

The Key Factors Affecting Entrepreneurship in Middle East and North Africa (MENA)

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Abstract— This paper aims to determine which factors have an impact on business creation in the MENA by focusing on socio-economic factors that are unemployment rate, taxation levels, income levels and the education level as well as on governance factors more precisely the Worldwide Governance Indicators published by the World Bank. In addition, this research will also study the impact of net migration on entrepreneurship in the region which is the gap that this paper will attempt to address. Data was collected for 13 Middle East and North African countries for a period of 14 years (2006-2023). The methodology applied in this research includes Pearson correlation analysis as well as static panel data analysis which was proved to be more adequate given the data and research problematic. Our analysis included the Fixed Effects (FE) method and the Random Effects (RE) method followed by a Hausman test to help determine which model is better. The Pearson correlation analysis followed by variance inflation factor (VIF) analysis led us to remove 3 IVs (IV) from our model. The RE method indicated that only net migration, education level and taxation level have a statistically significant (STS) impact on entrepreneurship while all the other variables are not STS. The findings of this research can be used by governments across the region to set-up entrepreneurship strategies and undertake effective reforms depending on their socio-economic and governance indicators. The findings can also be used to better manage migrant flows based on new business creation objectives.

Index Terms—Education level, Entrepreneurship, Governance, Income, Net migration, Taxation, Unemployment.

I. INTRODUCTION

Entrepreneurship has evolved as a focus point for many economies throughout the world, and it is now acknowledged as a critical engine of economic growth and prosperity. Entrepreneurs have a role that goes beyond just making money; they also help to stimulate innovation, thereby supporting economic growth. It is critical to understand how entrepreneurial activity differs among countries.

Over time, literature has identified three main lines of thinking about the factors of entrepreneurship. This includes a socioeconomic perspective that views the economics as the major driver of entrepreneurial activity within a country and an institutional approach that emphasizes the role of social-cultural elements and regulatory frameworks in determining entrepreneurship levels.

This research as well as the literature review that will follow will focus mainly on the economic approach and the institutional approach and will ignore the psychological approach due to constraints related to data collection.

For the institutional determinants of entrepreneurship, we will include the worldwide governance indicators published by the World Bank which include “Government Effectiveness; Regulatory Quality; Rule of Law; Voice and Accountability; Political Stability and absence of Violence; and Control of Corruption” (World Bank, 2022). For the social and economic factors, we will include unemployment rate, taxation levels, income levels with GDP per capita as a proxy and education level with the expected years of schooling as a proxy.

This research covers the impact of net migration on entrepreneurship. Many studies have analyzed the impact of migrant inflows on entrepreneurship (Duan et al., 2023), however, when it comes to the impact of net migration which considers both migrant inflows and outflows, the subject was not researched enough and was not given enough attention by researchers especially in the MENA region. This is the gap that this paper will attempt to address.

Studying the impact of net migration in the MENA region is particularly interesting because the countries in the region are at the same time host countries, transit countries and source countries of immigration (Yee, 2023).

II. LITERATURE REVIEW

To measure entrepreneurship levels for the purpose of comparison between countries, researchers have used different variables. Ferreira et al. (2023) have indicated that variables such as business creation, business density, provided funds for new businesses, financing of SMEs and patent applications can all be used as proxies for entrepreneurship levels. Many

researchers including Kaivanto & Zhang (2022) have indicated that new business creation is the most suitable measure of entrepreneurial levels since it is a direct act of entrepreneurship. New business density which refers to the number of new registered businesses per 1000 people is also used as a measure of entrepreneurship (Abegaz et al., 2023; Ghazy et al., 2022).

When it comes to factors affecting entrepreneurship, Audretsch et al. (2022) used a sample of 52 countries and concluded that low corruption levels positively impact new business creations. Chen et al. (2022) reached the same conclusion and found a positive relationship (PR) between corruption control and green entrepreneurship in Chinese energy-intensive industry. Dreher & Gassebner (2013) have also added that corrupt administrative officials can also continue to exploit entrepreneurs even after their business has already been created due to the need of renewing the required authorizations and licenses.

H1: there is a negative relationship (NR) between corruption levels and entrepreneurial levels.

Abegaz et al. (2023) studied the effect of political stability on entrepreneurship for 126 countries and concluded that higher political stability led to higher rates of entrepreneurship. Goel & Nelson (2023) studied the impact of political factors on entrepreneurship and also reached the same conclusion: political instability lowers new business creations.

Farè et al. (2023) also studied the impact of democracy on entrepreneurial levels by studying data from 23 countries and concluded that there is a PR between democracy and entrepreneurial activity.

Recent research has also shown that entrepreneurial levels are higher in economies characterized by features usually found in democracies such as the rule of law (Mickiewicz et al., 2021).

H2: there is a PR between political stability and entrepreneurial levels.

When it comes to the impact of economic development on entrepreneurial activity, Abegaz et al. (2023) have shown that a high income has a positive effect on new business creations since high-income countries provide better support to start-ups and entrepreneurs both in terms of infrastructure and fundings. Méndez-Picazo et al. (2023) also studied the impact of income on entrepreneurial activity in 15 OECD countries and the results have shown a positive effect of income on entrepreneurship.

H3: there is a PR between income levels and entrepreneurial levels.

When it comes to the impact that unemployment has on the level of entrepreneurial activity, O'Leary (2022) has concluded that for low-income countries, unemployment has a NR with entrepreneurial activity, while for countries with high-income there is a PR. O'Leary (2022) explains that in rich countries, unemployed individuals can still obtain an income and other sources of funding from the state to start their business ventures. However, in poor countries, funds unavailability, especially for the unemployed, reduces business formations.

H4: there is a PR between unemployment levels and entrepreneurial levels.

Concerning the impact of education level, Bosma et al. (2021) have proven that education level has a positive impact on entrepreneurial activity and that individuals with a post-secondary degree are more likely to launch a business venture. Rosado-Cubero et al. (2021) have also reached a similar conclusion and identified education and training levels as having a positive impact on entrepreneurial activity.

H5: there is a PR between education levels and entrepreneurial levels.

When it comes to the impact of taxation levels on entrepreneurial activity, Audretsch et al. (2022) concluded that higher taxation levels have a negative impact on new business creations in a study that included a sample of 52 countries. Zemtsov et al. (2022) also already reached a similar conclusion and indicated that higher taxation levels have a negative effect on entrepreneurial activity in Russia.

H5: there is a NR between taxation levels and entrepreneurial levels.

Zhuo et al. (2020) indicated that rule of law has a positive effect on new business creation due its positive effect on accelerating economic growth. Goel and Nelson (2023) also reached a similar conclusion and indicated that countries with a higher rule of law are characterized by higher entrepreneurial levels.

H6: there is a PR between rule of law and entrepreneurial levels.

When it comes to the effects of government effectiveness of entrepreneurial levels, Sasmaz and Sagdic (2020) indicated that government effectiveness has a positive impact on entrepreneurship. Zhuo et al. (2020) reached a similar conclusion on the effect of government effectiveness on business creations and indicated that countries with effective governments are characterized by higher levels of entrepreneurship.

H7: there is a PR between government effectiveness and entrepreneurial levels.

Concerning the impact of regulatory quality on entrepreneurial levels, Abegaz et al. (2023) have indicated that there is PR between regulatory quality of a country and its level of entrepreneurship.

H8: there is a PR between regulatory quality and entrepreneurial levels.

Concerning the impact of accountability which includes freedom of expression and freedom of the press on entrepreneurship, Abegaz et al. (2023) have found no significant relationship between accountability and entrepreneurship.

H9: there is a PR between voice and accountability and entrepreneurial levels.

Many researchers have studied the impact of net migration on economic growth in what is referred to as migration impact

assessment (Nijkamp et al., 2012). Pal et al. (2022) have studied the economic impact of remittances sent by migrants to their country of origin and concluded that remittances from migrants abroad have a positive effect on the economic growth of countries of origin, whatever their level of development.

Pal et al. (2022) also concluded that remittances led to a decline in unemployment rates in low-income and middle-income countries, while it led to an increase in unemployment in high-income countries.

Kennan (2013) has indicated that migrant flows have a positive economic impact not only for the sending countries but also for the receiving countries. Tomohara (2022) for example concluded that migrant inflows reduce unemployment in Japan which can be explained by labor shortages that Japan suffers from in most of its industries.

Research has also shown that the impact of migration on both the sending and receiving country depends on the skill levels of the migrants and their productivity (Borjas, 2019).

H9: there is a NR between net migration and entrepreneurial levels.

We have decided to include the following IV in this research: income (with GDP per capita as a proxy), unemployment rate, education level (with expected years of schooling as a proxy), taxation level, political stability, net migration in addition to all the World Bank worldwide governance indicators which are “corruption level, voice and accountability, regulatory quality, rule of law and government effectiveness” (World Bank, 2022). The dependent variable is the number of new businesses registered.

III. METHODS

For all the variables used in this research (table 1), data was collected from the World Bank for 14 years from 2006 to 2019. We have collected data for 13 countries in the MENA which are: Algeria, Bahrain, Egypt, Israel, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates and Turkey.

TABLE I
VARIABLES

Variable	Definition	Sign of relationship (literature review)	Source of data	
Number of business registrations per year as a proxy for entrepreneurship.	The total number of limited liability corporations (or their equivalent depending on the country) registered each calendar year for a given country.	N.A: Dependent variable	WORLD DEVELOPMENT INDICATORS	BANK
Unemployment, total (% of total labor force).	The percentage of the labor force that is unemployed yet looking for work.	PR : O’Leary (2022) and Fritsch et al. (2015). NR: Fuentelsaz et al. (2015).	WORLD DEVELOPMENT INDICATORS.	BANK
GDP per capita (current US\$) as a proxy for income.	The gross domestic product of a given country divided by its average population during the year. It is measured in current US\$.	PR : Méndez-Picazo et al. (2023) and Abegaz et al. (2023) NR: Spencer and Gómez (2004) and Fuentelsaz et al. (2015)	WORLD DEVELOPMENT INDICATORS.	BANK
Expected years of schooling as a proxy for education levels.	The number of years that a child in age to go to school is expected to spend in the educational system.	PR : Bosma et al. (2021) and Rosado-Cubero et al. (2021). NR: Blanchflower et al. (2001)	WORLD DEVELOPMENT INDICATORS.	BANK
Taxation levels	Taxes (% of profit) represent the percentage of taxes that businesses pay	NR: Zemtsov et al. (2022) and Audretsch et al. (2022).	WORLD DEVELOPMENT INDICATORS.	BANK

	after considering tax deductions.			
Corruption control	Perception of the level of use of public power for private gains (-2.5 to 2.5) *.	PR : Audretsch et al. (2022) and Chen et al. (2022).	WORLD GOVERNANCE INDICATORS.	BANK
Political stability	Perception of the probability of political instability (-2.5 to 2.5) *.	PR : Abegaz et al. (2023) and Goel & Nelson (2023).	WORLD GOVERNANCE INDICATORS.	BANK
Government effectiveness	Perception of the quality of governmental services and its independence from political forces (-2.5 to 2.5) *.	PR : Sasmaz and Sagdic (2020) Zhuo et. al. (2020) NR: Friedman (2011)	WORLD GOVERNANCE INDICATORS.	BANK
Rule of law	Level of confidence in a country's laws and justice system. (-2.5 to 2.5) *.	PR : Zhuo et al. (2020) Goel & Nelson (2023) Goltz et al. (2015) Levie & Autio (2011)	WORLD GOVERNANCE INDICATORS.	BANK
Regulatory quality	Indicates the quality of government regulatory framework and its role in promoting investment (-2.5 to 2.5) *.	PR : Abegaz et al. (2023) Çule and Fulton (2013) Dau and Cuervo-Cazurra (2014), and Dabija et al. (2014)	WORLD GOVERNANCE INDICATORS.	BANK
Voice and accountability	Refers to the perceptions that citizens have about their ability to participate in electing their government as well their ability to express their opinions (-2.5 to 2.5)*.	No relationship: Abegaz et al. (2023) PR : Ha et al. (2016) Baumol & Strom (2007)	WORLD GOVERNANCE INDICATORS.	BANK
Net migration per year	the sum of all migration during the year. It is computed as the difference between the number of immigrants and the number of emigrants.	Pal et al. (2022): remittances have a positive impact on economic growth. Tomohara (2022): migrant inflows reduce unemployment.	WORLD DEVELOPMENT INDICATORS.	BANK

The main difference between static panel data analysis and dynamic analysis is the fact that in dynamic panel data analysis, the regressors include a lagged dependent variable (Asteriou & Hall, 2021). Therefore, we concluded that current business creations are not impacted by past business creations since base effect is irrelevant in this context: each year new business registrations start from zero and past business creations do not influence current business creations and given these factors, static panel data analysis will be used since it is more relevant to the research problematic.

A. Pearson correlation analysis

As observed in the results below, the absolute value of correlation between many IV is superior to 0.8. Variance inflation factor (VIF) is then used to remove from the model IV that are highly correlated. VIF indicates, for the coefficient of each IV, the degree to which its variance is inflated due to high correlation with one or many other IV.

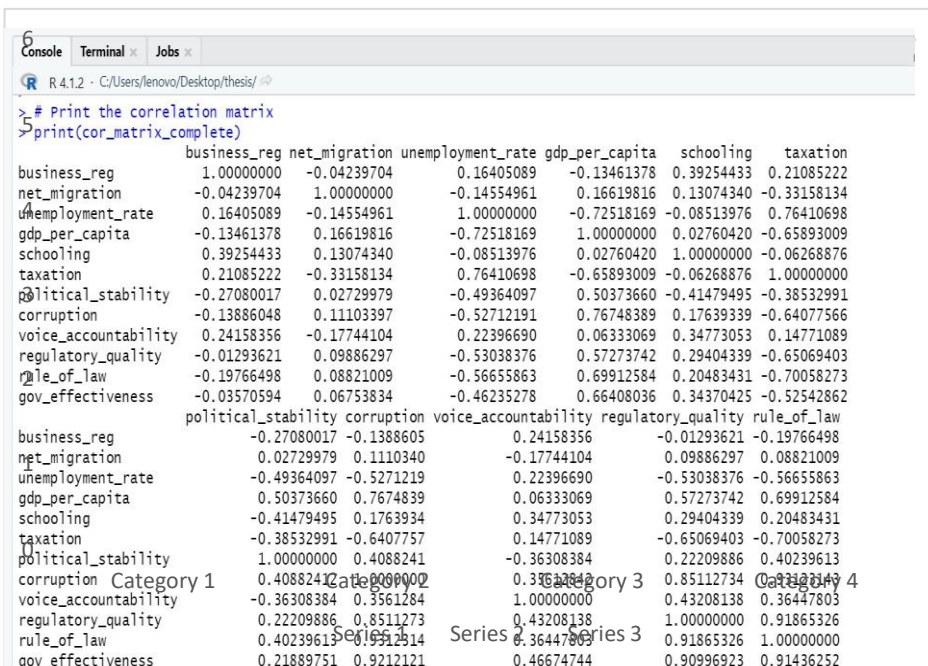


Figure 2

	gov_effectiveness
business_reg	-0.03570594
net_migration	0.06753834
unemployment_rate	-0.46235278
gdp_per_capita	0.66408036
schooling	0.34370425
taxation	-0.52542862
political_stability	0.21889751
corruption	0.92121206
voice_accountability	0.46674744
regulatory_quality	0.90996923
rule_of_law	0.91436252
gov_effectiveness	1.00000000

B. Variance inflation factor (VIF)

The variables with VIF values above 10 are corruption control, regulatory quality, rule of law and government effectiveness. We notice that these four variables have very high correlation levels with all of them having absolute values superior to 0.8.

Since these 4 governance variables are very highly correlated, it was decided to drop three of them (regulatory quality, rule of law and government effectiveness) and to include just corruption control in the model.

	unemployment_rate	gdp_per_capita	schooling	taxation	political_stability
vif_results	4.456933	5.387573	1.770250	7.468414	3.945719
print(vif_results)	15.703558	3.921557	13.769811	20.368446	23.159497

The results of the new multicollinearity test are presented below. As observed, the VIF values of all the variables are now below 10.

	unemployment_rate	gdp_per_capita	schooling	taxation	political_stability
new_vif_results	3.870781	3.921393	1.628051	3.587776	2.728086
print(new_vif_results)	5.382655	2.500899			

number citations consecutively in square brackets [1]. The sentence punctuation follows the brackets [2]. Multiple references [2], [3] are each numbered with separate brackets [1]–[3]. When citing a section in a book, please give the relevant page numbers [2]. In sentences, refer simply to the reference number, foreign-language citation [8].

C. FE method.

The results of the FE method performed using software R are presented below.

```

Console Terminal Jobs
R 4.1.2 - C:/Users/lenovo/Desktop/thesis/
> # Print the fixed effect model results
> summary(fixed_model)
Oneway (individual) effect within Model

Call:
plm(formula = business_reg ~ net_migration + unemployment_rate +
    gdp_per_capita + schooling + taxation + political_stability +
    corruption + voice_accountability, data = data_complete,
    model = "within")

Unbalanced Panel: n = 13, T = 2-13, N = 97

Residuals:
    Min.   1st Qu.   Median   3rd Qu.    Max.
-9433.58 -2122.34   193.32  1530.29  8692.07

Coefficients:
              Estimate Std. Error t-value Pr(>|t|)
net_migration    -0.0148967    0.0028046  -5.3116 0.000010467021 ***
unemployment_rate  357.4113915    277.0557699   1.2900  0.200950
gdp_per_capita    -0.0867977    0.0644152  -1.3475  0.181831
schooling         2750.4945019    390.9542512   7.0353 0.0000000007533 ***
taxation          -626.2769486    210.0500729  -2.9816  0.003852 **
political_stability -969.5736782    1827.7735217  -0.5305  0.597335
corruption        -271.1405521    2753.9356100  -0.0985  0.921830
voice_accountability -86.4514055    1709.1163940  -0.0506  0.959791
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

```

Console Terminal Jobs
R 4.1.2 - C:/Users/lenovo/Desktop/thesis/
Total Sum of Squares: 1749500000
Residual Sum of Squares: 764700000
R-squared: 0.56292
Adj. R-squared: 0.44789
F-statistic: 12.235 on 8 and 76 DF, p-value: 0.00000000004433
>
> # View the fixed effects for each country
> fixed_effects <- fixef(fixed_model)
> print(fixed_effects)
      AE      BH      DZ      EG      IL      JO      KW      MA      OM      QA      SA      TN
-8228.0 -29157.4  8087.4  -9011.7 -10919.8 -14268.4 -25668.7  26659.1 -15541.6  -8305.0 -17896.6  3263.6
      TR
  42328.7

```

D. RE method

The results of the RE method performed using software R are given below.

```

Console Terminal Jobs
R 4.1.2 - C:/Users/lenovo/Desktop/thesis/
> # Print the random effects model results
> summary(random_model)
Oneway (individual) effect Random Effect Model
(Swamy-Arora's transformation)

Call:
plm(formula = business_reg ~ net_migration + unemployment_rate +
    gdp_per_capita + schooling + taxation + political_stability +
    corruption + voice_accountability, data = data_complete,
    model = "random")

Unbalanced Panel: n = 13, T = 2-13, N = 97

Effects:
              var      std.dev share
idiosyncratic 10061798      3172 0.016
individual    617713038     24854 0.984
theta:
    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 0.9101  0.9549  0.9575  0.9547  0.9597  0.9646

Residuals:
    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-8570.4 -1616.6   -95.5     2.6  1411.7  10546.2

```

```

Console Terminal Jobs
R 4.1.2 - C:/Users/lenovo/Desktop/thesis/
Coefficients:
              Estimate Std. Error z-value Pr(>|z|)
(Intercept)  -9552.9136240    10745.5027750  -0.8890  0.373995
net_migration    -0.0148056     0.0027236  -5.4360 0.0000000544763820 ***
unemployment_rate  374.4973634     267.7845867   1.3985  0.161962
gdp_per_capita    -0.0840998     0.0622555  -1.3509  0.176734
schooling         2768.3224463    378.6448830   7.3111 0.0000000000002649 ***
taxation         -474.1421330     178.4202334  -2.6574  0.007674 **
political_stability -800.2351264    1755.4348516  -0.4559  0.648490
corruption        -896.8101232    2615.7478383  -0.3429  0.731711
voice_accountability  81.4540881     1646.1301461  0.0495  0.960535
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 1817000000
Residual Sum of Squares: 836750000
R-squared: 0.53949
Adj. R-squared: 0.49763
ChiSq: 102.664 on 8 DF, p-value: < 0.000000000000000222
>
> # View the random effects for each country
> random_effects <- ranef(random_model)
> print(random_effects)
      AE      BH      DZ      EG      IL      JO      KW      MA      OM
-703.8278 -21509.2282  5977.6331 -6398.5834 -5541.1250 -9368.1912 -18375.8644  28128.2642 -9629.5163
      QA      SA      TN      TR
-294.7162 -10620.3087  3050.5468  45284.9150

```

E. Hausman Test

To choose between the FE method and the RE method, a Hausman test can be performed since it allows us to find if a random or FE estimator is more appropriate for our research by comparing the difference between the two estimators and

testing its significance (Asteriou & Hall, 2021).

(H0): the RE model is valid, and its estimates do not differ significantly from the FE model estimates. The RE model is the best option.

(HA): the RE model is not valid, and its estimates differ from the estimates from the FE model. The FE model is the best option.

The results of the Hausman test that was done using R are presented below.

```

Console Terminal Jobs
R 4.1.2 · C:/Users/lenovo/Desktop/thesis/
>
> # Perform the Hausman test
> hausman_test <- phptest(fixed_model, random_model)
>
> # Print the Hausman test results
> print(hausman_test)

Hausman Test

data: business_reg ~ net_migration + unemployment_rate + gdp_per_capita + ...
chisq = 1.991, df = 8, p-value = 0.9813
alternative hypothesis: one model is inconsistent
>

```

The p-value (PV) is 0.9813 which is superior to 0.05. At a 95% confidence level (CL), we fail to reject the null hypothesis and we should use the RE model.

Now that the Hausman test has indicated that we should use the RE model, let us perform some diagnostic tests to be certain the model's assumptions are valid.

In the case of the RE model, the most important assumption is the assumption of homoscedasticity.

F. Breusch-Pagan Lagrange Multiplier test for heteroskedasticity

If we find evidence of heteroskedasticity for the error terms, this means that one of the assumptions of the RE model is not respected.

```

Console Terminal Jobs
R 4.1.2 · C:/Users/lenovo/Desktop/thesis/
>
> # Obtain residuals from the random effects model
> residuals <- residuals(random_model)
>
> # Perform Breusch-Pagan LM test for heteroskedasticity
> bp_test <- bptest(residuals ~ net_migration + unemployment_rate + gdp_per_capita +
+                 schooling + taxation + political_stability + corruption + voice_accountability,
+                 data = data_complete)
>
> # Print the results of the BP test
> print(bp_test)

studentized Breusch-Pagan test

data: residuals ~ net_migration + unemployment_rate + gdp_per_capita + schooling + taxation + political_stability +
corruption + voice_accountability
BP = 11.608, df = 8, p-value = 0.1696
>

```

The PV is 0.1696 which is superior to 0.05. At 95% CL, therefore, enough evidence to conclude that the assumption of homoskedasticity is not respected.

G. Breusch-Pagan Lagrange Multiplier test for heteroskedasticity

The test was performed using R. The results are provided below.

```

Console Terminal Jobs
R 4.1.2 · C:/Users/lenovo/Desktop/thesis/
>
> # Perform wooldridge test for serial correlation
> wooldridge_test <- pbgttest(random_model, order = 1) # Order indicates the lag order to test
>
> print(wooldridge_test)

Breusch-Godfrey/wooldridge test for serial correlation in panel models

data: business_reg ~ net_migration + unemployment_rate + gdp_per_capita + ...
chisq = 9.8609, df = 1, p-value = 0.001688
alternative hypothesis: serial correlation in idiosyncratic errors

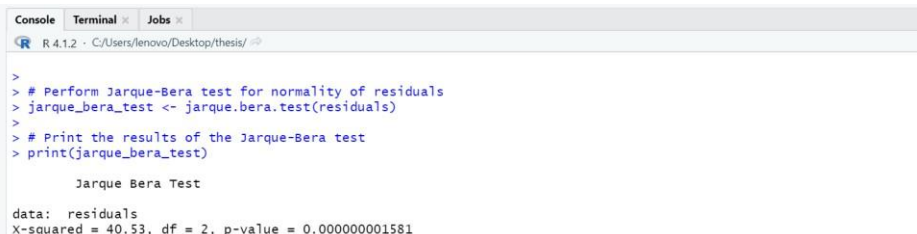
```


The PV is 0.001688 which is inferior to 0.05. At 95% CL, hence, there is autocorrelation in the error terms. The absence of autocorrelation in the error terms is not a strict assumption for the RE model; however, the results of this test will still be included in the limitations section.

H. Variance Inflation Factor (VIF) diagnostic for Collinearity.

In previous sections, we have already fixed issues related to multicollinearity by removing the problematic variables.

I. Jarque Bera Test for Normality of Residuals.



```

Console Terminal Jobs
R 4.1.2 · C:/Users/lenovo/Desktop/thesis/

>
> # Perform Jarque-Bera test for normality of residuals
> jarque_bera_test <- jarque.bera.test(residuals)
>
> # Print the results of the Jarque-Bera test
> print(jarque_bera_test)

Jarque Bera Test

data: residuals
X-squared = 40.53, df = 2, p-value = 0.000000001581

```

The PV obtained is inferior to 0.05%. This means that at 95% CL, we can conclude that the residuals are not normally distributed. Normality of residuals is not a strict assumption for the RE model.

IV. RESULTS

Since the Hausman test has indicated that the RE model must be used, the results of the RE model are presented below.

For the first IV, which is net migration, the PV obtained is 0.0000000544763820 which is inferior to 5%. This means that at 95% CL, there is an STS relationship between net migration and the number of businesses registered. The estimate for the coefficient of net migration is -0.0148056, this means that for every 1 unit increase in net migration, there is 0.0148056 units decrease in the number of businesses registered.

For the second IV, which is unemployment rate, the PV obtained is 0.161962 which is superior to 5%. This means that at a 95% CL, there is no STS relationship between unemployment rate and the number of businesses registered.

For the third IV, which is GDP per capita, the PV obtained is 0.176734 which is superior to 5%. This means that at a 95% CL, there is no STS relationship between GDPs per capita and the number of businesses registered.

For the fourth IV, which is education level the PV obtained is 0.0000000000002649 which is inferior to 5%. This means that at 95% CL, there is an STS relationship between the education level and the number of businesses registered. The estimate for the coefficient of education level is 2768.3224463, this means that for every 1 unit increase in the expected years schooling, there is 2768.3224463 units increase in the number of businesses registered.

For the fifth IV, which is taxation level, the PV obtained is 0.007874 which is inferior to 5%. This means that at a 95% CL, there is STS relationship between the taxation level and the number of businesses registered. The estimate for the coefficient of taxation level is -474.1421330, this means that for every 1 unit increase in the taxation level, there is 474.1421330 units decrease in the number of businesses registered.

For the sixth IV, which is political stability, the PV obtained is 0.648490 which is superior to 5%. This means that at 95% CL, there is no STS relationship between political stability and the number of businesses registered.

For the seventh IV, which is corruption control, the PV obtained is 0.731711 which is superior to 5%. This means that at 95% CL, there is no STS relationship between corruption control and the number of businesses registered.

For the eighth IV which is voice and accountability the PV obtained is 0.960535 which is superior to 5%. This means that at a 95% CL, there is no STS relationship between voice and accountability and the number of businesses registered.

The R-squared is 0.53949 which means that 53.949% of the variation of the dependent variable can be explained by the IV included in the model.

For the chi-square test, we obtain a PV that is inferior to 5%. This means that at a 95% CL, it can be concluded that the RE model fits the data better compared to a model where the IV has no significant relationship with the dependent variable.

V. DISCUSSION

Concerning the first IV which is net migration, the results of the test indicate that there is a negative and STS relationship between net migration and entrepreneurship. This matches our initial hypothesis which is that net migration has a negative impact on new business creation. However, results obtained also indicate that it is a very small impact. This result could be explained by the profiles and characteristics of emigrants and immigrants in the MENA. It would be interesting to investigate the socio-economic profile of both emigrants and immigrants (education level, income level) to verify if they have an entrepreneurial profile. Indeed, if migrant flows concern mainly individuals who participate in entrepreneurial activity and have an entrepreneurial profile, it is logical to conclude that their presence or absence in the country has an impact on new business creations. In other words, whether these individuals leave the country or settle in the country has

an impact on new business creations. However, as discussed in the limitations section, collecting data on migrant's profiles is very difficult for countries in the region and credible sources do not publish the required information.

Concerning the second IV which is the unemployment rate, the results of the test that we discussed previously don't match our initial hypothesis which is that unemployment rate has a positive impact on new business creation. This is also not in line with previous research that observed a PR (O'Leary, 2022) between unemployment rate and entrepreneurship. Indeed, the results of our test found that there is not a significant relationship between unemployment rate and business creation at 95% CL. This could be related to the profile of the unemployed population in the region: it would be interesting to evaluate the skill levels and education levels of the typical unemployed person in the region.

Concerning the third IV which is real GDP per capita, the results of the test that we discussed previously don't match our initial hypothesis which is that real GDP per capita rate has a strong PR with new business creation. This is also not in line with previous research that observed a PR (Méndez-Picazo et al., 2023) between income levels and entrepreneurship. Indeed, the results of our test found that there is not a significant relationship between GDPs per capita and business creation at 95% CL. This is very surprising, and it can be related to the fact that in the region, people with high incomes are not interested in creating businesses (opting instead for other types of investments such as real-estate). This could also be due to the lack of entrepreneurial opportunities in the region, as well as a lack of confidence in the institutions and the business environment.

Concerning the fourth IV which is education level, the results of the test match our initial hypothesis which is that education level has a positive impact on new business creation. Indeed, this could be explained by the fact that educated people possess the required skills necessary to create a business. Concerning the fifth IV which is taxation levels, the results of the test match our initial hypothesis which is that taxation levels have a negative impact on new business creation. One possible explanation is that higher taxes increase the financial burden on entrepreneurs and reduce the incentives to launch a business venture. This is also in line with the findings of Audretsch et al. (2022) and Zemtsov et al. (2022).

Finally, contrary to previous research, the impact of the selected governance indicators which are corruption control, political stability and voice and accountability, results showed that there is no relationship between STS and entrepreneurship. The only exception is voice and accountability which was found to have no significant relationship with entrepreneurship Abegaz et al. (2023). The results for these governance indicators could be related to the specificities of the MENA region. Indeed, since countries in the regions are on average very poorly ranked in terms of governance as indicated by World Bank (2022), entrepreneurs in these countries could have learnt to ignore governance indicators when planning to launch their businesses.

VI. CONCLUSION

This research aimed to explore the impact of governance and socio-economic factors on entrepreneurship in MENA countries using the Random Effects (RE) method. The findings revealed that only net migration, education level, and taxation level significantly influence new business creation. Other variables, including governance indicators, showed no significant impact on entrepreneurship levels.

The practical implications of this study highlight strategies to foster entrepreneurship. Firstly, countries should consider reducing immigration to increase new business creations. This can be achieved by implementing stricter immigration procedures and establishing immigration partnerships with labor-shortage countries to encourage emigration. Secondly, enhancing education levels positively affects entrepreneurship, suggesting increased investment in education infrastructure and efforts to reduce school dropout rates. Lastly, lowering taxation levels for entrepreneurs can stimulate new ventures, complemented by effective communication of tax reduction programs.

This study has several limitations. Firstly, it did not account for the informal sector due to data constraints, warranting future research to include informal business estimations for a comprehensive understanding of entrepreneurship. Secondly, the analysis of net migration could be enhanced with more detailed data on migrants' characteristics. Additionally, considering business creation by industry sectors could provide deeper insights into the impact of economic factors.

Moreover, the RE methodology used in this study has inherent limitations, including assumptions about the random element's distribution and potential bias due to correlation between independent variables and country-specific effects. While certain statistical tests yielded satisfactory results, further research could explore alternative methodologies to mitigate these limitations and enhance the findings.

REFERENCES

- [1] Abegaz, M. B., Debela, K. L., & Hundie, R. M. (2023). The effect of governance on entrepreneurship: From all income economies perspective. *Journal of Innovation and Entrepreneurship*, 12(1), 1.
- [2] Asteriou, D., & Hall, S. G. (2021). *Applied econometrics*. Bloomsbury Publishing.
- [3] Audretsch, D. B., Belitski, M., Chowdhury, F., & Desai, S. (2022). Necessity or opportunity? Government size, tax policy, corruption, and implications for entrepreneurship. *Small Business Economics*, 58(4), 2025-2042.

- [4] Bosma, N., Hill, S., Kelley, D., Guerrero, M., Schott, T., & Ionescu-Somers, A. (2021). GEM Global Entrepreneurship Monitor 2020/2021. GEM Global Entrepreneurship Monitor.
- [5] Borjas, G. J. (2019). Immigration and economic growth.
- [6] Chen, X., Chen, G., Lin, M., Tang, K., & Ye, B. (2022). How does anti-corruption affect enterprise green innovation in China's energy-intensive industries?. *Environmental Geochemistry and Health*, 44(9), 2919-2942.
- [7] Dreher, A., & Gassebner, M. (2013). Greasing the wheels? The impact of regulations and corruption on firm entry. *Public choice*, 155, 413-432.
- [8] Duan, C., Kotey, B., & Sandhu, K. (2023). A systematic literature review of determinants of immigrant entrepreneurship motivations. *Journal of Small Business & Entrepreneurship*, 35(4), 599-631.
- [9] Farè, L., Audretsch, D. B., & Dejardin, M. (2023). Does democracy foster entrepreneurship?. *Small Business Economics*, 1-35.
- [10] Ferreira, J. J., Fernandes, C. I., Veiga, P. M., & Gerschewski, S. (2023). Interlinking institutions, entrepreneurship and economic performance. *International Journal of Entrepreneurial Behavior & Research*.
- [11] Ghazy, N., Ghoneim, H., & Lang, G. (2022). Entrepreneurship, productivity and digitalization: Evidence from the EU. *Technology in Society*, 70, 102052.
- [12] Goel, R. K., & Nelson, M. A. (2023). Which political regimes foster entrepreneurship? An international examination. *The Journal of Technology Transfer*, 1-21.
- [13] Guerrero, M., & Marozau, R. (2023). Assessing the influence of institutions on students' entrepreneurial dynamics: evidence from European post-socialist and market-oriented economies. *Small Business Economics*, 60(2), 503-519.
- [14] Jabeur, S. B., Ballouk, H., Mefteh-Wali, S., & Omri, A. (2022). Forecasting the macrolevel determinants of entrepreneurial opportunities using artificial intelligence models. *Technological Forecasting and Social Change*, 175, 121353.
- [15] Kaivanto, K., & Zhang, P. (2022). Is business formation driven by sentiment or fundamentals?. *The European Journal of Finance*, 1-27.
- [16] Lehmann, E. E., & Seitz, N. (2017). Freedom and innovation: A country and state level analysis. *The Journal of Technology Transfer*, 42, 1009-1029.
- [17] Méndez-Picazo, M. T., Galindo-Martín, M. A., & Castaño-Martínez, M. S. (2021). Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation & Knowledge*, 6(2), 69-77.
- [18] Mickiewicz, T., Stephan, U., & Shami, M. (2021). The consequences of short-term institutional change in the rule of law for entrepreneurship. *Global Strategy Journal*, 11(4), 709-739.
- [19] Oftedal, E. M., Iakovleva, T. A., & Foss, L. (2018). University context matter: An institutional perspective on entrepreneurial intentions of students. *Education+ Training*, 60(7/8), 873-890. Igar Publishing.
- [20] O'Leary, D. (2022). Unemployment and entrepreneurship across high-, middle-and low-performing European regions. *Regional Studies, Regional Science*, 9(1), 571-580.
- [21] Pal, S., Villanthenkodath, M. A., Patel, G., & Mahalik, M. K. (2022).
- [22] The impact of remittance inflows on economic growth, unemployment and income inequality: An international evidence. *International Journal of Economic Policy Studies*, 1-25.
- [23] Rosado-Cubero, A., Freire-Rubio, T., & Hernández, A. (2022). Entrepreneurship: What matters most. *Journal of business research*, 144, 250-263.
- [24] Salmony, F. U., & Kanbach, D. K. (2022). Personality trait differences across types of entrepreneurs: a systematic literature review. *Review of Managerial Science*, 16(3), 713-749.
- [25] Sasmaz, M. U., & Sagdic, E. N. (2020). The effect of government effectiveness and rule of law on economic growth: The case of European Union transition economies. *Dokuz Eylül Üniversitesi İşletme Fakültesi Dergisi*.
- [26] Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics*, 8(2), 39-42.
- [27] Tomohara, A. (2022). Does an increase in the number of immigrant workers reduce unemployment rates? An industry sector unit level analysis in Japan. *Economic Analysis and Policy*, 74, 464-476.
- [28] World Bank. (2022). World governance indicators (WGI). Washington D.C.: World Bank.