Analysis of Immigration Patterns Pre and Post Democratic Transition: Evidence from Tunisia

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Abstract

This paper delves into the impact of Tunisia's democratic transition, stemming from the Arab Spring, on immigration patterns. Leveraging data from four waves of the Arab Barometer Survey, the study employs a Probit model to scrutinise shifts in the probability of immigration pre and post the democratic transition. The paper extends to a robustness check via a Changes-in-Changes framework, with Tunisia as a treatment group and Algeria as a control group. Findings indicate that immigration patterns in Tunisia have not diminished post-democratic transition but have instead intensified. This trend is supported by the Chow Test. Moreover, the study reveals the presence of the brain drain phenomenon. On average, Tunisians demonstrate an increased inclination toward immigration post-democratic transition compared to Algerians. These patterns could be attributed to unmet economic demands precipitating the 2011 revolution, coupled with expectations of swift reforms, and the subsequent lack of immediate improvements in economic conditions following democratisation.

تحليل أنماط الهجرة قبل وبعد الانتقال الديمقراطي: أدلة من تونس

مريم عريفة

ملخص

يتناول هذا البحث دراسة تأثير الانتقال الديمقراطي في تونس، على سلوكيات وأنماط الهجرة. يستفيد البحث من بيانات أربع موجات من استطلاع الباروميتر العربي، ويستخدم نموذج "البروبيت" لدراسة التحولات في احتمالات الهجرة قبل وبعد الانتقال الديمقراطي. بالإضافة إلى ذلك، يطبق نموذج "التغيرات في التغيرات"، مع استعمال بيانات من الجزائر كمجموعة مراقبة. تشير النتائج إلى أن سلوكيات وأنماط الهجرة في تونس لم تتناقص بعد الانتقال الديمقراطي، بل زادت بدلاً من ذلك، وهو اتجاه يؤكده نتائج اختبار "تشاو". علاوة على ذلك، تكشف الدراسة عن وجود ظاهرة هجرة الادمغة. في المتوسط، يظهر التونسيون ميلاً متزايدًا نحو الهجرة بعد الانتقال الديمقراطي، مقارنة بالجزائريين. يمكن تفسير هذه السلوكيات إلى الاحتياجات الاقتصادية غير الملباة بعد الانتقال الديمقراطي، وكذلك التوقعات التي لم تتحقق بأن الديمقراطية تؤدي إلى تحسين فوري في الوضع الاقتصادي.

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1. Introduction

The Arab Spring was a series of pro-democratic uprisings and social movements that swept across a number of Middle Eastern and North African (MENA) countries, beginning in late 2010 and continuing up until early 2011. These uprisings were characterised by widespread protests, demands for political reforms, social justice, and better economic opportunities. While the specific triggers that sparked the Arab Spring varied from one country to another, the common denominator was the desire for change and a response to longstanding authoritarian regimes, high unemployment, corruption, widening inequalities, and economic hardships. These underlying factors drove immigration patterns in the region, as individuals pursued stability, personal freedoms, and better economic prospects.

In Tunisia, the situation leading up to the so-called "Jasmine Revolution" was shaped by decades of policies under a tightly controlled political regime. Post-independence in 1956, President Habib Bourguiba established a single-party state that was later continued by President Zine El Abidine Ben Ali after his rise to power in 1987. Ben Ali's era had been characterised by a tightly controlled political space and an economy that emphasised state-led modernisation, which saw some successes in terms of growth, but failed to provide equitable opportunities for all segments of society. With a heavy emphasis on tourism and foreign investment, economic benefits were narrowly distributed, leading to regional disparities and youth unemployment. Despite efforts in the 2000s to liberalise the economy, structural problems such as corruption, a lack of political freedom, and restricted civil liberties led to widespread public discontent. These conditions were further exacerbated by stringent state controls over media and political opposition. As a result, despite some advancement, these policies did not alleviate the economic and social strains faced by the Tunisian people, ultimately contributing to the flame that ignited the Arab Spring in the country.

The MENA region has historically been classified as a region of significant immigration flows. Large scale immigration from Mediterranean Arab countries dates back to approximately five decades ago. Nassar (2008) states that in general, the MENA region is characterised by two distinctive immigration patterns: intra-regional and extra-regional migration. Fargues and Fandrich (2012) claim that when the Arab Spring broke out, the region was a source to approximately eight million first generation migrants; 62% of which were living in an EU member state (or the

UK), 27% in other Arab countries (20% of which were in the GCC region), and 11% were in other parts of the world.

Tunisia holds a pivotal role in the narrative of the Arab Spring, being recognised as the birthplace, marked by the Jasmine Revolution. This transformative period was initiated by widespread protests which marked a radical transformation of the country's political system, successfully ousting long-time autocrat Zine El Abidine Ben Ali, and paving the way for a transitional government and democratisation. Tunisia has long been a prime immigration country in the Mediterranean region. Natter (2015) claims that in 2012, it was reported that more than 1.2 million Tunisians were living abroad (out of a population of approximately 11 million). Examining immigration patterns in Tunisia, both preceding and following the Arab Spring, and spanning back to the country's independence in 1956, highlights a notable trend of Tunisians seeking opportunities abroad with a significant focus on Europe (particularly France and Italy). Notably, data from the 2020-2021 National Survey of International Migration in Tunisia, as reported by Ministére des Affaires Sociales Tunisie (2021) underscores this pattern. The statistics reveal that among non-immigrants in the country expressing a desire to immigrate, seven out of ten express a preference for Europe as their primary destination. More specifically, their aspirations centre on settling in one of the three countries with the largest Tunisian communities, listed in the following order: France, Italy, and Germany. The drive in immigration trends among Tunisians can be traced back to challenges that individuals faced within their homeland, including high unemployment rates and political instability. The economic hardships and scarcity of prospects created a strong inclination among Tunisians to seek better opportunities abroad. Consequently, this led to an upswing in irregular immigration, where individuals crossed the Mediterranean on boats. Specifically, starting from the 1980s, Italy gained popularity among low-skilled workers, primarily because of its close proximity and the lack of strict immigration restrictions. Over a decade since the transformative events unfolded, a pertinent question arises: Have the aspirations that catalysed the Arab Spring been adequately addressed? And is there any solid empirical evidence to suggest a slowdown in immigration patterns as a result?

Undoubtedly, Tunisia has grappled with persistent political and economic challenges in the aftermath of the Arab Spring. The country stands out as a compelling case study, having been hailed as the only success story in the region, marked by its successful transition to democracy. Despite its democratic strides, indicators suggest that immigration patterns from Tunisia have not substantially abated, potentially indicating that the economic hardships which prompted the Arab

Spring may not have been fully addressed. In general, there has been a significant increase in the outflows of highly skilled individuals (those with a university degree or higher), accounting for a growing proportion of total registered outflows from 19.6% in 2001 to 30% in 2008, according to Di Bartolomeo et al. (2010b). Research by Alvi (2019) underscores the persistence in this pattern by highlighting Tunisia's surpassing of Eritrea in migrant numbers entering Italy by sea. Moreover, the study notes a concerning trend, reporting that around 100,000 skilled and educated workers have immigrated since 2011, further signalling a significant brain drain. Additionally, data from Ministére des Affaires Sociales Tunisie (2021) reveals that the outflow of immigrants between 2010 and 2019 has not slowed down.

The paper attempts to assess the extent to which the demands for change that prompted the Arab Spring have been met, using immigration patterns as a key metric. The study conducts a comparative analysis spanning periods prior and after the onset of democratic transition, proxied by Tunisia's first free and fair presidential election (which took place late 2014). Utilising data from four waves of the Arab Barometer Survey, the paper employs a Probit model. To discern the determinants of immigration patterns, the pre-democratic transition period encompasses pre-first presidential elections (2010-2011 and 2012-2014 survey waves), while the post-transition period covers post-first democratic elections (2016-2017 and 2018-2019 survey waves). The survey does not cover years preceding the Arab Spring, specifically for Tunisia. If such data were available, it would have been integrated into the analysis. It is crucial to note that the survey wave for 2010-2011 was conducted in December 2011, subsequent to the Jasmine revolution. This timing is significant as it implies that the collected data reflects the post-revolutionary context. Consequently, the analysis provides insights into the transitionary period and captures the immediate aftermath of the revolution, offering a valuable comparative perspective on the socio-economic climate before and after this pivotal event. The study deliberately excludes COVID years, due to the possible disruption in normal trends it may introduce. Specifically, taking these wavelengths into account in the analysis might introduce confounding variables unrelated to the democratic transition. Furthermore, the paper conducts a Chow Test for structural breaks, and employs a Changes-in-Changes approach as a robustness check. In the Changes-in-Changes framework, Tunisia is classified as the treatment group, and Algeria as the control group (given their similar characteristics, except for Tunisia's experience of a revolution). As highlighted by Nellis (1983), Tunisia and Algeria share commonalities in terms of environment, history, culture, religion, colonial heritage, and politico-administrative traditions, facing comparable challenges of underdevelopment. The findings underscore that immigration patterns in Tunisia have not decelerated post-democratic transition; rather, they have

intensified, suggesting that the revolutionary demands may not have been adequately addressed. Substantial evidence also points to the presence of the brain drain phenomenon. The findings in this paper furthermore highlight an increased inclination of Tunisians to immigrate post-democratic transition, compared to Algerians. Through these methodologies, the paper sheds light on the dynamic landscape of immigration patterns in the region. To the knowledge of the author, this study is the first to explore this topic using this particular approach within this context. The scarcity of microeconomic research on immigration in Tunisia specifically is often attributed to limited data availability, which further adds to the significance of this study.

The rest of this paper is organised as follows. Section two briefly discusses the relevant literature. Section three provides the specification of the model to be used in this investigation. Section four discusses the data and provides some descriptive statistics. Section five presents the empirical results. Section six provides a discussion of policy implications. Section seven concludes the paper.

2. Literature Review

Bodvarsson et al. (2013) note that many Economists commonly utilise a labour-flow model that assumes individuals move based on spatial variations in labour supply returns when studying immigration. At a micro level, this would suggest that immigrants maximise their subjective utility by choosing a location which offers the highest net income. This approach however, neglects the broader motivations behind immigration (e.g., cultural attraction). When immigration is viewed as an investment decision, it involves upfront costs and uncertain future payoffs, analogous to investing in human capital as proposed by Becker (1974). In this framework, individuals invest in their skills to maximise the net present value of future earnings. To comprehend the determinants of post-Arab Spring immigration, it is essential to bridge the perspective of the labour-flow model, which often emphasises on income maximisation, with a more comprehensive understanding of immigration motivations.

In their study, David and Jarreau (2016) utilise an empirical model to pinpoint the factors driving immigration in Egypt, drawing from data extracted from the Egyptian Labour Market Panel Survey (ELMPS) spanning from 1998-2012. Their findings underscore that higher levels of education and wealth serve as significant catalysts for immigration. Furthermore, their findings highlight that all else equal, immigration patterns are significantly driven by higher levels of unemployment. In line with this finding, Dibeh et al. (2018) delve into the factors

influencing the inclination of Lebanese youth to immigrate. Leveraging data from the SAHWA Youth Survey and employing a Probit model, the authors find that unemployed individuals, males, and those with a university degree exhibit a higher propensity to consider immigration. Conversely, findings reveal that individuals with higher incomes are less likely to immigrate. Furthermore, the research suggests that residents from economically disadvantaged and marginalised areas in Lebanon are more inclined to contemplate immigrating. At a micro-level in general (even outside of the MENA region) socio-demographic findings on the likelihood of immigrating are some of the most consistent and least controversial. Being young, well-educated, male, living in an urban environment, have all been demonstrated to increase the propensity of relocating abroad (e.g., (Hiskey et al. 2014) and (Migali and Scipioni 2018)).

On the other hand, Gevrek et al. (2021) employing an instrumental variable (IV) approach, find a significant relationship between education and the intention to immigrate amongst Turkish individuals. Their hypothesis suggests that increased levels of education equips individuals with the ability to comprehend the political landscape of their country. This, in turn, influences their perspectives and future decisions, ultimately fostering a desire to immigrate. Specifically, in their analysis, education serves as a conduit through which immigration is influenced by political discontent. Furthermore, Bertocchi and Strozzi (2006) employ a two-stage least squares (2SLS) estimation technique to investigate the determinants of mass immigration in the 19th century. Their results reveal that both institutional and socio-economic factors play a substantial role in shaping immigration decisions. Specifically, they find that individuals immigrate with the aspiration of residing in countries with better economic and political institutions (what Robinson and Acemoglu (2012) would describe as inclusive institutions). From an institutional perspective as well, Cooray and Schneider (2016), utilising various approaches including the generalised method of moments (GMM) and fixed effects models, offer additional insights into the impact corruption has on immigration patterns. Their research demonstrates that heightened levels of corruption act as a driving force for the immigration of high skilled workers. Through different analytical approaches, the study establishes a compelling connection between corruption and the phenomenon of brain drain.

Fakih and El Baba (2023) contribute to understanding the complex dynamics influencing immigration decisions in the aftermath of the Arab Spring, using the 2014 Arab Transformation Project dataset. Their findings indicate that unhappiness is a primary driver of immigration, alongside post-revolutionary factors like distrust and political dissatisfaction. Socio-economic factors such as

being male, being young, and possessing high levels of education increases the willingness to immigrate. On the other hand, married individuals show lower likelihood of immigration. Moreover, Dennison (2022) examines factors influencing the willingness to immigrate in the MENA region utilising data from the Arab Barometer survey and employing a two-step model. Their findings suggest that the key determinants include youth, university education, male gender, stress levels, negative economic and political perceptions, unmarried status, trust in social media, remittances, and low religiosity. Notably, economic factors like unemployment and income have no significant impact. For irregular immigration specifically, gender, lower income, lower education, and negative economic and political perceptions stand out as catalysers.

Regarding Tunisia specifically, Ramos (2019) investigates the intentions and determinants influencing the immigration decisions of young people during their transition from school to work in select countries of the MENA region, focusing on Egypt, Jordan, Lebanon, Palestine, and Tunisia, and utilising microdata from School-to-Work Transition Surveys conducted by the International Labour Organisation from 2013 to 2015. The study highlights significant socio-economic challenges influencing immigration aspirations among Tunisian youth. Specifically, it reveals that high unemployment rates, particularly among the educated youth, serve as a major push factor for immigration. The study underscores that in Tunisia, the unemployment rates for youth with tertiary education are significantly higher than for those with primary education or less, suggesting an alarming trend of brain drain.

Despite the importance of understanding immigration patterns in Tunisia post-democratic transition, the existing literature is notably scarce. This gap in the literature represents a significant opportunity to further explore and understand the intricate factors shaping immigration decisions in the post-democratic transition era in Tunisia. Importantly, given the recent regression back to a more autocratic rule in the country, a comprehensive investigation into the motivations and determinants of immigration bears heightened significance, in terms of both academic discourse and policy considerations in this evolving political landscape.

3. Model Specification

3.1 Probit Model

To analyse the intricate determinants of immigration decisions in a rigorous manner, a Probit model is employed, treating the binary outcome variable "Immigration" (denoted as Y) as a Bernoulli-distributed random variable. The model is defined as follows:

$$Y \sim Bernoulli(\Pr(Y = 1))$$

where $\Pr(Y = 1)$ would indicate the probability of immigrating. The underlying utility function of immigrating is specified as:

$$U = \beta X' - Cost + \varepsilon \qquad (5)$$

Here, U is the unobserved utility indicator and can be seen as a latent variable, β denotes the vector of coefficients, X encompasses the vector of explanatory variables including demographic factors, individual characteristics, and subjective perceptions, which are assumed to influence the outcome variable Y (the components of this covariate matrix are summarised in Table 1 in the Appendix). The term ε captures unobserved factors, following a standard normal distribution with mean zero and variance one ($\varepsilon \sim N(0,1)$).

The immigration decision is then determined by whether the utility is greater than a threshold (commonly set to zero in Probit models):

$$Y = \begin{cases} 1 & if \quad U + \varepsilon > 0 \\ 0 & if \quad U + \varepsilon \leq 0 \end{cases} \qquad (6)$$

The probability of immigrating $\Pr(Y = 1|X)$ is equivalent to the probability that $U + \varepsilon > 0$, which is equivalent to $\Pr(\varepsilon > -U)$. By symmetry of the standard normal distribution, this probability can be expressed using the cumulative distribution function (CDF) of the standard normal distribution (Φ):

$$\Pr(Y = 1) = \Phi(U) = \Phi(X'\beta)$$

The estimation process involves maximising the likelihood function, where the likelihood of observing the immigration choice for individual i is given by:

$$L_i = \begin{cases} \Phi(x_i'\beta) & if \quad y_i = 1 \\ 1 - \Phi(x_i'\beta) & if \quad y_i = 0 \end{cases} \qquad (7)$$

Here, $i = 1, \dots, N$ represents each individual observation. The estimator β in the Probit model can be estimated through maximising the log-likelihood function. The overall likelihood function aggregates the individual likelihoods across the sample. Employing maximum likelihood estimation principles, the Probit model offers a

foundation for exploring the dynamics of immigration decisions. In essence, on the assumption that all observations in the sample are independently and identically distributed (IID), the likelihood function for the observed data can be expressed as follows:

$$l(\beta) = \prod_{i=1}^{n} [\Phi(x_i'\beta)]^{y_i} [1 - \Phi(x_i'\beta)]^{1-y_i} \tag{8}$$

Since the maximisation of the likelihood function is done in terms of the log likelihood, equation (8) can further be expressed as follows:

$$L(\beta) = \sum_{i=1}^{n} [y_i \ln[\Phi(x_i'\beta)] + (1 - y_i) \ln[1 - \Phi(x_i'\beta)]] \tag{9}$$

The estimator $\hat{\beta}$ which maximises this function will be consistent, efficient, and asymptotically normal, provided that $E[X'X]$ exists and is non-singular. It can be shown that this log-likelihood function is globally concave in β, ensuring that the standard numerical algorithms for optimisation will converge rapidly to the unique maximum. The asymptotic distribution of $\hat{\beta}$ is given by:

$$\sqrt{n}(\hat{\beta} - \beta) \xrightarrow{d} N(0, \Omega^{-1})$$

where,

$$\Omega = E\left[\frac{\psi^2(X'\beta)}{\Phi(X'\beta)\big(1 - \Phi(X'\beta)\big)} X'X\right]$$

$$\hat{\Omega} = \frac{1}{n} \sum_{i=1}^{n} \frac{\psi^2(x_i'\beta)}{\Phi(x_i'\beta)(1 - \Phi(x_i'\beta))} x_i x_i'$$

where ψ is the probability density function (PDF) of the standard normal distribution.

By accommodating both observable and latent factors, this statistical framework allows for a comprehensive understanding of the drivers behind individuals' choices to either immigrate or not, enhancing the richness and depth of the analysis.

3.2 Changes-in-Changes

To investigate the impact of democratic transitions on immigration, the paper further utilises a Changes-in-Changes framework, as developed by Athey and Imbens (2006). The foundational model for this framework is articulated as follows:

$$Y_{it} = f(D_i, T_t, X_{it}) \tag{10}$$

$$Y_{it} = f(\beta_0 + \beta_1 D_{it} + \beta_2 T_t + \beta_3 D_{it} T_t + \theta X_{it}) + \varepsilon_{it} \tag{11}$$

In this model, Y_{it} represents the outcome of interest, $t = 1,2$ are, respectively, the pre transition and post transition periods, D is a binary democratic indicator (with $D = 1$ denoting the treatment group, i.e., $D = 1$ for Tunisia and $D = 0$ for Algeria), T is a binary transition indicator (with $T = 1$ denoting the transitional period), and X represents a set of control covariates. The functional form f of this model will be specified later on in this section. The subscripts are omitted for simplicity. Following the potential outcomes framework introduced by Athey and Imbens (2006), assuming transition exogeneity, the treatment effect in a potential outcomes model is expressed as:

$$\tau(T = 1, D = 1, X) \tag{12}$$
$$= E[Y^1|T = 1, D = 1, X] - E[Y^0|T = 1, D = 1, X]$$

Here, Y^1 and Y^0 denote potential outcomes with and without the treatment, respectively. The measure, τ, serves as a latent indicator of the likelihood of immigration.

Adapting a nonlinear model as suggested by Puhani (2012), where potential outcomes are parametrised with a linear index of covariates, the binary potential outcome becomes as follows when $DT = 0$:

$$E[Y^0|T, D, X] = \Phi(\beta_1 + \beta_2 + X\theta) \tag{13}$$

and as follows when $DT = 1$:

$$E[Y^1|T, D, X] = \Phi(\beta_1 + \beta_2 + \beta_3 + X\theta) \qquad (14)$$

so that the sign of τ is the same sign of β_3. In this context $\Phi(.)$ denotes the conditional distribution function of the standard normal distribution. Consequently, the Probit Changes-in-Changes model is expressed as:

$$E[Y|T, D, X] = \Phi(\beta_1 D + \beta_2 T + \beta_3 DT + X\theta) \qquad (15)$$

From equation (12), the treatment effect in this case is thus given by:

$$\tau(D = 1, T = 1, X) = \Phi(\beta_1 + \beta_2 + \beta_3 + X\theta) - \Phi(\beta_1 + \beta_2 + X\theta) \qquad (16)$$

In which case, the treatment effect is zero iff the coefficient of the interaction term β_3 is zero. Additionally, because $\Phi(.)$ is a strictly monotonic function, the sign of β_3 is equal to the sign of the treatment effect. In simple terms, the treatment effect is simply the incremental effect of the interaction term. The coefficient β_3 estimates the causal effect of the democratic transition on immigration decisions. In essence, a statistically significant β_3 would imply that the democratic transition influenced immigration patterns differently in Tunisia compared to Algeria. As shown by Puhani (2012), this can furthered be expressed as:

$$\tau(D = 1, T = 1, X) = \frac{\delta^2 E[Y^1|D, T, X]}{\delta T \delta D} - \frac{\delta^2 E[Y^0|D, T, X]}{\delta T \delta D} \qquad (17)$$

This yields the same result as in equation (16).

In essence, this confirms that the treatment effect in the Probit Changes-in-Changes model, is equivalent to the difference in both cross differences. This formulation captures the differential change in the likelihood of immigration due to the interaction between democracy and the transitional period, facilitating an in-depth exploration of the effects of democratisation/political changes on immigration behaviour.

The use of Algeria as a control group in analysing Tunisia's immigration patterns is supported by the similarities in their socioeconomic landscape. The economic and cultural parallels provide a strong basis for comparison, satisfying the parallel trends assumption. Both countries share economic structures, challenges, and demographic profiles that influence immigration tendencies. This alignment ensures that differences observed in immigration patterns can be more

accurately attributed to Tunisia's unique political and social developments following the Arab Spring, rather than broader regional trends.

In the context of the Probit model and the Changes-in-Changes framework, it is essential to note that the costs that are subtracted from the utility functions reflect the net utility an individual derives from the decision to immigrate. The decision to immigrate is then based on whether this net expected utility exceeds the expected utility of staying, considering the associated costs. It is crucial to note that the costs are subjective and can vary widely among individuals based on their circumstances, preferences, and the specific context of immigration. In which case, these costs are unobservables and enter the stochastic error terms. The inclusion of these costs in the model aims to capture the complexity and trade-offs inherent in the decision-making process.

4. Data and Descriptive Statistics

The paper utilises four wavelengths from the Arab Barometer Survey (2010-2011, 2012-2014, 2016-2017, 2018-2019). The first two wavelengths are used to proxy the pre-democratic transition period, and the last two wavelengths proxy the post-democratic transition period, respectively. The sample design in these surveys is probability sampling, making the surveys representative at both the national and governorate levels. The mode of conduction is face to face interviews (i.e., the gold standard for survey research). Due to the nature of the question being investigated, the paper restricts the focus on individuals between the ages of 18-50. Individuals within this age range typically represent the working-age population, and their immigration decisions may be more closely tied to employment opportunities and economic factors. Focusing on this age group ensures that the analysis is more directly relevant to the economic motivations of immigration. Furthermore, homogeneity in age groups can simplify statistical analyses and interpretations. It allows for a more straightforward comparison of immigration patterns and determinants within a specific life stage, facilitating clearer conclusions, and making findings more applicable to decision and policy makers. The sample exhibits a balanced distribution between males and females, yet there is a slight urban bias, with approximately 65% to 67% of the respondents residing in urban areas.

Concerning additional characteristics, during the initial two survey waves, approximately 80% asserted their belief that freedom of expression is guaranteed in the country. However, notably, this percentage decreases to around 69% in the latter two waves following the democratic transition, suggesting a potential reversal of this perception. Conversely, those who feel their safety is ensured constitute around

59% in the first two waves, and this positive sentiment grew to approximately 69% in subsequent waves. This shift suggests an improvement in the perceived safety and security landscape. Interestingly, prior to the democratic transition, 42% claimed to be significantly interested in politics, and this interest sharply declined to around 25% in the later waves. This could indicate a shift in focus or disengagement from political affairs post-transition. Moreover, the religious identification of the sample remained relatively high in both periods, with 79% of the sample in the initial two waves identifying as religious, and around 70% in the latter two waves. While the change is subtle, it hints at a persistent connection to religious identity among the respondents despite others shifts in perceptions.

The sample outlines a notable educational distribution across the first two wavelengths, where a predominant majority, constituting approximately 80% of participants, exhibit low to negligible levels of education, ranging from illiteracy to basic, elementary, and secondary education. In stark contrast, only around 20% of the sample have educational qualifications at the level of a bachelor's degree or higher. Likewise, in the last two waves, a substantial portion, roughly 75%, are with limited educational attainment, while approximately 21% of respondents hold educational credentials at the level of a bachelor's degree or higher, including master's degrees. This educational profile underscores the prevalence of lower educational levels within the surveyed population across both time periods, highlighting a persistent pattern over the waves of data collection. Regarding unemployment, a noteworthy concern arises as approximately 58% of the surveyed individuals reported being without employment in both the initial two wavelengths and the subsequent two wavelengths. This consistent and high unemployment rate is a pressing issue with far-reaching consequences. The significant percentage of individuals grappling with unemployment not only reflects economic instability but also underscores the broader societal implications. High unemployment can erode social cohesion, exacerbate inequality, and create a fertile ground for discontent and upheaval. The Arab Spring, in particular, was influenced by socio-economic factors, including high unemployment rates, as people sought avenues for meaningful change and economic improvement.

The data reveals a finding that can potentially be considered as a case of concern. Indeed, nearly 31% of respondents in the initial two survey waves reported that their income adequately covers their essential monthly needs. This concerning trend persists across post-democratic transition, with a slight increase to 34%. This consistent finding suggests a prevalent economic struggle within the surveyed population. This could be indicative of broader economic challenges that hinder individuals from comfortably meeting their basic requirements (e.g.,

unemployment, inadequate wage growth, inflation). Furthermore, the data underscores a noteworthy aspect of financial dynamics, where only 5% of respondents in the first two waves reported receiving remittances. This figure marginally increased to around 6% in the subsequent waves. The relatively low percentage of individuals receiving remittances suggests a limited external financial support network for the surveyed population. These economic indicators shed light on the persistent challenge of meeting basic needs for a significant portion of the population, with only marginal improvement post-democratic transition. Overall, these indicators hint at a persisting segment among the surveyed population, who had limited or no improvements post democratic transition. The findings raise questions about the effectiveness of economic policies in addressing day-to-day financial challenges faced by a substantial portion of the population.

In the initial two survey waves, roughly 26% of respondents expressed a desire to immigrate, and within the specified age group, approximately 85% cited economic reasons as the primary motivation. Conversely, in the subsequent two waves, 34% expressed a desire to immigrate, with about 83% attributing their decision to economic considerations. Notably, in the first two wave lengths, 80% of participants perceived the economic situation as unfavourable. In the latter two waves, this perception intensified, with around 91% expressing concern about the economic situation. Furthermore, when queried about their expectations for the country's economic situation in the next 2-5 years compared to the current situation, approximately 72% expressed optimism in the first two wave lengths. However, in the subsequent two waves, this percentage declined to around 43%, suggesting a potential shift towards a more pessimistic outlook. Additionally, the table indicates that the perception of corruption increased, with 81% perceiving corruption as prevalent pre-transition, and 95% post-transition. There is also a significant decline in the belief that the country is fighting corruption, from 63% to 43%. This highlights a drop in public trust in institutional quality post-democratic transition. Interestingly, the latter two waves indicate that satisfaction with public services is notable low, with only 32% satisfied with the educational system, and 38% with the health system.

Figures 1 and 2 in the Appendix reveal that the economic situation remains the predominant concern among Tunisians both before and after the democratic transition. Pre-transition, a striking 78% of respondents identified economic issues as the principal challenge, highlighting the critical nature of economic stability. Post-transition, the economic situation continued to be seen as the primary issue by 46% of the respondents, although with a reduced emphasis compared to before. This persistent prioritisation of economic issues as the main concern underscores a

heightened awareness and concern regarding the economic context, indicative of evolving sentiments over time. Despite changes in other areas of concern, the economic situation consistently remains at the forefront of national challenges.

In summary, the descriptive statistics provide a comprehensive overview of the surveyed population, unveiling prevalent educational patterns and noteworthy shifts in immigration intentions and economic perceptions over the four waves. These insights serve as a crucial foundation as the paper pivots towards the subsequent regression analysis. The forthcoming examination aims to delve deeper into the details of immigration decision-making by scrutinising the relationships between individual characteristics, economic indicators, perceptions, and immigration aspirations. The observed trends revealed by the descriptive statistics set the context for a more rigorous investigation, offering a valuable insight through which to interpret the regression results that follow, and ultimately, to derive an understanding of the factors influencing immigration decisions in the context of Tunisia.

5. Empirical Estimation and Discussion of Results

5.1 Probit Estimation Results

The findings presented in Tables 3 and 4 in the Appendix underscore a gender-based disparity in immigration probabilities, indicating that, all else equal, Tunisian males exhibit a higher likelihood of immigrating. This trend could be attributed to traditional gender roles that position males as primary providers for their families, which may drive them to explore enhanced opportunities abroad. Moreover, the findings suggest that individuals residing in urban areas exhibit a heightened likelihood of immigrating. Notably, this probability becomes even more pronounced in the post-democratic transition period. This could be explained by the fact that individuals residing in rural areas, are heavily invested in familial work like agriculture, maybe exhibiting higher relocation costs. In contrast, living in an urban area may offer a plethora of opportunities, enhanced career prospects, educational advancements, and exposure to diverse experiences. Urban cities furthermore are associated with higher costs of living, which could further influence immigration decisions. Moreover, in the post-democratic transition analysis, the significance of the age squared term contrasts with the non-significance of the age variable itself. As detailed in Table 4, this suggests a non-linear relationship with regard to age and the desire to immigrate. This finding highlights that there is not a straightforward increase in the likelihood of immigration with age. Instead, the significant age squared term suggests that any influence of age on the desire to immigrate might increase at a diminishing rate. This implies that as individuals age,

factors that initially might encourage immigration diminish, possibly due to various socio-economic or personal constraints (e.g., established careers, family commitments, reduced adaptability to new environments).

The findings from Table 3 and 4 highlight that individuals identifying as religious exhibit a significant reduction in their inclination to immigrate. This may be explained by a sense of rootedness, strong community ties, and a commitment to religious values (which may be perceived to be more difficult to adhere to in foreign countries), all of which foster comfort in the current environment. Notably, individuals perceiving guaranteed freedom of expression are less inclined to immigrate pre the democratic transition. This could be attributed to a sense of optimism, believing that voiced concerns can be addressed in the evolving political landscape. The subsequent insignificance post democratic transition might arise from a convergence in responses as individuals become more politically aware, considering guaranteed freedoms as a standard, rendering this belief no longer a significant deterrent. Moreover, individuals expressing an interest in politics are more inclined to immigrate post democratic transition. This inclination could stem from increased political awareness, as individuals become knowledgeable about the economic and political challenges in the country. If the belief is that that institutional quality remains extractive, the decision may well be choosing to immigrate to countries with better prospects. Additionally, the results in Tables 3 and 4 suggest that individuals who feel their safety is ensured are less inclined to immigrate, emphasising the pivotal role of political stability and security in shaping individuals' immigration decisions. This relationship underscores the connection between internal security and immigration patterns, suggesting that effective governance that improves safety and instils a sense of stability can significantly retain its population by reducing the push factors that drive immigration.

The results in Tables 3 and 4 also provide insights into the interplay of social status and employment in shaping immigration decisions. Specifically, unmarried individuals appear to exhibit a higher probability of immigrating, a result that could be attributed to the perceived flexibility and fewer familial responsibilities that come with being unmarried (i.e., single individuals possess a lower cost of relocating). Interestingly, the study reveals a significant difference in the immigration behaviour of individuals before and after the democratic transition. Specifically, employed individuals are considerably less likely to immigrate in the pre-democratic transition phase. This could imply that during periods of political uncertainty, job security provides a stabilising factor, acting as a deterrent to immigration. However, the post-democratic transition results reveal a shift in this relationship, as employment becomes statistically insignificant. The insignificance

of employment as a determining factor for immigration may highlight a shift in priorities, indicating that individuals, despite political stabilisation, no longer view job security as a crucial driver, reflecting the possible broader sense of pessimism. The results however suggest a consistent reluctance of employed males to immigrate, observed both pre and post the democratic transition, despite employment status becoming statistically significant in the latter stage, which may reflect a deeper, role-specific dynamic. This suggests that while employment might not universally deter immigration among the general population, it still plays a crucial role for males. Typically, employed males may have greater responsibilities and expectations to provide for families or maintain stable income sources, which could discourage the risk associated with immigration. This stability is crucial, particularly in contexts where male employment is often associated with primary breadwinner status. Thus, even as broader employment loses its deterrent effect on immigration decisions post transition, for employed males, the social and economic incentives to maintain stability potentially outweigh the opportunities or uncertainties associated with moving abroad.

Furthermore, findings in Tables 3 and 4 reveal that individuals receiving remittances are more prone to immigrate, especially post-democratic transition. One plausible explanation is rooted in potential economic pessimism, where those sending remittances, often more economically prosperous, may convey a sense of unmet demands or economic uncertainty in recipients' home countries. In essence, it may simply reflect the economic disparities between the home country and the destination, prompting individuals to seek opportunities abroad. Alternatively, the connection between remittance-receiving individuals and immigration decisions could also be linked to family ties. It is common for the breadwinners in the family to immigrate, and send remittances to provide financial support for their families left behind. Conversely, the results suggest that individuals who assert their income covers their needs exhibit a reduced inclination to immigrate, with a more pronounced effect pre-democratic transition, which indicates that income acts as a greater safety net during periods of political instability. This may suggest that all else equal, the overall probability of immigrating is higher post-transition due to decreased reliance on income as a stabilising factor.

Tables 3 and 4 offer comprehensive insights into the relationship between individuals' perceptions of their country's economic and political conditions, and their likelihood of immigrating. In particular, individuals who perceive their country as economically prosperous or an on a positive trajectory, are significantly less inclined to immigrate. Post the democratic transition, this effect intensifies, ranging between -0.18 to -0.21, compared to the pre-democratic transition value of

approximately -0.1. This implies that individuals' perceptions of economic prosperity plays a substantial role in shaping immigration decisions. When individuals perceive their country as economically robust or on the right track, their motivation to seek opportunities abroad diminishes. The amplified trend post-democratic transition suggests that a positive perception of economic conditions becomes an even stronger deterrent to immigration in the aftermath of the political transformation. Moreover, a variable indicating individuals foreseeing a better economic situation in the next 2-5 years aligns with reduced inclination to immigrate, particularly post the democratic transition. One plausible explanation is rooted in the potential optimism that accompanies democratic transitions. As Tunisia transitions into a democracy, Tunisians may become more optimistic about the future (anticipating improved economic prospects, political stability, and overall wellbeing for instance). This enhanced optimism may deter individuals to seek opportunities abroad. Moreover, results from both tables further underscore a correlation between the perception of corruption prevalence and the propensity of immigrating. This suggests that Tunisians who believe that corruption is widespread, are more inclined to immigrate. The impact of corruption elimination on immigration decisions is even more pronounced post-democratic transition. Intriguingly however, Tables 3 and 4 indicate that individuals who believe their country is undertaking the necessary reforms and eliminating corruption, are less inclined to immigrate. The positive association between the perception of corruption and the likelihood of immigrating highlights the impact of perceived institutional shortcomings on immigration decisions. The prevalence of corruption will likely erode the confidence of Tunisians in their country's governance and prospects. The pronounced effect post-democratic transition, highlights the potential sense of pessimism among individuals. Conversely, the perception that the country is taking the necessary reforms appears to act as a mitigating factor against immigration. This could signify that individuals are more inclined to stay and contribute to the positive changes they anticipate in their home country.

Results from Table 4 further demonstrate that overall satisfaction with key public services such as education and healthcare significantly influence individuals' decisions about whether to immigrate. Individuals satisfied with the education system, and those believing the country is on the right economic trajectory and satisfied with the education system, are less inclined to immigrate. This signifies that individuals are more likely to invest in their human capital in their home country when they are confident in opportunities for professional growth and the quality of the system. Such satisfaction underlines the importance of strong domestic institutions in fostering a stable environment where individuals feel less compelled to seek better prospects abroad. Findings also illustrate that individuals

satisfied with the health care system are less likely to immigrate. Robust healthcare services contribute to overall well-being and long-term health, crucial components of human capital that further tie individuals to their country by reducing the appeal of seeking better services abroad. Hence, when the domestic environment supports the development and maintenance of human capital through quality education and healthcare, the necessity and desire to immigrate appear to diminish significantly.

The results suggest a notable trend among individuals with higher levels of education, specifically those who hold a bachelor's degree or higher, where educated individuals who assert that their income covers their needs, are more inclined to immigrate. This observation aligns with the phenomenon of "brain drain", suggesting that individuals with advanced levels of education who experience income growth are more likely to migrate. The brain drain phenomenon refers to the immigration of highly skilled and educated individuals from their home countries to seek better opportunities elsewhere. Additionally, reinforcing the notion of the brain drain, the results suggest that individuals with a higher level of education exhibit a higher likelihood of immigrating, whilst those with no education show a diminished inclination (possibly due to the associated immigration costs). Importantly, this trend becomes even more pronounced in the post-democratic transition period, highlighting a possible failure from a governance perspective in meeting people's demands. The heightened inclination of educated individuals may stem from factors such as self-selection, where individuals with high skills or education are more mobile to pursuing better opportunities abroad. Conversely, the reduced inclination of less educated individuals to immigrate could be linked to various barriers, including financial constraints associated with immigration, limited awareness of opportunities abroad, or a preference for stability in their current socio-economic environment. The magnification of this trend post-democratic transition could be attributed to shifts in the global and domestic economic landscape, impacting the motivations and opportunities perceived by individuals across different education levels. In the context of this study, the positive correlation between income and the probability of immigration for highly educated individuals suggests that economic factors play a pivotal role in their immigration decisions. This may be driven by the pursuit of better compensation, improved professional prospects, or access to environments that value and reward their specialised skills.

The results all in all appear to suggest that the marginal effects are more prominent post-democratic transition. In fact, pre-democratic transition, given the set of covariates, the chance of the outcome (immigration) occurring is approximately 25%, compared to around 32% post-democratic transition. The

paper further employs a Chow Test to test whether the structural break does indeed exist. This approach helps in substantiating whether the observed changes in immigration probabilities are due to the transition or simply due to random fluctuation or other factors not related to the democratic changes. The set-up is as follows:

$$H_0 = There\ is\ no\ structural\ break$$

$$H_1 = There\ exists\ a\ structural\ break$$

The results of The Chow Test, presented in Table 5, reveals a small p value, supporting the conclusion that immigration dynamics undergo substantial shifts with the move towards a democratic political framework. While certain factors consistently influence immigration decisions, the heightened probability post-democratic transition reveals novel dynamics associated with democratisation. The newfound political freedoms and opportunities may contribute to an increased inclination among individuals to explore alternative living conditions or pursue aspirations that were previously constrained. This observed uptick in immigration post-democratic transition might be fuelled by a misalignment between expectations and reality, with individuals anticipating immediate economic prosperity following political changes. In reality, the benefits of democratisation often take time to materialise, prompting individuals to seek more immediate improvements in their lives by immigrating to perceived opportunities.

5.2 Changes-in-Change Results

Table 6 in the Appendix presents the standard Difference-in-Difference (DiD) analysis, estimating an Average Treatment Effect (ATE) of approximately 0.26. The directionality of the covariates aligns with the findings from the Probit regressions. Table 7 on the other hand provides results using the Changes-in-Changes (CiC) approach, which is more suitable for this analysis. It shows a substantial causal effect of approximately 0.25 (comparable to the DiD estimate), indicating that, on average, individuals in Tunisia are more likely to contemplate immigration after the democratic transition compared to those in Algeria. The observed effect could be attributed to prevalent expectations, whether realistic or not, that democratic transitions swiftly deliver economic prosperity.

The analysis of quantiles reveals that while there is a moderate increase in the likelihood of immigration among the least likely to migrate (10th quantile), this effect grows stronger at the median (50th quantile), indicating a broader influence across the general population. The most substantial increases are observed at the 70th and 80th quantiles, suggesting that those already more predisposed to immigrate

are significantly more influenced by the transition. These heterogeneous impacts across quantiles could stem from a combination of factors including economic expectations, or a heightened sensitivity to political changes, all of which shape the decision-making process regarding immigration in the post-democratic transition era.

Additionally, these findings align with immigration statistics. Specifically, Di Bartolomeo et al. (2010a) reveal that from the early 2000s until around 2008, approximately 1.3 million Algerians, constituting around 4.2% of the population, were residing abroad, whereas around 1.1 million Tunisians, making up roughly 10.2% of the population, were living abroad during the same period. Moreover, according to UN DESA (2020), as of mid-2020, an estimated 1.7 million Algerians and 529,756 Tunisians had settled in Western European countries alone. These destinations are particularly attractive to individuals from French-speaking African countries in general, and North Africans in particular. These figures account for approximately 3% and 4% of the Algerian and Tunisian populations, respectively. It is noteworthy that this analysis does not account for the geographical proximity of Tunisia to the Italian coast, which makes it an appealing hub for irregular immigration, potentially contributing to an increased percentage of immigrants from the region.

6. Policy Implications

The persistence of certain probabilities without significant changes in the study's findings could be attributed to underlying economic stagnation the country faced. When a country experiences prolonged economic stagnation, individuals may face limited prospects for income growth or improved living conditions, irrespective of political transitions. In such circumstances, the motivation to immigrate might not witness substantial shifts, particularly among specific demographic groups or individuals with certain characteristics. The stability in certain probabilities underscores the enduring influence of economic factors on immigration dynamics, highlighting the need to consider economic conditions alongside political changes when examining the determinants of immigration among the population. The observed stability in certain probabilities amid economic stagnation has notable policy implications. Policymakers should recognise the role of economic conditions in shaping immigration decisions and consider targeted interventions to address economic stagnation. Policies aimed at revitalising economic growth, creating job opportunities, and fostering innovation could play a pivotal role in altering the calculations of individuals contemplating immigration. Moreover, initiatives that enhance educational and skill development opportunities

may contribute to mitigating the brain drain effect, especially among highly educated individuals. By understanding the interplay between economic factors and immigration decisions, policymakers can craft more effective strategies to address root causes, promote economic dynamism and sustainable development, and create conditions that encourage individuals to invest in their home countries rather than seeking opportunities elsewhere.

The brain drain phenomenon raises concerns for Tunisia, as it implies a loss of skilled human capital. While the individuals benefiting from improved income and opportunities abroad contribute to their personal success, the departure of skilled professionals can pose challenges for the development and growth of their home country. The findings provide empirical support for the notion that economic considerations, particularly those related to income and career advancement, are key drivers of immigration decisions among highly educated individuals. The evidence supporting the phenomenon of brain drain in Tunisia could be underscored by the country's profound challenges in job creation, particularly in bridging the gap between the skills possessed by graduates and the actual demands of the labour market. The mismatch between educational outcomes and industry requirements perpetuates a scenario where many skilled individuals find limited opportunities domestically, prompting them to seek better opportunities abroad. To address this, educational reforms become a crucial policy avenue, emphasising the need to enhance skills and align them with market demands.

Tunisia is grappling with a significant learning crisis, and the current educational system reveals several deficiencies. Notably, despite substantial investments, the returns on investment, measured by student outcomes, have been disappointingly low in the country, as highlighted by Smaali-Bouhlila (2021). Lucas (1993) argues that an important engine of economic growth is the accumulation of human capital. In fact, the main reason for differences in standards of livings amongst nations, arises due to differences in human capital. It is well-established that education is one of the main components of human capital, which consequently translates to schooling being an important determinant of economic growth. Tunisia is in dire need of reforming its education sector, in order to achieve this efficiency in human capital, and as a result, achieve higher growth. Without fundamental reforms in this regard, Tunisia will continue to be condemned with a long-lasting period of economic stagnation. To a large extent, compared to the rest of the MENA region, Tunisia may be considered a prime example of a country striving to provide quality education for its children. According to World Bank data, Tunisia allocates approximately 20-28% of its national budget on education (which is above the average of roughly 14-17% for middle-income countries). Michael

Drabble, a Senior Education Specialist at the World Bank, states that while Tunisia has successfully addressed issues of access to education and achieved gender parity as well as universal primary education, the country continues to suffer severely with regards to the quality of education being offered, as students need to be supported in developing strong foundational skills, (World Bank, 2019). A wide gap remains between standards in the country, in comparison to those in advanced nations. Further progress is needed in the country, in terms of not only enhancing the quality of education, but as well as the equipment and technology. According to Akkari (2005), there is a pressing need for a national agency dedicated to monitoring and evaluating school performances and student outcomes in the country. To address this, effective policies targeting corruption in Tunisia are crucial. The lack of adequate policies to combat corruption poses a significant challenge. Transparency International's Corruption Perception Index for Tunisia fluctuated between 38 and 52 from 2000 to 2023. Notably, there has been minimal change in the index over the past decade, especially when compared to the years leading up to the revolution. This is a critical issue to address, especially considering that corruption has been identified as a factor driving immigration among Tunisians. Implementing robust anti-corruption measures is essential to curbing malpractices and fostering a more conducive educational environment.

By prioritising skill development, policymakers can enhance the employability of graduates, curbing the inclination to immigrate in search of better prospects. In practical terms, it is necessary for the government and policymakers to initiate reforms to redesign their education systems, as a means towards promoting innovation and human capital development. This may well be the more fundamental factor needed in overcoming the challenges that the country has been unable to break through, even since the spark of the revolution (for example, high unemployment especially amongst the youth). Simultaneously, fostering economic growth and job creation on a broader scale emerges as a critical approach to mitigate the push factors driving immigration. This entails strategic investments in infrastructure, educational systems, and the business environment, creating an environment that not only retains local talent, but also attracts foreign investments, thereby contributing to a more sustainable and vibrant economy, allowing to potentially break the chains of economic stagnation the country faced throughout the period.

In conjugation, enhancing healthcare satisfaction is a crucial policy implication for aligning with broader human development goals in Tunisia. As satisfaction with healthcare services is shown to influence individuals' decisions regarding immigration, it is vital for policy makers to focus on comprehensive

healthcare reforms. These reforms should aim to improve the quality of care, and effectively manage healthcare resources. This not only contributes to the overall well-being of the population, but also supports economic stability by reducing the inclination to immigrate in search of better healthcare, thereby retaining valuable human resources essential for national development.

7. Conclusion and Avenues for Future Research

In conclusion, this paper delves into the dynamics of immigration decisions in Tunisia, offering a comprehensive examination of the factors shaping immigration patterns both before and after the democratic transition, utilising data from the Arab Barometer Survey. The empirical findings shed light on the interplay of individual attributes, socio-economic indicators, and subjective perceptions in shaping immigration decisions. Furthermore, the exploration extends to a robustness check through a Changes-in-Changes analysis. Findings reveal that the immigration trend in the country has not diminished post-democratic transition; instead, it has intensified. The findings provide significant evidence supporting the brain drain phenomenon in Tunisia, particularly after the democratic transition. Additionally, the results overall indicate a higher inclination among Tunisians to immigrate compared to Algerians. This heightened propensity could be attributed to unmet demands stemming from the Tunisian revolution, as well as potentially unrealistic expectations regarding the immediate benefits of democracy.

In light of Tunisia's recent political shifts, an intriguing avenue for future research involves investigating immigration patterns both pre and post the shift. A longitudinal analysis considering data wavelengths spanning these time periods could undercover how changes in political landscapes impact immigration patterns. Additionally, exploring the impact of the political environment on immigration decisions becomes crucial in understanding how individuals navigate political uncertainties. Researchers could further assess how perceptions of political stability, freedom, and human rights impact immigration intentions in a changing political landscape. This analysis would not only contribute to the understanding of immigration dynamics in the face of political upheaval, but also provide valuable insights for policymakers seeking to address the consequences of political regression on immigration trends in Tunisia. Additionally, recent waves of data capture individuals' considerations of irregular immigration. Exploring this aspect further would add an interesting dimension to the study and could provide more insights into the interplay between political shifts, economic perceptions, and immigration choices.

References

Akkari, A. (2005). The Tunisian educational reform: from quantity to quality and the need for monitoring and assessment. Prospects, 35(1), 59-74.

Alvi, H. (2019). The political economy and Islam of the Middle East. USA: Palgrave Macmillan.

Athey, S., & Imbens, G. W. (2006). Identification and inference in nonlinear difference-in-differences models. Econometrica, 74(2), 431-497.

Becker, G. S. (1974). Human capital. University of Chicago press.

Bertocchi, G., & Strozzi, C. (2006). The age of mass migration: Economic and institutional determinants.

Bodvarsson, Ö. B., Van den Berg, H., Bodvarsson, Ö. B., & Van den Berg, H. (2013). The determinants of international migration: Theory. The Economics of Immigration: theory and policy, 27-57.

Cooray, A., & Schneider, F. (2016). Does corruption promote emigration? An empirical examination. Journal of Population Economics, 29, 293-310.

David, A., & Jarreau, J. (2016, September). Determinants of emigration: Evidence from Egypt. In Economic research forum (ERF)–Egypt. ERF Cairo.

Dennison, J. (2022). Re-thinking the drivers of regular and irregular migration: evidence from the MENA region. Comparative Migration Studies, 10(1), 21.

DESA, U. (2020). International migrant stock 2020. New York.

Di Bartolomeo, A., Jaulin, T., & Perrin, D. (2010). CARIM–Migration Profile: Algeria.

Di Bartolomeo, A., Jaulin, T., & Perrin, D. (2010). CARIM–Migration profile: Tunisia.

Dibeh, G., Fakih, A., & Marrouch, W. (2018). Decision to emigrate amongst the youth in Lebanon. International Migration, 56(1), 5-22.

Fakih, A., & El Baba, M. (2023). The willingness to emigrate in six MENA countries: The role of post-revolutionary stress. International Migration, 61(4), 201-220.

Fargues, P., & Fandrich, C. (2012). Migration after the Arab spring.

Gevrek, Z. E., Kunt, P., & Ursprung, H. W. (2021). Education, political discontent, and emigration intentions: evidence from a natural experiment in Turkey. Public Choice, 186, 563-585.

Gibson, John, and David McKenzie. 2011. "The microeconomic determinants of emigration and return migration of the best and brightest: Evidence from the Pacific." Journal of Development Economics 95 (1): 18–29.

Hiskey, Jonathan, Jorge Daniel Montalvo, and Diana Orc ́es. 2014. "Democracy, governance, and emigration intentions in Latin America and the Caribbean." Studies in Comparative International Development 49:89–111.

Lucas Jr, R. E. (1993). Making a miracle. Econometrica: Journal of the Econometric Society, 251-272.

Migali, S., & Scipioni, M. (2018). A global analysis of intentions to migrate. European Commission.

Nassar, H. (2008) Migration in the MENA region: an overview. na.

Natter, K. (2015). Revolution and political transition in Tunisia: A migration game changer?. Migration information source, 28.

Nellis, J. R. (1983). A comparative assessment of the development performances of Algeria and Tunisia. Middle East Journal, 37(3), 370-393.

ONS. 2021. "RAPPORT DE L'ENQUETE NATIONALE SUR LA MIGRATION INTERNATIONALE TUNISIA HIMS." Ministère des Affaires Sociales Tunisie.

Puhani, P. A. (2012). The treatment effect, the cross difference, and the interaction term in nonlinear "difference-in-differences" models. Economics Letters, 115(1), 85-87.

Ramos, R. (2019). Migration aspirations among youth in the Middle East and North Africa region. Journal of Geographical Systems, 21(4), 487-507.

Robinson, J. A., & Acemoglu, D. (2012). Why nations fail: The origins of power, prosperity and poverty (pp. 45-47). London: Profile.

Smaali-Bouhlila, Donia. 2021. Education in Tunisia: Past progress, present decline and future challenges.

WEF. 2012. Reforming Tunisia's Education Sector.

WorldBank. 2019. Middle East and North Africa Human Capital Plan.

Appendix

Table (1): Set of covariates included in the analysis

Category	Covariate	Description
Individual Specific Demographics	Location	Dummy variable: 1 if an individual resides in an urban area, 0 if in a rural area.
	Age	Restricted to ages 18-50.
	Gender	Dummy variable: 1 if male, 0 if female.
	Social Status	Dummy variable: 1 if unmarried, 0 if married.
	Religious	Dummy variable: 1 if identifies as religious/somewhat religious, 0 if not religious.
Socio-Economic/Financial	Employed	Dummy variable: 1 if employed, 0 otherwise.
	Education Level	Dummies for each level (Illiterate, Basic, Elementary, Secondary, Diploma, BA, Above BA): 1 for highest educational attainment, 0 otherwise.
	Remittances	Dummy variable: 1 if receiving remittances, 0 otherwise.
	Income Cover	Dummy variable: 1 if income covers monthly needs, 0 otherwise.
Economic Perceptions	Econ. Evaluation	Dummy variable: 1 if economic situation is evaluated as good/very good, 0 if bad/very bad.
	Econ. Compared	Dummy variable: 1 if economic situation is expected to improve, 0 if expected to stagnate/worsen.
Institutional Trust	Reforms*[1]	Dummy variable: 1 if believes state is undertaking reforms, 0 otherwise.
	Corruption	Dummy variable: 1 if believes corruption is prevalent, 0 otherwise.
	Eliminate Corruption	Dummy variable: 1 if believes the country is fighting corruption, 0 otherwise.
Social and Political Indicators	Freedom	Dummy variable: 1 if believes freedom of expression is guaranteed, 0 otherwise

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[1] * Data only available pre-democratic transition, ** Data only available post-democratic transition.

Category	Covariate	Description
	Treated Equally*	Dummy variable: 1 if feels treated equally to other citizens, 0 otherwise.
	Safety Ensured	Dummy variable: 1 if believes personal and family security is ensured, 0 otherwise.
	Political Interest	Dummy variable: 1 if expressing significant interest in politics, 0 otherwise.
Public Service Satisfaction**	Education Satisfaction	Dummy variable: 1 if satisfied with the education system, 0 otherwise.
	Health Satisfaction	Dummy variable: 1 if satisfied with the health system, 0 otherwise.

Table (2): Descriptive Statistics

(Averages reported)

Category	Variable	Pre-Transition	Post-Transition
Individual Specific Demographics	Proportion in Urban Areas	65%	67%
	Average Age	34	35
	Proportion of Males	48%	52%
	Proportion Unmarried	42%	32%
	Identifies as Religious	79%	70%
Socio-Economic/Financial	Employment Rate	42%	42%
	Low/No Education	79%	75%
	High Education Levels	21%	22%[2]
	Receives Remittances	5%	6%
	Income Covers Needs	31%	34%
Economic Perceptions	Good Economic Evaluation	20%	9%
	Believes in Correct Economic Trajectory	72%	43%
Institutional Trust	Believes Reforms are Being Taken	62%	-
	Sees High Corruption	81%	95%
	Believes Country is Fighting Corruption	63%	43%
Social and Political Indicators	Guaranteed Freedom of Expression	80%	69%
	Believes Being Treated Equally to Others	52%	-
	Believes Safety is Ensured	59%	69%
	Interested in Politics	42%	25%
Immigration Intentions	Expressed desire in Immigrating	26%	34%
	For Economic Reasons	85%	83%
Public Service Satisfaction	Satisfied with Educational System	-	32%
	Satisfied with Health System	-	38%

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[2] The remaining 3% hold a technical or professional diploma.

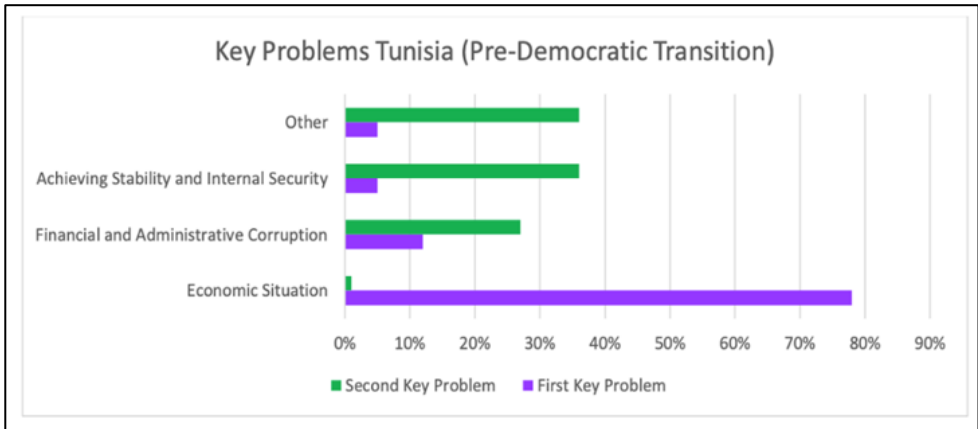Figure (1): Key Problems Identified in Tunisia (Pre-Democratic Transition)

Figure (2): Key Problems Identified in Tunisia (Post-Democratic Transition)
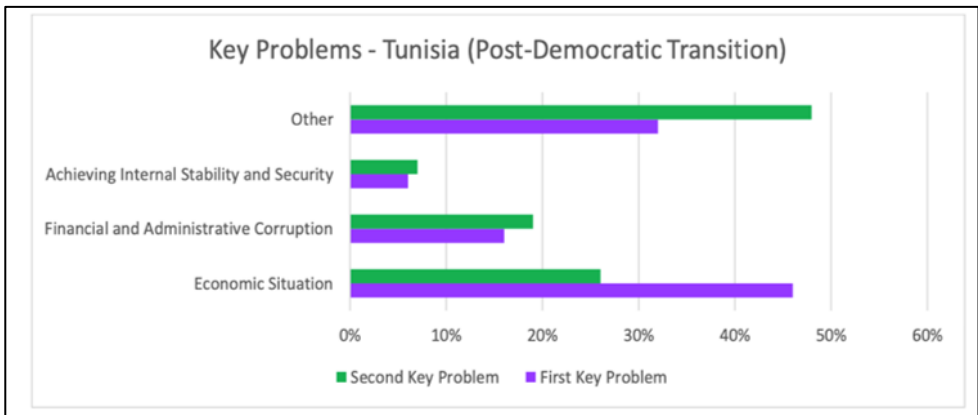
Table (3): Probit Estimation Results (Pre-Democratic Transition)

	Y	Y	Y	Y	Y	Y	Y
Location	0.0562**	0.0581**	0.0564**	0.0537**	0.0570**	0.0636***	0.0638**
Age	-0.0092	-0.0127	-0.0128	-0.0188*	-0.0103	-0.0119	-0.0141
Age Squared	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001
Gender	0.1447***	0.1425***	0.1286***	0.1340***	0.1403***	0.1978***	0.1495***
Social Status	0.0893***	0.0886***	0.0904***	0.1019***	0.0942***	0.0859***	0.1027***
Religious	-0.0781***	-0.0768***	-0.0700**	-0.0573*	-0.0795***	-0.0596**	-0.0554*
Employed	-0.1190***	-0.1091***	-0.0918***	-0.0999***	-0.1114***		-0.1077***
Illiterate	-0.0521	-0.0751**	-0.0699*	-0.0557	-0.0660*		
Basic Education	-0.0085	-0.0005	0.0070				
Secondary Diploma	-0.0001	0.0062	0.0052				
BA	0.0386	0.0571	0.0524	0.0373	0.0506		
Above BA	0.1393**	0.1684***	0.1314**	0.1376**	0.1549***		
Remittances		0.1311**	0.1199**	0.0677	0.1116**	0.1216**	
Income Cover		-0.0793***	-0.0652***	-0.0671**	-0.0675***	-0.0896***	-0.0881***
Econ Evaluation			-0.0975***			-0.1023***	
Econ Compared			-0.0881***			-0.0873***	
Reforms				-0.0535*			
Corruption				0.0705*			0.0804***
Elim. Corrup.				-0.0638**			
Freedom					-0.0587**	-0.0496*	
Treated Equally					-0.0241		
Safety Ensured					-0.0729***		-0.0635**
Interest Politics					0.0269		
Employed*Gender						-0.1546***	
BA*IncomeCov						0.1409**	0.1366**
AboveBA*IncomeCov.						0.1733**	0.2331***
EconEval*Reforms							-0.0698**
Observations	1,664	1,635	1,517	1,250	1,564	1,489	1,392

Note: Y here denotes the dependent variable: Immigration
Marginal effects reported; $* p < 0.1, ** p < 0.05, *** p < 0.01.$

Table (4): Probit Estimation Results (Post- Democratic Transition)

	Y	Y	Y	Y	Y	Y	Y	Y
Location	0.0979***	0.0782***	0.0933***	0.0989***	0.0971***	0.0809***	0.0992***	0.0946***
Age	0.0141	0.0071	0.0091	0.0010	0.0111	0.0060	0.0136	0.0094
Age Squared	-0.0003**	-0.0002	-0.0002*	-0.0003*	-0.0003**	-0.0002	-0.0003*	-0.0003*
Gender	0.1275***	0.1327***	0.1250***	0.1198***	0.1159***	0.1210***	0.1811***	0.1143***
Social Status	0.1289***	0.0728**	0.1285***	0.1331***	0.1352***	0.0757**	0.0707*	0.1034***
Religious	-0.0656***	-0.1029***	-0.0778***	-0.0679***	-0.0665***	-0.0988***	-0.1203***	-0.0849***
Employed	-0.0307	-0.0357	-0.0171	-0.0356	-0.0188	-0.0301		
Illiterate	-0.0959*	-0.1001*	-0.0931*	-0.1166**	-0.1114**	-0.0638		
Basic Education	-0.0059	-0.0109						
Secondary						0.0419		
Diploma	0.1293**	0.2264***	0.1469**	0.1387**	0.1429**	0.2273**		
BA	0.1467***	0.1800***	0.1421***	0.1582***	0.1524***	0.1983***		
Above BA	0.1562***	0.1673***	0.1930***	0.1536***	0.1654***	0.1805***		
Remittances		0.1673**				0.2161***	0.2371***	0.1945***
Income Cover			-0.0467*	-0.0458**	-0.0346*	-0.0352	-0.0719**	-0.0593*
Econ. Eval			-0.2136***				-0.1801***	
Econ Compared			-0.0974***				-0.1023***	
Corruption				0.2398***				
Elim. Corrup				-0.0113***				-0.0649***
Freedom					-0.0255			
Safety Ens.					-0.1150***			-0.1131***
Interest Pol.					0.0620**			0.0551*
Satisfied Educ.						-0.0505*		
Satisfied Health						-0.0736***		-0.0784***
Employed*Gender							-0.0910**	
Dip*IncomeCov							0.0487	0.0986
BA*IncomeCov							0.2058***	0.1627***
AboveBA*IncomeCov							0.1916**	0.1519**
Sat Educ* EvalEcon								-0.2026***
Observations	2,234	1,527	1,884	2,064	2,181	1,485	1,299	1,471

Note: Y here denotes the dependent variable: Immigration
Marginal effects reported; $* p < 0.1, ** p < 0.05, *** p < 0.01$

Table (5): Chow Test Results

Chi Squared	**Value:** 33.37
Critical Value/P-value	**Critical Value**: ($\alpha = 0.1$) ; **P-Value**: 0.03[3]
Decision Rule	Reject H_0 if P-value $< \alpha$
Conclusion	Reject H_0, indicating a significant structural break.

Table (6): Standard Difference-in-Difference Results[4]

Country - Treatment	Year - Transition	Coefficient
0 (Algeria)	0 (Pre-Transition)	0.779
0 (Algeria)	1 (Post-Transition)	0.550
1 (Tunisia)	0 (Pre-Transition)	0.590
1 (Tunisia)	1 (Post-Transition)	0.618
Average Treatment Effect (DID): 0.26*[5]**		
	Immigration	
Location	0.0384***	
Age	-0.0082	
Age Squared	-0.0002	
Gender	0.1730***	
Social Status	0.1106***	
Religious	-0.0153***	
Political Interest	-0.0271**	
Employed	-0.0544***	
Illiterate	-0.0032	
Basic Education	0.0062	
Secondary Education	0.0078	
BA	0.0841***	

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[3] Various model specifications were tested to ensure the robustness of the results. Across all tested specifications, the p-vales consistently ranged from 0.02 to 0.05, reaffirming the statistical significance of the findings.

[4] Note: Variables "Corruption" and "Eliminate Corruption" were excluded as data is unavailable for Algeria in the last wavelength.

[5] ATE calculation: Change in Tunisia: Post – Pre = 0.618– 0.590 = 0.028; Change in Algeria: Post – Pre = 0.550 – 0.779 = -0.229. ATE = Change in Tunisia – Change in Algeria = 0.028 – (-0.229)≈0.26

Country - Treatment	Year - Transition	Coefficient
Above BA		0.1190***
Remittances		0.1256***
Income Cover		-0.0335**
Eval. Econ.		-0.1289***
Econ. Compared		-0.0662***
Freedom		-0.0697***
Safety Ensured		-0.0669***

$** \, p < 0.05 \, , *** \, p < 0.01$

Note: Bootstrap standard errors were computed using 1000 replications.

Table (7): Changes-in-Changes Results: Averages and Quantiles

Average Treatment Effects (CIC) = 0.25***	
Quantiles	
10th Quantile	0.1722***
20th Quantile	0.2069***
30th Quantile	0.1941***
40th Quantile	0.1940***
50th Quantile (Median)	0.2201***
60th Quantile	0.2555***
70th Quantile	0.5026***
80th Quantile	0.4661***
90th Quantile	0.2175***

$*** \, p < 0.01$

Note: Bootstrap standard errors were computed using 1000 replications.