of the revolution on migration intentions to intensify, as many feel uncertain about the future now more than ever.

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A Appendix

Table 12: Weighted Summary Statistics, SYPE and HSYPE 2009

	SYPE 2009			HSYPE 2009		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Female	0.538	0.499	15029	0.536	0.499	10916
Age	18.949	5.647	15029	18.676	5.655	10916
Married	0.23	0.421	15029	0.237	0.425	10916
Rural	0.555	0.497	15029	0.596	0.491	10916
Urban	0.355	0.479	15029	0.304	0.46	10916
Slum	0.09	0.286	15029	0.101	0.301	10916
Student	0.462	0.499	15029	0.497	0.5	10916
Migration intentions	0.146	0.353	8355	0.139	0.346	5835
Wage	172.12	11166.83	15029	167.467	9584.87	10916

Source: Survey of Young People in Egypt (SYPE) 2009 and Harmonized Survey of Young People in Egypt (HSYPE) 2009.

Table 13: Migration Intentions: rural and urban area by gender

	Urban		Rural	
	Female	Male	Female	Male
2014 * Strong RI	0.0153 (0.0220)	-0.0774 (0.0495)	-0.0125 (0.0115)	-0.0517 (0.0376)
Strong RI	-0.0285 (0.0323)	0.0237 (0.0892)	0.0313 (0.0370)	0.00413 (0.0861)
2014	-0.0189 (0.0219)	0.0386 (0.0478)	-0.00973 (0.0134)	-0.115** (0.0379)
Constant	0.0907** (0.0338)	0.227 (0.148)	0.0183 (0.0215)	0.297*** (0.0726)
Fixed Effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
R-Squared	0.0211	0.0464	0.0117	0.0824
Observations	2087	1871	4431	3279

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area, feeling of certainty about future, level of perceived corruption and religiosity witness of bribery. Source: HSYPE and Wikithawra.

Table 14: Migration Intentions: rural and urban area by education

	Urban				Rural			
	Edu ₁	Edu ₂	Edu ₃	Edu ₄	Edu ₁	Edu ₂	Edu ₃	Edu ₄
2014 * Strong RI	-0.181*	-0.0889	-0.0448	0.00149	0.0107	-0.0085	-0.0427	-0.121
	(0.0839)	(0.0590)	(0.0444)	(0.0806)	(0.0269)	(0.0481)	(0.0334)	(0.0816)
Strong RI	0.198	0.0392	0.0458		-0.148	0.0348	0.00536	0.0208
	(0.139)	(0.106)	(0.0670)		(0.165)	(0.0481)	(0.0818)	(0.201)
2014	0.0601	0.0101	0.0104	-0.0267	-0.0342	-0.0731	-0.0702*	-0.0206
	(0.0446)	(0.0521)	(0.0428)	(0.0832)	(0.0284)	(0.0448)	(0.0347)	(0.115)
Constant	0.197**	0.0492	0.156**	0.271***	0.124	0.121**	0.204***	0.203
	(0.0683)	(0.0691)	(0.0564)	(0.0819)	(0.0762)	(0.0404)	(0.0447)	(0.118)
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.3352	0.0283	0.0215	0.1175	0.0270	0.0438	0.0652	0.1312
Observations	247	993	2039	679	1386	2018	3762	544

Note: t statistics in parentheses. Standard errors are robust. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Weights are from the base year 2009. Controls include education, gender, marital status, age, employment, residency area, feeling of certainty about future, level of perceived corruption and religiosity witness of bribery. Source: HSYPE and Wikithawra.

Table 15: Educational Gender Ratio: by residency area

	Slum			Rural			Urban		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N
No Education	0.709	0.456	93	0.76	0.427	966	0.645	0.48	169
Less than High School	0.514	0.5	352	0.522	0.499	2432	0.506	0.5	1277
High School or Vocational	0.533	0.499	482	0.5	0.5	2647	0.49	0.5	1343
University or higher	0.59	0.493	171	0.48	0.5	458	0.529	0.499	525
Total	0.551	0.497	1098	0.546	0.498	6503	0.51	0.499	3314

Source: Harmonized Survey of Young People in Egypt (HSYPE). The table shows the mean, standard deviation and number of observations for the gender ratio by education and residency area. Female takes the value 1, whereas male 0.