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Research paper

The impact of financial convergence in the economic growth rates of the expansion countries in the euro area

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Abstract

The Maastricht Agreement included a set of financial and monetary standards that the expan-sion countries committed to implement to ensure economic convergence with the most ad-vanced countries in the European Union. The most important of these criteria is to maintain a moderate debt and deficit ratio to the GDP and to keep interest rates and inflation within a certain ceiling. The implementation of these standards even before joining the Federation in 2003 and it continues to date with the existence of relative differences between countries in the extent of their commitment to the proportions determined and according to the economic situation of both of them in particular and the global economy in general, and the current study was to measure the impact of the development The criteria for monetary and financial convergence referred to above are based on the economic convergence expressed in economic growth (per capita income growth) in seven of the expansion countries. A 13-year study period was adopted with the use of the cross-sectional approach to data processing. The research concluded that the application of convergence criteria In the seven expansion coun-tries contributed to the positive impact on economic growth.

Keywords: *Convergence; Economic Growth and Expansion Countries.*

1. Introduction

The Maastricht Agreement is the framework for the practical organization of the involvement of countries in the European Economic and Monetary Union (EMEA), particularly. The expansionist countries (Central and Eastern Europe), which have officially joined since May 2004: Cyprus, Czech Republic, Estonia, Hungary, Malta, Latvia, Lithuania, Poland, Slovakia and Slovenia. "These countries have been forced to go through another transition period of at least two years to meet the Maastricht criteria so that they can join the European Economic and Monetary Union fully. During this period, Through the European Union's program of assistance for countries in transition. Among the most important means of support was the payment of foreign investment to replace financial aid. The issue of the accession of these countries has aroused great controversy in the local and international circles. In the view of the supporters that the accession of these countries to the Economic and Monetary Union Can be a framework for deepening the process of integration in Europe. The initial preparation of monetary and economic union in the 1990s and the experience of creating the euro, which deepened the degree of integration among European countries, support the validity of this vision. In the long run, but the crises that the Union has faced in recent years, especially with regard to the debt crisis, led to the introduction of new visions focused on the importance of gains made by the expansion countries compared to the dominant countries in the Union (Germany and France), which applied difficult conditions and made And the current research is an attempt to extrapolate the fact that the criteria of monetary and monetary convergence applied by the expansion countries have an impact on the economic rapprochement with the developed countries in the Union. The problem of research: As part of its application of the convergence criteria, the EU enlargement countries faced many obstacles arising from differences in their economic structure and away from the system of economic freedom, which they tried to enter through economic reform programs and the criteria of convergence are instruments of economic reform from the point of view of their authors. The question raised here is whether the countries of expansion by applying monetary and financial convergence standards have achieved real economic convergence with the more advanced countries of the European Monetary Union? This is what the research will try to answer by measuring the impact of these standards on economic growth in the expansion countries.

Research Objectives: The research aims at the following:

1) Clarification of the criteria of economic convergence.
2) Analysis of the development of convergence criteria in the expansion countries for the period 2003-2015
3) Measuring the impact of financial and monetary convergence criteria on economic growth in the countries of expansion for the period 2003-2015. The hypothesis of the research: The research starts from the hypothesis that the criteria of financial and monetary convergence have positively affected the real economic growth rates of the expansion countries of the European Monetary Union. Methodology: In order to reach the goal of the research, the research followed the method of extrapolation based on reaching the conclusions of the holistic partial introductions through the use of quantitative methods to measure and analyze the available data. The second axis deals with the analysis of the development of economic growth and the convergence criteria in the countries of expansion for the period 2003-2015. The third populace has also measured the impact of the standards of financial and monetary convergence On

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economic growth in the expansion countries. The research included a set of conclusions and recommendations.

2. Convergence indicators according to the Maastricht treaty and previous studies

Indicators of convergence in accordance with the Maastricht Treaty.

In the context of the organization of the economic situation within the European Union, the Treaty of Maastricht was agreed in 1992, in light of which it became incumbent on the newly entering countries to adhere to the implementation of a package of economic reforms in the real aspects, financial and monetary. The vision in this area was based on the fact that economic convergence represents The main objective of these measures, which requires the achievement of a set of monetary and financial convergences, which represent the intermediate objectives of this approach, which was designed to the maximum limits of macroeconomic variables cannot be exceeded and obligates countries to apply and return to them within the framework of periods Time. The most important criteria for convergence can be mentioned as follows:

2.1. The criterion of the ratio of deficit to GDP

This criterion is based on the objective of the financial balance that can be achieved by making the state expenditure compatible with its resources. The limits of this criterion is that the budget deficit does not exceed 3% of GDP in any country. The target here is unjustified public expenditure, which has no real impact on growth Which means that the expenditure of any country must be linked to the proceeds of its revenues, which depend on the growth of its output, which makes the state concerned to increase the efficiency of the availability, and the creation of the balance of reform to address the imbalances and leaks of public spending, and raise their ability to collect revenue, Increasing the efficiency of tax monitoring, limiting the tax community and increasing the dependence on real resources by raising the efficiency of the public domain, which is an important source of financing for the expansion countries, which can contribute to reducing their dependence on taxes in financing the budget, which preserves the individual and collective motivation for investment and increases the strength of impact On economic activity, all of which result in the efficiency of the financial system and thus the economic well-being required [Richard and Charles, 2012, 437].

2.2. The ratio of public debt to GDP

It is also a financial criterion concerning the ability of the state to serve its debt and not to allow it to take an explosive course. Public debt should not be viewed as a mere balance that the state pays. It is a tool for developing the state's performance and supporting its economic growth. And maintain financial sustainability through good public debt management that requires the need to take into account the proportionate relations between the balance of debt and the ability of expenditure and income to bear the burden, and the limits of this criterion is that the public debt does not exceed 60% of GDP at constant prices [Stephanie, 2011, 12] It aims to expand the financial capacity of the And to ensure financial and monetary stability in the future, especially with the countries of the Union to abandon part of the independence of monetary and financial decisions and part of their sovereignty in this area, and took this criterion as a ratio to the fixed GDP to ensure that inflation is not dominated by the state to pay the public debt, Countries do not resort to inflation as a tool to increase public spending [Richard and Charles, 2012, 438].

2.3. The standard of inflation to GDP

This criterion is designed to preserve the monetary stability in which the balance of gains can be maintained for the privileged countries of the Union. The limits of this criterion are that inflation in the economies of the major countries, especially the expansion countries, does not exceed 3% per annum [Stephanie, 2011, 12]. The relative stability of the purchasing power of the euro ensures that it becomes an important source of international liquidity and an important reserve for the central banks of the world. In fact, this criterion includes a dynamic balance that addresses the imbalances in production systems, marketing, financing and human resources as well as its ability to empower the system. Cash In fact, this indicator is a cornerstone in the construction of European monetary union, whose framework and environment are related processes of economic integration based on their precise calculations on the Economic references are reverberated to judge the viability of achievement, including inflation, unemployment and economic growth [Richard and Charles, 2012, 436]. For example, the lower the inflation rate, the more attractive the economy is. His work and productivity, and the more the community felt the value of his achievements.

2.4. Interest rate criterion

This criterion is that the nominal interest rate of long-term lending does not exceed 7.5% per annum. This standard supports two main objectives: First, to give preference to investment in investment projects rather than bank savings in order to Guaranteeing real financing for investment activities; and secondly, ensuring a stable and stable internal and external financing area. This standard complements the previous standard in order to ensure financial and monetary stability by combating the deflationary effects associated with high interest rates, Continuous self-propulsion towards more active investment [Richard and Charles, 2012, 436].

2.5. The standard of independence of the central bank

Is one of the practical and practical monetary criteria that the central banks of the countries wishing to join should be completely independent from the government in its monetary policy. The central bank in any country should not be subject to Sultan except the authority of science, experience, know-how, [Stephanie, 2011, 23]. This is one of the most dangerous and important criteria which is a precondition for the entry of the State into the euro system because it concerns With the acquiescence of the Member State A financial and monetary burden over its sovereignty is the rule of the ECB, and thus it abandons the issuing operations and the management of monetary reserves as well as abandoning the management of monetary policy with its partial components because the comprehensive view of the interests of the euro zone may impose monetary measures to deepen and build monetary union, An interactive and interactive feature that will be done by the European Central Bank [Richard and Charles, 2012, 441].

2.6. Time-weighted criterion

This criterion provides for an appropriate period of time for the requesting country to review its status, so that its entry into the euro area is not merely momentary, or temporary, temporary and expedient interest considerations. This criterion states that "the application for the state's accession to the euro shall be studied within two years, (Richard and Charles, 2012, 441), as well as their general economic conditions "This criterion allows for more time to study and analyse, to determine the content and content, and to explore what It is hidden and unclear to the villagers Or do they really want to support the European Union, or do they wish to put obstacles and obstacles in front of them, while at the same time allowing the State to adjust its situation before entering the system and carrying its burdens and costs, especially that entry into the system will restrict The state's freedom and its financial and monetary apparatuses and limits its ability to choose the appropriate fiscal and monetary policy, both in general and in particular if it is exposed to a sudden crisis [George, 2004, 92] and will

therefore be forced to follow fiscal and monetary policies imposed upon it .

3. Review previous studies

A study entitled "Experimental analysis of the effects of trade openness in economic growth: a guide to the countries of South-Eastern Europe" was conducted by Merale Fetahi-Vehapi, Luljeta Sadiku and Mihail Petkovski. The purpose of this study is to analyze the effects of trade openness on the economic growth of the countries of South-Eastern Europe. Although countries at different stages of development and integration with the EU, differences in trade openness are not highlighted. Its trade policies have tended towards regional trade cooperation, as well as integration into the global economy. The empirical analysis of this study includes 16-year data for 10 Central and Eastern European countries from 1996 to 2012. The system uses the standard method of estimation, including homogeneity problems. The growth rate in the sample countries depends on trade openness and a range of regulatory variables such as: the initial level of per capita income, human capital, the composition of total reform capital, foreign direct investment, the labor force and a number of variables of interaction with trade openness. The results of the assessment indicate that there are positive effects of trade openness on economic growth, primary per capita income and other explanatory variables, and trade openness is more beneficial for countries with higher per capita primary incomes, as well as trade openness for countries with higher levels of foreign investment Direct and high fixed capital formation.

4. Analysis of the development of economic growth and convergence standards in the countries of expansion for the period 2003-2015.

In 2003, the countries of expansion officially joined the European Union. These countries have successfully completed their two years of testing and have been approved at different intervals. The time standard of the Maastricht Treaty has been exhausted by the expansionist countries. The Central Bank of Europe, which exempts them from the criterion of independence of the Central Bank has, as for the monetary and financial standards four, it has seen a commitment by the expansion countries in different rates and depending on the economic situation experienced by the State and in terms of economic growth during the previous period The rate of economic growth and the four convergence criteria in the seven selected sample countries, which are Estonia, Poland, Czech Republic, Slovakia, Slovenia, Lithuania and Henkaria, for the period 2003-2015, have fluctuated.

4.1. Economic growth in the expansion countries

The growth rate of gross domestic product (GDP) at constant prices is an important indicator of the extent of the economic development that the countries of expansion require from sustained growth and high rates in order to achieve economic rapprochement with other countries in the European Union. Table 1 shows the evolution of this index in the expansion countries before and after accession And for the period 2001-2015, we note through the table that three countries were able to achieve better growth rates after accession and during the period 2004-2009, which are Poland, the Czech Republic and Slovakia, while growth rates fell from the previous (before accession) to the remaining countries, Growth rates are declining for you For the period 2010-2015 with the exception of Estonia, which improved its position over the previous period (2004-2019). The reason for this is that the effects of the global financial crisis on this country were very serious as its growth in 2009 declined to -14%. (2004-2009, 2010-2015). The Czech Republic recorded the highest rate of growth (7.4%) after the entry of the Union, and the most affected countries to enter Slovenia, where growth declined for the next two periods and to reach (0.5%) for the last period, on the whole it can be said that there is a relative difference in the effects of accession to growth Economic growth in the countries of expansion stems from the nature of their economies and the stage of development and the level of competitiveness and the extent of their ability to attract investments and benefit from the transfer of production elements and the expansion of markets

Table 1: Real GDP Growth Rates in the Expansion Countries for the Period 2001-2015[Based on Data from the European Central Bank and the World Bank]

Variables Countries	2001-2003	2004-2009	2010-2015
Estonia	7.7	-0.05	3.7
Poland	2.2	4.7	2.7
Czech Republic	2.7	4.7	0.9
Slovikia	4.3	7.4	2.6
Slovenia	3.2	2.8	0.5
Lithuania	7.9	7	4.4
Hungary	4.3	2.6	1.6

4.2. Evolution of the deficit index in the expansion countries

As mentioned above, the standards of financial convergence produced by the Maastricht Treaty imposed a ratio of the total deficit in the general budget not exceeding 3% of GDP. Fig. 1 illustrates the fluctuations in the deficit to GDP ratio in the EU enlargement countries for the period 2003-2015, Countries except Hengaria have been able to adhere to this standard and achieved convergence in this area until the global financial crisis in 2009, Estonia is characterized in this period from the rest of the countries that were able to achieve surplus for the years 2004-2007 and even in the years of the crisis was not affected significantly as in other countries, Hengaria was distinguished by the fact that it exceeded the limits of this criterion The deficit ratio is high until it reached 9.3% in 2006, but this country has been able to return to the limits of this standard for recent years, as the deficit did not exceed 3%, and under the pressure of the global financial crisis has returned this ratio to rise for all countries of expansion and most affected Lithuania, Has 10% in 2009 and since 2012 most countries have returned to comply with the ceiling of this standard except for Slovenia, which was exposed to a financial crisis raised its deficit to 15% in 2012 and then returned to decline for the next two years, generally note that all expansion countries worked on Commit to it and return to it after the crisis money Of the world.

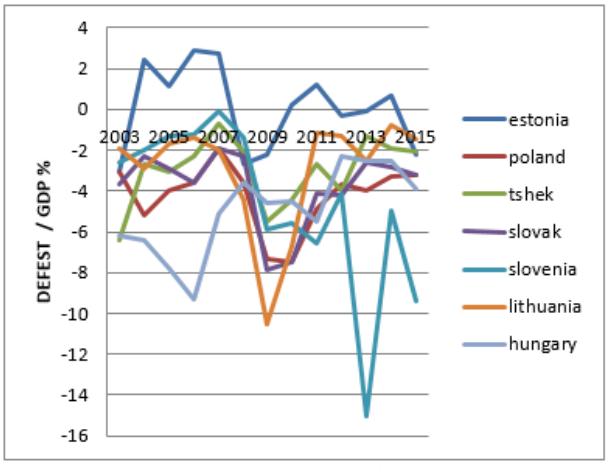


Fig. 1: Iillustrates the Fluctuations in the Deficit to GDP Ratio in the EU Enlargement Countries for the Period 2003-2015[from the Work of Researchers Based on the Results of Excel].

4.3. Evolution of the ratio of public debt to GDP in the expansion countries

In light of this criterion, countries are committed not to allow the ratio of public debt to GDP to exceed 60%. Figure 2 illustrates the changes in this standard in the countries of expansion during the period 2003-2015. It is clear from the figure that all countries committed to this standard during 2003 2008, before the global financial crisis, with the exception of Hungary, whose economy was suffering from major problems arising from the poor performance of economic stabilization and adjustment programs. However, after the global financial crisis, this criterion took an upward trend for all countries, which exceeded three of them to the assessed rate represented by Hungary and Slovenia Estonia has exceeded 100% for the last three years because of the economic crisis that passed in 2012, while the ratio exceeded 80% in the other two countries, Lithuania is the best countries in this standard, where the percentage did not exceed more than 40% in the most difficult circumstances and this is due to the nature of this economy The country and the resources available to it and the success of its reform programs. Poland is the most stable among the other countries of convergence in this standard as its debt ratio is between 40-45% as shown in Fig. 2

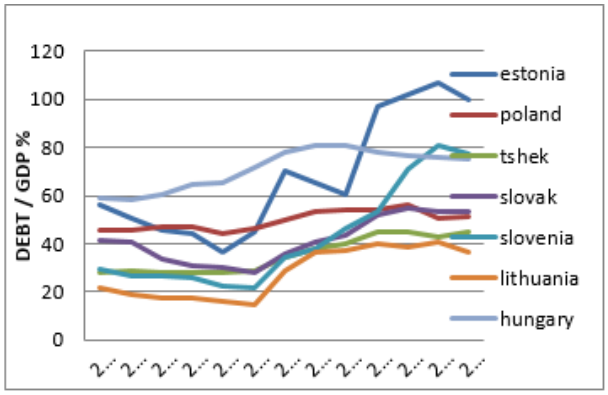


Fig. 2: Poland Is The Most Stable among the Other Countries of Convergence in This Standard as Its Debt Ratio is between 40-45%.

4.4. Evolution of the inflation rate in the expansion countries for the period 2003-2015

In light of the Maastricht Treaty, the expansion countries committed themselves to inflation rates by 3% in order to preserve the value of the euro, consolidate its position in international liquidity and stabilize prices within the euro zone. Fig. 3 illustrates the evolution of inflation rates in the expansion countries during 2003 In which we note that Poland was the most committed to this standard, which exceeded the limit only in 2008, the year that saw a marked rise in inflation rates in most countries of the world, including the countries of expansion in the European Monetary Union, and the decline in inflation significantly In 2009 in all the expansion countries b The reason for the global financial crisis. Estonia and Lithuania experienced the highest rates of inflation in the countries of expansion. These rates recorded more than 11% in 2008. Hungary could not meet this criterion in only two years (2005-2006). Inflation rates remained at more than 4% % For all years of schooling, including 2009 (the year of the global financial crisis). In general, most countries have achieved or approached this standard, especially in recent years.

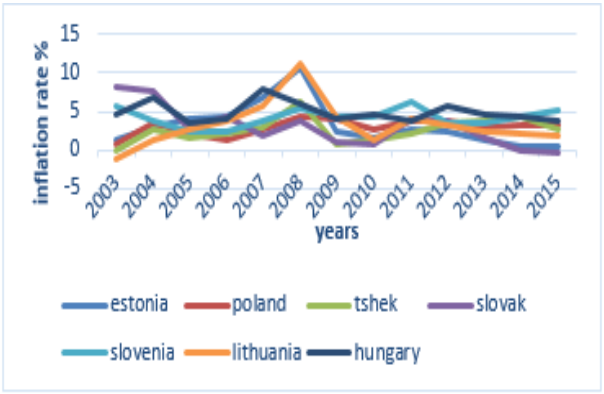


Fig .3: Illustrates The Evolution Of Inflation Rates in the Expansion Countries During 2003.

4.5. Evolution of the interest rate criterion in the expansion countries for the period 2003-2015

Under the terms of the Treaty of Maastricht, the commitment of countries wishing to join the European Monetary Union at nominal interest rates of no more than 7% in order to guarantee savings and not to exit the money from within the Union on the one hand and not to raise the cost of investment on the other. Fig. 4 shows the evolution of interest rates in countries Expansion After joining the European Monetary Union from 2003 until 2015, we note from the figure that five of the expansion countries under study fully adhered to this criterion throughout the period 2003 - 2015. It is clear that the dominance of the European Central Bank and the abandonment of monetary policy by the EU countries Help keep And Lithuania and Hungary were not able to comply with this standard, especially at the beginning of accession due to instability in their parallel markets and the continued sharp speculation in their financial markets. The two countries were able to comply with the standard after 2009. Hungary fully committed until 2015 When Lithuania committed itself in 2010-2011 and out of compliance in 2012 due to the local economic crisis that hit the country and then re-established commitment in the subsequent years. In general, this is a criterion for countries to expand better than other standards and this is due to the authority of the European Central Bank to influence their interest rates.

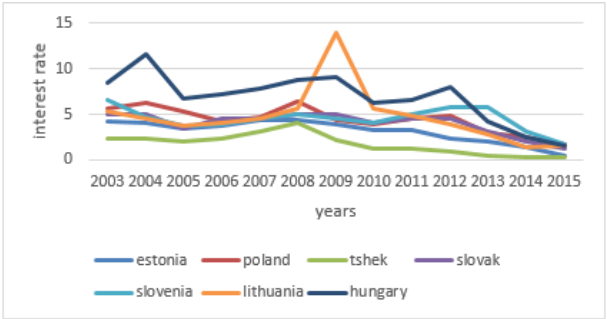


Fig. 4: The Evolution of Interest Rates in Countries Expansion after Joining the European Monetary Union from 2003 until 2015[from the Work of Researchers Based on the Results of Excel].

5. Measuring the impact of indicators of convergence in the economic growth of the countries of expansion for the period 2003-2015

5.1. The mechanism of the operation of the series of the series

The research in this axis seeks to prove the existence of an effect relationship between the criteria of financial and monetary convergence applied by the expansion countries and economic growth

in which we will prepare here as a dependent variable. In order to estimate the relationship, the research will be based on the Method Panel Data because of its information content As well as its ability to reduce measurement problems, especially the problems of heterogeneity and heterogeneity, multicolinarity, and the general format of data data can be clarified as follows[Shorbagi, 2011, 15]

$$Y_{It} = B_{0(i)} + \sum_{j=1}^{k} B_J X_{J(it)} + \varepsilon_{it} \quad (1)$$

Where: i = 1, 2, N, t = 1, 2 ..., T

Y = the value of the dependent variable in view i and at time t.

B_0 (i) = the value of the intersection parameter in the view i.

B_J= the value of the slope parameter.

At the time period i in the view j = the value of the independent variable X (J) it
At the time period i = the error value in the view ε_{it} It is worth noting that the Penal Data method includes three models:

5.1.1. Pooled regression model

According to this model, the constant boundary parameter B0 and the B_J slope parameter are the same for each model vocabulary and the mathematical formula is as follows[Alexiou, 2001: 5-6]

$$Y_{It} = B_0 + \sum_{j=1}^{k} B_J X_{J(it)} + \varepsilon_{it} \quad (2)$$

This model assumes the homogeneity of the random error variance of the vocabulary, and the method of the lower squares can be used in estimating the parameters after the order of the values of the dependent variable and independent variables.

5.1.2. Fixed effects model

This model is used when there is a difference between the vocabulary of the form so it is necessary to know the behaviour of each individual by making the parameter of constant B0 vary from one to another with the slope parameter B_J constant, that we are in a state of instability homogeneity of the variance between the vocabulary, The sport of this model also comes[Gujarati, 2003: 675]

$$Y_{It} = B_{0(i)} + \sum_{j=1}^{k} B_J X_{J(it)} + \varepsilon_{it} \quad (3)$$

The effects in this model are expressed in constant because B0 does not change any cross-sectional data over time, and the use of dummy variables is repeated, whereby the constant parameter is allowed to change between the computed totals and only then can we use the lower-squares method.

5.1.3. Random effects model random effects model

In this model, the constant parameter B0 is treated as a random variable of μ, so the random effects model takes the following formula[Gujarati, 2003: 677]

$$Y_{It} = \mu + \sum_{j=1}^{k} B_J X_{J(it)} + \nu_i + \varepsilon_{it} \quad (4)$$

Where ν_i represents the error limit in the CTI data set, and the Generalized Least Squares method is usually used to estimate the parameters of this model. In order to distinguish between these models, two basic tests, Breusch and Pagan, are used to differentiate between the three models (complex, constant and random), a test of the approximation of model coefficients in the individual dimension, which helps to determine the possibility of specificity of each individual in the model under study. For differentiation between the model of static and random effects.

5.2. Build a search form

The study covered seven European Union enlargement countries whose data were obtained from the European Central Bank (ECB). The data covered the period 2003-2015, ie thirteen years, which began in 2003, the year in which these countries actually entered the European Union and became subject to convergence criteria Which is based on the Maastricht Treaty. Based on this, the research seeks to construct a model to estimate the effect of four of the main financial and monetary convergence criteria on economic convergence represented by the real GDP growth rate. = 7) and (t = 13) Here will be the formulation of the model equation first, then move on to tests Alastaqrarah joint integration of data, estimate the relationship using the three models and Penal Data differentiation between them as follows:

5.2.1. Formulation of the estimation equation

Using a cross-sectional data of the seven countries under study and a time series spanning 13 years, using four independent variables and a dependent variable, the equation of the model appeared as follows

$$GROTHit = \beta 0 + \beta 1DEBT + \beta 2DFEST + \beta 3INTEREST + \beta 4INFLATION + \varepsilon_{it} \quad (5)$$

i = 1 , 2 , ……..N t = 1 , 2 , ……T
Whereas:-
i = Country, N = Number of countries of study sample, t = time, T = number of views.
β1 β2 β3 β4 = slope parameters, β0 = constant parameter.
GROTH = GDP growth rate at constant prices.
DEBT = Public debt as a ratio to GDP.
DFEST = Gross Deficit as a ratio to GDP.
Interest rate.

5.2.2. Stability tests and joint integration

The results of these tests are used in the cross-sectional data to determine the availability of unit roots or not in the data under study. Table 2 shows the stability of the cross-sections of GDP growth, debt ratio and interest rate in the first difference. , While the fractional series of the deficit and inflation at the level (0).

Table 2: Tests for LLC, IM, ADF, and PP to Measure the Stability of the Series Data of the Sample Countries the Work of the Researchers Based on the Results of the Statistical Program Eviews. 9

One Deference |(1)	At Level |(0)	Type of Test	Variables
١٠,٠٠٧٩- (٠,٠٠٠٠)	٢,٠١٩٤- (٠,٠٢١٧)	LLC	
-6.72577 (٠,٠٠٠٠)	-0.52270 (0.3006)	IM	
62.1269 (٠,٠٠٠٠)	14.6525 (0.4023)	ADF	Groth
102.567 (٠,٠٠٠٠)	21.7419 (0.0841)	PP	
٤,٠٩٣٩٩- (٠,٠٠٠٠)	٠,٤٠٣٥٠- (٠,٣٤٣٣)	LLC	
-2.26019 (0.0118)	1.86831 (0.9541)	IM	
25.6570 (0.0286)	6.44203 (0.9541)	ADF	Debt
26.8995 (0.0198)	3.59874 (0.9974)	PP	
-	-4.46822 (0.0000)	LLC	
-	-2.13394 (0.0164)	IM	
-	26.6629 (0.0213)	ADF	DfESt
-	24.9189 (0.0354)	PP	
-8.44180	1.52498	LLC	Interest

(0.0000)	(0.9364)		
-5.18816 (0.0000)	1.47798 (0.9303)	IM	
49.9391 (0.0000)	10.6369 (0.7143)	ADF	
53.4937 (0.0000)	6.12096 (0.9633)	PP	
-	-5.68734 (0.0000)	LLC	
-	-3.65984 (0.0001)	IM	Inflation
-	37.2078 (0.0007)	ADF	
-	41.8445 (0.0001)	PP	

By moving to the joint integration of the cross-sectional data of the sample countries, some of which have been shown to be integrated in one degree, which requires the possibility of joint integration, we often note a Pedroni Residual Cointegration Test, which focuses on testing the unit root of the condom It is based on the test of eleven parameters, and we accept the alternative hypothesis H1 (which means co-integration) if at least six of them have a significant level of less than 5%. Table (2) shows the results of the joint integration of the sample.

Table.3: Pedroni Test Results for the Co-Integration of the Cross-Sections of the Convergence Variables of the Expansion Countries the Work of the Researchers Based on the Results of the Statistical Program Eviews. 9

Pedroni Residual Cointegration Test				
Series: Debt Defst Groth Infltion Interest				
Date: 01/11/18 Time: 11:45				
Sample: 2003 2015				
Included Observations: 91				
Cross-Sections Included: 7				
Null Hypothesis: No Cointegration				
Trend Assumption: No Deterministic Trend				
User-Specified Lag Length: 1				
Newey-West Automatic Bandwidth Selection And Bartlett Kernel				
Alternative Hypothesis: Common Ar Coefs. (Within-Dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel V-Statistic	-1.267676	0.8975	-1.438900	0.9249
Panel Rho-Statistic	1.192611	0.8835	1.726033	0.9578
Panel Pp-Statistic	-0.605809	0.2723	-0.315375	0.3762
Panel Adf-Statistic	3.501143	0.9998	1.682045	0.9537
Alternative Hypothesis: Individual Ar Coefs. (Between-Dimension)				
	Statistic	Prob.		
Group Rho-Statistic	2.893337	0.9981		
Group Pp-Statistic	-1.294923	0.0977		
Group Adf-Statistic	2.118638	0.9829		

The results of Table .3 indicate that there is no common integration between the integrated variables of the same class which is the growth rate, the debt ratio and the interest rate. According to the Pedroni test, all the statistics were insignificant. This means accepting the null hypothesis H0 that there is no cointegration vector The studied data.

5.2.3. Estimation using the three panel data models

Table.4: Results of Estimation Using Three-Stranded Models (RFM, FEM, PRM) from the Work of the Researchers Based on the Outputs of the Statistical Program Eviews. 9

at constant cost GDP and variable = growth ratio			
(N = 7) at (2003-2015)(T = 13) (sum view=91)			
Random Effects Model	Fixed Effects Model	Pooled Regression Model	Dpendent Vareables
7.175430 (٧,٥٠٢)	6.033257 (5.987)***	7.175430 (4.225)***	CONSTANT
-0.066211 (-٤,٦٩٦)	-0.052140 (-2.929)***	-0.066211 (-4.225)***	DEBT
0.211288 (١,٩٠٣)	0.007405 (0.057)	0.211288 (1.713)*	DFEST
-0.394189 (-٢,٧٠١)	-0.556251 (-3.288)***	-0.394189 (-2.430)**	INFLATION
0.344806 (٢,٣٣٨)	0.425708 (2.198)**	0.344806 (2.104)**	INTEREST
0.241	0.471	٠,٢٤١	R^2
0.205	0.356	٠,٢١١	Adjusted R^2
(٦,٨٢٤)***	(٤,١٢٣)***	(٦,٨٢)***	F – Statistic
Prob of (F- Statistic) ، Prob of (t- Statistic) (%١٠ *) (%٥**) (%١***) =			

5.2.4. The trade-off between the three panel data models

In order to determine the appropriate model for estimating the relationship of available data on the convergence and growth of the sample countries, it will be necessary first to make a distinction between the cumulative and constant model. If the preference of the aggregate model is to be chosen, Randomization through the Hausman test can clarify the checksum trade off as it comes: -
Test 1: Test using Fisher
The heterogeneity means that there is a correlation between the parameters of the constant for all countries of the sample. However, the heterogeneity is because the different parameters differ from one country to another because of the different variables that affect the economic growth of each. The following is the law necessary to extract statistics F- Statistic

$$F = \frac{(R^2_{FEM} - R^2_{PM})/(N-1)}{(1 - R^2_{FEM})/(NT - N - K)} = \frac{(0.471-0.241)/(7-1)}{(1-0.471)/(91-7-4)} = 5.791$$

Whereas: R^2_{FEM} = Fixed form selection factor.

R^2_{PM} = Determination factor for the aggregate model.

Here, the acceptance of nullification means that the model is homogeneous, that is, there is a common common parameter for all countries, and then the aggregate model is the best. After calculating the F statistic according to the above law, it was (5,791) greater than F (N-1, NT-NK) We reject the null hypothesis 0H and accept the alternative hypothesis H1, which says heterogeneity, ie, there is a definite parameter for each country. This means that the static effects model is the most acceptable of the aggregate model.
The second test: the Hausman test
The standard analysis indicates that the inverse effects are more appropriate than the random effects of the cross-sectional data. In order to ensure this, the Hausman test is often used to select one of the two models. This test compares the null hypothesis with the alternative hypothesis, which is formulated as follows

$$H_0 : E\left(\frac{\beta_i}{X_i}\right) = o$$

$$H_1 : E\left(\frac{\beta_i}{X_i}\right) \neq o$$

Acceptance of the null hypothesis H_0 means acceptance of the random effects model, which requires its estimation using the GLS method. Acceptance of the alternative hypothesis H_1 means acceptance of the fixed effects model, which can rely on the traditional OLS method, This test is based on the Kay statistic (2), where the calculated value is higher than the tabular value. We reject the null hypothesis and accept the alternative hypothesis. Table 5 shows the results of the Hausmann test.

Table 5: Hausman Test Results from the Work of the Researchers Based on the Outputs of the Statistical Program Eviews. 9

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	27.212963	4	0.0000

The results of the Husman test in the table above show a statistical significance of ki squared at 1%. This means rejecting the null hypothesis H0 and accepting the alternative hypothesis H1, which means that the static effects model is the best in estimating the current data. Interpret the estimation results using the Fixed Effects Model. Based on the above Table .5 and using the fixed-effect model, the formula for estimating the model was as follow:

GROTHit = 6.033 – 0.052 DEBT + 0.007 DFEST + 0.426 INTEREST – 0.556 INFLATION (5.987) *** (-2.929) *** (0.057) (2.198)** (-3.288)***

R2 = 0.471 Adjusted R2 = 0.356 F – Statistic = (٤,١٢٣) ***

The results of the estimation of the effect of the monetary and monetary convergence criteria on the GDP growth rate in the EU enlargement countries indicate the importance of other factors and the economic conditions of any of these countries in influencing the economic growth. Therefore, the fixed effects model was elected because it represents the true crossing point for this situation The value of the coefficient of determination (R2) shows the strength of the effect of the independent variables, which were able to explain about 47% of the changes in economic growth in the sample countries, Variable The value of the F statistic was significant at 1%, indicating the success of the model as a whole, and the value of the constant was significant at 1%. This enhances the role of other factors in influencing the growth in the expansion countries and moving to the effect of the ratio of debt to GDP We see that it is the other was significant and negative in reference to the reverse relationship between public debt and economic growth and this corresponds to the economic theory and with the vision of the Maastricht Treaty in determining the public debt to support growth, and the parameter of the ratio of deficit to GDP has emerged with a negative value and this is contrary to the logic of modern theory, Not significant any that The variable did not have an impact on the growth in the eye countries during the study period. Turning to the interest rate parameter, we note that it has emerged with a positive value and a significant level of 5%, which means that the increase in interest rates within certain limits stimulates growth in the expansion countries because it works to attract foreign capital Which is an important source of funding for the growth of the real sector of these countries and this is what the Treaty of Maastricht sought and helped the dominance of the European Central Bank on this indicator to keep it within the ceiling of the positive impact, and go to the parameter of inflation we note that it has emerged with a negative value and a level of 1% Economy Friendly and supports the Maastricht Treaty, which tried to restrict inflation within the ceiling of 7% to support economic growth in the countries of expansion.

6. Conclusions

1) The expansion countries of the European Union differed in their adherence to the monetary convergence criteria agreed in the light of the Maastricht Treaty. However, as a general trend, all the countries in the sample studied were highly committed, especially in the debt ratio index, which was only exceeded by Slovenia in the three recent years.
2) Because of the financial crisis, there were violations of the criteria of financial convergence in most countries of the sample, especially with regard to the percentage of deficit to GDP, but most of them were able to overcome the crisis and return to comply with the standards mentioned for subsequent years.
3) The countries of expansion witnessed a good and moderate growth before the global financial crisis in 2008 ranged between 3% - 9%, but the years after the crisis did not witness such growth of the sample countries, not more than 4% at best, and the debt crisis experienced by countries The European Union and the European Central Bank's focus on inflation targeting is a major factor in the continued decline in growth rates.
4) The standard results indicate the specificity of each country in expanding the other factors specific to its economic growth, which is normal given the difference in resources, level of progress and competitiveness.
5) The two variables of convergence, the ratio of debt to GDP, and the rate of inflation in line with the Maastricht trends, are consistent with the need to adhere to a certain ceiling to support economic growth in the expansion countries. The results of the assessment showed negative and significant impact on economic growth in the sample countries.
6) The standard results showed that the variable interest rate was significant and in direct correlation with economic growth. It is clear that the tight measures of the ECB contributed to obligating the sample countries to maintain the value of the euro. European Central Bank, which worked to keep it within the ceiling of positive impact and this, supports the hypothesis of research.
7) There was no effect on the economic growth in the expansion countries as a positive and insignificant value.

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