Discussion Paper Series, **21**(1): 1-18

Debt-led convergence in the European Union

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Abstract

This paper argues that the highly celebrated EU process of convergence with respect to development levels has been driven by the accumulated debt of the European Periphery. Using panel data for the pre-crisis period and a 2-stages econometric approach that decomposes public debt to a 'targeted' and a 'non-targeted' part, the paper provides evidence that challenges the mainstream growth paradigms. First, when the effect of a debt-led fiscal expansion is included in the standard convergence model, the market based process of integration appears to be strongly associated with increasing inequalities among EU member states, casting some doubt to the ability of the current EU model to generate inclusive growth and convergence. Second, the model provides evidence that 'targeted' public debt related to public investment and public services contributes to growth and convergence in the EU, while 'non-targeted' public debt related to clientele practices is related to divergence. The results of the paper reveal the limits of the current model integration in the EU and raise serious questions about the effectiveness of the debt-management and austerity policies that have been implemented during the crisis.

Key words: *Public debt, economic growth, convergence, EU, panel data*

June 2015

Introduction

The debt crisis that has erupted in 2010 in the old European Periphery[1] has triggered an intense debate with respect to the management of public debt in the debt-burdened EU countries. Critical elements of this debate have been the austerity and reform programs implemented in these countries, often with international supervision, and a negative rhetoric in the international media and the international organizations pointing to irresponsible behavior with respect to public spending. Yet, the 'black ships' of the recent years, often called 'PIIGS' from the initials of the countries in trouble (i.e. Portugal, Italy, Ireland, Greece and Spain), have been the celebrated 'success stories' of the European Commission a few years ago, as their GDP per capita was converging relatively fast to the EU average. This is a noticeable inconsistency that ought to be examined with caution. It is rather unlikely, in a short period of about 10 years, the same countries to be both 'success stories' of convergence (and a proof that EU integration works for all) and 'black ships' of macroeconomic mismanagement. Interestingly, the literature did not pay much attention to this paradox and the discussion turned to the estimation of the 'safe' level of debt for a country. A body of empirical literature emerged dealing with the impact of the level of public debt on growth performance, and providing typically evidence for the existence of a negative link.[2]

The seminal study of Reinhart and Rogoff (2010a and 2010b), in particular, placed the empirical investigation of the impact of public debt on economic growth in the spotlight, indicating that public debt exerts a negative impact on growth above the debt-to-GDP threshold of 90%.[3] Providing support for austerity policies, the findings of Reinhart and Rogoff (*Ibid.*) brought to the forefront a question of extreme importance, in the light of the on-going economic crisis: Are high levels of public debt harmful for economic growth? Posing the same empirical question, a series of studies (Checherita and Rother 2010, Kumar and Woo 2010, Cecchetti et al. 2011, Baum et al. 2012, Checherita-Westphal and Rother 2012, Égert 2012, Elmeskov and Sutherland 2012, Minea and Parent 2012, Padoan et al. 2012, *inter alia*) suggest, usually deploying panel growth models, that the typical turning point beyond which public debt negatively affects growth ranges between 50% and 100%. Yet, the discussion on the relationship between public debt and economic growth, in advanced countries, has become, particularly, animated

[1] European Union is in the middle of socioeconomic storm as the crisis is still in full swing. For an extensive discussion about the roots and causes of the current economic crisis, see, *inter alia*, Crotty (2009), King et al. (2012), Lin and Treichel (2012), Bellofiore (2013) and Panico and Purificato (2013).

[2] See Checherita and Rother (2010) and Panizza and Presbitero (2013) for a thorough survey.

[3] Reinhart and Rogoff (*Ibid.*) incorporate data on 20 advanced countries, over the period 1946-2009. Presenting four debt-to-GDP categories (i.e. ≤30%, 30–60%, 60–90%, and >90%), and comparing average real annual GDP growth rates across each category, they argue that: (a) the relationship between public debt and long-term growth is weak at 'normal' debt levels (i.e. for debt-to-GDP ratios below the threshold of 90%), and (b) above the threshold of 90%, the average real annual GDP growth rate is -0.1%.

by the study of Herndon et al. (2013 and 2014). Casting strong doubts on the effectiveness of austerity policies in order to overcome the economic crisis[4], Herndon et al. (*Ibid.*) provoked the debate (Égert 2013, Herndon 2013, Lof and Malinen 2013, Panizza and Presbitero 2013, Pollin and Ash 2013a and 2013b, Reinhart and Rogoff 2013a, 2013b and 2013c, *inter alia*).

As the debt-growth nexus receives a renewed interest, in both academia and policy-making, the present study offers an alternative perspective and brings to the forefront another salient – inextricably related though highly neglected – question: Is convergence, among the EU countries, debt-led? Such a question is never made explicit. This is so as convergence models have been tested in a way that does not make clear whether (or to what extent) convergence occurs because of market forces or because of public policies. Since the seminal studies of Barro (1991) and Barro and Sala-i-Martin (1992), the well-established convergence/divergence empirical literature offers a plethora of studies testing for convergence in the EU, usually in terms of GDP per capita, at various spatiotemporal frameworks.[5] The underlying research question (hypothesis), explicitly or implicitly stated, following the tradition of neoclassical thinking, refers to the ability of market forces to generate faster growth in less advanced areas, and thus allow them to catch-up with their more advanced counterparts. Such a research question is critical for economy policy. To the extent that market economies have embodied mechanisms of convergence, social peace and political stability can be maintained without the need for large-scale public interventions. Numerous studies conducted at the country level (Martín and Sanz 2003, Yin et al. 2003, Kocenda et al. 2006, Kutan and Yigit 2007, Matkowski and Prochniak 2007, Crespo-Cuaresma et al. 2008, Reza and Zahra 2008, Rapacki and Próchniak 2009, Vojinović and Próchniak 2009, Böwer and Turrini 2010, Halmai and Vásáry 2010, Cavenaile and Dubois 2011, Gill and Raiser 2012, Quillin 2012, Wunsch 2013, *inter alia*) confirm that the EU has experienced, prior to the eruption of the crisis, a persistent convergence process among the EU countries.

Attributed to the effect of Cohesion Policy, the occurrence of such a process was, apparently, convenient for the European Commission[6], which was in need for a 'success story' for its policies and, at the same time, was under pressure by some 'net contributor' countries to cut (or cap) the budget for the Structural Funds for the 2014-2020 Programming Period. To say it differently, the accumulated public debt (assuming

[4] Herndon et al. (*Ibid.*), having performed statistical analysis on the data in the original Reinhart and Rogoff (2010a and 2010b) spreadsheet, identified coding errors, selective exclusion of available data and inappropriate methods for averaging statistics. The authors reckoned that when debt-to-GDP ratio exceeds the threshold of 90%, average real annual GDP growth rate is 2.2% (and not -0.1%)! Moreover, they observed that, over the period 2000-2009, average real annual GDP growth rate at debt-to-GDP ratios over 90% was not dramatically different than at debt-to-GDP ratios ranged from 30% to 90%.

[5] See Islam (2003) and Friedrich-Eckey and Türck (2007) for a thorough survey.

[6] European Commission (2008 and 2009) provides, also, empirical support for the existence of convergence trends at the country level, indicating that the speed of convergence was 2.3% prior to the eastwards enlargement (i.e. prior to 2004) and 3.4% afterwards.

that it was repayable and not out of control) in the weaker EU countries might be politically useful to the European Commission as it made basically market-based convergence to look possible without the need to proceed with fiscal, financial or political integration. Yet, the 'success stories' in the South (especially) and the East of Europe did not last for very long as the accumulated public debts were hiding the (growing) productivity and development gaps only temporarily. Thereupon, the expectations based on mainstream economic thinking about the potential of markets (and the consequent policy responses) to correct structural weaknesses – irrespective of initial conditions – and steer a sustainable convergence process have been anything but realized. Currently, it is clear that a process of divergence (i.e. augmentation of inequalities) - directly related to fiscal consolidation policies and the ability of the EU countries pushed out from the financial markets, because of their accumulated debts, to finance and maintain their public sector[7] - emerges in the EU (Halmai and Vásáry 2012, Landesmann 2013).

The aim of the present study is to explore, in a direct manner, the impact of the level of public debt on the level of convergence rate. Has the process of economic integration in the EU been, really, leading to convergence among the EU countries, or this seemingly robust process of convergence was, in fact, attributed to the accumulated public debts of the catching-up countries? Such a question, needless to say, challenges the sustainability of the process of economic integration and adds a new perspective to the debate about the management of public debt. Deploying a 2-stages econometric approach, the study provides empirically-based evidence that convergence among the EU countries has been driven in the pre-crisis period by public debt. Evidently, to the extent that expansionary policies affected positively the convergence process that took place among the EU countries, prior to the eruption of the crisis, the currently implemented austerity programs may put cohesion and consequently the overall European project, in great danger (Magnusson 2010, Hartleb 2012, Laski and Podkaminer 2012, Steinmeier 2014).[8]

The study proceeds as follows: The next section presents the methodological approach adopted. The third section provides the empirical findings, while the last section offers the conclusions and discusses the policy implications of the paper.

[7] From another perspective, a negative consequence of the economic crisis could be that the 'core' EU countries reduce their commitment to Cohesion Policy (Rae 2011).

[8] Cohesion Policy remains an overriding EU political priority (Delors 2012), being the principal policy tool for delivering the EU2020 strategy.

Methodological Approach

The novelty of the proposed methodology lies in the combination of two interrelated issues: The first one is whether convergence trends are maintained when the standard β-convergence model includes also the influence of public debt. In other words, if the effects of public expansion on growth are neutralized, is the market-driven process of convergence among the EU countries, detected in the standard (unconditional) β-convergence model, still expected? The second one is related to the nature of public debt. Given that a number of lagging EU countries (or regions) still have insufficient infrastructure, unexploited human resources and missing public services, in principle, a part of public debt should be considered as the unavoidable cost for the creation of the public capital that is necessary for long-term growth and convergence. In this case however, the critical question about public debt is not so much its size, but its composition. Has public debt been targeting the provision / expansion of productive and social capital, or the reproduction of the political system and its clientele practices? In the first case public debt is very likely to contribute to long-term growth, while in the second case the impact on the economy may be the opposite.

The proposed methodology compares the results of a standard panel unconditional convergence model (Equation 1) with the results of a 2-stages econometric model that includes the influence of the decomposed public debt on growth. In the first stage, a public debt panel regression (Equation 2) is estimated, under the assumption that debt-to-GDP ratio is a function of the development gap and the institutional characteristics of a country. The development gap measures the 'distance' a country has to cover in terms of GDP per capita in order to converge to the EU average level of development. Presumably, a larger gap requires a greater effort in terms of public spending for the creation of social and productive capital. On the other hand, the quality of institutions in a country affects the efficient allocation of public spending. Weaker institutions usually require a higher amount of public resources in order to produce the same growth effect. The fitted value of the dependent variable in the first stage (regression) is perceived to be the 'targeted' public debt, or the level of public debt that is required in order for a country to close the development gap with the EU average, given the quality of its institutions. The residuals of this model are perceived to be the 'non-targeted' part of public debt, or the part of public debt that cannot be explained by the convergence efforts of a country and is most likely related to clientele practices and public sector corruption. In the second stage, the 'targeted' and non-targeted' public debt variables are included in the unconditional convergence model (Equation 1), allowing for the estimation of a panel conditional convergence model (Equation 3).

Equation (1) presents the standard unconditional β-convergence model of economic growth which derives from the neoclassical tradition (Solow 1956, Barro 1991, Barro

and Sala-i-Martin 1992) and relates higher rates of growth with lower initial levels of GDP per capita.

$$LOG(PCGDPGR_{i,t}) = \beta_0 + \beta_1 LOG(PCGDP_{i,t}) + \varepsilon_{i,t} \qquad (1),$$

Subscript i stands for countries, t stands for years, $PCGDPGR$ is the dependent GDP per capita annual real[9] growth variable (expressed in logarithmic terms), $PCGDP$ is the independent GDP per capita variable (expressed in logarithmic terms), β_0 is the constant term, β_1 is the estimator of the independent variable, and ε [~N (0, σ^2)] is the disturbance term. A negative sign for β_1, would suggest that a process of unconditional convergence takes place among the EU countries. [10]

Equation (2) examines the key determinants of public debt (expressed as debt-to-GDP ratio), estimating public debt as a function of the development gap that a country has to cover within the EU and the quality of its institutions. The development gap is introduced in order to control for potential effects of economic backwardness on public debt (Roubini 1991, Woo 2003). Typically, as mentioned above, a larger gap[11] (with respect to the EU average, and in terms of GDP per capita) requires a greater effort in terms of public spending for the creation of social and productive capital. Perceiving public debt as the opportunity cost of the provision of public goods (Buchanan and Wagner 1958), public debt increase may be necessary in order to finance public capital (Aschauer 1989, 1998 and 2000). There is also a substantial literature indicating that institutional factors are crucial to explain the markedly different public debt levels across different economies, and to understand fiscal policies delivered (Roubini and Sachs 1989, Poterba 1994, Alesina and Perotti 1995, Neck and Getzner 2001, Woo 2003, Süssmuth and von Weizsäcker 2006, Guscina 2008, van Rijckeghem and Weder 2009, Katsimi and Moutos 2010, Kaplanoglou and Rapanos 2013a and 2013b, Kourtellos et al. 2013, Sharpe 2013, *inter alia*), even though the mainstream tipping-point debt-growth literature seems not to (explicitly) recognize the importance of institutions for the formation of public debt.

$$DEBTGDP_{i,t} = \gamma_0 + \gamma_1 PCGDPGAP_{i,t} + \gamma_2 INST_{i,t} + u_{i,t} \qquad (2),$$

[9] All values are expressed in constant 2000 prices.

[10] The convergence process is traditionally characterized by its convergence speed and its half-life. The convergence speed can be estimated by the formula: $b = -ln(1 + T\beta)/T$, where T is the length of the time interval. The half-life is the time necessary for the economies to fill half of the variation that separates them from their steady state, and it can be determined by the formula: $\tau = -ln(2)/\ln(1 + \beta)$.

[11] The gap is positive (negative) when the per capita GDP level of a country under consideration is lower (higher) than the corresponding EU average.

Subscript i stands for countries, t stands for years, $DEBTGDP$ is the size of public debt expressed as debt-to-GDP ratio, $PCGDPGAP$ is the development gap between each EU country and the EU average in terms of GDP per capita, $INST$ provides a multidimensional proxy for the quality of the institutional environment, γ_0 is the constant term, γ_1 and γ_2 are the estimators of the independent variables, and u [~N (0, σ^2)] is the disturbance term. A positive sign is expected for γ_1 under the hypothesis that public debt is higher (as a percentage of GDP) in countries that are in a catching-up process. In contrast, a negative sign is expected for γ_2, demonstrating that a better quality of institutional environment requires a lower level of public debt in order to deliver the same growth performance.

Utilizing the fitted values and the residuals of the first stage model in Equation (2), allows for the estimation of a conditional convergence model where the decomposed public debt enters into the model in the form of two independent variables. On this basis, the evolution of the conditional β-convergence process among the EU countries is tested on Equation (3):

$$LOG(PCGDPGR_{i,t}) = \overline{\beta_0} + \overline{\beta_1} LOG(PCGDP_{i,t}) + \beta_2 T.DEBT_{i,t} + \beta_3 NT.DEBT_{i,t} + \varepsilon_{i,t} \qquad (3),$$

where i stands for countries, t stands for years, $PCGDPGR$ is the dependent GDP per capita annual real growth variable (expressed in logarithmic terms), $PCGDP$ is the independent GDP per capita variable (expressed in logarithmic terms), $T.DEBT$ is the fitted value of the first stage model and measures the 'targeted' public debt, $NT.DEBT$ is the residuals of the first stage model and measures the 'non-targeted' public debt, $\overline{\beta_0}$ is the constant term, $\overline{\beta_1}$, β_2 and β_3 are the estimators of the independent variables, and ε [~N (0, σ^2)] is the disturbance term. A positive sign is expected for $\overline{\beta_1}$ in order to indicate that trends of divergence among the EU countries take place when the effect of public debt is neutralized. A positive sign is expected for β_2 in order to point out the positive impact of 'targeted' public debt on growth. Correspondingly, a negative sign is expected for β_3 in order to point out the negative impact of 'non-targeted' public debt on growth. As mentioned before, the 'targeted' public debt is the part of public debt that is driven by catching-up policies and is, by and large, related to public investment and the required level of public services for a given institutional environment of each economy. The 'non-targeted' public debt refers to the part of public debt that is most likely related to excessive public consumption, corruption and clientele policies. Such a specification contrasts the mainstream approach in the literature that demarcates public debt into

'good' and 'bad', according to its size in non-linear models (i.e. below and above a specified debt-to-GDP threshold, respectively) and not according to its composition[12].

Data and Empirical Findings

Data

Economic data used in the empirical analysis are derived from the EUROSTAT database. Institutional-related data are obtained from the Heritage Foundation's database (2013). More specifically, the popular Index of Economic Freedom (IEF), created by the Heritage Foundation and the Wall Street Journal, is used to measure institutional factors.[13] This composite indicator measures the degree of economic freedom on the basis of the, equally weighted, pillars of Rule of Law, Limited Government, Regulatory Efficiency, and Open Markets. The analysis focuses on the EU countries[14], and covers the period 1998-2009[15].

Empirical Findings

The econometric models have been estimated with the use of panel fixed effects estimators, according to the Hausman test (Hausman 1978). In particular, due to the fact that panel data typically contain both serial correlation and cross-section dependence, a wide array of estimators is employed.[16] However, as the results are similar among different estimators, particularly as regards the signs of the coefficients, a panel Estimated Generalized Least Squares (EGLS) (cross-section weighted) fixed effects model (Wooldridge 2002, Baltagi 2005) with robust standard errors is presented, using the Panel-Corrected Standard Error (PCSE) as well as the White diagonal estimators (Beck and Katz 1995, Reed and Ye 2011).

Tables 1, 2 and 3 report the regression results for Equation (1), (2) and (3) respectively. The first column of each Table lists the variables under consideration, as well as some diagnostics. The second, third and fourth column report the results obtained for the

[12] The non-linear approaches with respect to public debt suffer from a wide variety of conceptual and methodological issues such as heterogeneity, endogeneity and causality (Dreger and Reimers 2013, Kourtellos et al. 2013).

[13] Another similar index, known as Economic Freedom of the World (EFW), is produced by the Fraser Institute (www.fraserinstitute.org/programs-initiatives/economic-freedom). Both indices are compatible and generate identical results (Chortareas et al., 2012).

[14] Croatia is not included.

[15] Year 1998 is the first year that data are available for all variables considered, whereas year 2009 is the year prior to the eruption of the economic crisis (and the last year without Memorandums in Europe).

[16] As Reed and Ye (2011) point out, there is no definitive answer about the choice of estimators. As a result, several estimators have been applied, with or without GLS weights, such as PCSE, White cross-section, White period, and White diagonal.

model using the PCSE estimator. The fifth, sixth and seventh column report the corresponding results obtained with the use of the White diagonal estimator. For each case, the estimated coefficients, the t-statistics and the related probabilities, the adjusted R^2 figures, the F-statistics, the convergence speed as well as the half-time (where appropriate) are reported.

Table 1. Panel EGLS (cross-section weighted) fixed effects unconditional convergence model, 1998-2009

Dependent variable: growth in GDP per capita	*PCSE*				*White diagonal*			
	Coefficient	*t-statistic*	*probability*		*Coefficient*	*t-statistic*	*probability*	
Constant	*0.466*	*2.959*	*0.003****		*0.466*	*3.037*	*0.002****	
LOG(PCGDP)	*-0.047*	*-2.805*	*0.005****		*-0.047*	*-2.869*	*0.004****	
Adjusted R-Square	*0.19*	*-*	*-*		*0.19*	*-*	*-*	
F-statistic	*2.50*	*-*	*0.000****		*2.50*	*-*	*0.000****	
Convergence Speed	*6.9%*	*-*	*-*		*6.9%*	*-*	*-*	
Half-time	*14.3*	*-*	*-*		*14.3*	*-*	*-*	
Total pool observations	*324*	*-*	*-*		*324*	*-*	*-*	

Note: p values in parentheses
*** statistically significant at 1%*

Table 1 presents the results for Equation (1). As can be seen, the coefficient β_1 of the unconditional convergence model is negative and statistically significant (for both estimators), confirming that, indeed, a process of convergence took place among the EU countries over the study period. The results show a relative fast convergence speed (7% per annum) and a relative short half-life (14 years). The model explains approximately 19% (adjusted R-squared figure) of the variance in growth rate of GDP per capita.

Table 2. Panel EGLS (cross-section weighted) fixed effects public debt model, 1998-2009

Dependent variable: public debt as percentage of GDP	*PCSE*				*White diagonal*			
	Coefficient	*t-statistic*	*probability*		*Coefficient*	*t-statistic*	*probability*	
Constant	*100.4*	*15.931*	*0.000****		*100.4*	*13.88*	*0.000****	
PCGDPGAP	*0.001*	*2.533*	*0.010***		*0.001*	*2.007*	*0.045***	
INSTIT	*-0.767*	*-8.171*	*0.000****		*-0.767*	*-7.125*	*0.000****	
Adjusted R-Square	*0.97*	*-*	*-*		*0.97*	*-*	*-*	
F-statistic	*382.2*	*-*	*0.000****		*382.2*	*-*	*0.000****	
Total pool observations	*324*	*-*	*-*		*324*	*-*	*-*	

Note: p values in parentheses
*** statistically significant at 1%*
** statistically significant at 5%*

Table 2 reports the results for Equation (2) that estimates public debt as a function of the development gap that a country has to cover within the EU and the quality of its institutions. The coefficients γ_1 and γ_2 of the first stage equation are statistically

significant and have the expected positive and negative sign, respectively. The results of the model provide an empirical validation to the hypothesis that countries that are in a catching-up process register relatively higher levels of public debt. At the same time, the results of the model affirm the offsetting role of high-quality institutions as regards the augmentation of public debt. Jointly, the independent variables explain the largest part of the variation of the dependent variable, and, of course, the overall model is statistically significant.

Finally, Table 3 presents the results for Equation (3). The fitted values and the residuals of the first stage equation are utilized so as to proxy the variables of **'**targeted**'** and **'**non-targeted**'** public debt. The coefficients $\widehat{\beta_1}$, β_2 and β_3 of the conditional convergence model are statistically significant and have the expected positive, positive and negative sign, respectively. Moreover, the model explains a satisfactory level of the variance in growth rate of GDP per capita, approximately 44% (adjusted R-squared figure), while the overall model is statistically significant. It comes out that removing the effect of public debt, the process of convergence among the EU countries (detected in the corresponding unconditional model) no longer exists. This finding indicates that a mainly market-led process of divergence coexists with a policy-led process of convergence driven by the efforts of the less advanced EU countries to catch-up with their more advanced counterparts. Such a policy-led process refers to the part of public debt (the 'targeted' public debt) that is related to provision of public goods (social services, infrastructure and upgrading human resources) and to the institutional capacity of each EU country. Definitely, it does not refer to the 'non-targeted' part of public debt that is related to unnecessary public consumption and clientele practices and has a detrimental impact on growth.

Table 3. Panel EGLS (cross-section weighted) fixed effects conditional convergence model, 1998-2009

Dependent variable: growth in GDP per capita	*PCSE*				*White diagonal*			
	Coefficient	*t-statistic*	*probability*		*Coefficient*	*t-statistic*	*probability*	
Constant	*-0.441*	*-3.166*	*0.001****		*-0.441*	*-3.295*	*0.001****	
LOG(PCGDP)	*0.022*	*1.656*	*0.098**		*0.022*	*1.749*	*0.08**	
T.DEBT	*0.005*	*8.502*	*0.000****		*0.005*	*7.929*	*0.000****	
NT.DEBT	*-0.002*	*-11.261*	*0.000****		*-0.002*	*-9.387*	*0.000****	
Convergence Speed	-	-	-		-	-	-	
Half-time	-	-	-		-	-	-	
Adjusted R-Square	*0.44*	-	-		*0.44*	-	-	
F-statistic	*9.94*	-	*0.000****		*9.94*	-	*0.000****	
Total pool observations	*324*	-	-		*324*	-	-	

Note: p values in parentheses
*** statistically significant at 1%*
** statistically significant at 5%*
* statistically significant at 10%*

Conclusions and Policy Implications

Probably for the first time in the history of the EU integration, skepticism, criticism, disappointment with results and uncertainty about the future are so widely spread. The causes, but also the effects of the debt crisis that has erupted in the European South is a painful reminder that the creative and the destructive components of the competitive forces released by the process of economic integration are neither balanced nor evenly spread over time and across space.

The present study offers an alternative perspective to the on-going discussion regarding the management of public debt in the debt-burdened EU countries, indicating that convergence in development levels among the EU countries has, to a large degree, been driven by public debt. In particular, on the basis of a 2-stages econometric approach, utilizing the fitted values and the residuals of a first stage equation that examines the key determinants of public debt, the present study supports that the typically assumed process of convergence among the EU countries no longer exists (instead, a divergence process unfolds) when the effect of public debt is neutralized. The results provide evidence that the process of convergence that took place among the EU countries, prior to the eruption of the economic crisis, was not driven by market dynamics, but, rather by public policies that, however, increased the debt burden of the European Periphery.

In particular, the part of public debt that is associated with the efforts of the national governments in the less advanced EU countries to catch-up with the more advanced ones has been found to be a significant growth determinant. In contrast, public debt that cannot be associated with public investment or necessary public services tends to have a recessionary impact on the EU economies.

This finding calls for a re-examination of the role of public policies in the processes of integration and development, as it leaves some room for a growth strategy that is based on debt-led expansion, to the extent that public policies concentrate on a carefully designed Public Investment Program and the provision of the required public services for the maintenance, reproduction and improvement of the production factors of the economy.

As a result, fiscal consolidation policies in the less advanced EU countries need to move away from the procrustean suppression of public spending, and, rather, maintain public investment to levels comparable (or even higher than) to those of the more advanced EU countries. This requires the understanding that the critical issue is not the size of the debt itself, but its composition. A higher debt that is related to public investment in physical, social and human capital may improve productivity and lead to higher long term growth. Higher growth, in turn, will be the ground for the service and the eventual

reduction of debt when the process of convergence and catching up has made significant progress.

Given that the austerity programs that have been imposed by economic orthodoxy in the European periphery have led to severe loss of GDP, widespread unemployment and poverty, the targeted (to local and national comparative advantages) expansion of Public Investment Programs may be a credible strategy for breaking the vicious cycle of recession and its economic, social and political side-effects. In the long term, however, this can be feasible only if a major reform of the European architecture takes place, based on a commitment for a more balanced integration process that will include fiscal integration. Fiscal integration needs to proceed with rules of conduct that will discourage populist, political-cycle-driven or clientele spending, leaving, however, some room for redistribution policies that will partially counterbalance and compensate for the massive market redistribution that occurred, especially, after the advent of the euro currency.

The findings of the present study have significant policy implications. First, they call for targeted actions in order to improve the institutional capacity of the public sector and achieve better services and higher growth impact with less financial resources. Efforts and policies that improve the institutional capacity of the national economies, reduce bureaucracy, corruption and tax evasion and improve efficiency will have positive effects on growth.

Second, they call for the maintenance of the growth-generating part of the public sector to levels that are consistent with the catching-up efforts of the less advanced EU countries. Supporting public investment and public services in the Periphery is expected to generate growth and convergence, but it requires a new understanding of the process of integration and a greater commitment of resources with a more systematic and permanent character.

Acknowledgments

The authors would like to thank the participants of the 53rd ERSA Congress in Palermo, 25-28 August 2013, for constructive comments and suggestions. The usual disclaimer applies.

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