

Arab Spring and migration intentions

Work in progress

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Abstract

This paper empirically analyses how migration's intentions evolve with a changing environment in the home country. We make use of the the political and economical instability induced by the Arab Spring to test if Egyptian young people has changed their intentions to migrate abroad using a difference-in-difference strategy. Results highlight an increase in the aspirations to migrate following the Arab Spring and are robust to alternative treatment groups and to several specifications. We provide possible interpretations of the results, such as a decrease in the opportunity cost of moving.

J.E.L. classification: J61, N15

Key Words: Migration, Intention, Political instability

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1 Introduction

The migration decision is inherently dynamic and the optimal choice between several options can change over time in a complex way as new information is released. Intentions' statements constitute one of the first observable step of the migration process, but so far little is known about how individual agents form these intentions or how they update their expectations over time. This is surprising given the role of forward looking behaviour in decision-making theories, notably under uncertainty. In this paper, we aim to better understand how a new set of conditions, induced by the Arab Spring events, affects individual expectations about future (potential) migration.

The use of stated intentions inevitably raises questions about the kind of information conveyed, notably regarding their rationality, that is to say their accuracy to predict future behaviour.¹ In line with previous literature providing evidence that the stated intentions of migration contain information about its actual realization,² we assume that intentions are rational (the "best case hypothesis" of Manski (1990)), portraying optimal future migration behaviour conditional on current information and environment. We do not expect intentions to be a perfect approximate of future migration, firstly because intentions are based on self-declaration and often have no time-limit in their formulation: they tend to grasp all types of migration regardless of their timing, their duration or their legal status (Dustmann & Okatenko, 2014). Secondly, from a dynamic point of view, the true and intended probability distribution hardly coincide also because unexpected shocks, wealth and financial constraints could have a binding role in covering the migration costs. This "involuntary immobility" (Carling, 2014) could even have a non-financial aspect when endogeneous characteristics such as age or gender prevent the realization of migration plans (Chort, 2014).³ This paper analyses how intentions can evolve over time under a changing environment, because the new information released changes the constraints, the costs or the benefits of the location decision. We do not aim to explain how intentions are correlated with actual migration, and even allow a rational individual to "change his mind" over time.

The Arab Spring episode in Egypt offers a natural quasi-experiment to analyse the variation in migration intentions following a new "environment" in the home country. The Arab spring events

¹From the point of view of an economist, intention statement may be "irrational" if they do not imply any commitment (Van der Klaauw, 2012) which is in our study no actual willing to realize the migration intention. This could be the case if migration intentions reflect only political protests or individual's dreams. In our empirical exercise, we argue that irrational intentions should be marginal in our sample due to the disconnection between the question on migration aspirations and the survey module on experience of Arab Spring. However, some robustness checks are performed on the sub-sample of potential migrants having already prepare their journey to isolate rational intentions.

²In a recent and convincing exercise, Bertoli & Ruysen (2016) compare individual stated migration from 147 countries to the yearly scale of actual bilateral migration flows to OECD destinations. The estimated elasticity of bilateral migration flows with respect to the number of bilateral intending migrants stands from 0.409 to 0.800 according to the specifications used. Other works on the association between migration aspirations and realization includes Dustmann & Okatenko (2014) and Docquier *et al.* (2014) Only a handful of papers analyse the relationship between intended and realization of migration at the country level. Creighton (2013) and Chort (2014) for the Mexico-US migration stream and van Dalen & Henkens (2013) for the Dutch case show that migration intentions contain behavioural information as they are positively and significantly associated with both international and internal actual migration.

³In the context of Mexico, Chort (2014) shows that women have a lower propensity to realize their migration plans than men.

refers to the immediate collapses of governments following popular uprisings and the periods of high political changes and instability that have followed. In January 2011, Egyptians inspired by the Jasmine revolution in Tunisia gathered to the well-known Tahrir Square, claiming for the dismissal of their long-standing leader Hosni Mubarak. Following his rapid destitution, Egypt has known three different political regimes (military, Islamist religious movement and then military "coup d'état") in three years. Since 2014, the political situation seems to be stable. However, this Egyptian crisis had several economic and social consequences. The Arab Spring event has had a deteriorating effect in Egypt on several indicators as GDP, fiscal debts, unemployment and inflation. Political instability first influences the aspirations to migrate because of its impacts on economic stability and performance. Intentions to migrate should thus have been updated according to the induced-changing costs and opportunities. It does not necessarily translate into an increase in the migration intention if this bad economic context has induced a rise in migration costs or constraints. Furthermore, the political and economic instability have been spread across all the MENA region, reducing the expected opportunities to migrate in this area. This is even more the case as Egypt has seen massive return migrant flows during this time period, that could indirectly be indicative of a decrease in expected income and in social network at destination. Migration can still be a valid outside option for the ones disappointed with the new regime and with high preference (or taste) for democratic values, as highly educated youth often are (Easterly, 2001). At the extreme case, violence and repressions against Islamists from the Muslim Brotherhood under Sisi regime could have acted as a push factor and increase the willingness to migrate (Friebel *et al.*, 2013).

More specifically, this paper consists in an empirical analysis of the Egyptian case using panel survey data from the nationally representative Survey of Young People in Egypt (SYPE) that interviewed young Egyptians in 2009 and in 2014. More specifically, we exploit the fact that some governorates have been much more exposed than others to the Arab Spring protests and consequences. The geographical variation in exposure allows us to determine treatment and control groups. We test several identifications of the treatment group, allowing more individual variation (through the interaction of governorates exposure with access to information, having an unprotected job or being a religious person) and exploiting a continuous rather than a binary intensity to treatment. We argue that the Arab Spring protests and the induced economic and political consequences could not have been anticipated at the time of the first survey (in 2009). Thus, this setting lends itself to a difference-in-difference design, where we (i) control for time-invariant local economic conditions and individual preference (through the use of individual and governorate fixed-effect) and time-varying threatened characteristics (such as education and political participation) and (ii) correct estimations from the attrition bias. We find evidence that the incremental effect of the Arab Spring intensity on the migration intentions ranges from 0.024 to 0.136 percentage point (according to the specifications), which represents a substantial increase from 16% to 88% with respect to the sample mean prior to the Arab Spring (0.154).

2 Background

2.1 The Arab Spring episode in Egypt

Inspired by the events in Tunisia, Egyptians gathered on the Tahrir square on January 25th 2011 to protest against corruption, poor economic conditions and the 30-year-old regime of President Hosni Mubarak. The demonstrations grew up into national protests and led in 18 days to the remove from power of Mubarak and his political party (the National Democratic Party).⁴ Following the Mubarak's fall, a military regime (the Supreme Council of the Armed Forces) takes control of the country until June 2012, when Mohamed Morsi, an Islamist from the Muslim Brotherhood, was elected president. Anti-government protests continued and led to a "coup d'etat" in June 2013, with the overthrow of Morsi by the Egyptian Armed Forces, headed by Abdul Fatah al-Sisi. Since the official Sisi's election in 2014, Egypt seems to have stabilized its political situation.

Economic literature on the "Arab Awakening" (that is to say the revolution that led to the *de facto* dictator dismiss) often links protests and national demonstrations to economic and political claims from the urban and educated youth population (Acemoglu *et al.*, 2014). Over the last decade, Egypt has expand access to education, leading to an usual high proportion of educated among young people (Dimova *et al.*, 2016). The highly educated "youth bulge" coupled with high degree of nepotism has yielded to a lack of employment opportunities for educated youth (Campante & Chor, 2014). Frustrations from the widespread unemployment among young people, strengthened by strong norms regarding marriage that impeded the transition to adulthood, has lead to a crisis of "waitthood" that triggered protests (Singerman, 2013; Malik & Awadallah, 2013). The sharp increase in basic commodities price, during the 2006-2011 period, has also increase household vulnerability as Arab states rely heavily on imported food (Breisinger *et al.*, 2011). Alongside to economic reasons, protests contained some political grievances. Rougier (2016) highlights that the authoritarian redistributive social contract of the MENA region (high level of redistributions, state control of the economy and absence of political freedom) has led to a lack of reforms and structural transformation, which can explain the dearth of socioeconomic opportunities and the subsequent political violences. Mubarak's regime was also characterised by a high degree of corruption and favouritism. Inequalities supported by rampant corruption and repression, meant that vast segments of the population were excluded from modern jobs and political participation (Acemoglu *et al.*, 2014). Mass protests were thus triggered by a claim for more democratic regime (Costello *et al.*, 2015) and a demand for more equity and inclusion (Hassine, 2015). To the best of our knowledge, no study has yet investigated the factors driving the subsequent changing cast of ruling political elites (first by the Muslim Brotherhood and then by the Army).

The Arab Spring events in Egypt, characterised by four phases of leadership changes, has led to a range of political, social and economic consequences that makes the economy in worse shape after the political instability period. Although empirical studies are scarce due to data binding constraints, macro-economic indicators show a deterioration of main economic outcomes in the years following the uprisings. Egypt has known a global economic slowdown that has amplified its long-standing structural problems. Not enough jobs were generated to contain the youth bulge, and

⁴Egypt was not an isolated case: destitution of long-standing rulers following civil protests occurs in Tunisia, Libya and Yemen.

high unemployment was still an issue in 2014. [Hosny *et al.* \(2014\)](#) shows that the faster growing sectors before the revolution (Agriculture, Construction, Communication, Trade, Services) were the ones that have been most adversely affected. The tourism sector was particularly hit by the political instability. At the firm's level, [Acemoglu *et al.* \(2014\)](#) shows that politically connected firms have seen their fortunes varying according to the power reversal. Furthermore, the political turmoil and social uprisings increase uncertainty for domestic and foreign investors. Cutbacks in foreign direct investments and foreign exchange shortages due to the decline in confidence has had a detrimental effect on investment. Concomitantly, foreign reserves and Egypt's competitiveness were depleted despite a U.S. dollar fixed exchange rate ([Fund, 2015](#)). As neighbourhood countries in the MENA region also experience similar deterioration of their economies, some adverse spillovers effects occurred. One of interest is the wave of previously migrants return back, which has provoked a falloff in remittances and more pressure in the labour market. To meet population's claims, public sector wage increased. However, in the absence of a rise in governmental revenues, this led to massive fiscal imbalances exacerbated by the increase in oil prices (Egypt is a net oil importer) ([Khan, 2014](#)).

2.2 Political instability and migration intentions

So far, no literature connects the political context to the migration intentions. However, as we assume that intentions are rational (see the Introduction) and constitute one of the first step of the migration decision, intentions should be influenced by the same factors than for the actual decision. In this way, intentions to migrate result from an expected utility's maximization process. The intended migrant compares the utility from migrating in each location with the one from staying in Egypt and chooses the expected utility-maximizing alternative. Political instability in home country could influence intentions to migrate in various ways.

An update in the aspirations to migrate could occurred for economic reasons. The new economic context induced by the political instability (less GDP, more unemployment) has modify the costs and opportunities of staying in Egypt. Youth can be more financially constrained after the revolution, preventing the realization (and to a lesser extent the statement) of migration. The deteriorating economic situation in post-revolutionary Egypt can also be a "push" factor for migration if the youth expects better employment opportunities abroad. As this economic situation is shared within the MENA region, which historically constitutes one of the main migration destination area for Egypt, the opportunities for migrating in this region (the "pull" factors) have been eroded. The massive return of Egyptian migrants during this period reflects that expectations of earnings with migration within this region did not exceed anymore the ones of being (/retuning) in Egypt. Besides, the broad flows of return migrants has indirectly induced for intended migrants a progressive dilution of social networks at destination.⁵

Migration can also be seen as an outside option for people that are disappointed with the political evolution of the initial revolts and that believe not anymore in political institutions. Lack of political confidence in the home country's institutions increases emigration propensity significantly

⁵Social networks at destination contribute to improve job prospects and to reduce the multifaceted costs of crossing a border. See ([Bertoli & Ruyssen, 2016](#))

Lam (2002). This is particularly true for the most educated and wealthy youth, that have higher propensities to be both engaged in political activities (Easterly, 2001) and to migrate. The participation in uprisings can have induced a change in youth' preference, for example a taste for more democracy. In this case, western destination will be more attractive after the revolts.

Some youth may update their migration intentions to escape political persecution (the extreme case would be the one of political refugees). Reuters news highlight for example that under Al-Sisi, anyone opposing the regime faces severe repression, but the Muslim Brotherhood supporters were particularly targeted. Extremely religious people should re-consider their intention to migrate since Al-Sisi rules Egypt (since June 2013). Friebel *et al.* (2013) for instance find that migration intentions are sensitive to violence and xenophobic feelings in Mozambique, especially among household who have many young children and little access to social networks.

3 Data

3.1 Main dataset and sample selection

The two waves of the nationally representative panel Survey of Young People in Egypt (SYPE) covers a wide range of youth issues like education, employment, migration intentions, social issues or civic and political participation.⁶ The SYPE 2009 targeted adolescents and young adults aged from 10 to 29 years old, while the second wave in 2014 is composed of the same sample of young people aged from 15 to 35 years old. In our analysis, we exclude youth aged from 10 to 14 years old at the first wave as their answers to the migration intentions may reflect more dreams than actual process. In all, our sample consists of 7761 individuals (balanced panel). Note that the SYPE suffers from high attrition rate, mainly due to the relocation of respondents who could not be tracked in 2014 (Roushdy & Sieverding, 2015b). It concerns 35% of our sample (11947 individuals aged from 15 to 29 years old were interviewed in 2009). A glance at t-test in table A1 in Appendix indicates that attrition may be due to (internal or international) migration. Unlocatable individuals have a greater propensity to be non-married, wealthier, male, highly educated (at least the secondary level) and to be located in urban areas. All these variables are well-known determinants of migration. They however had declared in the first wave significantly lower international migration aspirations, suggesting that part of this attrition may be due to the (internal) relocation for marriage reasons. Importantly for our study, we observe no significant difference between attritors and non-attritors regarding the exposure to the Arab Spring events (see below for a definition). We can not exclude the fact that some of the attritors were actual international migrants by the second wave, introducing a downward bias in the estimation of the effects of the Arab Spring on migration. To limit the attrition bias, all benchmark estimations are weighted based on the probability of non-response, constructed to adjust the sample of the 2014 SYPE for attrition (Roushdy & Sieverding, 2015a). In addition, robustness checks are performed to take into account the selection into attrition (see the empirical analysis for more details).

⁶Contrary to the most of surveys in Egypt, the SYPE is one of the first large scale survey to include slums areas and the five frontier governorates. Data are also representative at the level of the six major administrative areas (urban Governorates, rural Upper Egypt, urban Upper Egypt, rural Lower Egypt, urban Lower Egypt, and the Frontier Governorates).

3.2 Intention of migration

Migration intentions are determined by the following question "Do you intend to travel to any country to work/live/study?". Although the same question were used in the two surveys, aspirations to migrate fall from 15.4% in 2009 to 7.9% in 2014 and from 27.2% to 13.8% for male (see Table A2). Intentions to migrate for girls are negligible (5.6% in 2009 and 2.9% in 2014). Migration intentions are not always time-consistent: 19% of our sample respondents have changed their mind between the two waves (i.e. they have declared their willingness to migrate in the first wave and renounce to it in the second wave, or inversely). The decrease in aspirations to migrate can be induced by a more stabilized life situation. In 5 years (between 2009 and 2014), respondents have had a higher propensity to get married (from 40% in 2009 to 56% in 2014), to have a higher educational level (from 51% in 2009 to 70% in 2014), to be in paid-work (from 25% to 31%), they get richer, although the negative mismatch between their education level and their occupation increases. A deeper look at the data (Table A3) reveals that several characteristics seem to be correlated with the migration intentions, as the fact of being a male, single, with at least a secondary degree. The aspired migrants are also richer, participate less in political activities, are more susceptible to experience negative mismatch, and more often in employment or searching for a job. We also note a significant increase over time of the influence of some characteristics on migration intention, as having a higher education, being wealthy, in paid employment or in negative mismatch.

The SYPE also asks individuals where do they want to migrate (Table A4). The MENA region is the main intended destination (79% in 2009 and 84% in 2014 of the wishing destinations), following by Western countries located in Europe, North America and Australia (19% in 2009 and 12% in 2012). A negligible proportion of individuals (1% or less according to the year) mentioned others part of the world. We divided the MENA region between countries having also experienced political instability during the Arab Spring period (Algeria, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Syria, Tunisia and Yemen) and those who have not (Bahrein, Qatar, Saudi Arabia, Sudan, Turkey and United Arab Emirates). Table A4 shows that there is no significant difference in intended destination before and after the Arab Spring events towards others countries having experienced the same event. However we notice a significant increase in aspiration to migrate in stable Arabic countries (especially in Saudi Arabia - details available upon request). Less people wanted to migrate in Europe (notably in France, Greece and Italy) in the second wave, certainly due to the financial crisis that happened in this region during the same period.

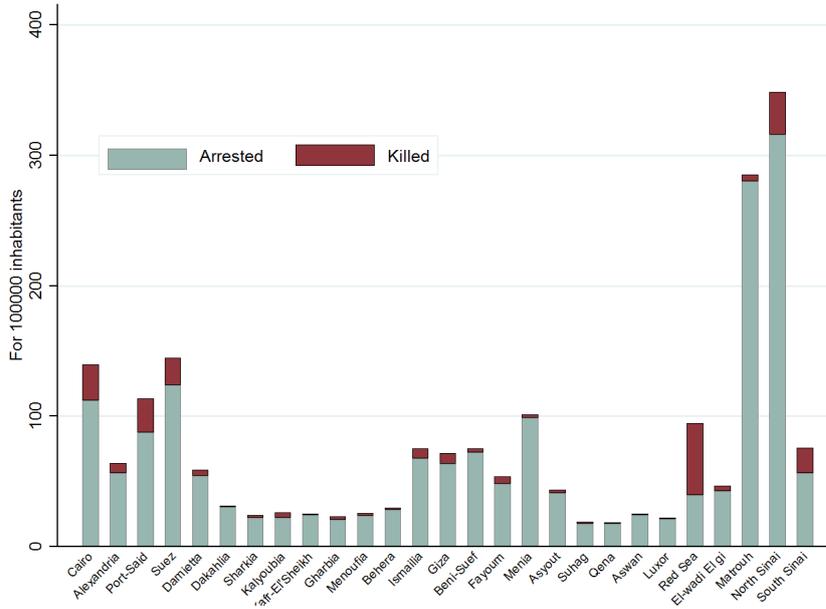
3.3 Exposure to Arab Spring

The statistical Database of the Egyptian Revolution, administered by the Egyptian Center for Economic and Social Rights⁷ counts and documents all fatalities, injuries and arrests that have occurred from the 25th January 2011 to 31th January 2014 by governorate. Our measure of exposure to Arab Spring expresses the number of arrested and killed people (normalized for

⁷Available online on the Wiki Thawra site.

100000 inhabitants to take into account demographic differences) at the governorate level.⁸ Figure 1 shows high discrepancies in the Arab Spring exposure. In particular seven governorates were more exposed than the others (Cairo, Port-Said, Suez, Menia, Matrouh and North Sinai.). In the following empirical analysis, we refers to this most exposed governorates as being "risky", in the sense that the risk for demonstrators and civil population to be arrested or killed were higher. (El-Mallakh *et al.*, 2016) argue that the number of martyrs is a summary measure of the protests intensity, correlated with other indicators of the revolution.

Figure 1: Exposure to Arab Spring by governorate



4 Empirical strategy

4.1 Benchmark specification

To estimate how Arab Spring events relate to the international migration intention, we exploit the geographic variation in exposure to fatalities and arrests using a difference-in-difference approach. Denote Y_i the intention to migrate for the youth i . This youth is observed in 2009, before any events ($\mathbf{1}_{(t>2014)} = 0$) and in 2014, after the Arab Spring ($\mathbf{1}_{(t>2014)} = 1$). Some have been exposed to Arab Spring ($T_i = 1$) and others not ($T_i = 0$). As this will be discussed below, we use several proxies for the treatment variable. We estimate linear probability models of the following equation:

⁸(El-Mallakh *et al.*, 2016) use a similar measure in their study on the labour market conditions of Egyptian women, although they only refer to martyrs, i.e. demonstrators who died during the protests, and have a shorter timespan (from January 2011 to June 2012)

$$Y_i = \alpha \mathbf{1}_{(t>2014)} + \beta T_i + \gamma \mathbf{1}_{(t>2014)} \times T_i + \delta X_i + \iota_i + \epsilon_i \quad (1)$$

where X_i is a set of covariates measuring characteristics of the youth (such as cohort, marital status, education level, employment status, religiosity, political participation, region and wealth index) to control for observable differences between treated and non-treated. α captures the average difference in migration intentions between pre- and post-treatment as identified on the non-treated (i.e. the time trend). β is the coefficient of interest: it reflects the average difference in outcome between the treated and the non-treated. The error ϵ_i is assumed to be distributed independently across time and governorate. We include individual fixed effects ι_i to take into account time-invariant unobserved heterogeneity. Standard errors are bootstrapped (Bertrand *et al.*, 2004). In some specifications, we include interactions between the individual variables and $\mathbf{1}_{(t>2014)}$, to control for potential differences in observable characteristics between youth in governorate with varying exposure to Arab Spring.

4.2 Discussion on non-anticipation assumption

The identification consists in assuming that the Arab Spring revolts (and the induced political instability) is an unforeseen and exogenous shock affecting young individuals' preferences. Although political, economic and social situation in Egypt have been the main roots of the protest, the spark of the revolution in Egypt was initiated by the self-immolation of Mohamed Bouazizi in Tunisia, that became a catalyst for the Tunisian Jasmine revolution and generates widespread revolts throughout the Arab region (Costello *et al.*, 2015; Campante & Chor, 2014). The non-expectation of the event seems to be confirmed by our data at hand. The SPYE's second wave module about the experience of the 25th January revolution reveals that only 5% of our sample respondent were not surprised at all that the revolution began in 2011. This question does not contain any time-limit, thus one can hardly imagine that in a country in which public demonstrations were illegal (Acemoglu *et al.*, 2014) these respondents were aware about the revolution since the first wave of interviews (in 2009) and even though this is the case, they could not have reasonably anticipate all political consequences that will happen during the following 5 years.

Our main assumption is thus that there were no-anticipation effect of the entire Arab Spring events at the time of the first survey. The non-predictability assumption could be threatened if some of the mechanisms that have led to social unrest also influence the migration intentions. For instance bad economic conditions in the pre-Arab Spring period could have lowered the opportunity cost of revolts (Acemoglu & Robinson, 2001) but also have acted as a well-known "push" factor for migration.⁹ Another concern relates to the rising education level of youth in Egypt: individuals with higher educational attainment are more likely to engage in all types of political acts because education increases awareness of political issues, fosters the socialization needed for effective political activity. For instance, Campante & Chor (2014) show that pressure towards democracy,

⁹Literature has notably identified the specific role of poor governance, unemployment and consumer price inflation (Asongu & Nwachukwu, 2016), as well as the gap between young adults' aspirations and the lack of socioeconomic opportunities for them (Rougier, 2016) as factors leading to the Arab Spring .

notably through protest activities, increases when the actual level of income is lower than the one predicted by the education level, explaining this result by the fact that the opportunity costs of being involved in political activism rather than working decreases with unemployment. On the other hand, migrants are well-known to be positively selected on education. We argue that these concerns are minimised by the use of youth and governorate fixed-effect that capture time-invariant local economic conditions and individual preference. We also add in the regressions education level (that could have increased between the two waves) and political participation to control for these time-varying threatened characteristics.

4.3 Treatment and control groups

The empirical strategy relies also on identifying valid treatment and control groups. To do so, we exploit the geographical variation in exposure to Arab Springs as some governorates experience much more demonstrations and arrests (in respect to their population density) than others (cf section 3.3.). Five different pairs of treatment/control group are tested. The first treatment relates only to the fact of being located in a risky governorate, namely in Cairo, Port-Said, Suez, Menia, Matrouh and North Sinai.¹⁰ We also use a continuous variable that capture the intensity of treatment through the logarithm of the number of arrested and killed people (Treatment 2). To obtain more individual variation, we interact the fact of being in a risky governorate with the access to information, proxied by the fact to follows news on TV, newspapers, internet or via social media (Facebook, Twitter). We assume that people in this second treatment group are fully aware of what happened in their governorate (and beyond).¹¹ The last sets of treatment/control pair groups target specific individual that have been more exposed than the others to the events, as the fact of being in a risky governorate without a public sector job (Treatment 4) or of being a religious person (as defined by the fact of practising every day religious activities). The reason behind this rational is that since Sisi's, person more or less affiliated with the Muslim Brotherhood movement have been massively arrested.

From an econometrics' point of view, Arab Spring events resembles a quasi-experiment when assignment to treatment or to control group is quasi-random. This involves that the comparability of two groups along relevant dimensions for the outcome variable (except for treatment).

5 Results

5.1 Main difference-in-difference estimations

Firstly we present the results of our difference-in-difference estimations for the five treatment variables explained above: (1) being located in a risky governorate, (2) the log number of arrested

¹⁰Note that no one in our non-attritors sample has moved in another governorate between the two waves.

¹¹Some scholars found that social media, especially Twitter played some role in the protests: more connected individual are more likely to participate in political events (?). This could induce a bias if connected individuals are clustered into some governorate. In this case, the exposure to Arab Spring is not random anymore. The control for participation in political activities attenuate this bias.

and killed people, (3) being located in a risky governorate and having access to information, (4) being located in a risky governorate and not having a public sector job, (5) being located in a risky governorate and being a religious person.

Table 1 summarizes the different specifications tested. We report here only the coefficients of interest γ that captures the average treatment effect on the treated through the interaction between being in 2014 $\mathbf{1}_{(t>2014)}$ and being in the treatment group. We notice in Table 1 that all coefficients are significant for all treatment groups and every specification tested. As we use linear probability model, the incremental effect of the Arab Spring on migration's intention is directly given by the coefficient. Looking at the first treatment definition, we see that being located in a risky governorate increases the migration intention by 0.054 percentage points, which represents a rise of 32% with respect to the sample mean prior to the Arab Spring (0.154). The second row of Table 1 reports the impact of the Arab Spring intensity (continuous variable): a one standard-deviation in the exposure to AS increases the migration intention by 0.024 percentage point (16%). Results are not altered by the introduction of the $\text{Post} \times X_i$ interaction terms.

Turning to the individual variation, we find that the effect is even higher. Being in a risky governorate and having access to news increase the migration aspirations by 70% to 88% when time-varying interactions are taken into account (third row in Table 1 - Treatment 3). The Arab Spring effect is of the same magnitude when treatment is individualized by the religiosity of the youth respondent (Treatment 5). When looking at having an unprotected job (Treatment 4) the effect is lower (a rise of 54%), and become insignificant when controls are interacted with the post-revolution dummy. Table A5 and A6 in Appendix show that the effect is higher for young male, also still significantly positive for young women. The difference in treatment according to the treatment identification scenario suggests that different channels of transmission of the Arab Spring. As the effect is lowered (and vanishes in some specifications) when considering the unstable job situation (Treatment 4), the employment situation seems to be a driver of the migration intention rise following to the Arab Spring. To investigate further which mechanisms drive the results, we examine the effects of several additional variables by adding them in the different specifications. Table 2 reports Linear probability model with fixed effect and bootstrapped errors terms (previously columns 4 and 5) according to the different treatment scenarii when the following mechanisms are taken into account: (1) being in a negative mismatch, (2) trust in the institution, (3) uncertainty about the future, (4) social networks at origin (5) number of known migrants, (6) proportion of returnees at the governorate level. [To be done!]

5.2 Robustness checks and additional results

5.2.1 Excluding irrational declarations

To definitely exclude irrational declarations, we re-perform the estimations on different sub-sample:

- On those who have already undertook some procedures to migration. In this sub-sample, we take into account those who are about to migrate (or at least truly try to migrate)
- On wealthy and educated non-students men. This sub-sample capture highly non-constrained people that have no impediment to migrate.

Table 1: Average treatment effect of Arab Spring (AS) exposure on migration intention

	LPM	LPM-FE	LPM-FE	LPM-FE	LPM-FE
	(1)	(2)	(3)	(4)	(5)
$\mathbf{1}_{(t>2014)} * Treat1$	0.054*** (0.012)	0.050*** (0.013)	0.050*** (0.014)	0.050*** (0.013)	0.050*** (0.014)
$\mathbf{1}_{(t>2014)} * Treat2$	0.028*** (0.006)	0.024*** (0.007)	0.024*** (0.007)	0.024*** (0.004)	0.024*** (0.006)
$\mathbf{1}_{(t>2014)} * Treat3$	0.083*** (0.026)	0.108*** (0.034)	0.136*** (0.035)	0.108*** (0.034)	0.136*** (0.051)
$\mathbf{1}_{(t>2014)} * Treat4$	0.057*** (0.020)	0.031 (0.023)	0.084*** (0.025)	0.031 (0.023)	0.084*** (0.031)
$\mathbf{1}_{(t>2014)} * Treat5$	0.030 (0.025)	0.114*** (0.040)	0.115*** (0.040)	0.114*** (0.040)	0.115** (0.053)
Observations	12,985	12,985	12,985	12,985	12,985
# individuals		7,382	7,382	7,382	7,382
Individual controls	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	Yes	Yes	Yes
$\mathbf{1}_{(t>2014)} * controls$	No	No	Yes	No	Yes
Standard errors bootstrapped	No	No	No	Yes	Yes

Model (1): Linear probability model (LPM), Model (2) LPM with individual fixed-effect, Model (3) LPM with fixed effect and varying control variable, Model (4) LPM with fixed-effect and bootstrapped standard errors, Model (5) LPM with fixed effect, varying control variable and bootstrapped standard errors.

Treatment 1: Located in a risky governorate (dummy), Treatment 2: log number of arrested and killed people, Treatment 3: located in a risky governorate \times access to information (dummy), Treatment 4: located in a risky governorate \times not having a public sector job (dummy), Treatment 5: located in a risky governorate \times being a religious person (dummy).

Source: Author's calculation. Survey on Young people in Egypt (SYPE) 2009 and 2014.

5.2.2 Alternative specifications

- calculated the marginal (rather, incremental) effect when using a logit for migration intentions (instead of linear probability model)
- Interaction with individual characteristics and level of intensity
- Only Cairo as a treatment as in [El-Mallakh et al. \(2016\)](#).

5.2.3 Taking into account destinations

Using Reuters international newswire archive on violent and non-violent protests ([Costello et al., 2015](#)) show that almost all Arab states experienced a major upsurge in 2010-2011. These protests were contained in some oil-countries (Iraq, Qatar, Saudi Arabia) where oil revenue *may have created*

coercive and cooptative controls.

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Tables

Table A1: Descriptive statistics according to the attrition status (first wave)

Variables	Attritors		Non-attritors		Mean Diff
	# Obs.	Mean	# Obs.	Mean	
Intended to migrate	4186	0.13	7761	0.15	-0.02***
Wealth index (quintiles)	4186	3.07	7761	2.95	0.12***
Secondary or higher education level	4186	0.59	7761	0.51	0.08***
Rural	4186	0.51	7761	0.59	-0.09***
Age	4186	21.90	7761	21.42	0.48***
Male	4186	0.54	7761	0.45	0.09***
Married	4186	0.34	7761	0.40	-0.06***
Being in a risky governorate	4186	0.24	7761	0.23	0.01

Table A2: Descriptive statistics - All sample

	All sample		
	2009	2014	Mean diff.
Male	0.45	0.45	0.00
Age	21.42	26.42	-5.00***
Married	0.40	0.56	-0.16***
More than secondary	0.51	0.70	-0.20***
Paid employment	0.25	0.31	-0.06***
Self-employment	0.04	0.10	-0.06***
Unemployed	0.09	0.09	0.00
Inactive	0.63	0.51	0.12***
Negative mismatch	0.19	0.23	-0.04***
Ever migrated	0.01	0.02	-0.01***
Rural	0.59	0.59	0.00
Greater Cairo	0.17	0.17	0.00
Regional			
Alexandria region	0.13	0.13	0.00
Suez Canal Region	0.16	0.16	0.00
North Upper Egypt			
Region	0.11	0.11	0.00
Asyut Region	0.05	0.05	0.00
South Upper Egypt			
Regional	0.14	0.14	0.00
Wealth index	2.95	3.15	-0.20***
Political activity	0.22	0.07	0.15***
Religious	0.89	0.94	-0.04***
Migration intentions	0.15	0.08	0.08***
#obs	7761	7761	

Table A3: Descriptive statistics, according to migration intentions

	With migration intentions			With no migration intentions			Selection	
	(1)	(2)	(1)-(2)	(3)	(4)	(3)-(4)	(1)-(3)	(2)-(4)
	2009	2014	Mean diff.	2009	2014	Mean diff.	Mean diff.	Mean diff.
Male	0.80	0.80	0.00	0.39	0.42	-0.03***	-0.41***	-0.38***
Age	20.45	25.55	-5.10***	21.60	26.49	-4.90***	1.15***	0.94***
Married	0.20	0.37	-0.17***	0.44	0.58	-0.14***	0.24***	0.21***
Secondary +	0.56	0.82	-0.26***	0.50	0.69	-0.20***	-0.07***	-0.13***
Paid employment	0.36	0.50	-0.14***	0.23	0.29	-0.06***	-0.13***	-0.20***
Self-employment	0.07	0.13	-0.06***	0.03	0.09	-0.06***	-0.04***	-0.04***
Unemployed	0.14	0.17	-0.03	0.08	0.08	-0.01	-0.06***	-0.08***
Inactive	0.43	0.21	0.22***	0.66	0.53	0.13***	0.23***	0.32***
Negative mismatch	0.31	0.40	-0.10***	0.17	0.21	-0.05***	-0.14***	-0.19***
Ever migrated	0.00	0.12	-0.12***	0.01	0.01	0.00***	0.01***	-0.11***
Rural	0.59	0.56	0.02	0.60	0.60	0.00	0.01	0.03
Greater Cairo	0.13	0.21	-0.08***	0.18	0.17	0.01	0.05***	-0.04**
Alexandria	0.15	0.15	0.00	0.13	0.13	0.00	-0.02**	-0.02
Suez Canal	0.12	0.10	0.02	0.17	0.16	0.00	0.05***	0.06***
North Upper Egypt	0.11	0.15	-0.04**	0.11	0.11	0.00	0.01	-0.04***
Asyut	0.06	0.07	-0.01	0.05	0.05	0.00	-0.01	-0.02**
South Upper Egypt	0.15	0.05	0.10***	0.14	0.15	-0.01	-0.01	0.10***
Wealth index (quintile)	3.10	3.47	-0.37***	2.92	3.12	-0.20***	-0.18***	-0.35***
Political activity	0.33	0.19	0.14***	0.20	0.06	0.14***	-0.13***	-0.13***
Religious	0.87	0.92	-0.06***	0.90	0.94	-0.04***	0.03***	0.01
Migration intentions	1.00	1.00	0.00	0.00	0.00	0.00	-1.00	-1.00
#obs	1194	609		6567	7152			

Table A4: Intended destinations of migration

Intended destination	2009	2014	Mean diff.
Arab Spring countries	0.278	0.274	0.00
Other arabic countries	0.507	0.57	-0.06**
Western countries	0.187	0.122	0.07***
Rest of the world	0.003	0.01	-0.01*

Table A5: Average treatment effect of Arab Spring (AS) exposure on migration intention - Male sample

	(1)	(2)	(3)	(4)	(5)
$\mathbf{1}_{(t>2014)} * Treat1$	0.081*** (0.024)	0.081*** (0.027)	0.070** (0.028)	0.081** (0.034)	0.070** (0.029)
$\mathbf{1}_{(t>2014)} * Treat2$	0.050*** (0.013)	0.047*** (0.014)	0.042*** (0.015)	0.047*** (0.009)	0.042*** (0.012)
$\mathbf{1}_{(t>2014)} * Treat3$	0.085** (0.041)	0.111** (0.053)	0.119** (0.056)	0.111* (0.061)	0.119** (0.050)
$\mathbf{1}_{(t>2014)} * Treat4$	0.096*** (0.030)	0.080** (0.035)	0.067* (0.037)	0.080** (0.037)	0.067* (0.037)
$\mathbf{1}_{(t>2014)} * Treat5$	0.067 (0.047)	0.168** (0.079)	0.207** (0.080)	0.168*** (0.059)	0.207*** (0.073)
Observations	5,771	5,771	5,771	5,771	5,771
# individuals		3,325	3,325	3,325	3,325
Individual controls	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	Yes	Yes	Yes
$\mathbf{1}_{(t>2014)} * controls$	No	No	Yes	No	Yes
Standard errors bootstrapped	No	No	No	Yes	Yes

Model (1): Linear probability model (LPM), Model (2) LPM with individual fixed-effect, Model (3) LPM with fixed effect and varying control variable, Model (4) LPM with fixed-effect and bootstrapped standard errors, Model (5) LPM with fixed effect, varying control variable and bootstrapped standard errors.

Treatment 1: Located in a risky governorate (dummy), Treatment 2: log number of arrested and killed people, Treatment 3: located in a risky governorate \times access to information (dummy), Treatment 4: located in a risky governorate \times not having a public sector job (dummy), Treatment 5: located in a risky governorate \times being a religious person (dummy).

Source: Author's calculation. Survey on Young people in Egypt (SYPE) 2009 and 2014.

Table A6: Average treatment effect of Arab Spring (AS) exposure on migration intention - Female sample

	(1)	(2)	(3)	(4)	(5)
$\mathbf{1}_{(t>2014)} * Treat1$	0.034*** (0.011)	0.029*** (0.011)	0.031*** (0.012)	0.029** (0.013)	0.031** (0.013)
$\mathbf{1}_{(t>2014)} * Treat2$	0.010* (0.006)	0.006 (0.006)	0.008 (0.006)	0.006 (0.005)	0.008* (0.005)
$\mathbf{1}_{(t>2014)} * Treat3$	0.101*** (0.032)	0.189*** (0.043)	0.192*** (0.044)	0.189** (0.076)	0.192*** (0.059)
$\mathbf{1}_{(t>2014)} * Treat4$	0.082** (0.033)	0.099** (0.041)	0.136*** (0.045)	0.099** (0.044)	0.136** (0.053)
$\mathbf{1}_{(t>2014)} * Treat5$	-0.015 (0.023)	0.048 (0.033)	0.054 (0.034)	0.048 (0.038)	0.054 (0.035)
Observations	7,214	7,214	7,214	7,214	7,214
# individuals		4,057	4,057	4,057	4,057
Individual controls	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	Yes	Yes	Yes
$\mathbf{1}_{(t>2014)} * controls$	No	No	Yes	No	Yes
Standard errors bootstrapped	No	No	No	Yes	Yes

Model (1): Linear probability model (LPM), Model (2) LPM with individual fixed-effect, Model (3) LPM with fixed effect and varying control variable, Model (4) LPM with fixed-effect and bootstrapped standard errors, Model (5) LPM with fixed effect, varying control variable and bootstrapped standard errors.

Treatment 1: Located in a risky governorate (dummy), Treatment 2: log number of arrested and killed people, Treatment 3: located in a risky governorate \times access to information (dummy), Treatment 4: located in a risky governorate \times not having a public sector job (dummy), Treatment 5: located in a risky governorate \times being a religious person (dummy).

Source: Author's calculation. Survey on Young people in Egypt (SYPE) 2009 and 2014.

Table A7: Average treatment effect of Arab Spring (AS) exposure on migration intention - Selection into attrition

	(1)	(2)	(3)	(4)	(5)
$\mathbf{1}_{(t>2014)} * Treat1$	0.058*** (0.010)	0.060*** (0.012)	0.057*** (0.013)	0.060*** (0.011)	0.057*** (0.013)
$\mathbf{1}_{(t>2014)} * Treat2$	0.032*** (0.006)	0.028*** (0.006)	0.030*** (0.007)	0.028*** (0.006)	0.030*** (0.005)
$\mathbf{1}_{(t>2014)} * Treat3$	0.057** (0.023)	0.099*** (0.031)	0.139*** (0.035)	0.099** (0.044)	0.139*** (0.038)
$\mathbf{1}_{(t>2014)} * Treat4$	0.071*** (0.018)	0.031 (0.022)	0.102*** (0.024)	0.031 (0.022)	0.102*** (0.026)
$\mathbf{1}_{(t>2014)} * Treat5$	0.054*** (0.020)	0.109*** (0.035)	0.098** (0.039)	0.109*** (0.035)	0.098*** (0.034)
Observations	13,619	15,467	13,619	18,328	15,467
# individuals		7,739	7,736	7,739	7,736
Individual controls	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	Yes	Yes	Yes
$\mathbf{1}_{(t>2014)} * controls$	No	No	Yes	No	Yes
Standard errors bootstrapped	No	No	No	Yes	Yes

Model (1): Linear probability model (LPM), Model (2) LPM with individual fixed-effect, Model (3) LPM with fixed effect and varying control variable, Model (4) LPM with fixed-effect and bootstrapped standard errors, Model (5) LPM with fixed effect, varying control variable and bootstrapped standard errors.

Treatment 1: Located in a risky governorate (dummy), Treatment 2: log number of arrested and killed people, Treatment 3: located in a risky governorate \times access to information (dummy), Treatment 4: located in a risky governorate \times not having a public sector job (dummy), Treatment 5: located in a risky governorate \times being a religious person (dummy).

Source: Author's calculation. Survey on Young people in Egypt (SYPE) 2009 and 2014.