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DETERMINANTS OF EXPORT DIVERSIFICATION: AN EMPERICAL STUDY, THE CASE OF DEVELOPING AND EMERGING COUNTRIES DURING THE PERIOD 1996-2017

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ABSTRACT: This study attempted to investigate the determinants of exports diversification for 151 developed and developing countries during a period of 22 years (1996-2017), Using 8 explanatory variables, divided into four main groups: economic reforms group, physical variables group, macroeconomic stability variables group, And institutional variables group. The estimation results of the pooled OLS model, Fixed Effect model, Random Effect model, the Bayesian Model Averaging (BMA) and the weighted-average least squares method (WALS), indicate the importance of investments, governance, individual income and The added value in the industrial sector, in enhancing the diversification of exports process, while the economic reforms variables (trade openness and financial development) do not have much impact on the diversification of exports.

Key words: export diversification, Bayesian model averaging (BMA) model, weighted-average least squares method WALS

JEL Classification : F14 , C33 , E60

1. INTRODUCTION

Recent years have seen a strong return to the issue of economic diversification, particularly in developing countries, due to the existence of many reasons, including : the weakness of the economies of developing countries, the failure of these countries to benefit from the preferential treatment granted by the developed countries, the small returns from the opening of trade and the lifting of restrictions on foreign trade. Many studies prove that diversification allows reducing macroeconomic imbalances and contributes to reducing fluctuations in income from exports in the long term (Hesse, 2008), (Leiderman and Moloney 2007) also carried out studies on this issue and came up with results that support the hypothesis of the effectiveness of the diversified economy. Diversification of non-traditional exports opens up new opportunities and new markets for enterprises and investors. Economic diversification is theoretically an effective strategy for countries on the path to growth to transform into

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modern economies. (Chandra et al 2007). The country or region whose economic activities are more diversified are the least vulnerable to economic shocks, as shocks to different sectors are not positively linked to each other, an argument that is particularly important for commodity exporters, whose prices can fluctuate considerably, and which is the most obvious reason for seeking further diversification.

Given the importance of economic diversification in general and export diversification in particular, the search for export diversification determinants is also very important, economic literature does not provide us with many studies on the determinants of economic diversification and export diversification and existing studies are either only concerned with the determinants of export diversification in a specific country such as the study of (Dilip Kumer Roy, 1991). Which dealt with determinants in Bangladash, Or concern about the relationship of export diversification to one variable such as the (Imbs Wacziarg, 2003) study, in which they looked for the relationship between per capita income and the degree of export concentration, where they concluded that the higher the per capita income, the lower the levels of commodity concentration until they reach a certain level of income and then countries take another turn towards specialization again, among the studies that dealt with the determinants of export diversification on a large scale study are (Manuel R. Agosin, 2011) and (Aleksendra Patrelka et all 2011).

In our study, we will try to search for the determinants of economic diversification by building a standard model using the panal data for 151 emerging developing countries and during the period 1996-2017 and by including more than eight explained variables included in certain groups in order to search for the most important variables in raising the degree of economic diversification.

2. LITERATURE REVIEW :

- ✓ The International Monetary Fund (FMI) study conducted by Rahul Giri and al (2019), which used in its study a wide range of variables that are likely to affect the export diversification using the panal data for a group of countries during the period 1975-2015 and using the Bayesian Model Averaging (BMA) which addresses model uncertainty and ranks factors in order of importance vis-avis their explanatory power. The study concluded that the most important variables explaining export diversification is the accumulation of human capital, reducing barriers to foreign trade, improving the quality of institutions and developing the financial sector. For commodity-exporting countries, the reduction of barriers to foreign trade is the most important driver of export diversification, followed by improved education outcomes at the secondary level and the development of the financial sector.
- ✓ (Manuel R. Agosin and al. 2011) stady, in which he tried to search for the determinants of export diversification around the world (79 countries) during the period 1962-2000, using dynamic panal models and GMM estimation method. The study concluded that trade openness may increase The country's commodity specialization, It also concluded that Financial development has no significant impact on the increase in export diversification, as well as fluctuations in exchange rates have no effect on export diversification, and the study concluded that the accumulation of human capital is an important and determining factor in the degree of export diversification, The study also showed that countries far from economic zones have more specialized exports.

- ✓ Imbs and Wacziareg (2003) study, where the researchers studied the development of the commodity specialization and its relation to the level of individual income, based on a variety of data, and the study concluded that there was a U-shaped relationship between the two variables of the study in the sense that countries in the first stage of development are diversifying, i.e. that economic activity is distributed equally between different sectors, and then comes the second stage of development where the countries begin to specialize again.
- ✓ (Hakim Ben hamouda and al , 2006) study, where they looked at the determinants of export diversification in 18 African countries between 1996 and 2001 and using the Hirvindal Hirschman index of commodity concentration as a dependent variable and a set of explanatory variables, the study concluded that the process of economic diversification is greatly influenced by investment, per capita income level, degree of trade openness, macroeconomic policies, governance, conflicts and wars.
- ✓ Anar Ahmadov, (2012) study, which tried to answer the problematic: Why do some developing countries rich in natural resources succeed in diversifying their economies while others fail. The study tested a set of hypotheses about political and institutional factors instead of purely economic and geographical factors that enable or impede export diversification in developing countries. The study was conducted during the period between 1962 - 2010, and it was concluded that international institutions designed to help these countries overcome the resource curse through economic diversification can only be effective if the political and institutional situation of these countries is taken into account.
- ✓ (Aye Mengistu abmu , 2009) study, which examined the main determinants of export diversification, vertically and horizontally, based on unbalanced panal data for 41 countries from sub-Saharan Africa and East Asia during the period 1975-2004, using the FGLS estimation method with corrected heteroskedasticity and autocorrelation, The study indicates that education, health, per capita income, population size, infrastructure development, and trade openness are crucial factors to support export diversification, horizontally and vertically.
- ✓ Aleksendra patrelka and all (2011), which examined the determinants of export diversification for each specific country, based on the data of 60 countries and during the period between 1985-2004, the study concluded that even after removing differences in per capita income, the variation in sectors in the degree of diversification Exports are large. The study also concluded that the variables that affect the size of the markets that can be accessed locally or abroad are the most important and strong determinants of the export diversification process. The study also concluded that the opportunities for export diversification increase if the countries are large and do not fall far from the main economic zones. And when barriers to trade are constrained.
- ✓ Jean Claud Berthély (2003) study, in which he discussed the arguments for economic diversification policies in view of the gains of diversification in the light of recent theories of foreign trade, then studied the determinants of diversification using the panel data of more than 40 developed and developing countries in transition, the study concluded that there is an inverted U-shaped relationship between diversification and individual income, It also concluded that economic diversification could be closely linked to new forms of international specialization such as intra-sector trade and the international division of productive processes and was unlikely to be linked to protectionist policies. It is unlikely to be associated with protectionist policies, and the study also showed that successful diversification policies must be based on effective participation in globalization.

3. DATA

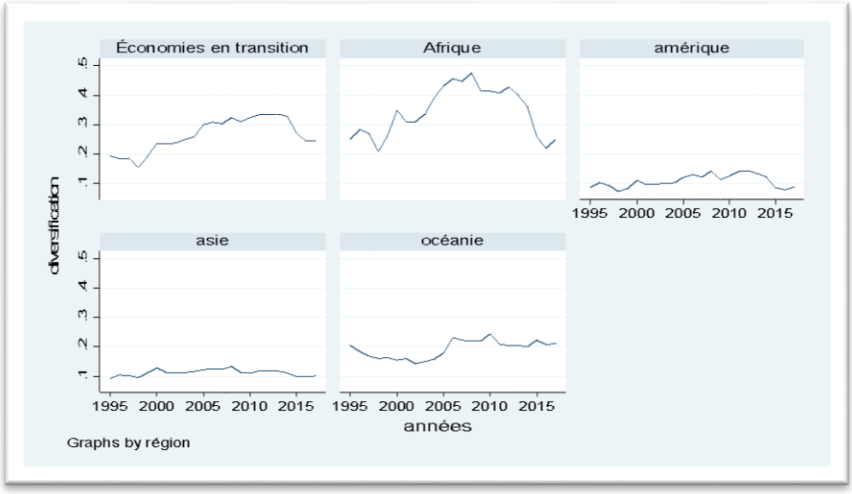
The study sample included 151 countries from emerging and developing countries, according to the classification of the International Monetary Fund : 12 countries from the Commonwealth of Independent States (CIS), 26 countries from Asia, 12 countries from Europe, 30 countries from Latin America and the Caribbean, 22 countries from North Africa, the Middle East, Afghanistan and Pakistan. There are 45 countries from sub-Saharan Africa, and The time area of the study extended from 1996 to 2017, and eight variables were selected for the study, as shown in Table 01, which show some statistical measures for each of the study variables, the dependent variable It is the Hirschman-Harvendall index of export product concentration, which has been used in several studies as a measure of export diversification (Hakim ben hammouda and al, 2006), (Manuel R. Agosin and al, 2011) (Anar K Ahmadov, 2012) , and it was calculated by Cnuced on exported products at the level of 3 digits (3degit) for 151 countries during the period 1996 - 2017, and this indicator has been standardized so that its value is limited to between 0 and 1, and it calculated according to the following formula:

$$H_j = \frac{\sqrt{\sum_{i=1}^{n}\left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{1/n}}{1 - \sqrt{\frac{1}{n}}}$$

Where H_j is a country or country group index, x_{ij} value of export for country j and product i, $X_j = \sum_{i=1}^{n} x_{ij}$, n the number of products (SITC revision 3 at 3-degit group level), An index value closer to 1 indicates a country's exports or imports are highly concentrated on a few products. On the contrary, values closer to 0 reflect exports or imports are more homogeneously distributed among a series of products.

Figure 01 show the evolution of the export product concentration index for developing country exports during the period 1995-2017 for different regions of the world. On average, developing countries in the American and Asian regions recorded the lowest rates of export product concentration compared to other regions, and the index for these two regions has tended to stabilize compared to other regions. Likewise, the export product concentration index in the Oceania region remain low and largely stable, while African countries, there are very large export product concentration rates. They also witnessed during the period 1995-2017 great instability. For example, in Africa, the rate varies from 0.2 to 0.5.

Figure 01: Evolution of the Hirschmann-Herfendahl index by region during the period 1995-2017



Source : created by others, using CNUCED data

In order to search for the determinants of export diversification, eight variables explained based on previous studies were used, and these variables are : the coefficient of trade openness and we symbolize it by the symbol To, which is the ratio of total value of external trade (export plus import) to the gross domestic product, The data was obtained from the CNUCED. Financial development as the share of domestic credit to the private sector on the GDP, and we denoted it with the symbol Dcs, the data was obtained from the World Bank, the variable of per capita gross domestic product we denoted it with the symbol pib_hab, data was obtained from the data of the World Bank, the variable gross capital formation As a percentage of GDP we denoted it with the symbol fbc ant the data was obtained from the World Bank data, the Industrial production (the added value of industrial production as a percentage of the GDP) we denoted it with the symbol VAI and the data was obtained from the World Bank data. the inflation rate was measured by the consumer price index and was obtained from the World Bank data. The real effective exchange rate was obtained from the World Bank data. for the governance variable, we use Governance indicators provided by the World Bank: voice and accountability, political stability and absencfe of violence, gouvernment effectiveness, regulatory quality, rule of law, contrôle of corruption, .The average of these indicators was calculated to express the quality of institutions in a country, as in the study of William Easterly and al, (2002).

4. ECONOMETRIC METHOD :

In our study, we will first estimate the pooled model of panal data, the fixed effects model and the random effects model, then we will estimate the Bayesian model averging (BMA) and the Weighted-average least squares model (WALS).

Estimation of the pooled Model, Fixed Effects Model and random Model:

In this study we will estimate two mathematical models using Panal data, the first model is given as :

$$ID_{it} = \beta_0 + \beta_1 To_{it} + \beta_2 Dcs_{it} + \beta_3 Pib\_hab_{it} + \beta_4 Fbc_{it} + \beta_5 inf_{it} + \beta_6 Tcer_{it} + \beta_7 Gouver_{it} + \mu_i + \varepsilon_{it} \quad (01)$$

And the second model is given in the form :

$$ID_{it} = \beta_0 + \beta_1 To_{it} + \beta_2 Dcs_{it} + \beta_3 Pib\_hab_{it} + \beta_4 Pib\_hab_{it}^2 + \beta_4 Fbc_{it} + \beta_6 Fbc_{it}^2 + \beta_5 inf_{it} + \beta_6 Tcer_{it} + \beta_7 Gouver_{it} + \mu_i + \varepsilon_{it} \quad (02)$$

Where ID_{it} it is the Hirvendal-Hirschman index of the export product concentration for country i during period t, which is explained by a set of variables as in Equation No. (01). These explanatory variables have been divided into four main groups : economic reforms variables, physical variables, macro stability variables and institutional variables, these sets of variables have been relied upon based on the trade model with the heterogeneity of firms of (Melitz, 2003) in addition to study of (Manuel R. Agosin and all, 2011), as well as the study of the African Trade Policy Center (Hakim ben hammouda and al, 2006). the first group of variables is the set of economic reforms and included the variables of the coefficient of trade openness and the index of financial development, the coefficient of trade openness is measured by dividing the total exports and imports by the gross domestic product, while the index of financial development was measured as the share of domestic credit to the private sector on the GDP (Manuel R. Agosin and al, 2011), both indicators were obtained from World Bank data.

Table No. 01: A statistical summary of the study variables

Variable		Mean	Std. Dev.	Min	Max	Observations
IDIV	overall	.3902341	.2276875	.060041	.9833122	N = 1716
	between		.2140368	.0953541	.9516613	n = 78
	within		.0811838	.0394302	.7998147	T = 22
to	overall	62.97506	30.57591	4.110275	225.3046	N = 3198
	between		27.62707	12.90765	158.1927	n = 149
	within		13.5725	-2.182058	163.1579	T-bar = 21.4631
dcs	overall	35.0992	29.72794	.0046205	174.8892	N = 3039
	between		27.32295	.0257211	155.1231	n = 147
	within		11.57507	-18.23925	100.4376	T-bar = 20.6735
fbc	overall	23.7967	8.732238	-2.424358	67.9105	N = 2824
	between		6.887208	8.828964	50.53391	n = 139
	within		5.793172	1.260189	55.81285	T-bar = 20.3165
pib_hab	overall	6074.123	10300.85	187.5167	94903.2	N = 3222
	between		10652.72	230.8195	83058.88	n = 150
	within		1650.882	-10014.83	21357.92	T-bar = 21.48
vai	overall	27.8674	13.64996	2.073173	87.79689	N = 3088
	between		13.83472	8.355203	77.09931	n = 150
	within		4.612584	-14.34047	59.35206	T-bar = 20.5867
tch	overall	101.8449	31.54763	42.8941	740.5999	N = 1406
	between		14.92139	68.75431	188.9452	n = 65
	within		28.08045	12.89968	725.4701	T-bar = 21.6308
inf	overall	90.85973	107.5161	.0297131	4583.706	N = 2928
	between		66.91979	67.83189	759.2714	n = 142
	within		97.02005	-574.2803	3915.294	T-bar = 20.6197

Source: created by others using stata.15

According to (Melitz, 2003), trade liberalization can stimulate export diversification through an increase in the number of exporters in these sectors, which improves export opportunities, under the premise of the monopolistic competition model in foreign trade, which states that each company produces a different group of Export-oriented commodities, however, in countries where exports are concentrated in primary commodities, traditional explanations such as the Heckscher-Ohlin model of factor endowments may be more appropriate to explain the potential impact of trade liberalization on diversification. In those countries, by raising the profitability of traditional sectors. Trade reforms could negatively affect export diversification (Manuel R. Agosin and al, 2011).

With regard to the impact of financial development on exports, there is a study of (Manova , 2008) in which he stated that credit restrictions are one of the most important determinants of foreign trade flows, and that financial development increases the value of exports in the intensive sectors with external financing and the softer assets if the industries of these sectors produce Differentiated commodities, and in this context, it can be said that financial development reduces restrictions on liquidity and with the increase in the number of exporters, the export basket can diversify.

The second group of variables included the per capita gross domestic product and gross capital formation as a percentage of GDP, per capita gross domestic product or the level of income considered in the economic literature as one of the most important determinants of export diversification, as (Imbs and Wacziarg, 2003) indicated that export diversification has an inverse relationship with the level of development that was measured in per capita gross domestic product, meaning that poor countries have a tendency to diversify their exports in the beginning, coinciding with the development of their income level before they start specializing againand, Consequently, there is no monotonous relationship between the degrees of exports diversification and the level of income, as acknowledged by many studies as (Acemoglu and Zilibotti, 1997), so there is a relationship in the form of an inverted U-shape and from it we expect a positive effect of the per capita GDP, while the variable of gross capital formation as a percentage of the gross domestic product, it was used as a measure of investment within the country and it is expected to have a positive impact on the exports diversification, as the increase in investments is likely to result in increased rates of diversification. (Hakim ben hammouda and al, 2006). Industrial production is expected to have a positive impact on export diversification according to (Hakim ben hammouda and al, 2006).

The third group, which includes variables of inflation (consumer price index) and exchange rate rates, are the most important factors in the success of economic diversification policies, where macroeconomic stability provides a stable environment in which investors, entrepreneurs and consumers can : plan, invest and focus on production and performance, Otherwise, macroeconomic instability such as high inflation levels harms export diversification opportunities as high inflation rates are detrimental to several other economic variables that increase export diversification rates such as investment rates. Which declines in an economic environment with high inflation rates as a result of the high cost of borrowing (Aye Mengistu Alemu and all, 2009), and therefore we expect a negative sign for this variable in relation to diversification of exports. As for the variable of exchange rate fluctuations according to (Melitz, 2003) model, the fluctuations in the exchange rate can have the same effect as the increase in foreign trade costs, given that the improvement in exchange rates reduces the profitability of exports and reduces the number of exporters, As for the fluctuations in exchange rates, according to (Melitz, 2003), this would stimulate exporters to

enter the markets, but when fixed entry costs are considered, firms can decide to remain outside the international markets if the expected returns are less than entry costs, and thus exchange rate fluctuations increase from the absence of Certainty, that is, is expected to adversely affect the degree of export diversification.

The fourth group includes the governance variable, as institutions play an important role in economic diversification, according to many studies (Anar K. Ahmadov, 2012) as well as (Cubers and al, 2009) which showed a strong and positive relationship between the quality of political governance (democratic - non-democratic). And between the diversification of exports, also the study of the International Monetary Fund (Rahul Giri and al, 2019), which concluded that there is a positive relationship between the quality of institutions and the exports diversification.

Based on the study sample and using the unbalanced panal data, we estimated several functions of the model. We initially used the least squares method in order to estimate the pooled model, the fixed effect model and the random effect model, And in order to choose between the three models, we used the Hausman test, and in order to improve the results of the estimation, we used the generalized squares method GLS to solve the problem of heteroskedasticity, but the results of the estimation were not good, so we changed the linear form of the model where we included the variable of GDP per capita as a square in the model As approved by many studies (Imbs and Wacziarg, 2003), as well as the variable of gross capital formation was included as a percentage of the gross domestic product in the square model as in the study (Hakim ben hammouda and al, 2006) and as shown in Equation No. (02) Above, we then estimated the last model for a sample of 151 countries.

- **BMA and Weighted Least Squares Model (WALS)**

In this paragraph, we briefly describe the linear regression with uncertainty about the choice of the explanatory variables, so these models differentiate between the focus regressors explaining variables that support and confirm their presence in the economic theoretical model, And the auxiliary explanatory variables, which we are less certain about the strength of their explanation of the dependent variable, and these models can be described in the following mathematical form :

$$y = X_1\beta_1 + X_2\beta_2 + \varepsilon$$

where y is a vector with dimension (n × 1), X_1 with dimension $(n \times k_1)$, X_2 with dimension $(n \times k_2)$, X_1 and X_2 are a non-random matrix of explaination variables, ε is an error vector, β_1 and β_2 are the unknown regression parameters, and we assume that : $k_1 \geq 1$, $k := k_1 + k_2 < n - 1$, and $X := (X_1\ X_2)$ is a perfect-rank matrix, $(\varepsilon_1 \dots \dots . \varepsilon_n)$ is i. i. d $N(0, \sigma^2)$, X_1 is the focused explanatory variables and X_2 the auxiliary explanatory variables.

Uncertainty models arise depending on the various sub-sets of the explanatory variables, which can be removed from the model in order to improve the statistical properties of the parameters of the variables focused on, for example there is k_2 parameters in the vector β_2 and the number of estimated models increases whenever the different sub-groups of β_2 are equal to zero.if $k_2 = 0$ then there is no model, if $k_2 = 1$ then there are two models for estimating: the restricted model and the unrestricted model, if $k_2 = 2$ then there are four models: the unrestricted model, two restricted models (each model in which one is $\beta = 0$),

And the restricted model as a whole, and in general, 2^{k_2} is a model, and we denote the i-class form with $\mathcal{M}_i$ and write as:

$$y = X_1\beta_1 + X_{2i}\beta_{2i} + \varepsilon$$

Where X_{2i} denotes a $(n \times k_{2i})$ matrix containing k_{2i} column of X_2 and β_{2i} denotes a $(k_{2i} \times 1)$ subset of vectors and we naturally have $0 \leq k_{2i} < k_2$†.

In our study we will use the Bayesian model averging (BMA) developed by (Leamer,1978) and the least squares weighted averages (WALS) method developed by (Magnus and al. 2010), where the basic idea of this method of estimation depends on the computation of weighted averages of conditional estimates across all possible models, because each of these models contains a certain amount of information about the basic regression parameters, and from the basics of Bayesian inference the weight given to each model and conditional estimates For its parameters determined based on previous data and information‡.

5. DISCUSSING THE RESULTS :

Table No. 01 in the list of appendices shows the results of the estimation of the pooled model, the fixed effects model and the random effects model, where the results of the estimation of the pooled model show that most of parameters estimated are significant and with the same previously expected sign. According to the estimation results, economic reforms stimulate export diversification, The sign of the trade openness rate parameter was negative, i.e. it was adversely affected in the process of commodity concentration of exports, and the parameter is significant at the level of 10%, also the parameter of the financial development variable is negative and significant at the level of 1%, which means that financial development contributes to reducing the concentration of exports on certain commodities, and these results consistent to the conclusions of (Melitz, 2003). for the parameter of the industrial production variable, it was significant at the 1% level, but with a positive sign, that is, it supports the specialization process and does not contribute to the diversification process, which is opposite to what was expected and contrary to what was found (Hakim ben hammouda and al, 2006), as for the phisical variables, the parameter of per capita of GDP was significant, but its indication is opposite to what is expected, as the results show that an increase in per capita gross domestic product would support the commodity concentration in exports and this may be According to the second stage of the relationship between the two variables (according to Imbs and Wacziarg, 2003) who concluded that poor countries have a tendency to diversify their exports in the first phase and then return to specialization in the second phase. for the variable of gross capital formation as a percentage of the gross domestic product, it is not significant and is not affected In the diversification process, the overall stability variables (inflation rates and the real effective exchange rate) were significant. They increase the commodity specialization process and stand as an obstacle to the process of economic diversification. High inflation rates limit the emergence of new exporting sectors and do not contribute to creating an economic climate that allows The main determinants of diversification can have a significant impact (Hakim ben hammouda and al, 2006), As with the exchange rate, the positive sign of the parameter means that the deterioration of the exchange rate does not always encourage diversification

† There are several studies dealing with this topic extensively, such as: Hoeting et al (1999), Danilov and Magnus (2004).

‡ For further explanation, see Jan R. Magnus and all (2010), Giuseppe De LUCA and al (2011).

efforts, especially if the country does not have a pre-diversified economy so that the objective of the exchange rate decline is to gain more competitiveity in the markets in foreign markets by playing on the price band by making it more low, and thus the positive relationship between exchange rates and the process of diversifying exports can be explained by the fact that most of the developing countries do not already have a diversified basket of exports, as a depreciation of the currency can increase the process of commodity allocation rather than diversification. Parameters of institutional variables (governance) are highly significant and at the level of 1%, which has a negative sign, which consistent to previous expectations, and from that, good governance helps economies to move forward in the diversification process and this consistent with the results of (Rahul and al, 2019) study, which concluded that the quality The institutionalization expressed in good governance reduces commodity specialization in exports.

In the same table, the results of the estimation of the fixed and random effects models appear where most of the parameters are not significant and therefore cannot be relied upon, and in order to obtain better results, we estimated the second model that depicts the non-linear relationship between export diversification and GDP per capita on the one hand and Gross capital formation on the other hand (ben hammouda and al, 2006).

Table No. 02 in the list of annexes shows the results of estimating the three models : pooled, fixed effects and random effects. In the pooled model, the parameter of trade openness rates appears not significant, but with a negative sign, while the parameter of financial development appears significant and with a negative sign consistent to the results obtained in Table No. 01, for the variable of GDP per capita, it was significant, with a negative sign in the level and a positive sign in the square. The variable of gross capital formation as a percentage of the gross domestic product was significant at the level of 5% and with a negative sign, so Investment is a very important process in every attempt to diversify exports. The inverse relationship between investment and the export commodity concentration index shows that export diversification increases in conjunction with increased investment. This result consistent to the results of (ben hammouda and al, 2006) staudy, The results of the macro stability variables are the same as what we obtained in the first model in terms of significance and indication. Institutional variables are significant in this model and appear with a negative sign indicating the importance of institutional variables in support of the export diversification process.

In order to make a comparison between the fixed effects models and the random effects model, the Hausman test was used, and through the test results that appear in Table 01, we note that the p-value = 0.0485 <0.05 and thus we reject the null hypothesis that the effects model Stochastic is the appropriate model for our study, i.e. the fixed effects model is appropriate.

Table 02: Hausman test results

Hausman's test results	
Kiddo statistic	Prob>chi2
17 ,01	0,0485

Source : creating by others using stata .15

Through Table No. 02, which shows the results of estimating the fixed effects model, we note that the set of economic reforms, with its two variables, trade openness rates and the financial development index, do not affect the process of economic diversification because its parameters are not significant, while the per capita product of the domestic product is shown by a significant parameter at level 1 % And with a negative sign in the variable in the square and a positive sign in the variable in the level, the results also show that investment helps a lot in diversifying exports, as the parameter was significant at the level of 1% and with a negative sign, inflation rates have no effect on the export diversification process because its parameter is not significant while the rates Exchange rates are significant and with a negative sign, meaning that they support the diversification process. Governance is significant and with a negative sign, as expected.

- BMA and WALS estimation results :

Table No. 02 in the annex shows the results of a model estimation (BMA) and (WALS). The results were obtained using the stata 15 program and the code developed by Luca and Magnus (2011), where the table shows that all the capabilities of the explained variables have the same signal and the parameters are almost Equal for both models, the results also show that the governance policies (institutional variables) and total capital formation as a percentage of the gross domestic product as well as the added value from the industrial sector have a major role in increasing the degree of diversification of exports since the sign of its parameters is negative and these results are consistent with the results of (Rahul's study Giri, 2019), as the results of the estimation for both models showed that higher macro stability variables (exchange rate and inflation) would reduce the degree of diversification of economies and this is consistent with the study of (Manuel R. Agosin, 2011). As for the variable per capita output. The indication of its parameter was positive, which means that an increase in per capita income may increase the degree of concentration of exports and this is consistent with the second stage of economic diversification concluded by (Imbs and Wacziarg, 2003) (where countries begin to specialize more after The first stage has a tendency to diversify its economy. As for the variables of investment and value added in the industrial sector, the results came in contradiction to many studies such as the study (ben hammouda and al, 2006). This may be due to the fact that developing countries pour their investments in certain sectors, increasing the degree of Her specialty.

As for the results of the (WALS) estimate, it is almost the same as the results of (BMA), as $|t - ration| = 10{,}12$ for the financial development variable and for the value added variable from the industrial sector, it was $|t - ration| = 9{,}29$ The third rank in order of importance is a governance variable where the $|t - ration| = 4{,}66$, then comes after that the exchange rate variable, where $|t - ration| = 4{,}43$, then the trade openness variable with $|t - ration| = 1{,}61$And the inflation variable with $|t - ration| = 1{,}39$.

6. CONCLUSION

This study attempted to research the determinants of export diversification in developing countries and emerging countries (151 countries) during the period 1996-2017 by using three main groups of explanatory variables: The set of economic reforms that includes the variables of trade openness and financial development are not affected by the export diversification process. Includes the per capita gross domestic product, the added value from the industrial

sector and capital accumulation, the macro-stability group, which includes the variables of inflation and the exchange rate, and the set of institutional variables that include the governance variable. Promoting the diversification of exports, while the variables of value added, total capital formation, and macro-stability variables have a positive relationship with export allocation, while the results of estimating the fixed effects model in the model that includes the per capita income variable in square measure showed that economic reforms have no effect On export diversification, the determining factors in export diversification are per capita income and capital formation No total, i.e. investments.

As for the results of the estimation of the Bayesian model averging (BMA) and (WALS), the results showed that the variables of governance policies (institutional variables) and total capital formation as a percentage of GDP as well as the added value from the industrial sector have a major role in increasing the degree of diversification of exports. The estimation results for both models also showed that the high macro stability variables (exchange rate and inflation) would reduce the degree of diversification of the economies. As for the variable per capita of the gross domestic product and the economic reform variables, they have an impact on increasing specialization. As for the investment and value-added variables in the industrial sector, their impact is different from what was expected, which increases the specialization process.

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APPENDICES

Table No. 01: Results of the first model estimation

set	variables	Pooled model	Fixed effects model	Random effect model
Constant	constant	0 ,096**	0,055	0,059
		(0,014)	(0,160)	(0,194)
Economic reforms	To	-0,0003*	0,00006	0,00001
		(0,095)	(0,802)	(0,967)
	Dcs	-0,0029***	0,0006*	0,0002
		(0,000)	(0,096)	(0,445)
Physical variables	Pib_hab	2.64e-06***	2.45e-06	2.64e-06
		(0,0000)	(0,459)	(0,320)
	Vai	0,005***	0,006***	0,006**
		(0,0000)	(0,000)	(0,000)
	Fbc	0,001	-0 ,0008	-0 ,0008
		(0,275)	(0,214)	(0,244)
Macro stability variables	Inf	0,00043***	-0,00006	-0,00004
		(0 ,0004)	(0,444)	(0,444)
	Tcer	0 ,001***	0,0006***	0,0007***
		(0,000)	(0,000)	(0,000)
Institutional variables	Gouver	-0,06***	-0,032	-0,051***
		(0,000)	(0,141)	(0,008)

The numbers in parentheses represent the p-values

***significant at the level of 1%, ** significant at the level of 5%, * significant at the level of 10%

Table No. 02: Results of the second model estimation

set	variables	Pooled model	Fixed effects model	Random effect model
Constant	constant	0 ,211***	0,07*	0,097**
		(0,000)	(0,097)	(0,044)
Economic reforms	To	-0,0002	0,0002	0,0001
		(0,191)	(0,324)	(0,604)
	Dcs	-0,002***	-0,00003*	-0,0001
		(0,000)	(0,929)	(0,690)

Physical variables	Pib_hab	-0 ,00001*** (0,0000)	0,00002*** (0,001)	0,00001** (0,032)
	Pib_hab2	7.31e-10*** (0,000)	-7.88e-10*** (0,000)	-4.13e-10** (0,031)
	vai	0,08*** (0,0000)	0,006*** (0,000)	0,006** (0,000)
	Fbc	-0,008** (0,016)	-0 ,006*** (0,001)	-0 ,006*** (0,001)
	Fbc2	0,0001** (0,018)	0,0001*** (0,003)	0,0001** (0 ,031)
Macro stability variables	Inf	0,0006*** (0 ,001)	-0,00006 (0,444)	-5.00e-06 (0,965)
	Tcer	0 ,0008*** (0,000)	-0,00009*** (0,000)	0,0007*** (0,000)
Institutional variables	Gouver	-0,003 (0,002)	-0,01 (0,004)	-0,0365* (0,06)

The numbers in parentheses represent the p-values

***significant at the level of 1%, ** significant at the level of 5%, * significant at the level of 10%

Table No03: BMA and WALS estimation results

set	variables	BMA estimation	WALS estimation
Constant	constant	0 ,115 (1,00)	0,128 (3,82)
Economic reforms	To	2.86e-10 (1,00)	2.68e-10 (6,73)
	Dcs	-0,005 (1,00)	-0,0006 (0,72)
Physical variables	Pib_hab	0,002 (1,00)	0,002 (-10,12)
	Vai	-0,067 (1 ,00)	-0,062 (-4,66)
	Fbc	-0,005 (1,00)	-0,005 (9,29)
Macro stability variables	Inf	0,0008 (0,99)	0,0008 (4,43)
	Tcer	0,0001 (0,36)	0,0002 (1,39)
Institutional variables	Gouver	0 ,00003 (0,11)	0,0003 (-1,61)

Values are in parentheses () in the BMA estimators column are the posterior inclusion probabilities, while the values in parentheses in WALS estimates express the statistic t value