Employment-output elasticities determinants: is there difference between Francophone and Anglophone countries from AMEE ?

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Abstract

Employment to production intensity or elasticity is used as indicator for employment. The aim of this paper is to provide new estimates of this indicator by rolling regression and assess the effect of structural policies, macroeocnomic policies, and demographic factors on it. Using an unbalanced panel of 44 countries (20 Francophone and 24 Anglophone countries taken from AMEE (Africa and Middel East Erea) over the period 2000–2017, there is an important difference between Francophone and Anglophone countries. The results suggest that structural policies (**Lmp and Pmp**) aimed at increasing labor and product market flexibility have a significant and positive impact on employment elasticities for **Francophone** countries. While for **Anglophone** countries, macroeconomic policies aimed at promoting Foreign direct investment (**FDI)** and increasing **government size** have a significant and positive impact on employment elasticities. In addition for **all countries**, the results also suggest that in order to maximize the positive impact on the responsiveness of employment to economic activity, structural factors have to be complemented with macroeconomic policies aimed at increasing **stability**.

Key words : Rolling regression, Employment to product elasticity, Panel Data, static model, dynamic model, GMM, AMEE (Africa and Middel East Erea), **Francophone** countries, **Anglophone** countries.

Jel classification : E24, C23, J21.

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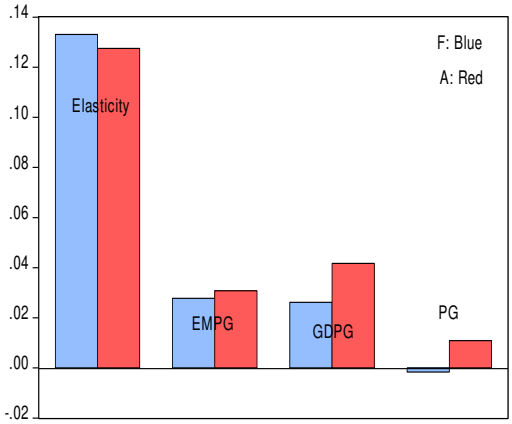
Introduction

Employment-related economic indicators, particularly those that measure the ability of economies to generate sufficient employment opportunities for their populations, often provide valuable insights into economies' overall macroeconomic performance. Among the most widely publicized indicator is the *employment intensity of growth,* or *elasticity of employment with respect to output*.[2]
Although researchers have deeply analyzed the impact of real shocks on overall unemployment and the determinants of unemployment, only a few have tried to explain the determinants of employment-output elasticities.

Our study is an application on 44 countries from AMEE (Africa and Middel East Erea). In this sample, we have two group of countries : 20 Francophone countries and 24 Anglophone countries. Period of study is from 2000 to 2017 (T = 18 < N = 44). By rolling technic, we get a panel data of elasticities, $\varepsilon_{i,t}$, for each i and t. The goal is to pinpoint some of the broad structural, macroeconomic, and demographic factors that might influence employment intensity of growth for each group. The *employment intensity of growth* (dependent variable $\varepsilon_{i,t}$) is then grouped on Elasticities for **francophone** countries and elesticities for **anglophone** countries.



From Figure 1, it is clear that in mean GDP growth, GDPG, Employment growth, EMPG, Productivity growth, PG, and *employment intensity of growth,* $\varepsilon_{i,t}$, take different values for Anglophone countries (A) from Francophone ones (F). GDPG, EMPG, and PG in average are larger for Anglophone countries while *employment intensity of growth* in average is larger for Francophone countries.

Figure 1: Elasticities, EMPG, GDPG, and PG in average for **A**nglophone (A) and **F**rancophone (F) countries

These comparisons can be conducted regourously by Student t and ANOVA test statistics. For testing H_0 : in average EMPG is the same for both Anglophone and Francophone coutries, Table 1 report the results of these tests. Hypothesis of equality of means is rejected by these tests (p-value = 0.0083 << 5%).
Also, for testing H_0 : in average GDPG is the same for both Anglophone and Francophone coutries, Table 1 report the results by Student t and ANOVA tests. Hypothesis of equality of means is not rejected by these tests (p-value = 0.4810 > 5%).

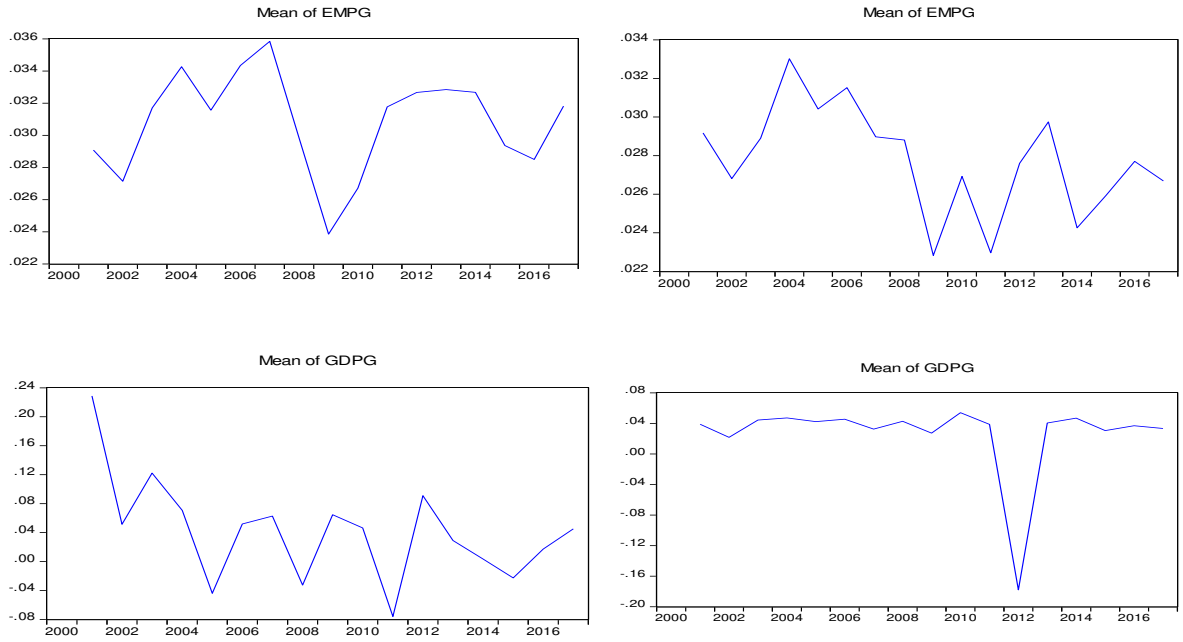
[2] The most basic definition of this indicator is that it is a numerical measure of how employment varies with economic output; how much employment growth is associated with 1 percentage point of economic growth. Employment elasticities can provide important information about labour markets.

Also, looking at Figure 2, EMPG, and GDP Growth in everage have different pattern for these group of countries. An econometric model is then neaded to address why group of countries with equal economic growth in mean have different EMPG in average and then difference in their employment intensity.
The first broad objective of this present study is to outline the data and methodological requirements for generating estimates of employment elasticities. The second objective is to form a better understanding of the key determinants (structural, macroeconomic, and demographic) of employment elasticities themselves. An econometric Panel model is developed to address why Anglophone and Francophone countries have substantial differences in their employment intensity.

This paper is organised as follow. After introduction, we give a literature review for determinants of employment intensity (section 0). In section II, we explain how create Panel data for employment intensity and Data analysis is presented. In section III, methodology is presented for both static and dynamic Panel model. Section IV present empirical application for 44 countries from AMEE (Africa and Middel East Erea). Finally, we conclude by recommanded politic to promote employment.

Table 1: Average comparison tests for Francophone vs Anglophone countries

Variables	GDPG			EMPG		
Tests	df	value	p-value	df	value	p-value
Student T	746	-0.705087	0.4810	746	-2.648548	0.0083
ANOVA	(1, 746)	0.497148	0.4810	(1, 746)	7.014805	0.0083



Anglophone countries **Francophone countries**

Figure 2 : EMPG and GDPG in average for Anglophone and Francophone countries 2000-2017.

I Literature Review : Determinants of employment intensity

This section gives some of the theoretical and empirical determinants of employment intensity. The goal is thus to pinpoint some of the broad structural, macroeconomic, and demographic factors that might influence individual economies' employment intensity of growth.

There is a large literature that examines macroeconomic determinants of employment and labour productivity growth, but little investigative work has been done to try to identify the relationship between structural and Policy variables, macroeconomic variables, and demographic variables and the overall employment intensity of growth explicitly (represented by the employment elasticity). Economic theory and previous empirical studies have identified a number of labor market policies and institutional determinants of unemployment. Previous empirical evidence has in general concluded that more rigid labor market institutions may obstruct job creation and the response of employment to economic activity (e.g., (Blanchard & Wolfers, 2000), (Bassanini & Duval, 2009), (Botero, Djankov, Rafael La Porta, & Lopez-de-Silanes Andrei, 2004)) find that more rigid employment laws are associated with high unemployment. (Belot & Ours, 2004) find that high labor taxes tend to increase unemployment rates. Economic theory suggests also that product market regulations, like labor market regulations, may affect labor demand. In addition, product market institutions may also affect productivity growth over the medium term, and, consequently, the relation between GDP and employment. Previous empirical evidence has confirmed the hypothesis that product market regulations are correlated with the persistence and the responsiveness of unemployment to GDP shocks ((Bassanini & Duval, 2006) (Bassanini & Duval, 2009)).

Government size can also affect the elasticity between employment and GDP. Previous empirical evidence has confirmed the hypothesis that a larger government is associated with higher unemployment rates (e.g., (Feldmann H. , 2006)). First, a large government sector often involves higher taxes which can have depressive effects on aggregate demand and on the labor market ((Daveri & Tabellini, 2000). Second, because the private sector is smaller, its ability to absorb new labor force entrants is correspondingly smaller. Third, a large government sector tends to crowd out private investment and reduce productivity growth over the medium term (Afonso & Furceri, 2010).

GDP per capita can be examined to test whether employment elasticities vary with the level of economic development. Openness (via Trade) and FDI can olso be included to test the role of trade and financial openness in affecting employment elasticities ((Bruno & al., 2001).
Growth volatility and inflation may affect employment elasticities as uncertainty as to prices and economic activity may have a significant impact on growth and employment ((Ramey & Ramey, 1995); (Judson & Orphanides, 1999); (Imbs, 2007); (Furceri, 2010)). The share of value added in Services can be included to test whether the service sector is usually characterized by higher employment intensity ((Padalino & Vivarelli, 1997); (Mourre, 2004)). The share of urban population and population density can be included to test whether agglomeration factors have an effect on employment elasticities. Total labor force and working-age population growth can be included also to assess the effect of labor market supply on employment elasticities.

In this paper, Structural and Policy Variables (S) [as labor market policies, product market policies, and government size], Macroeconomic variables (*M*) [as GDP per capita, openness (proxied by Trade), CPI-based inflation rate, GDP growth volatility (computed as the coefficient of variation of real GDP growth), and the share of Services' value added in total

GDP], and Demographic variables (*D*) [as the share of urban population, population density, and 15-24 year_old participant in active population] are considered for empirical study on 44 countries from AMEE (Africa and Middel East Erea).

II Dependent variable creation and Data Analysis

Our study is an application on N = 44 countries from AMEE. In this sample, we have 20 Francophone countries and 24 Anglophone countries. The list of considered countries is given in Table A 1 (see Appendice). Period of study is from 2000 to 2017 (T = 18 < N = 44).[3] Most of the variables used in the empirical analysis, including employment E and real GDP, are taken from the World Bank Development Indicators (WDI) database.

The most basic definition of employment elasticity is the percentage change in the number of employed persons in an economy associated with a percentage change in economic output, measured by gross domestic product. Within this broad definition, two methodologies are frequently utilized for calculating a Panel of elasticities. The first technique gives the *arc* elasticity of employment,

$$\varepsilon_{i,t} = \frac{(E_{i,t}-E_{i,t-1})/E_{i,t-1}}{(GDP_{i,t}-GDP_{i,t-1})/GDP_{i,t-1}}, \mathrm{i} = 1, \dots, \mathrm{N}, \mathrm{t} = 1, \dots, \mathrm{T}.$$

The numerator simply gives the percentage change in employment in country i, while the denominator gives the corresponding percentage change in output, *GDP*. The second technique is the rolling method.

Dependante variable in this study is employment elasticity wich has to be estimated from regression

$$\ln(E_{it}) = \alpha + \beta_{it} \ln(GDP_{it}) + \mathrm{u}_{it},$$

where E is employment and GDP is gross production. By rolling technic, we can get a panel data of elasticities denoted by $\varepsilon_{i,t}$ for each country i and time t and a given p observations. This is done by regressing the considered equation with **p successive observations** with

$$\mathrm{t} = \mathrm{j}+1, \dots, \mathrm{j}+\mathrm{p}, \mathrm{j} = 0, \dots, \mathrm{T}- \mathrm{p},$$

for each i by OLS. Then,

$$\varepsilon_{i,t} = \beta_{i,t}, \mathrm{t} = (\mathrm{p}+1)/2, \dots, \mathrm{T}- (\mathrm{p}+1)/2, \text{ and } \mathrm{i} = 1, \dots, \mathrm{N}$$

where

$$\beta_{i,t} = \frac{\partial \log(E_{it})}{\partial \log(GDP_{it})}$$

is an estimator for country elasticity (individual i) at time t.

For rolling technic, we choose a window size of p = 5 years. Hence, the first rolling regression would estimate the employment-growth elasticity $\varepsilon_{i,t} = \beta_{it}$ by OLS using the sample period from 2000 to 2004. The sample period is then moved forward one year, and the regression is re-estimated to produce a second estimates, using data from 2001 to 2005, and so on. This

[3] Panel Data are balanced annual type.

process is repeated until the final estimates are made using the sample period from 2013 to 2017. Consequently, the first estimate of employment-growth elasticity corresponds to 2002 and the last one is related to 2015. These elasticities $\varepsilon_{i,t}$ (dependent variable) are grouped on Elasticities for **francophone** countries and elesticities for **anglophone** countries. Figure B 1 (in Appendice) illustrates elasticities (blue lines) evolution for each country.[4] All elasticities are instable. Employment intensity of growth has increased over time for some countries and decreased for others, see also Figure B 2 (in Appendice). Following (Kapsos, 2005), it is important to regard the relationship between employment elasticities and labour productivity (P_{it}). The fundamental identity that links these concepts is given by:

$$\log(GDP_{it}) = \log(E_{it}) \times \log(P_{it})$$

where GDP_{it} and E_{it} are, as before, output and employment, while P_{it} is the labour **productivity (equal to output per worker).** This Equation implies that for small changes in output, the following holds:

$$\Delta\log(GDP_{it}) = \Delta\log(E_{it}) + \Delta\log(P_{it}).$$

That is, for a given amount of output growth, $\Delta\log(GDP_{it})$, any increase in the rate of employment growth must be met by an equal and opposite decrease in labour productivity growth. The significance of this **employment elasticity-productivity relationship** is great. If we divide this equation by output growth, $\Delta\log(GDP_{it})$, we derive the following:

$$\varepsilon_{it} = 1 - \frac{PG_{it}}{GDPG_{it}},$$

where

$$PG_{it}=\Delta\log(P_{it}) \text{ and } GDPG_{it}= \Delta\log(GDP_{it}).$$

This equation with different GDP growth ($GDPG_{it}$) scenarios clarifies the relationship between employment elasticities, ε_{it}, and actual employment growth ($EMPG_{it}$) and productivity growth (PG_{it}). A summary of this relationship is provided in (Kapsos, 2005).

The cells of The three boxes in the right column ((iv), (v), and (vi)) indicate that the interpretation of employment elasticities vis-à-vis employment growth and productivity growth is exactly the opposite in cases in which the corresponding GDP growth rate is negative.

Table 2: Interpreting employment elasticities

can be interpreted as follows:

(i) In countries with positive GDP growth, $\varepsilon_{it} < 0$ correspond with negative employment growth and positive productivity growth.

(ii) In economies with positive GDP growth, $0 \leq \varepsilon_{it} \leq 1$ correspond with positive employment and productivity growth and higher elasticities within this range correspond to more employment-intensive (lower productivity) growth. This case typically represents **the ideal**, where by job growth is occurring hand-in-hand with gains in productivity.

(iii) In economies with positive GDP growth, $\varepsilon_{ti} > 1$ correspond with positive employment growth and negative productivity growth.

[4] Note : All figures and Tables are elaborate by author.

The three boxes in the right column ((iv), (v), and (vi)) indicate that the interpretation of employment elasticities vis-à-vis employment growth and productivity growth is exactly the opposite in cases in which the corresponding GDP growth rate is negative.

Table 2: Interpreting employment elasticities

.	$GDPG_{it}$	
Employment-output elasticity	**Positive** $GDPG_{it}$	**Negative** $GDPG_{it}$
$\varepsilon_{it} < 0$	(i) (-) $EMPG_{it}$ (+) PG_{it}	(iv). (+) $EMPG_{it}$ (-) PG_{it}
$0 \leq \varepsilon_{it} \leq 1$	(ii) (+) $EMPG_{it}$ (+) PG_{it}	(v) (-) $EMPG_{it}$ (-) PG_{it}
$\varepsilon_{ti} > 1$	(iii) (+) $EMPG_{it}$ (-) PG_{it}	(vi) (-) $EMPG_{it}$ (+) PG_{it}

Elasticities in average, employment growth (EMPG), GDP growth (GDPG), and productivity growth (PG) in average (**in time and throw countries**) are presented in Table 3 for dicussion and illustrated at Figure 3 (for all countries, for **Francophone** countries, for **Anglophone** countries, and for **MENA** zone). Averages are also done by **time** and are illustrated at Figure B *4* (for all countries and for **MENA** zone),[5] and at Figure 4 (for Francophone and Anglophone countries). From Table 3 and Figure 3, all averages are positive except GDPG and PG for MENA and PG for Francophone countries. The highest elasticity in average is in **MENA** and **Francophone** countries where GDPG, EMPG, and PG are the lowest in average. PG in average is negative for MENA zone and Francophone countries. From Figure B 4 (see Appendice), there is some difference between MENA results and the 44 countries in all. For both, elasticities >> GDPG > PG in average. GDPG and PG evolution for 44 countries are more volatil than those at MENA region. In all cases, evolution of GDPG and PG are very close. For the 44 countries Min of EMPG is at GFC (Global financial crisis 2008-2009), while Max of Elasticities in mean is at 2011 (Begening of the YESAMIN revolution). Different results is found for MENA zone : Min of EMPG, Min negative values of GDPG and PG, and Max of elasticities in mean is at 2011. Figure *4* illustrate results for Francophone and Anglophone countries in everage by time (temps). There is no big difference between Anglophone and Francophone countries in term of EMPG. Both have almost **fixe** low **EMPG** during period of study. EMPG takes its minimum at 2009 for Anglophone countries. PG and GDPG are very volatil for Anglophone countries. Francophone countries have a strong pic in **PG and GDPG** at 2011-2012 while Elasticities in average is at its Maximum. For both groups, GDPG > PG. All considered independent variables are stationnary [except Trade and PIB_H], see Table 4. From pairwise correlation matrix (see Table A 6, Table A 7, and Table A 8 in Appendice 5), there are some significant correlations betwen several independent variables. [Pop_D and

[5] 11 MENA considered countries are : Algeria, Morocco, Tunisia, Egypte, Iraq, Jordan, Libanon, Libye, Oman, Yémen, and Iran.

Trade with **Pop_U** ; FDI with **Trade** and Pop_D; Tx1524 and **trade** with **PIB_H**].[6] So, for selection of control variables, we have to avoid multicolinearity problem.

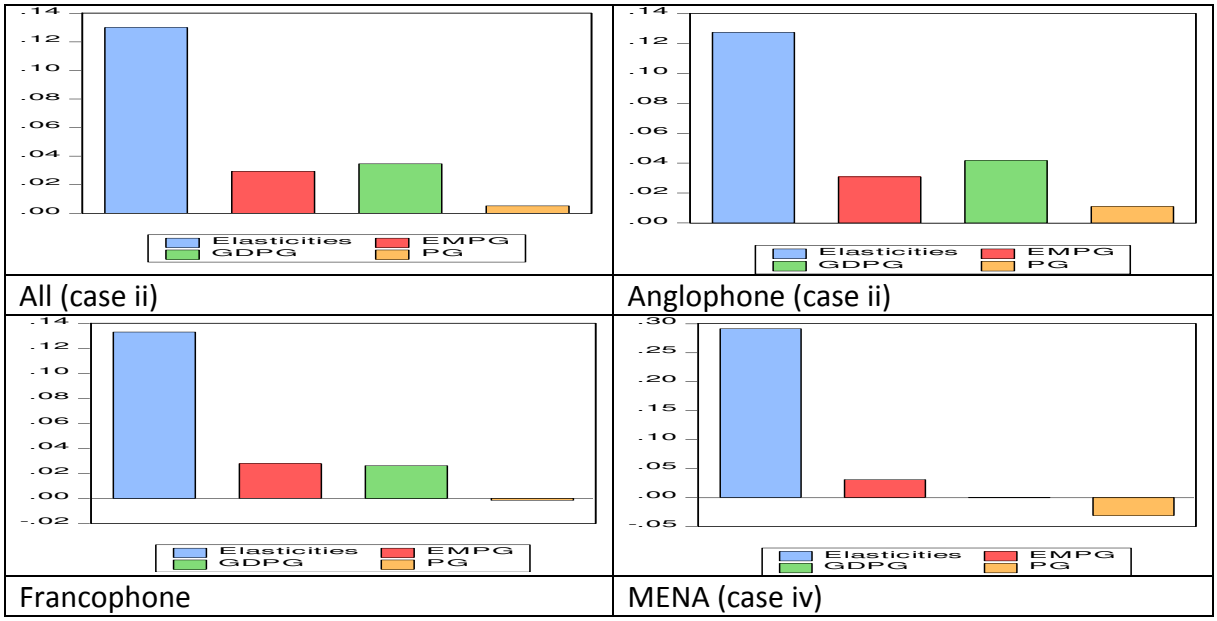
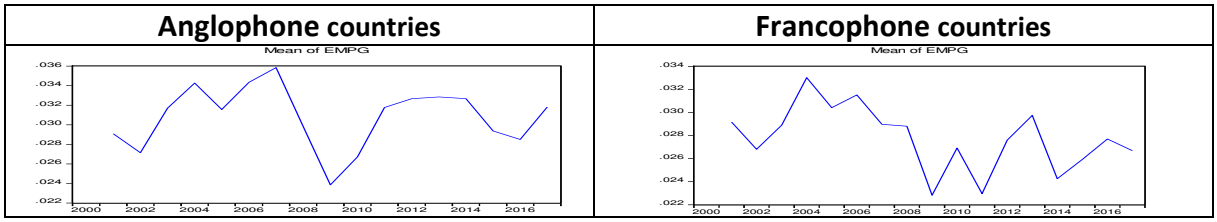


Figure 3: $\varepsilon_{i,t}$, employment growth (EMPG), GDP growth (GDPG), and productivity growth (PG) in average.

Table 3: $\varepsilon_{i,t}$, employment growth (EMPG), GDP growth (GDPG), and productivity growth (PG) in average.

Means	ALL	Anglophone	Francophone	MENA
Elasticities: $\varepsilon_{i,t}$	0.130030	0.127474	0.133098	0.291470
EMPG	0.029438	0.030821	0.027778	0.030659
GDPG	0.034641	0.041699	0.026172	-0.000764
PG	0.005203	0.010877	-0.001606	-0.031423



[6] This is true for all countries. For Francophone countries, we have significant correlation between (Pop-U and Pmp) and PIB_H, between Pop-D and Tx1524, between Size and Vol_B, and Between Va_S and Inflation. For Anglophone countries, we have significant correlation between Lmp and Pmp, Inflation and Trade, and significant correlation between Pmp and Pop_D.

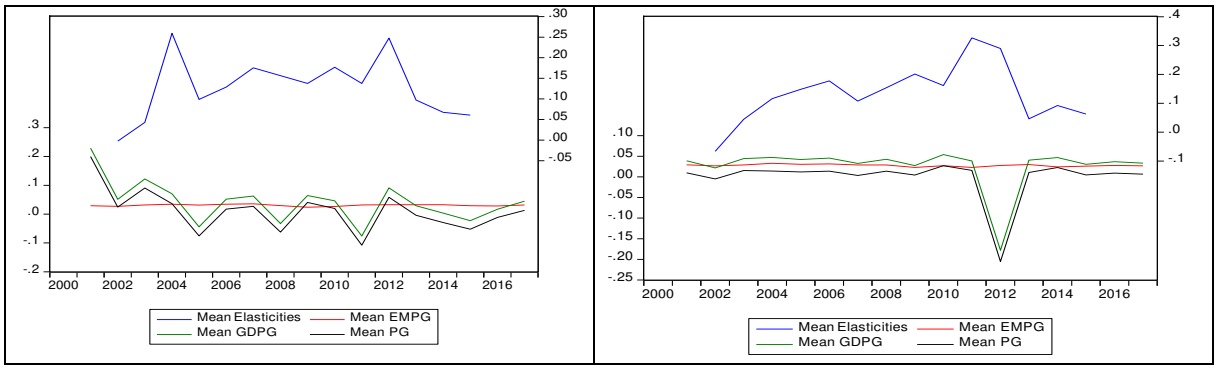


Figure 4: Elasticities, EMPG, GDPG, and PG in average for Anglophone and Francophone countries.

Table 4: Unit root tests results for variables of Panel data

Variables/TEST	LLC	IPS	ADF-Fisher	PP-Fisher	Result
$\varepsilon_{i,t}$	0.0	0.0	0.0	0.0	I(0)
Size	0.0334	0.0439	0.1706	0.0	I(0)
Pmp	0.0	0.0	0.0	0.0	I(0)
Lmp	0.0007	0.0045	0.0055	0.0	I(0)
Inflation	0.0	0.0	0.0	0.0	I(0)
FDI	0.0	0.0	0.0	0.0	I(0)
Trade	0.0015	0.2394	0.2089	0.2248	**I(1)**
PIB_H	0.0375	0.9996	0.7928	0.9967	**I(1)**
Vol_B	0.0015	0.0019	0.0047	0.3777	I(0)
Pop_U	0.0	1.0	0.0	0.0	I(0)
Tx1524	0.0	0.0247	0.01	0.0	I(0)
Pop_D	0.4631	1.0	0.0363	0.0	I(0)
Va-s	0.0	0.0	0.0	0.0	I(0)

Note: (.) is the p-value. LLC is Levin, Lin & Chu t*, IPS is Im, Pesaran and Shin W-stat, ADF-Fisher is ADF - Fisher Chi-square, and PP-Fisher is PP - Fisher Chi-square. PP - Fisher Chi-square

III Methodology

1. Static Specifications

Evolution of dependente variable $\varepsilon_{i,t}$ can then be investigated into two dimensions. Considered model is then

$$\varepsilon_{i,t} = F(D_{i,t}\ and/or\ M_{i,t}\ and/or\ S_{i,t}\ )$$

where D, M, and S are respectively vectors of demographic, macroeconomic and stuctural variables ;

$$D = (\mathrm{POP}_U\ ,\ \ \mathrm{POP}_\mathrm{D}, \mathrm{Tx1524})',$$

$$\mathrm{M}=(PIB_\mathrm{h}, \mathrm{Trade},\ Inflation,\ FDI, \mathrm{VA\_s})',$$

$$\mathrm{S}=(\mathrm{Lmp}\ , \mathrm{Pmp},\ \ \mathrm{Size})',$$

as defined in Table *5*.

From Figure B 3 in Appendice, we can conclude that relation between $\varepsilon_{i,t}$ and independent variables is linear for all considered Structural variables.

If function F is linear, we propose to study the following models :[7]

$$M1: \quad \varepsilon_{i,t} = \delta' D_{i,t} + u_{i,t}, \quad (1)$$

$$M2: \quad \varepsilon_{i,t} = \mu' M_{i,t} + u_{i,t},$$

and

$$M3: \varepsilon_{i,t} = \theta' S_{i,t} + u_{i,t}.$$

Time-invariant country characteristics (fixed effects), such as geography and demographics, may be correlated with the independent variables. The fixed effects (FE) or the random effects (RE) are contained in the error term in these equations, which consists of the unobserved country-specific effects, α_i

$$u_{i,t} = \alpha_i + e_{it},$$

where e_{it} is the observation-specific errors (WN). By Hausman test, we can decide if FE or RE model is the adequate specification.

Table 5 : List of variables : sources and expected signs

Variables	Abreviations	Sources	Expected signs
(D) : Demographic variables			
Urban population	Pop_U	WDI[8]	+/ -
Density of population	Pop_D	WDI	+/-
15-24 year_old participant in active population	Tx1524	WDI	+/-
(S) : Structural and political variables			
Politic of work market	Pmp	EFW[9]	+
Politic of product market	Lmp	EFW	+
Zise of gouvernement (% of PIB)	Size	WDI	+
(M) : Macroeconomic variables			
Openess to trade	Trade	WDI[10]	+
Inflation based on CPI[11]	Inflation	WDI	-

[7] Again, we consider also, different specification for different combinaison of independent variables as follow : $M1.2$: $\varepsilon_{i,t} = \delta' D_{i,t} + \mu' M_{i,t} + u_{i,t}$, $M1.3$: $\varepsilon_{i,t} = \delta' D_{i,t} + \theta' S_{i,t} + u_{i,t}$, $= \theta' S_{i,t} + \mu' M_{i,t} + u_{i,t}$, and $M1.2.3$: $\varepsilon_{i,t} = \delta' D_{i,t} + \mu' M_{i,t} + \theta' S_{i,t} + u_{i,t}$.

[8] World Bank World Development Indicators.

[9] Fraser Institute's Economic Freedom of the World Database.

[10] World Bank World Development Indicators.

[11] CPI : consumer price index.

Entries of FDI (% of PIB)	FDI	WDI	+
Added values for service secteur	Va_s	WDI	+
GDP by capita	PIB_H	WDI	+
Volatility of GDPG	VOL_B		-

2. Dynamic Specifications

The following model examines the impact of labor and product structural variables on employment to production elasticities in a dynamic panel data (DPD) set :[12]

$$\varepsilon_{i,t} = \rho\varepsilon_{i,t-1} + \theta' S_{i,t} + \beta' X_{i,t} + u_{i,t}, \quad i = 1, \ldots, N, \; t = 2, \ldots, T, \qquad (2)$$

$$X_{i,t} = \left(D_{i,t}, M_{i,t}\right),$$

$$u_{i,t} = \alpha_i + e_{it}, \; e_{it} \sim \text{i.i.d.}, \; |\rho| < 1,$$

where $\varepsilon_{i,t}$ is an observation for country i at time t, $\varepsilon_{i,t-1}$ is an observation for the same country at previous period, $S_{i,t}$ are predetermed regrossors (**Structural and political variables**), α_i the unobserved specific individual time invariant effect which allow for heterogeneity in the means of the $\varepsilon_{i,t}$ series across individuals, $e_{i,t}$ is a disturbance term, ρ, θ', β' are unknwon real parameters, and $X_{i,t}$ are independent variables (control variables: Macroeconomic variables and Demographic variables). Several econometric problems may arise from estimating this model. A serious difficulty arises with one-way FE model in this context because the lagged dependent varible is correlated with the error. This correlation crates a large sample bias in the estimate of ρ, which is not mitigated by increasing N.[13] The same problem affects the one-way RE model. α_i the error component, which enters every value of dependent variable, make the lagged dependent variable not independent of the composite errors. Since the presence of the lagged dependent variable $\varepsilon_{i,t}$ gives rise to autocorrelation problem, then first differencing of the original model may be a solution for this problem since it removes both the constant and the individual effect (because it does not vary with time);

$$\Delta\, \varepsilon_{i,t} = \rho\, \Delta\, \varepsilon_{i,t-1} + \theta'\, \Delta\, S_{i,t} + \beta'\, \Delta\, X_{i,t} + \Delta\, e_{i,t} \quad i = 1, \ldots, N, \; t = 3, \ldots, T, \qquad (3)$$

$$\Delta = 1 - B, \; e_{it} \sim \text{i.i.d.}, \; |\rho| < 1,$$

where B is the lag operator. But, correlation still exist between differenced lagged dependent variable $\Delta\, \varepsilon_{i,t-1}$ and the disturbance process $\Delta\, e_{i,t}$ (which is an MA(1) process). Instrumental variable estimation is then the available method. By expoilting all of the information available in the sample, (Arellano & Bond., 1991) give an efficient estimator in the GMM context for DPD model.[14] The Arellano-Bond (AB) estimator begins by specifying the model as a system

[12] The set will be of 44 countries for 18 years (2000 – 2017).

[13] By construction, the unobserved panel-level effects are correlated with the lagged dependent variables, making standard estimators inconsistent.

[14] It is an extension to Anderson-Hsiao consistent estimator (it fail to take all the potential rthogonality conditions into account).

of equations.[15] It is often known as **Diffecence GMM**. Later, (Arellano & Bover, 1995) and (Blundell & Bond, 1998) reveal a potential weakness in Arellano-Bond estimator. Their modification of the estimator includes lagged levels as well as lagged differences as instruments. This expanded estimator is commenly termed as **system GMM**.[16] Both the difference GMM and the system GMM estimators have one-step and two-step variants. For the null hypothesis of "the instruments as a group are exogenous", we apply Sargan test. Therefore, the higher the p-value of the Sargan statistic the better is. When the idiosyncratic errors $e_{i,t}$ are independently and identically distributed (i.i.d.), the first differenced errors are first-order serially correlated. The Arellano – Bond test for autocorrelation has a null hypothesis of no autocorrelation and is applied to the differenced residuals. The test for AR (1) process in first differences usually rejects the null hypothesis. The test for AR(2) in first differences is more important, because it will detect autocorrelation in levels.

IV Empirical results

The set of Panel data is of 44 countries for 18 years (2000 – 2017). List of considered countries is given in Appendice Table A1. Elasticities ($\varepsilon_{i,t}$) for each country are estimated with p=5 successive observations by rolling method as given previously.[17]

3. Results from Static Models

Fixed and Random effect models are considered for the 7 possible specifications (M1, M2 to M1.2.3). For each case, adequate model is selected by Hausman test. Table 6 gives results of all these investigations. Having the right models, we sum up in Table *7*.

Clearly from Table 7, there is an important difference between Francophone and Anglophone countries. For **Francophone** countries (20 countries), elasticities evolution depend on **Pmp** and **Lmp** (S variables). Both factors have positive and significant effects (respectively about 10% and 4.5%). **Size** (S variable) is the only facteur which has positive and significant effect on elasticity for **Anglophone** countries (about 12%).

For the **totality** of our sample (44 countries), we find that besides positive and significant effects of structural factors **Pmp, and Lmp** (respectively about 5%, and 3%), **Tx1524** (Demographic factor) has a negative significant effect (about -0.3%). **Government size** has also a role in explaining employment elasticities (about 7 %). This results is not in line with previous empirical results suggesting that countries with larger government size tend to have lower employment elasticities ((Feldmann H. , 2006) and (Afonso & Furceri, 2010)).

Details for Table 7 are given in Table A 9 for Francophone countries, Table A 10 for Anglophone countries, and Table A 11 for all countries, see Appendice 6 (F).

[15] Arellano – Bond estimator was designed for small-T large-N panels.

[16] Sometimes the lagged levels of the regressors are poor instruments for the first-differenced regressors. In this case, one should use the augmented version – "system GMM". The system GMM estimator uses the levels equation to obtain a system of two equations: one differenced and one in levels. Thus the variables in levels in the second equation are instrumented with their own first differences. This usually increases efficiency.

[17] Rolling technic is easally applied by Eviews 10 or by Stata 15.

Table 6 : Hausman test results (Static Models for Panel Data)

Specification	**Francophone**		**Anglophone**		**Total**	
Model/p-value	**Model**	**p-value**	**Model**	**p-value**	**Model**	**p-value**
M3	FE	0.0974	RE	0.06179	FE	0.0445
M1.2	RE	0.8294	RE	0.2101	RE	0.7708
M1.3	FE	0.06951	RE	0.3969	FE	0.0674
M2.3	FE	0.0506	RE	01573	FE	0.052
M1.2.3	FE	0.0251	RE	0.1561	RE	0.1003

Note : RE : radem effect model, FE : fixed effect model. Results of M1 and M2 are remouved from this table since all explicative variables in these models are not significants.

Table 7 : Significant variables in Static specifications

	Francophone		**Anglophone**		**All countries**		
Model/variable	**Pmp**	**Lmp**	**Size**	**Size**	**Tx1524**	**Pmp**	**Lmp**
M3	.0842087	.036532		*.0694246*		.0502761	.0248994
	(0.076)	(0.077)		(0.001)		(0.091)	(0.085)
M1.2					-.003202		
					(0.088)		
M1.3	.0974857	.0430889	.1124318	.0706622		.0513968	.0257363
	(0.053)	(0.051)	(0.000)	(0.001)		(0.088)	(0.078)
M2.3	.0896221	.0396828	.1213782	.0733885			
	(0.067)	(0.097)	(0.000)	(0.001)			
M1.2.3	.1014945	.0492073	.1206563	.0498469			
	(0.049)	(0.052)	(0.000)	(0.011)			

Note : (.) is the p-value.

4. Results from dynamic models

Elasticities are significantly correlated with their past ; corr($\varepsilon_{i,t}$, $\varepsilon_{i,t-1}$) = $\rho = 0.5647 << 1$ and corr($\varepsilon_{i,t}$, $\varepsilon_{i,t-2}$)= 0.4236.[18] We consider then dynamic panel data model (DPD) ; Equation (2). As Nickell (1981) has shown, the standard within-group estimate is based and inconsistent in the dynamic panel model because of correlation between the lagged dependent varible and the error. Following Arellano and Bound (1991) we use GMM method to get consistent estimates for unknown coefficients. We take first differences to get rid of the time invariant effects α_i, so we consider equation (3). This model allows as to use values of $\varepsilon_{i,t-j}$ (lagged twice or more) as instruments ((Anderson & Hsiao, 1982) and (Arellano & Bond., 1991)). Under the assumption of serially uncorrolated $e_{i,t}$, the first difference error term $\Delta\, e_{i,t}$ follow an MA(1) process, so $\varepsilon_{i,t-j}$ (j = 2, 3, …) are valid instruments for $\Delta\, \varepsilon_{i,t-1}$. Furthermore, we assume that

[18] The same result is get for Anglophone countries and Francophone countries, see Table A 5 in Appendice 4.

the remaining right-hand side variables $S_{i,t}$ and $X_{i,t}$ are strictly exogeneous with respect to $\varepsilon_{i,t}$, i.e.

$$E\left(\Delta\ \varepsilon_{i,t} \middle|\ \Delta\ S_{i,t}\ and\ \Delta\ X_{i,t}\right) = 0 \text{ for all t = 1, …, T.}$$

Test statistics for these assumptions are applied below.

Because system GMM uses more instruments than the difference GMM it may not be appropriate to use system GMM with a dataset with a small number of countries.[19]
Table 8 sum up estimation results by one step difference GMM method for All countries (first colum), for Francophone countries (second column), and for Anglophone countries (third column).[20] We provide also the results of diagnostics tests for the validity of the used instruments. The Sargan-tests can not reject validity of instruments in all case at 5% level (p-values are > 5%).[21] The other assumption that is necessary for the validity of instruments is the Arellano–Bond test for first- and second-order autocorrelation in the first-differenced errors. Serial correlation in the first-differenced errors at an order higher than 1 implies that the moment conditions used by GMM are not valid. Serial uncorrelated error terms at first order are rejected at conventional significant levels if p-values < 5% for AB(1). In all cases, there are significant evidence of serial correlation in the first-differenced errors at order 1. Serial uncorrelated error terms at second order can not be rejected if p-values > 5% for AB(2)). In all cases, no significant evidence of serial correlation in the first-differenced errors at order 2.

For **Francophone** countries, elasticities evolution depends on **Pmp** and **Lmp** (S variables) and on Tx1524 (D variable). Both structural factors have positive and significant effects (respectively about 11% and 13%), while demographic factor has significant negative effect (-5.25%).

For **Anglophone** countries, only **FDI** has positive and significant effect (about 1.1%).

For 44 countries, elasticities depend on **Lmp** (S variable), **Volatility** of **GDPG** (M variable),[22] and **Tx1524** (D variable). **Lmp** has positive and significant effect (about 12%). Both macroeconomic and demographic effects have negative and significant effect (respectively about -0.6% and -3.8%). Then, macroeconomic policies aimed at reducing macroeconomic volatility have a significant and positive impact on employment elasticities for all countries.

Table 8 : One Step Difference GMM Results for Equation (3).

Variable	All countries	Francophone	Anglophone
Lmp	**.1152461****	**.10987711****	.05508624
Pmp	.1572678	**.12941478***	.1031167
FDI	.00260021	-.00408898	**.01110124***
Vol_B	**-.00571947****	-.0080446	-.00257701
Size	-.00070235	-.05257838	.02604954
Pop_U	.01977188	.03957699	.00027545
Tx1524	**-.03800264****	**-.05250829****	-.01653265
Inflation	.00431916	.00861079	.00238496

[19] Recall that when the number of instruments is greater than the number of countries the Sargan test may be weak.
[20] For reference FE and RE results are given in Appendice 6 (G), see Table A 12 and Table A 13. These estmators are biased and not convergent.
[21] Only for a homoskedastic error term does the Sargan test have an asymptotic chi-squared distribution.
[22] (Furceri, 2010)

F	3.3012966	1.3522658	.99636241
N	467	241	226
Sargan	0.475	1.000	0.999
AB(1)	0.003	0.024	0.049
AB(2)	0.158	0.133	0.537
Instruments	43	81	43

Note : * p<.05; ** p<.1; *** p<.01. AB(1) is p-value for Arellano-Bond test for AR(1) in first differences. AB(2) is p-value for Arellano-Bond test for AR(2) in first differences. Sargan is p-value for Sargan test of overid restrictions.

Conclusion

This paper contributes to the literature by providing new set of employment-output elasticities for an unbalanced panel of 44 countries (from AMEE) over the period 2000–2017. Point estimates of elasticities by rolling regression have the majority ranging typically in the [-1, 1] range. Having a sample of 20 francophone et 24 anglophone countries, we assess the role of structural and policy variables in affecting these elasticities within these two groups. Results were built from an econometric models aimed at providing insights into some of the structural, macroeconomic, and demographic determinants of the employment intensity of growth by type of countries. There is an important difference between Francophone and Anglophone countries. The main findings with **dynamic specification** can be summarized as follows:[23]

For **Francophone** countries (20), elasticities evolution depends on product market indicator, **Pmp,** and labor market factor, **Lmp,** (Structural variables) and on ***15-24 years-old participant in active population,*** Tx1524, (Demographic variable). Both structural factors have positive and significant effects (respectively about 11% and 13%), while demographic factor has significant negative effect (-5.25%).[24] Then, structural policies aimed at increasing labor and product market flexibility have a significant and positive impact on employment elasticities for **Francophone** countries. A clear implication is that high economic growth may not necessarily lead to a substantial decline in unemployment unless it is accompanied by structural changes in the labor and product markets.[25]

For **Anglophone** countries (24), only Foreign direct investment (**FDI)** has positive and significant effects (about 1.1%).[26] Then, macroeconomic policies aimed at promoting FDI have a significant and positive impact on employment elasticities for **Anglophone** countries (Bruno & al., 2001). So, maintaining high rates of growth to promote employment requires higher rates of investment and improvements in the efficiency of **FDI.**

[23] Static model gives evidence to Pmp and Lpm to have significant effect on Francophone elasticities. While Anglophone elasticities change only with Sizes.

[24] With static model, employment-output intensity evolution depends also on **Pmp** and **Lmp**. Both factors have positive and significant effects (respectively about 10% < 11% and 4.5% << 13%).

[25] Structural changes in the labor market would include also measures to improve skill levels (vocational training, upgrading the education system) in line with the changing requirements of the labor market.

[26] With static model, **Size** (Structural variable) is the only facteur which has *positiv*e and significant effect on elasticity (about 12%). This mean that Structural policies aimed at increasing government size have effect on employment elasticities.

For the **totality** of countries (44), elasticities depend on labor market indicator, **Lmp**, on **Volatility** of **GDPG** (Macro-economic variable), and on **Tx1524** (Demographic variable). **Lmp** has positive and significant effect (about 12%). Both macroeconomic and demographic effects have negative and significant effect (respectively about -0.6% and -3.8%). Then, macroeconomic policies aimed at reducing macroeconomic volatility have a significant and positive impact on employment elasticities for all countries. This implies that structural reforms have to be complemented by macroeconomic stability policies.

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Appendice

1 Tables

Table A 1: List of countries.

Francophone countries	Anglophone countries	Francophone countries	Anglophone countries	Francophone countries	Anglophone countries
Algérie (AN)	Egypte	Congo, Rép. dém. (AC)du	Angola	Sénégal	Namibie
Maroc (AN)	Iran, République islamique	Côte d'Ivoire (AO)	Erythrée	Togo	Nigéria
Bénin	Iraq	Gabon (AC)	Gambie	Tchad	Ouganda
Burkina Faso (AO)	Jordanie	Guinée	Ghana	Tunisie	Rwanda
Burundi (AE)	Liban	Guinée-Bissau	Kenya		Sierra Leone
Cap-Vert (AO)	Libye	Madagascar	Lesotho		Tanzanie
Comores (AE)	Oman	Mauritanie	Malawi		Zambie
Congo (AC)	Yémen	Niger	Mozambique		Zimbabwe

2 Figures

Figure B 1 : Panel data : Elasticities (blue lines)[27] and GDP growth (red lines) by countries.

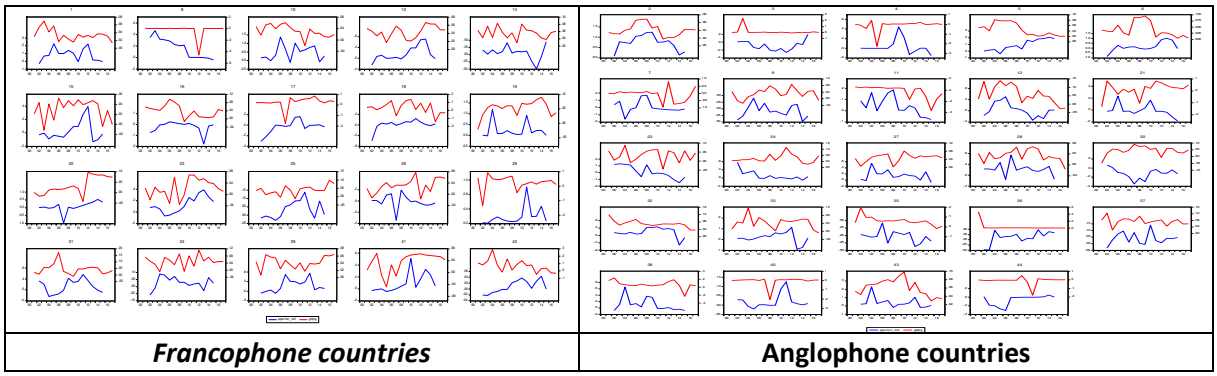


Figure B 2 : Elasticities distribution by country.

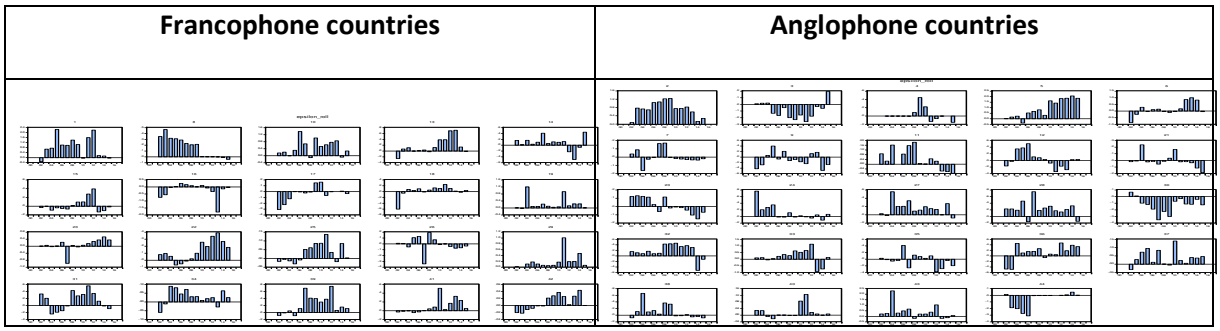
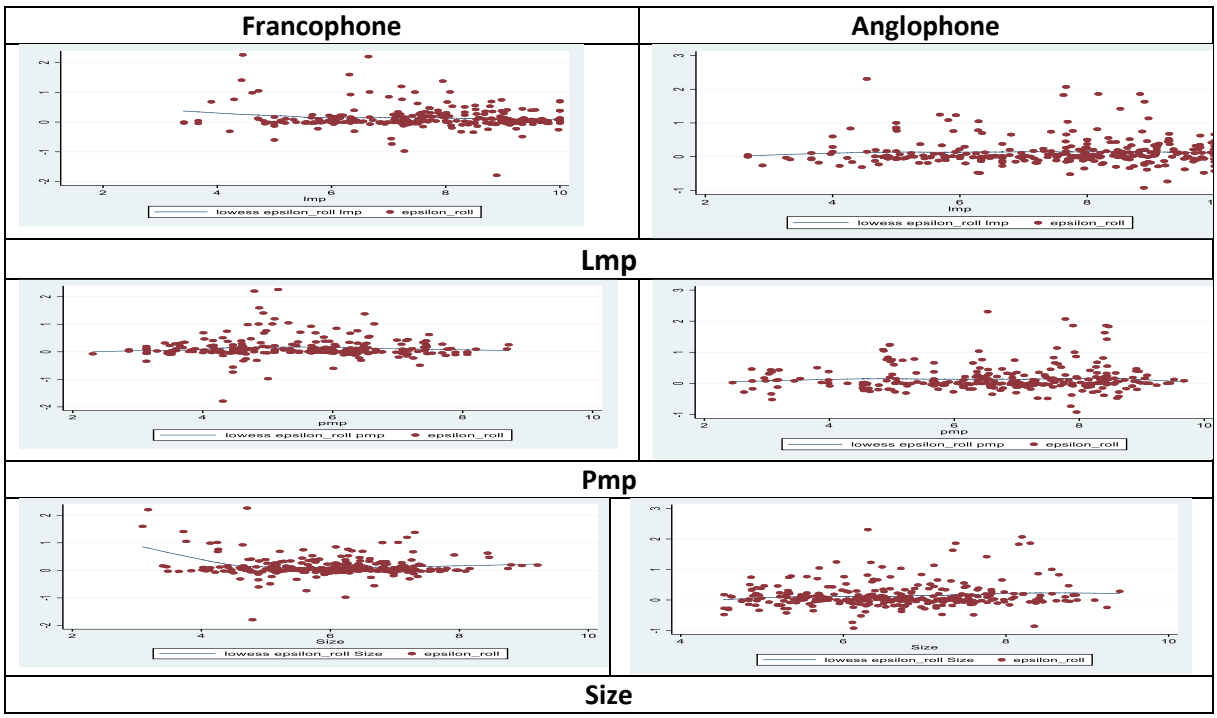


Figure B 3: Nonparametric fit of Elasticities on structural and policy variables; case 2.



[27] Rolling regression estimates of elasticities in 5 year window.

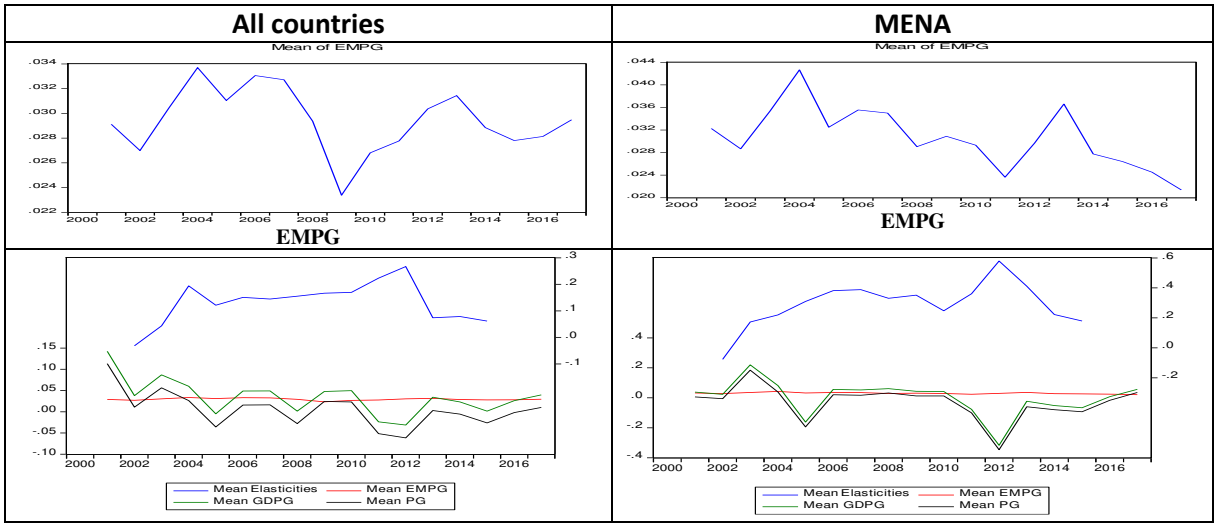


Figure B 4 : Elasticities, EMPG, GDPG, and PG in average for 44 countries and 11 MENA countries.

3 Descriptive statistics

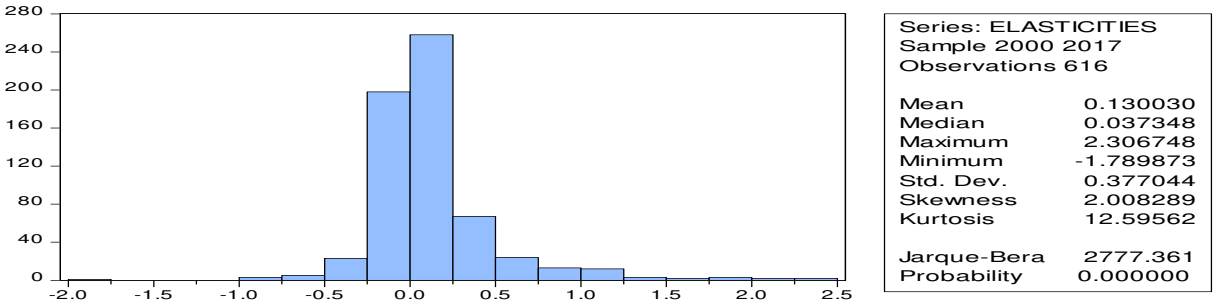


Figure B 5: Histogram for elasticities.

Table A 2: Descriptive statistics : All countries for independent variables

	FDI	LMP	PMP	POP_D	POP_U	PRODUCTIVITY
Mean	4.237879	7.393393	6.065750	101.7550	52.34485	0.015127
Median	2.768415	7.593351	6.148980	61.58965	58.21500	0.017606
Maximum	50.00028	10.00000	9.702941	622.9621	91.75400	0.801859
Minimum	-6.054919	1.416140	2.308431	2.306911	1.626000	-0.973525
Std. Dev.	5.698612	1.727935	1.619794	131.0453	22.74052	0.072324
Skewness	3.381644	-0.475697	-0.044123	2.356111	-0.478101	-2.719918
Kurtosis	19.99678	2.588533	2.196245	8.193291	2.273995	76.49560
Jarque-Bera	10875.56	31.60686	18.57908	1610.492	47.20599	167688.1
Probability	0.000000	0.000000	0.000092	0.000000	0.000000	0.000000
Observations	780	706	682	786	786	741

	GDPG	TX1524	VA_S	VOL_B	SIZE
Mean	0.034641	48.29266	5.304870	3.848339	6.310852
Median	0.044664	44.08450	5.113892	2.206238	6.291244
Maximum	4.688814	83.58300	85.06538	75.17580	9.398888
Minimum	-4.582449	13.40200	-33.09684	0.054567	3.089435
Std. Dev.	0.299776	17.99073	6.788397	6.780813	1.115072
Skewness	-0.673910	0.303296	3.918993	7.263309	0.030574
Kurtosis	168.3974	2.009792	48.32506	68.38682	2.747812

Jarque-Bera	852660.9	44.49939	64972.54	148053.1	2.065033
Probability	0.000000	0.000000	0.000000	0.000000	0.356110
Observations	748	792	737	792	736

4 Cross-Section Dependence Test

Table A 3: Cross-section dependence tests

Null hypothesis: No cross-section dependence (correlation) for $\varepsilon_{i,t}$. Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	1486.029	946	0.0000
Pesaran scaled LM	12.41527		0.0000
Bias-corrected scaled LM	10.72296		0.0000
Pesaran CD	5.117224		0.0000

5 Correlations tests

A. For $\varepsilon_{i,t}$ and independent variables

Table A 4: Correlation between $\varepsilon_{i,t}$ and independent variables

	Anglophone	Francophone	All
Pop_U	-0.0919	-0.1778*	-0.1223*
Tx1524	-0.1675*	-0.1732*	-0.1700*
Pop_D	0.0199	-0.1533*	-0.0370
Size	0.1049	-0.1183*	0.0033
Pmp	0.0322	0.0151	0.0263
Lmp	0.0281	-0.0942	-0.0226
VA_S	-0.0059	0.0548	0.0145
Inflation	-0.0585	0.0275	-0.0276
Trade	0.1641*	-0.0076	0.0952*
Vol_B	-0.1401*	0.0529	-0.0247
PIB_H	-0.0832	0.1796*	-0.0064
FDE	0.1094*	-0.0695	0.0243

B. For $\varepsilon_{i,t}$ and its past

Table A 5: correlation between $\varepsilon_{i,t}$ and its past

$\varepsilon_{i,t}$	All	Francophone	Anglophone
$\varepsilon_{i,t-1}$	0.5647*	0.4734*	0.6345*
$\varepsilon_{i,t-2}$	0.4236*	0.2942*	0.5299*

C Independent variables for all countries

Table A 6: Correlation matrix.

	Pop_U	Tx1524	Pop_D	Size	Pmp	Lmp	VA_S	Inflat~n	Trade	Vol_B	PIB_H	FDI
Pop_U	1.0000											
Tx1524	0.1936*	1.0000										
Pop_D	0.3372*	-0.0518	1.0000									
Size	-0.1003*	-0.0817*	0.1036*	1.0000								

Pmp	0.0432	-0.1650*	-0.0281	0.1024*	1.0000							
Lmp	-0.0542	-0.0714	-0.1211*	0.0156	0.132*	1.0000						
VA_S	0.0751*	0.0470	0.0510	-0.0224	0.0668	0.0121	1.0000					
Inflation	0.0167	0.0265	-0.0476	0.0175	-0.0029	-0.12*	-0.1429*	1.0000				
Trade	-0.3214*	-0.1932*	-0.0625	-0.1138*	-0.0342	0.171*	-0.0200	-0.015	1.0000			
Vol_B	-0.1314*	0.1590*	-0.1211*	0.1728*	-0.099*	-0.0230	0.0518	0.009	0.0280	1.0000		
PIB_H	-0.1964*	-0.4391*	-0.0179	-0.0631	0.2189*	0.0690	0.0120	-0.069	0.250*	-0.049	1.0000	
FDI	-0.0013	0.0430	0.2174*	0.0575	-0.0404	0.0280	0.0110	0.0385	0.384*	-0.029	-0.041	1.0000

D Independent variables for Fancophone countries

Table A 7: Correlation matrix for Fancophone countries

	Pop_U	Tx1524	Pop_D	Size	Pmp	Lmp	VA_S	Inflat~n	Trade	Vol_B	PIB_H	FDI
Pop_U	1.0000											
Tx1524	0.1894*	1.0000										
Pop_D	0.4477*	-0.2636*	1.0000									
Size	-0.2048*	0.1176*	0.0589	1.0000								
Pmp	0.1579*	-0.3126*	0.3242*	-0.2400*	1.0000							
Lmp	0.0481	0.0403	-0.0321	0.1287*	-0.1422*	1.0000						
VA_S	0.0370	0.0178	-0.0582	-0.2390*	0.0221	-0.0149	1.0000					
Inflation	-0.0425	0.0044	-0.0307	0.1090*	0.0073	-0.1439*	-0.2332*	1.0000				
Trade	-0.3035*	-0.2471*	-0.2455*	0.0289	0.0360	-0.0776	0.0640	-0.1618*	1.0000			
Vol_B	-0.1815*	0.2679*	-0.1033	0.3128*	-0.1163*	-0.0014	-0.0421	-0.0038	-0.0198	1.0000		
PIB_H	-0.5084*	-0.5985*	-0.2393*	-0.1869*	0.2798*	-0.1396*	0.0278	-0.0822	0.3029*	-0.1042*	1.0000	
FDI	-0.1339*	0.0597	-0.1848*	0.0749	0.0155	-0.0254	-0.0484	-0.0302	0.5028*	0.0382	0.0163	1.0000

E Independent variables for Anglophone countries

Table A 8: Correlation matrix for Anglophone countries.

	Pop_U	Tx1524	Pop_D	Size	Pmp	Lmp	VA_S	Inflat~n	Trade	Vol_B	PIB_H	FDI
Pop_U	1.0000											
Tx1524	0.1995*	1.0000										
Pop_D	0.3184*	0.0509	1.0000									
Size	-0.0169	-0.2585*	0.0714	1.0000								
Pmp	-0.0125	-0.1099*	-0.3066*	0.2423*	1.0000							
Lmp	-0.1198*	-0.1567*	-0.1694*	-0.0710	0.3690*	1.0000						
VA_S	0.0976	0.0631	0.0739	0.0726	0.0630	0.0277	1.0000					

Inflation	0.0995	0.0614	-0.0973	-0.1767*	-0.1798*	-0.2059*	-0.0684	1.0000
Trade	-0.3330*	-0.1566*	0.0167	-0.2290*	-0.0626	0.3440*	-0.0605	0.1600*	1.0000
Vol_B	-0.1107*	0.0184	-0.1729*	-0.0037	-0.0859	-0.0618	0.1740*	0.0605	0.1012*	1.0000
PIB_H	-0.0827	-0.4063*	0.0033	-0.0864	0.1344*	0.1677*	-0.0075	-0.1119*	0.2451*	-0.0104
FDI	0.0934	0.0279	0.4711*	0.0357	-0.0991	0.0797	0.0479	0.1495*	0.2963*	-0.1582*	-0.0795	1.0000

6 More results

F For panel static model

Table A 9 : Static models for **Francophone countries**.

Variable	M3	M1.2	M1.3	M2.3	M1.2.3
Size	.00115099		.02214219	.01770857	.01770857
Pmp	.03427217		**.09748565***	**.08962208***	**.08962208***
Lmp	.01949013		**.04308894***	**.03968283***	**.03968283***
Pop_U		-.0023581	.01583879		
Tx1524		-.00397583	-.00822688		
Inflation		.00193991		.0034123	.0034123
Vol_B		.00320281		.00286527	.00286527
FDI		.00003854		.00078239	.00078239
_cons	-.20605922	.42966929**	-1.3154157*	-.78377395**	-.78377395**
Wald/F	2.39	5.13	1.7676528	1.4470494	1.4470494
N	269	274	269	264	264
R^2			.0349562	.03519627	.03519627
p-value			0.0000	0.0000	0.0000

Note : * p<.05; ** p<.1; *** p<.01. p-value is for F test that all fixed effect α_i=0.

Table A 10 : Static models for **Anglophone countries**.

Variable	M3	M1.2	M1.3	M2.3	M1.2.3
Size	**.10980705*** **		**.11243177*** **	**.12137818*** **	**.12137818*** **
Pmp	-.00269727		-.00248999	-.01024511	-.01024511
Lmp	.01516852		.0145926	.0080461	.0080461
Pop_U		-.00043491	-.00096714		
Tx1524		-.00258006	-.0005856		
Inflation		.00165494		.00474773	.00474773
Vol_B		-.0046359		-.00496924	-.00496924
FDI		-.00253427		-.00268575	-.00268575
_cons	-.67558438***	.30496198*	-.60839232*	-.65114685**	-.65114685**
Wald	17.46	2.42	18.14	18.67	18.67
N	286	300	282	258	258

Note : * p<.05; ** p<.1; *** p<.01.

Table A 11 : Static model for **All countries**.

Variable	M3	M1.2	M1.3	M2.3	M1.2.3
Size	**.06942456*** **		**.07066224*** **	**.07338847*** **	**.0505924** **
Pmp	**.05027614***		**.05139675***	.04772484	.01552651
Lmp	**.02489944***		**.02573632***	.02492861	.01096348
Pop_U		-.00113079	.00331103		
Tx1524		**-.00320236***	-.00036012		
Inflation		.00113389		.00462994	.00262707
Vol_B		.00160682		.00173393	.00082665
FDI		-.00048793		-.0021525	-.00065901
_cons	-.78881137***	.33974366***	-.96882999**	-.82343147***	-.37414296*

Wald/F	5.931167	4.87	3.6569915	3.1778771	9.61
N	555	574	551	522	522
R^2	.03384123		.03514412	.03882821	
p-value	0.0000		0.0000	0.0000	

Note : * p<.05; ** p<.1; *** p<.01. p-value for F test that all fixed effect α_i=0.

G For Panel dynamic model

Table A 12 : Fixed Effect Results.

Variable	All	Francophone	Anglophone
Lmp	.02495554	**.04920726****	.00769117
Pmp	.04662106	**.10149448****	-.0079739
FDI	-.00205011	.00187601	-.00630127
Vol_B	.00169181	**.00306152*****	.0003102
Size	.07345193	.01618137	.1468597
Pop_U	.00145255	.01900537	.00602448
Tx1524	-.00181865	-.01053872	.00526231
Inflation	**.00463127***	.00257304	**.00628418***
_cons	-.80741012	-1.4252868*	-1.4168427
F	2.4627697	2.9554276	1.5194193
N	522	264	258
R^2	.03902812	.04386636	.09758941

Note : * p<.05; ** p<.1; *** p<.01.

Table A 13 : Random Effect Results.

Variable	All	Francophone	Anglophone
Lmp	.00965797	.01772266	.00660467
Pmp	.01030737	.02336209	-.01063151
FDI	-.00049806	.00022383	-.00245547
Vol_B	.00085063	**.00328365*****	-.00542692
Size	.04984689	-.0087409	.12065634
Pop_U	-.00145464	-.00273439	-.00145116
Tx1524	-.00303716	-.00323475	-.00128032
Inflation	.0027838	.00258146	**.00488043***
_cons	-.10601752	.20330026	-.49572828
F			
N	522	264	258

Note :* p<.1; ** p<.05; *** p<.01