

DISCUSSION PAPER SERIES

IZA DP No. 15933

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Countries:  
The Role of Post-Revolutionary Stress**

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## ABSTRACT

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# The Decision to Emigrate in Six MENA Countries: The Role of Post-Revolutionary Stress

This paper studies the determinants of emigration from six Middle East and North Africa (MENA) countries in light of the Arab Spring of 2011. The aim is to determine if the economically depressing events which occurred as a result of the Arab Spring, resulted in brain drain for many countries. The paper's analysis is conducted using the Arab Transformation Project dataset of the year 2014 by employing an ordered probit model. The main conclusion of the paper is that sentiments of unhappiness appear to be the main determinant of the decision to emigrate. Other post-revolutionary feelings include lack of trust and political and democratic discontent, which highly encourage emigration decisions. In addition, socio-economic factors, such as being young, being male, and being highly educated are all contributing factors to the willingness to emigrate. However, married individuals are less likely to consider emigration.

**JEL Classification:** C25, J60, O15

**Keywords:** Arab Spring, emigration, unhappiness, attitude

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## 1. Introduction

Emigration is an international phenomenon; in 2019, emigrants stood at around 271 million individuals, constituting 3.5% of the global population. However, seen from a regional perspective, trends and numbers vary from one region to another. Particular regions are characterized by more migration flows than others. For example, Asian countries and Mexico top the list for the number of emigrant outflows. However, one interesting observation arises when examining the top 20 countries of origin for immigrants worldwide, three of them are countries from the Middle East and North Africa (MENA) region.<sup>1</sup> Formally, the International Organization for Migration (IOM) defines emigration as “the act of moving from one’s country of nationality or usual residence to another country”. Emigration is therefore the relocation of individuals to a destination country.

Emigration from the MENA region is classified into three main patterns: the first is forced migration and internal displacement, resulting mainly from the wars which erupted in light of the revolutions in Syria and Libya. The second pattern is irregular, mixed migration, which is motivated by economic and political factors, and lastly, labor migration, caused by the willingness of emigrants to have better work opportunities. Labor migration takes the form of both regular and irregular emigration.<sup>2</sup>

Several Arab states are known to be above-average sender countries; the ratio of first-generation emigrants to the total population of these countries exceeds the world average (Fandrich & Fargues, 2012). In 2015, international migrants in the MENA region stood at 34.5 million, which

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<sup>1</sup> World Migration Report, 2020. <https://publications.iom.int/books/world-migration-report-2020>

<sup>2</sup> IOM MENA Region Strategy, 2017-2020. <https://publications.iom.int/books/iom-middle-east-and-north-africa-regional-strategy-2017-2020>

is a 150% increase compared to the number of 1990. In addition, emigrants from the MENA region constitute 10% of the global migrant stock.<sup>3</sup>

In 2011, a phenomenal episode of protests and demonstrations in several Arab countries marked the start of the Arab Spring uprisings. These revolutions, which resulted in the overthrow of several governments, presidents, and regimes revealed the will of citizens to change the way their countries were governed. The protests that were carried out were an impetus for determining the political, social, and economic future of the corresponding countries (Ismael & Ismael, 2013; Jones, 2012). The Arab Spring was accompanied by times characterized by risks and uncertainties; while masses took to the streets to voice their demands and impose the change they seek, there was no assurance that their demands would be fulfilled. Greenberg (2014) asserts that democracy is never a guaranteed outcome of revolutions and social movements. These levels of uncertainty experienced by citizens have a direct impact on the decision-making process; expectations about the future affect the decisions taken by citizens, especially amongst youth (Liu et al., 2019).

Of the various decisions that may be affected by the political upheavals and the nationwide demonstrations is the decision to emigrate. In this paper, we explore the determinants of emigration from the MENA region in the period following the Arab Spring, using the Arab Transformation Project dataset of the year 2014. While examining the factors affecting the willingness to emigrate among the MENA region citizens, we pay close attention to the factors constituting the mental health aftermath and attitudes individuals exhibit after collective actions and social movements end.

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<sup>3</sup> Migration to, from and in the Middle East and North Africa, 2016.  
[https://www.iom.int/sites/default/files/country/mena/Migration-in-the-Middle-East-and-North-Africa\\_Data%20Sheet\\_August2016.pdf](https://www.iom.int/sites/default/files/country/mena/Migration-in-the-Middle-East-and-North-Africa_Data%20Sheet_August2016.pdf)

While most studies focus on the causes and main drivers of revolutions, one of which is the Arab Spring, this paper adds to the existing studies by examining the effects of revolutions on populations. In particular, the contribution of this paper is that it examines how the willingness to emigrate is affected by the aftermath of the Arab Spring uprisings that individuals either took part in or were subject to its consequences. Thus, we attempt to capture the impact of both behavioral and psychological effects of the Arab Spring on the decision to emigrate.

The paper is structured as follows. Section 2 briefly summarizes the existing literature both theoretically and empirically. Section 3 presents the research methodology by introducing the data and the empirical model. Empirical results are displayed and discussed in Section 4. Section 5 concludes.

## **2. Literature Review**

### ***2.1 Conceptual Background***

#### *a. The Arab Spring and its Aftermath*

The Arab Spring of 2011 is a major example of social movements and collective actions. Protests, riots, and national uprisings erupted subsequently in several Arab countries, all carrying similar demands: changing the regime. Citizens from all backgrounds, beliefs, and ideologies, and schools of thought participated in and mobilized these nationwide movements. Each had their vision and expectation as to how the political system should look after the end of the movement. As such, many citizens were satisfied by the outcomes of the Arab Spring, whereas many believed that the situation was worse than it was before. In certain countries, the Arab Spring succeeded in toppling and replacing many existing regimes, while in others, it escalated into civil wars.

These major transformations have left their toll on various social, economic, and political aspects in countries in which they occurred, and they have also left population-level impacts. Liu et al. (2019) empirically analyze the effects of being exposed to protests and consequently political instability on the well-being of Egyptian youth. Specifically, they study the effect of such exposure on social trust, uncertainty, education, and the health of youth. A fixed-effects model shows that perceptions of uncertainty significantly rose due to protests, and respondents reported a significant decline in their health. The results also show that the protests did not enhance public trust in public institutions. From a theoretical perspective, the post-Arab Spring era has witnessed increased divisions and further ineffective governance due to political differences, and rising insecurities may have contributed to the erosion of social trust (Murshed, 2002).

The Arab Spring has also impacted the psychological state and mental health of citizens of countries in which it occurred. Matthies-Boon (2017) conducts a qualitative analysis through testimonial interviews with Egyptian participants in the January 25<sup>th</sup> Revolution to study the impact of the revolution on the participants' psychological state. She concludes that participants have been experiencing traumatic and depressive consequences of the revolution, even three years after the start of the Arab Spring.

A noteworthy observation is that such effects do not only fall upon participants in the Arab Spring but affect all citizens of a nation. Ni et al. (2020) assert that "community spillover effects" might occur, regardless of whether individuals engaged in collective actions or not. To understand social changes and their impact on the population, it is crucial to study all the individuals whose society was transformed (de la Sablonniere et al., 2013).

As mentioned earlier, the Arab Spring outcomes were perceived differently by different individuals and groups. Those passionate about the Arab Spring and who believed that positive

change was to follow the protests were faced with outcomes that countered their expectations, and they encountered depressing emotions and feelings. The revolutions and the events following them might result in what is known as post-revolutionary stress. There is no uniform naming for this state; in some cases, researchers name it post-revolutionary depression, or trauma, or simply aftermath.

Based on the perceived outcomes of collective actions, individuals are more likely to develop stress-related symptoms which are manifested in mood swings, mental health problems involving sensitivities and attitudes at different levels, including socio-political behaviors (Akl, 2017). These feelings also take years to be absorbed and felt, and all members of the community are subject to be hit by them. Feelings of shame, frustration, and hopelessness are emotions that may arise in response to what is perceived as failed outcomes of the collective action (Pekrun & Stephens, 2010).

Matthies-Boon (2017) describes the post-revolutionary period in Egypt as “traumatizing”. She further affirms that the depressing events have affected participants in the revolutions on both individual and social levels and that they are contextualized in social and political implications. In her study, respondents compared their expectations for Egypt’s future after the revolution with its actual outcomes; during the revolution, protesters envisioned the future as holding more social equality and political freedom. However, after the revolution, feelings of betrayal by politicians and the unfolding of events resulted in their loss of positive expectations and their consequent depoliticization. More than half of the participants also felt hopeless in light of adverse revolutionary outcomes.

All respondents revealed that the absence of positive revolutionary outcomes, and the emergence of negative ones, have added to their sense of disappointment and depression and took the meaning



out of the revolution, and they blamed themselves for actually believing that they can induce changes. Putting their own lives and careers at stake was not worth it anymore, and respondents, therefore, disengaged from all political activism and decided to focus on their development, and many decided to live abroad and raise a family outside of Egypt.

Ni et al. (2020) analyze 52 studies conducted on the mental health effects of protests in different regions of the world. Depression was prevalent in 35% of the examined studies, whereas anxiety and post-traumatic stress disorder were reported in 21% of the studies. Other examined studies also revealed the presence of psychological distress and emotional reactivity after the occurrence of revolutions or protests. The study also asserts that the mental health effects of such collective actions are similar to the impact of natural disasters and armed conflict on the psychological state of the population.

#### *b. Theoretical Drivers of Emigration*

To understand the driving forces of emigration, several theories have been developed. In his book *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*, Hirschman (1970) highlights the options individuals are faced with when they encounter a decline in the performance of the organization they are part of. Individuals are then faced with the “exit” option, where they can leave the organization and seek membership in another one. Alternatively, individuals can “voice” their thoughts and try to pinpoint the flaws they believe are causing the problem. Putting it in the context of states, Hirschman postulates that these two options are translated into emigration or protest respectively. Citizens can exit through emigration, thus withdrawing from the political and social context they were dissatisfied with, or they can voice their discontent through protests and national movements. It is noteworthy to mention that usually, emigration is less costly than going

with the voice alternative, especially when there is an availability of emigration opportunities. However, exit may be hindered by the loyalty citizens have to their countries.

Based on his analysis of the British Censuses of 1871 and 1881, Ravenstein (1885) sets rules that govern the decision and the behaviors of emigration. For example, he asserts that adults are more likely to migrate, and particularly young adults migrate more than older ones. In addition, females are more likely to migrate than males. Concerning the areas from which individuals migrate most, Ravenstein asserts that individuals living in rural areas are more likely to migrate than those in urban ones, largely due to a lack of opportunities and underdevelopment in various investments in these areas. Laying the foundations for the push-pull theory, the author also finds that economic factors are the main reason for emigration. Push factors force individuals to move away from their home countries, while pull factors are desirable drivers which attract individuals to relocate to destination countries.

Lee (1966) builds on Ravenstein's theory of push-pull factors by adding non-economic incentives for emigration. These include environmental and cultural motivations. In his classification, Lee indicates that factors such as political fear, lack of political freedom, and few work opportunities act as push factors, whereas factors such as better living conditions and political freedom act as pull factors.

Further research and studies have been carried out to understand the push and pull factors. Push factors include lack of economic opportunities, inequality (Cooray, 2014), corruption (Cooray and Friedrich, 2015), as well as other factors examined in depth in several studies (e.g. Hare, 1999; de Haas, 2007). Pull factors, which are specific to host countries, including better living conditions and better income (Jenkins, 1977; Chowdhury et al., 2012). Understanding push factors relevant

to the MENA context and the aspirations of Arab citizens is essential to design policies that tackle the root causes of the emigration phenomenon.

Neoclassical theories have also aimed at explaining the decision to emigrate. This decision is based on a cost-benefit analysis conducted by individuals whose aim is to maximize their lifetime earnings (Todaro, 1976). An example is the Economic Opportunity theory developed by Sjaastad (1962), who argues that individuals are considered rational actors and utility maximizers through both a cost-benefit analysis that not only includes economic costs and benefits, but also social ones.

## **2.2 Determinants of Emigration**

Empirical studies, analyzing the different determinants of emigration have been conducted in different contexts and different countries.

### *a. Socio-Economic Factors*

Dibeh et al. (2017) investigate the propensity to emigrate among youth in Lebanon. Using the SAHWA Youth Survey, and applying a probit regression model to study the drivers of the willingness to emigrate among youth, they find that youth with higher household income are less likely to be willing to emigrate. They also find that unemployed individuals, males, and youth with university education have a higher tendency to emigrate. Residents of poor and marginalized areas also exhibit a higher willingness to live abroad. David and Jarreau (2016) apply an empirical model to identify emigration drivers in Egypt using the Egyptian Labor Market Panel Survey (ELMPS) from 1998 until 2012. According to their results, higher levels of education and wealth are drivers of emigration. Moreover, unemployment highly affects the decision to emigrate. Papapanagos and Sanfey (2001) explore the Albanian willingness to emigrate, which they find is positively

correlated with being educated and being male. Conversely, it is negatively correlated with age; being older decreases the tendency to emigrate. They also find that income is only slightly correlated with willingness to emigrate.

Using a probit model for the case of Kosovo, Hoti (2009) finds that youth exhibit a higher willingness to emigrate. On the contrary, income and the area of residence do not affect this willingness. Kahanec and Fabo (2013), while studying drivers of emigration in the EU, find that individuals who are married, are males, and have children are more likely to emigrate. They find that age negatively affects the decision to live abroad and that education does not affect such a decision. When analyzing such drivers in Singapore, Fetzer and Millan (2015) reach the finding that age is negatively correlated with the propensity to emigrate, while education is positively correlated, whereas gender does not impact migration decisions. Grada (1986), using a logit model, finds that gender does not affect emigration decisions.

Funkhouser (1992) determines that age, education, and household size motivate emigration in Nicaragua. According to Epstein and Gang (2006), in Hungary, higher levels of education, age, being male and coming from urban areas increase willingness to live abroad. Finally, Finnie (2004) uses a logit model to study migration movements from 1982 until 1995 in Canada. He finds that residents of rural provinces are more likely to migrate to other provinces. However, being older or being married negatively affects the decision to emigrate.

#### *b. Post-Revolutionary Factors*

Otrachshenko and Popova (2011) conduct a two-level hierarchical econometric model to determine whether life dissatisfaction influences migration decisions in Central and Eastern Europe, finding that there is a positive correlation. Petreski and Petreski (2015) examine the role of dissatisfaction

with political and economic environments in the country of origin in shaping emigration decisions. They conduct their analysis using a dataset from Macedonia, and they find that such dissatisfactions increase the likelihood of emigration. However, they find that gender and ethnic inequalities do not affect emigration decisions. Mendez (2020) empirically analyzes the role of youth's perceptions, particularly economic satisfaction and the tendency to emigrate from the country of origin. Her study, which is conducted on youth from Uruguay, shows a strong correlation between economic dissatisfaction, and the willingness to emigrate.

Through using an IV approach, Gevrek et al. (2019) find that education significantly affects emigration intention in Turkey, and this is because more years of schooling allows individuals to understand the political contexts in their country, and this shapes their ideas and decisions about the future and inclines them towards emigration. They conclude that this is a channel through which emigration is affected by political discontent.

### *c. Institutional Factors*

Bertocchi and Strozzi (2006) conduct a 2SLS model to determine the drivers of mass migration in the 19<sup>th</sup> century. They arrive at the result that institutional factors, as well as socio-economic determinants, have a significant result in affecting migration decisions. Individuals migrate in hopes of living in countries with better economic and political institutions. Using different models, such as GMM and fixed effects models, to prove that corruption promotes brain drain, Cooray and Schneider (2015) determine that increased levels of corruption exert an upward force on the emigration of highly skilled workers. Poprawe (2015) confirms this result using a gravity model and a cross-sectional dataset from 230 countries. The results show that corruption stimulates emigration and cuts levels of immigration into countries in which it is present. Using three empirical strategies to study the impact of gender inequality in social institutions on emigration,

Ferrant and Tuccio (2015) find that gender discrimination affects female migration, but it does not affect male migration patterns.

### **3. Research Methodology**

#### ***3.1. Data and Survey***

For conducting the empirical research, we use a micro-level dataset, based on the Arab Transformation Project survey, which covers six MENA countries. The database is composed of 9,809 observations, distributed as follows: Egypt (1,525 observations), Iraq (1,613 observations), Jordan (2,139 observations), Libya (1,540 observations), Morocco (1,777 observations) and Tunisia (1,215 observations). A sampling strategy, composed of three stages and consisting of identifying geographic clusters, was adopted to ensure random sampling in each country. The survey covers various pillars, such as economic situation, security, political system, and perceptions of the Arab Spring, giving rise to a dataset with 369 variables.

#### ***3.2. Variables***

##### *a. Dependent Variable*

The dependent variable is defined to be a categorical variable taking the value of 1 if respondents showed a willingness to emigrate for an unspecified period, 2 if respondents are willing to live abroad permanently, i.e. to emigrate, and the value of 0 otherwise.

##### *b. Independent Variables*

The independent variables examined are classified into four categories. First, we use a set of *socio-economic factors* that include marital status, a binary variable taking the value of 1 if married and

0 otherwise. Age is reported as a continuous variable, while gender is defined as a binary taking the value of 1 if male and 0 otherwise. Household income is a binary taking the value of 1 if the household's expenses are covered and 0 otherwise, while the household size is a continuous variable showing the number of members of the household. University education takes the value of 1 if the respondent has a university education or higher educational attainment, and 0 otherwise. Employment status is defined as a binary variable taking the value of 1 if employed and 0 otherwise. Finally, the area of residence is studied by a variable taking the value of 1 if rural and 0 otherwise.

Second, *post-revolution stress factors* include self-reported happiness, a categorical variable taking the value of 1 if the respondents describe themselves as happy and 4 if unhappy. Trust in others is captured by a binary variable taking the value of 1 if the respondent believes most people are not trustworthy and 0 otherwise. Economic and democratic discontent are examined as categorical variables taking the values of 1 if the respondent is very satisfied with the way the economy and democracy, respectively, are progressing in the country, and 4 if the respondent is extremely dissatisfied. Perception of the direct effects of the Arab Spring are seen through a binary variable taking the value of 1 if the respondent believes the general situation of his family is worse than before the Arab Spring, and a categorical variable taking the value of 1 if the respondent believes freedom of speech is much better than before, and 5 if much worse.

Third, *institutional factors* include corruption, a categorical variable taking the value of 1 if the respondent reports on corruption in state institutions, and 4 if corruption is present to a large extent. Gender equality is captured through a categorical variable taking the value of 1 if the respondent reports that gender equality is much better than before the Arab Spring, and 5 if much worse.

Finally, we control for *country-specific factors* that include binary variables that capture the specific context of each of the 6 countries examined: Egypt, Iraq, Jordan, Libya, Morocco, and Tunisia.

### ***3.3. Sample Characteristics***

Table 1 displays the summary statistics for the variables used to carry out the empirical analysis. It can be seen from analyzing the dependent variable that 33% of respondents showed a willingness to live abroad. From analyzing the independent variables, the average age of the respondents is about 39 years old. 63% of respondents are married, 50% are males, and 31% are employed. University education or a higher degree was attained by only 22% of the respondents. The average household in the sample is composed of around 5 individuals, and 49% of households cover their expenses. 31% of the respondents reside in rural areas.

As for the post-revolution stress factors, which are perception-based variables, respondents showed a mean value of happiness of 2.06, revealing that they are “somewhat happy”. Interestingly, 75% of respondents believed other people were not trustworthy. Economic and democratic discontent showed a mean value of 2.86 and 2.73, respectively, revealing that respondents are rather dissatisfied. A mean value of 2.23 for freedom of speech indicates that it is somewhat better than before the Arab Spring. 37% of respondents reported worsened living conditions compared to the period before the Arab Spring.

When examining the institutional factors, the mean value of corruption is 3.45, which reflects that respondents believe that corruption prevails to a very large extent in state agencies. The mean value for gender equality, 2.90, shows that the government practices gender equality in almost the same way as the previous ones did. Moving on, the country-specific factors show that 13% of



respondents are from Egypt, 17% are from Iraq, 22% are from Jordan, 16% are from Libya, and finally, 19% are from Morocco.

### 3.4. Collinearity Diagnostics

To test for multicollinearity across the independent variables, the Variance Inflation Factor (VIF) is examined. Table 2 shows the multicollinearity diagnostics. Higher mean values of VIF indicate higher levels of correlation across variables, and a mean VIF value greater than 10 indicates that severe multicollinearity exists. According to the results, the mean VIF value is 1.24, indicating that the independent variables are not correlated, and that multicollinearity does not exist.

### 3.5. Empirical Model

Given that our dependent variable is ordinal (0, 1, and 2), we employ an ordered probit model to identify the determinants of emigration, especially the effects of the aftermath of the Arab Spring on the willingness to emigrate. Consider a latent variable model where  $E_i^*$  depicts the unobserved – latent – dependent variable,  $\mathbf{x}_i$  is a vector of independent variables<sup>4</sup>,  $\beta'$  is a vector of unknown parameters to be estimated, and  $\varepsilon$  is the error term assumed to have a standard normal distribution.

$$E_i^* = \beta' \mathbf{x}_i + \varepsilon \quad (1)$$

Instead of  $E_i^*$ , we observe the following:

$$E_i = \begin{cases} 0 & \text{if } E_i^* \leq \mu_1 \\ 1 & \text{if } \mu_1 < E_i^* \leq \mu_2 \\ 2 & \text{if } E_i^* \geq \mu_2 \end{cases} \quad (2)$$

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<sup>4</sup> Including the socioeconomic and attitudinal variables outlined in Table 1.

where  $E_i$  is the willingness to emigrate ranked on a 3-point scale and  $\mu$  is the threshold level of the latent variable with  $\mu_2 > \mu_1$  to be estimated along with the  $\beta'$  vector.

Consequently, given  $F(\beta'x_i)$  as the standard normal distribution function, the univariate probability of  $E_i^* = j$  with  $(j = 0, 1, 2)$  is as follows:

$$\Pr[E_i = j] = F[\mu_j - \beta'x_i] - F[\mu_{j-1} - \beta'x_i] \quad (3)$$

Different regressions are run to capture the effects of socio-economic, post-revolution, and institutional factors as well as country effects on emigration intentions. First, Table 3 shows the ordered probit regressions on the whole sample. Table 4 displays the effects across countries, while Table 5 shows regression results across gender.

## 4. Results and Discussion

### 4.1. Benchmark results

Table 3 displays the marginal effects from the ordered probit model run to identify the determinants of emigration intentions in six MENA countries. In column (1) only the socio-economic factors are controlled for. Column (2) examines socio-economic factors as well as post-revolution stress factors. Column (3) adds to the model of column (2) the institutional factors. The model in column (4) displays the full model, which is model 3 in addition to the country-specific effects.

By looking at column (1), it can be seen that being married, being older, and residing in rural areas significantly decrease the willingness to emigrate. On the other hand, being male and having a university education or a higher degree significantly and positively impact migration decisions.

Having one's income covering household expenses negatively affects migration decisions, and this result is significant. These results are in line with the results of Dibeh et al. (2017), David and Jarreau (2016), Papapanagos and Sanfey (2001), Fetzner and Millan (2015), and Epstein and Gang (2006). Age, being married, being male, and having a university education remain significant in all other models to run.

Column (2) shows that all post-revolution factors increase the willingness to emigrate. Democratic discontent is slightly significant. All other variables, except freedom of speech, are highly significant. These results are in line with those of Otrachshenko and Popova (2011), Petreski and Petreski (2015), Gevrek et al. (2019), and Mendez (2020). This signifies the critical role that the Arab Spring and its aftermath have in shaping emigration decisions and reflects the depressing emotions and perceptions Arab citizens have endured. These results remain significant in models 3, 4, and 5, and democratic discontent becomes highly significant in models 4 and 5. These results are compatible with the theory of Hirschman (1970). Through the uprisings, citizens of Arab countries tried to "voice" their demands and enforce systematic changes. After enduring the consequences of the voice option, citizens then decided to resort to the "exit" option, which translates into emigration. Finally, column (3) shows that institutional factors do not have a significant impact on emigration decisions. Column (4), which accounts for country effects, shows that citizens of Egypt, Iraq, and Libya are less migratory than citizens of Tunisia, the reference group.

#### ***4.2. Effects across Countries***

Table 4 displays the determinants of emigration across each of the six countries examined. Age negatively affects emigration decisions, and this result is highly significant across all countries. This is in line with several results from the literature (e.g. Dibeh et al., 2017; Papapanagos & Sanfey, 2001; Hoti, 2009). Being married exhibits mixed results across countries, but it is only

significant in Morocco, where it negatively affects the willingness to emigrate. Being male in Iraq, Jordan, Morocco, and Tunisia significantly motivate emigration, and it is slightly significant for the case of Egypt.

As for the post-revolution stress factors, being unhappy shows a significant effect across all countries. Lack of trust also increases emigration decisions in Egypt and Jordan. Economic discontent highly motivates emigration from Libya, and democratic discontent is highly significant in Morocco, while it is slightly significant in Iraq. Effects of discontent in Libya, Morocco, and Iraq are in line with the results of Petreski and Petreski (2015). Theoretically, the results are consistent with the results of Ravenstein (1885) and Lee (1966). Post-revolution stress appears to have been deeply felt in Egypt and Libya. This might be attributed to the fact that in Egypt, the protests reemerged in 2014. In Libya, a civil war erupted as a result of the uprisings. These factors may have contributed to the increased levels of post-revolution stress in these two countries.

When examining institutional factors, it can be seen that corruption exhibits significant and mixed results; in Jordan, increased levels of corruption promote migration, while in Libya and Tunisia they discourage it. The results of Jordan are consistent with the results of Cooray and Schneider (2015) and Poprawe (2015). Gender inequality appears to significantly increase emigration intentions in Egypt. Insignificant results of gender inequality in other countries are in line with the predictions of Petreski and Petreski (2015) about the role of gender inequality in shaping emigration decisions.

#### ***4.3. Effects across Gender***

Table 5 shows the results for the determinants of the willingness to emigrate according to each gender. As for the socio-economic factors, age decreases the willingness to emigrate for both males

and females, while having a university degree significantly increases it for both. Having enough household income demotivates emigration for males, but it does not affect females' decisions. These results are consistent with the results of Dibeh et al. (2017), David and Jarreau (2016), and Fetzer and Millan (2015).

As for the post-revolution stress factors, feelings of unhappiness, losing trust in others and being dissatisfied with the way the economy is progressing all motivate females to live abroad, and this result is highly significant. Concerning males, feeling unhappy and having a worse general situation of one's family significantly increase the willingness to emigrate; a less significant determinant is democratic discontent. These results are aligned with the results of Otrachshenko and Popova (2011) and Petreski and Petreski (2015). The results are also in line with the theoretical drivers of emigration (Ravenstein, 1885; Lee, 1966). Both males and females have been affected by the Arab Spring and its aftermath. However, the effects were manifested differently across each gender. A noteworthy observation is that factors related to the household are more likely to affect males' emigration intentions, while females are more likely to be affected by perception-based factors. In addition, males from Egypt, Iraq, and Libya are significantly less likely to migrate than Tunisian males. Also, Egyptian and Iraqi females are less likely to migrate than females from Tunisia.

## **5. Conclusion**

The MENA region has always witnessed emigration patterns and is notorious for being the leading region in sending immigrants. The net migration rate in several Arab countries has been negative.

In 2017, it was negative for the MENA countries as a whole<sup>5</sup>. This paper aims to study how the Arab Spring, especially its aftermath, has shaped and contributed to these already-existing emigration trends. This paper adds to the literature on push factors in sender countries, by providing insights on the socio-economic and psychological factors that motivate emigration in MENA countries. Using the Arab Transformation Project dataset, we examine the socio-economic, post-revolution stress, and institutional factors that affect emigration intentions. We also examine heterogeneous effects across the six countries examined: Tunisia, Egypt, Iraq, Jordan, Libya, and Morocco. The main result is that the aftermath of the Arab Spring has left population-level impacts, which were felt across the sample examined, across individual countries, and both genders. The results reveal the significance of socio-economic and post-revolutionary stress factors in boosting the willingness to emigrate.

According to the results, young, single individuals, and those with university degrees are very likely to emigrate, which poses potential threats to the country of origin. In addition, males are more likely to emigrate. Therefore, policy interventions to mitigate the risks associated with the emigration of youth are highly recommended. While numerous countries worldwide have implemented such policies, MENA countries can implement them to address youth migration. These policies include better addressing the needs of these youth, which could be met through introducing them to the job market and the skills it needs and requires. Governments may work on attracting investments from abroad to provide better economic opportunities for their citizens. Highly skilled migrants may benefit youth in the countries of origin, by providing access to capital and increasing investment opportunities.

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<sup>5</sup> World Bank, 2017. <https://data.worldbank.org/indicator/SM.POP.NETM?locations=ZQ>

Feelings of post-revolutionary stress have increased emigration decisions, especially for citizens of Egypt and Libya. While both genders were deeply affected by the Arab Spring aftermath, their emigration intentions were enhanced by different post-revolutionary feelings. The findings also reveal that the post-revolutionary aftermath in the MENA countries has been deeply felt by citizens, which was reflected by its significance in boosting their emigration intentions. Feelings of unhappiness, lack of trust, dissatisfaction with economic development, and believing the Arab Spring worsened the situation are among the perceptions and feelings citizens went through, which highly impacted their willingness to relocate. Feelings of unhappiness exhibited robust and consistent results across all models, where feeling unhappy significantly increases emigration intentions. As such, these feelings are the main emigration driver. Policy implications to combat such adverse perceptions are challenging. Building trust and transparency and showing citizens that positive change can be done are examples of policy interventions that can induce change in attitudes. Such findings highlight that Arab citizens are extremely dissatisfied with their countries' governance in the past years. Thus, introducing reforms at the level of economic policy and strengthening local social trust and capital is inevitable. Another policy implication that MENA governments can adopt is to increase funding in research and development, which will provide key insights at the levels of governance, migration, and policy design.

Future studies and research about this topic are essential to generate accurate evidence that allows designing better policies. More empirical data on the psychological effects of revolutionary outcomes and how they are perceived would be of a major contribution to this field. Specific durations of such states and their exact effect on individuals' wellbeing are among the areas of interest for further research.

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**Table 1:** Summary Statistics of Variables

	Mean	Standard Deviation
<b>Dependent Variable</b>		
Emigrate	0.33	0.71
<b>Independent Variables</b>		
<i>Socio-Economic Factors</i>		
Age	38.50	14.09
Married	0.63	0.48
Male	0.50	0.50
University Education	0.22	0.42
Household Income	0.49	0.50
Household Size	4.96	2.94
Employed	0.31	0.46
Rural	0.31	0.46
<i>Post-Revolution Stress Factors</i>		
Unhappy	2.06	0.87
Lack of trust	0.75	0.43
Economic Discontent	2.86	0.77
Democratic Discontent	2.73	0.77
Freedom of Speech	2.23	0.95
Worse Family Situation	0.37	0.48
<i>Institutional Factors</i>		
Corruption	3.45	0.81
Gender Inequality	2.90	1.11
<i>Country-Specific Factors</i>		
Egypt	0.13	0.34
Iraq	0.17	0.38
Jordan	0.22	0.42
Libya	0.16	0.37
Morocco	0.19	0.39
<i>N</i>	9523	

**Table 2:** Collinearity Diagnostics of Independent Variables

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Age	1.21	1.10	0.8248	0.1752
Married	1.21	1.10	0.8236	0.1764
Male	1.29	1.14	0.7736	0.2264
University Education	1.09	1.05	0.9134	0.0866
Household Income	1.14	1.07	0.8795	0.1205
Household Size	1.03	1.01	0.9717	0.0283
Employed	1.32	1.15	0.7578	0.2422
Rural	1.03	1.01	0.9750	0.0250
Unhappy	1.19	1.09	0.8385	0.1615
Lack of Trust	1.03	1.02	0.9703	0.0297
Economic Discontent	1.84	1.35	0.5448	0.4552
Democratic Discontent	1.82	1.35	0.5508	0.4492
Freedom of Speech	1.23	1.11	0.8116	0.1884
Worse Family Situation	1.05	1.03	0.9499	0.0501
Corruption	1.08	1.04	0.9273	0.0727
Gender Inequality	1.25	1.12	0.8001	0.1999
<i>Mean VIF</i>	1.24			

**Table 3: Marginal Effects of the Ordered Probit Regressions, Benchmark results**

	(1)	(2)	(3)	(4)
<b><i>Socio-Economic</i></b>				
<b><i>Factors</i></b>				
Age	-0.015*** (0.002)	-0.015*** (0.002)	-0.015*** (0.002)	-0.017*** (0.002)
Married	-0.191*** (0.044)	-0.145*** (0.049)	-0.136*** (0.050)	-0.079 (0.052)
Male	0.386*** (0.044)	0.369*** (0.047)	0.378*** (0.048)	0.389*** (0.049)
University Education	0.237*** (0.050)	0.243*** (0.053)	0.255*** (0.054)	0.247*** (0.056)
Household Income	-0.181*** (0.040)	-0.066 (0.045)	-0.075 (0.046)	-0.077 (0.049)
Household Size	0.012* (0.007)	0.007 (0.007)	0.006 (0.007)	0.007 (0.008)
Employed	-0.009 (0.046)	-0.003 (0.050)	-0.022 (0.051)	-0.035 (0.053)
Rural	-0.141*** (0.043)	-0.044 (0.046)	-0.039 (0.047)	-0.034 (0.050)
<b><i>Post-Revolution</i></b>				
<b><i>Stress Factors</i></b>				
Unhappy		0.166*** (0.025)	0.163*** (0.026)	0.185*** (0.027)
Lack of trust		0.184*** (0.052)	0.180*** (0.054)	0.157*** (0.055)
Economic Discontent		0.137*** (0.037)	0.128*** (0.038)	0.081** (0.039)
Democratic Discontent		0.065* (0.036)	0.070* (0.038)	0.103*** (0.039)
Freedom of Speech		0.021 (0.022)	0.016 (0.024)	0.023 (0.025)
Worse Family Situation		0.099** (0.044)	0.089** (0.045)	0.119** (0.049)
<b><i>Institutional</i></b>				
<b><i>Factors</i></b>				
Corruption			-0.019 (0.028)	-0.030 (0.030)
Gender Inequality			0.015	0.009

			(0.021)	(0.021)
<i>Country-Specific Factors</i>				
Egypt				-0.964*** (0.110)
Iraq				-0.312*** (0.085)
Jordan				-0.031 (0.072)
Libya				-0.283*** (0.086)
Morocco				0.081 (0.080)
Country Effects	NO	NO	NO	YES
<i>N</i>	6090	5203	4912	4912

**Table 4:** Marginal Effects of the Ordered Probit Regressions, results by country

	Egypt	Iraq	Jordan	Libya	Morocco	Tunisia
<b><i>Socio-Economic Factors</i></b>						
Age	-0.022** (0.010)	-0.011** (0.005)	-0.015*** (0.003)	-0.016** (0.007)	-0.013*** (0.005)	-0.036*** (0.005)
Married	0.200 (0.256)	-0.059 (0.154)	0.028 (0.095)	-0.130 (0.142)	-0.357*** (0.120)	0.113 (0.145)
Male	0.438* (0.239)	0.606*** (0.139)	0.373*** (0.093)	0.115 (0.148)	0.409*** (0.110)	0.528*** (0.127)
University Education	0.449* (0.249)	0.436** (0.206)	0.228** (0.114)	0.081 (0.145)	0.118 (0.116)	0.147 (0.144)
Household Income	0.294 (0.226)	-0.046 (0.125)	-0.025 (0.091)	-0.340** (0.150)	-0.173 (0.114)	-0.018 (0.130)
Household Size	0.066 (0.070)	-0.022 (0.022)	0.014 (0.018)	0.015 (0.015)	-0.014 (0.020)	-0.014 (0.042)
Employed	-0.364 (0.301)	-0.133 (0.152)	0.005 (0.107)	0.311* (0.168)	-0.141 (0.113)	0.024 (0.129)
Rural	-0.520** (0.247)	-0.208 (0.142)	-0.123 (0.100)	-0.133 (0.197)	0.101 (0.102)	0.345*** (0.119)
<b><i>Post-Revolution Stress Factors</i></b>						
Unhappy	0.183* (0.107)	0.223*** (0.071)	0.177*** (0.046)	0.172** (0.082)	0.134* (0.073)	0.186** (0.080)
Lack of Trust	1.054** (0.484)	0.125 (0.146)	0.252** (0.104)	0.215 (0.146)	0.074 (0.124)	-0.016 (0.167)
Economic Discontent	-0.010 (0.173)	0.074 (0.096)	0.057 (0.068)	0.285** (0.127)	0.098 (0.092)	-0.055 (0.124)
Democratic Discontent	0.239 (0.168)	0.184* (0.102)	0.035 (0.068)	-0.111 (0.119)	0.246*** (0.093)	0.124 (0.116)
Freedom of Speech	-0.305**	-0.094	0.041	0.144**	0.022	-0.027

	(0.123)	(0.061)	(0.046)	(0.063)	(0.063)	(0.094)
Worse Family Situation	0.475**	0.253*	0.075	0.177	-0.175	0.005
	(0.224)	(0.136)	(0.084)	(0.130)	(0.181)	(0.119)
<i>Institutional Factors</i>						
Corruption	0.124	-0.020	0.190***	-0.123**	-0.065	-0.308***
	(0.186)	(0.099)	(0.064)	(0.055)	(0.083)	(0.083)
Gender Inequality	0.273**	0.021	0.004	-0.107*	0.047	0.045
	(0.137)	(0.058)	(0.037)	(0.061)	(0.049)	(0.061)
<i>N</i>	689	801	1411	586	768	657



**Table 5:** Marginal Effects of the Ordered Probit Regressions, results by gender

	Male	Female
<b><i>Socio-Economic Factors</i></b>		
Age	-0.019*** (0.003)	-0.014*** (0.003)
Married	-0.091 (0.086)	-0.038 (0.069)
University Education	0.303*** (0.079)	0.211*** (0.081)
Household Income	-0.222*** (0.069)	0.079 (0.070)
Household Size	0.000 (0.012)	0.010 (0.010)
Employed	-0.077 (0.067)	0.063 (0.097)
Rural	-0.072 (0.070)	-0.001 (0.074)
<b><i>Post-Revolution Stress Factors</i></b>		
Unhappy	0.220*** (0.037)	0.146*** (0.041)
Lack of Trust	0.045 (0.075)	0.278*** (0.084)
Economic Discontent	0.047 (0.056)	0.115** (0.055)
Democratic Discontent	0.140** (0.055)	0.082 (0.056)
Freedom of Speech	0.007 (0.035)	0.035 (0.036)
Worse Family Situation	0.197*** (0.069)	0.031 (0.071)
<b><i>Institutional Factors</i></b>		

Corruption	0.018 (0.043)	-0.073* (0.041)
Gender inequality	0.031 (0.030)	-0.017 (0.031)
Egypt	-1.100*** (0.153)	-0.786*** (0.159)
Iraq	-0.290** (0.116)	-0.318** (0.129)
Jordan	-0.081 (0.099)	0.060 (0.109)
Libya	-0.378*** (0.123)	-0.167 (0.124)
Morocco	0.099 (0.111)	0.088 (0.118)
<i>N</i>	2328	2584