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Income Convergence and the Impact of the Euro-MED Trade and Financial Integration on Macroeconomic Volatility

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Income Convergence and the Impact of the Euro-MED Trade and Financial Integration on Macroeconomic Volatility*

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EXECUTIVE SUMMARY

Economic and financial integration efforts between the Mediterranean Partner (MPs) countries and the European Union (EU) were initially introduced by the Cooperation Agreements, which granted total exemption from tariffs on industrial products. These efforts were subsequently enhanced by the Association Agreements that were launched under the Barcelona declaration of 1995, which resulted in MPs reducing or even eliminating tariffs on European industrial imports. At the same time, MPs have opened up considerably to other countries, either under the framework of the EU-Mediterranean (MED) trade agreements, or in the context of widespread reduction in tariffs through the signing of the World Trade Organization (WTO) agreements. In early 2000, the Barcelona Process was replaced by the European Neighborhood Policy (ENP), which then was revised in 2015 and became the New European Neighborhood Policy. It is under this framework that the economic relations between the EU and their MPs are now being reshaped. The New European Neighborhood Policy provides a robust platform towards financial assistance through deeper financial integration, greater access to the common market, and better institutionalization of trade and financial relationships. The EU is also proposing a Deep and Comprehensive Free Trade Area (DCFTA) that will address agriculture, services, and non-tariff measures. Negotiations for the DCFTA are underway with Morocco and Tunisia. Within the context of this New European Neighborhood Policy and the role of the EU in facilitating the modernization, the transition, and international openness of the Mediterranean countries, this research study assesses the degree of income convergence between the two groups (EU and MED) resulting from those trade agreements, as well as macroeconomic volatility effects of those policies on a selected sample of MPs, in order to identify the winners/losers from these trade agreements.

This said, in this study, we use in a first stage the concepts of σ -convergence and β -convergence to evaluate empirically income convergence among a group of EU-MED countries over the period 1980-2015. We then present a thorough empirical analysis of the implications of the Euro-MED partnership agreements on economic growth and on macroeconomic volatility in a sample of MPs. Because of the initiation of the Barcelona Process and the Neighborhood Policy in 2000, the empirical analysis is carried out sequentially, over 5 and 10-year periods, and then for the period as a whole 1980-2015. The empirical findings show that there is weak evidence of income convergence for a group of EU-MED countries when analyzed in 5- or 10-year subintervals from 1980-2000 in single equation cross section regressions. However, we find statistically significant evidence of real per capita GDP convergence either when the whole sample period 1980-2015 is analyzed or when the 10-year sub-periods are pooled and estimated in panel growth regressions. These are more plausible results both because economic growth and convergence are long run phenomena and because panel methods deliver more efficient parameter estimates. For the period 1980-2000, there is evidence of weak conditional income convergence in the group of EU-MED (16) countries, and this evidence becomes much weaker for the MED group of countries in between 2000-2015. The reason for these results is the negative effects of the European financial and debt crises on the Euro-MED region in general, and on the MED region in particular.

Macroeconomic stability and economic openness turned out to be statistically important factors and have the expected positive effect on economic growth in the MED countries. Indeed, in most of the estimated models, the variable that is consistently the most significant is economic openness. Of the other explanatory variables, population growth has the theoretically expected negative effect on economic growth as it is found in other studies on empirical growth.

Government spending also had a negative effect on economic growth and is statistically significant as is population growth.

The main policy implications that emerge from the empirical results of this paper is that if the MED countries wish to achieve high economic growth they should pursue policies that further promote free trade and economic openness with the EU, as well provide an anchor of macroeconomic stability by means of policies that keep fiscal and monetary policies under control. Political and social unrest, as well as, financial and debt crises have a negative effect on economic growth and convergence in the region and, if possible, should be dealt with as soon as possible by appropriate political and macroeconomic policy action.

Other empirical results point to the fact that MED countries may be less susceptible to EU's financial shocks if the domestic MED market is larger and/or more regulated. This is consistent with what economic theory would suggest and it has policy implications. In reality, some MED countries have chosen to impose capital controls to deal with financial market crises since it appears that the "culprit" is international capital flows although this policy practice may have undesirable long-term economic consequences. We have shown that MED countries should improve their macroeconomic and financial policy coordination to cope effectively with the impact of greater trade and financial integration with the EU. This may be achieved for example through enhancing regional economic and financial integration. The establishment of a MED free trade zone will not only stimulate and enhance growth, but will also enhance intra-MED trade, thereby, reducing considerably the exposure to the EU's business cycle, and controlling for the excessive exposure of these MED small open economies to macroeconomic developments in the EU.

The literature shows that large economies can better absorb and neutralize the effects of external shocks. Controlling for the effects of shocks, however, is particularly more difficult in the case of the developing MED economies, which are smaller in size and nearly dependent on exports to the EU of very few commodities and on the import of a huge number of commodities. A direct consequence of an integrated capital market within the MED region will be to reduce the risks associated with greater EU-MED integration, and to dampen the vulnerability of MPs, especially those with high levels of debt, such as Lebanon, Jordan and Egypt, to the effects of fluctuations in EU's interest rates. A larger MED financial market would lower the cost of raising capital, and would allow MED governments to service their huge debt at lower costs on one hand, and MED firms to rely more on the local market rather than tapping EU's markets to raise capital, on the other. Lower costs of raising capital will subsequently translate into more investment, consumption, and GDP growth rates in the region. The MED region should accelerate the process of trade, financial, and economic integration with the EU in order to better absorb the negative effects of external political, financial and/or economic shocks. Efforts should also be exerted to speed up the implementation of the fiscal and monetary reforms so as to improve the inflow of portfolio and FDI into the region.

In short, for further trade and financial integration with the EU, MPs need to individually devote more efforts to pursue sound macroeconomic policies. This should be coupled with institutional reforms aimed at developing the financial sector in the respective MED economies. Subsequently, MPs should try to integrate horizontally while at the same time opening up further vertically (to the EU). It was shown that financial openness- as measured by gross capital flows as a ratio to GDP- is associated with an increase in consumption volatility, contrary to the notions of improved international risk-sharing opportunities through financial integration. The

inherently unstable macroeconomic environment, political and military turmoil, as well as unsound monetary and fiscal policies in the MED region may explain this empirical irregularity.

One policy recommendation of the study is that MPs need to be more, not less, integrated with EU’s financial markets to be able to reap the benefits of financial integration in terms of improved risk sharing, and consumption smoothing opportunities. This conclusion will however require further analysis, as regional financial integration is associated with a variety of risks in the EU-MED region. To minimize these risks, MPs would need to implement sound macroeconomic and structural frameworks in tandem with further integration. For example, our findings have emphasized the role of sound fiscal and monetary policies in driving macroeconomic volatility. In regard to structural reforms, the development of the domestic financial sector is critical, as a high degree of financial sector development is associated with lower macroeconomic volatility.

Finally, the New European Neighborhood Policy provides a robust framework towards trade and financial assistance through deeper financial integration, greater access to the common market and better institutionalization of trade and financial relationships between the MED and EU countries. This research project will assist policy makers and academics in the EU and MED regions in redefining their trade, financial and macroeconomic priorities while designing new European Neighborhood Policies that will respond to the recent economic challenges. The new European Neighborhood Policy will spawn a large amount of literature on its consequences. This study constitutes an integral part of that literature by identifying the common and differing strands of analysis with particular emphasis on the changes made in the macroeconomic policy paradigm in both the MED and EU region.

SOMMAIRE

Les efforts d'intégration économique et financière entre les pays Partenaires Méditerranéens (MPs) et l'Union Européenne (EU) ont été initialement introduits par les accords de coopération qui garantissaient une exemption totale de tarifs douaniers sur les produits industriels. Ces efforts ont ensuite été consolidés par les Accords d'association introduits dans le cadre de la déclaration de Barcelone en 1995, qui ont eu pour effets de réduire ou éliminer les droits de douanes sur les importations industrielles européennes. Parallèlement, les MPs se sont considérablement ouverts aux autres pays, que ce soit dans le cadre des accords commerciaux euro-méditerranéens (MED) ou dans le contexte d'une réduction élargie des droits de douanes via les accords signés avec l'Organisation Mondiale du Commerce (OMC). Au début des années 2000, le processus de Barcelone fut remplacé par la politique européenne de voisinage (PEV) qui fut modifiée en 2015 et devient la nouvelle politique de voisinage. C'est dans ce cadre que les relations économiques entre l'Union Européenne et ces partenaires méditerranéens sont désormais redéfinies.

La nouvelle politique de voisinage offre une plateforme solide d'assistance financière par une intégration financière plus poussée, un meilleur accès au marché commun, et une amélioration de l'institutionnalisation des relations commerciales et financières. L'Union Européenne propose également un accord de libre-échange complet et approfondi (ALECA) concernant l'agriculture, les services et les mesures non tarifaires. Les négociations pour l'ALECA sont en cours avec le Maroc et la Tunisie. Dans le cadre de cette nouvelle politique européenne de voisinage et du rôle facilitateur de l'Union Européenne pour la modernisation, la transition et l'ouverture internationale des pays Méditerranéens, cette étude évalue le degré de convergence des économies résultant de ces accords commerciaux entre deux groupes de pays (EU et MED). Nous utilisons dans un premier temps les concepts de σ -convergence et β -convergence pour une évaluation empirique du phénomène de convergence économique parmi ces pays sur la période 1980-2015. Nous présentons ensuite une analyse approfondie des implications des accords de partenariats Euro-MED sur la croissance économique et la volatilité macroéconomique dans un échantillon de pays méditerranéens (MPs). Afin de tenir compte à la fois du lancement du processus de Barcelone et de la politique de voisinage en 2000, l'analyse empirique est traitée de façon séquentielle sur des périodes de 5 et 10 ans, puis sur l'ensemble de la période 1980-2015.

Les résultats empiriques montrent une évidence faible de convergence des économies pour le groupe de pays EU-MED analysé à intervalles partiels de 5 ou 10 ans de 1980 à 2000 dans une régression de type transversale. Toutefois, nous avons trouvé un résultat statistiquement significatif de convergence du PIB par tête, que l'analyse porte sur l'ensemble de la période 1980-2015 ou sur des sous périodes de 10 ans regroupées et estimées en données de panel par régressions de croissance. Ces résultats sont plus probants, puisque la croissance économique et la convergence sont tous deux des phénomènes de long terme et que les méthodes d'analyse en données de panel donnent de meilleures estimations. Sur la période 1980-2000, nous trouvons une évidence faible de convergence conditionnelle dans le groupe de pays EU-MED (16), et cette évidence est encore plus faible pour le groupe de pays MED de 2000 à 2015. Ces résultats

s'expliquent par les effets négatifs de la crise financière et de la crise de la dette en Europe sur la région Euro-MED en générale et sur la région MED en particulier. La stabilité macroéconomique et l'ouverture économique se sont avérées être des facteurs statistiquement importants et ont l'effet positif attendu sur la croissance économique dans les pays MED. Effectivement, dans la majorité des modèles estimés, la variable qui est systématiquement la plus significative est l'ouverture commerciale. Parmi les autres variables, la croissance de la population a l'effet théorique négatif attendu sur la croissance économique, comme trouvé dans d'autres études empiriques sur la croissance. Les dépenses du gouvernement ont également un effet négatif sur la croissance économique et cette variable est statistiquement significative tout comme l'est la croissance de la population.

Les principales implications politiques qui se dégagent des résultats empiriques de cette étude sont que les pays MED, s'ils souhaitent atteindre une croissance économique élevée, doivent poursuivre des politiques promouvant encore davantage le libre-échange et l'ouverture économique avec l'UE, tout en assurant une stabilité macroéconomique au moyen de politiques qui garantissent le contrôle des politiques fiscales et monétaires. Aussi bien l'agitation politique et sociale, que la crise financière et la crise de la dette ont un effet négatif sur la croissance économique et la convergence dans la région, et doivent être traitées si possible prioritairement par le biais d'actions politiques et de politiques macroéconomiques appropriées. D'autres résultats empiriques montrent que les pays MED seraient moins affectés par les chocs financiers provenant de l'UE, si le marché domestique MED était plus grand et/ou mieux régulé. Ceci est en cohérence avec ce que suggère la théorie économique et a des implications politiques. En fait, certains pays MED ont choisi d'imposer un contrôle du capital pour gérer les crises du marché financier puisqu'il semble que les « coupables » soient les flux de capitaux internationaux, et ce, malgré les conséquences économiques indésirables sur le long terme de ces pratiques politiques. Nous avons montré que les pays MED doivent améliorer la coordination de leurs politiques macroéconomiques et financières pour relever plus efficacement le défi d'une plus grande intégration commerciale et financière avec l'UE. Cet objectif peut par exemple être atteint en renforçant l'intégration économique et financière régionale. La création d'une zone de libre échange MED n'aurait pas pour seul effet de stimuler et de renforcer la croissance, mais pourrait également renforcer le commerce intra-MED, réduisant ainsi considérablement l'exposition aux cycles économiques européens, tout en contrôlant les expositions excessives de ces petites économies ouvertes (MED) aux développements macroéconomiques de l'Union Européenne.

La littérature établie que les plus grandes économies ont une meilleure capacité d'absorption et de neutralisation quant aux effets négatifs des chocs externes. Contrôler leurs effets reste toutefois une tâche beaucoup plus délicate qu'il n'y paraît lorsqu'il s'agit de pays MED en développement, qui sont de plus petite taille, n'exportent que peu de produits sur le marché européen et dépendent d'un très grand nombre de produits d'importations européennes. Une conséquence directe d'un marché des capitaux intégré au sein de la région MED serait de diminuer les risques associés à une plus grande intégration EU-MED, ainsi que de rendre les MP's moins vulnérables aux fluctuations des taux d'intérêts des pays de l'UE, en particulier pour ceux ayant un niveau de dette élevé, comme le Liban, la Jordanie et l'Égypte. Un plus grand marché financier MED donnerait la possibilité de baisser les coûts de financement, et de rembourser leurs dettes importantes des gouvernements MED à moindre coût. D'autre part les entreprises MED pourraient s'appuyer plus sur le marché local que sur le marché de l'UE pour la levée de capitaux. La baisse du coût de la mobilisation des capitaux peut ensuite se traduire par plus d'investissements, de consommation et une augmentation des taux croissance économique

dans la région. La région MED doit accélérer le processus d'intégration commerciale, financière et économique avec l'UE pour une meilleure absorption des effets négatifs liés aux politiques externes, financières et/ou aux chocs économiques. Il faudrait redoubler d'efforts pour accélérer la mise en place de réformes fiscales et monétaires afin d'améliorer l'entrée de nouveaux investissements de portefeuille et d'IDE dans la région.

En résumé, pour plus d'intégration commerciale et financière avec l'UE, les MPs doivent consacrer davantage d'efforts individuels pour mener des politiques macroéconomiques saines. A ces mesures, devront s'ajouter des réformes institutionnelles de soutien au développement du secteur financier dans les économies MED en question. Ensuite, les MPs devront essayer de s'intégrer horizontalement tout en s'ouvrant plus verticalement (à l'UE). Il a été montré que l'ouverture financière, mesurée par le rapport formation brute de capital/PIB, est associée à une augmentation de la volatilité de la consommation, contrairement à la notion établie d'opportunité de partage des risques internationaux via l'intégration financière. L'environnement macroéconomique et politique de nature instable et les conflits militaires, ainsi que les politiques fiscales et monétaires inappropriées dans la région MED peuvent expliquer cette irrégularité empirique. Une recommandation politique de cette étude est que les MPs ont besoin d'être plus, et non pas moins, intégrés avec le marché financier de l'UE pour pouvoir tirer avantage de l'intégration financière en termes d'amélioration du partage des risques, et de stabiliser la consommation. Cette conclusion peut toutefois nécessiter une analyse plus poussée, puisqu'il faut considérer que l'intégration financière régionale est également associée à divers risques dans la région EU-MED. Pour minimiser ces risques, les MPs devront mettre en œuvre des cadres macro-économiques et structurels sains en tandem avec une plus grande intégration. Par exemple, nos résultats ont mis en évidence le rôle clé des politiques fiscales et monétaires saines pour mieux contrôler la volatilité macroéconomique. Concernant les réformes structurelles, il s'agit de développer le secteur financier intérieur, puisqu'un haut degré de développement du secteur financier est associé à une diminution de la volatilité macroéconomique.

Enfin, la nouvelle politique européenne de voisinage offre une plateforme solide d'assistance commerciale et financière par une intégration financière plus poussée, un meilleur accès au marché commun et une meilleure institutionnalisation des relations commerciales et financières entre les pays MED et de l'UE. Ce projet de recherche aidera les décideurs politiques et les chercheurs académiques dans la région Euro-méditerranéenne, à redéfinir leurs priorités en matière de commerce, de finance et de macroéconomie lors de l'élaboration de nouvelles politiques de voisinage européennes qui doivent répondre aux défis économiques actuels. La nouvelle politique de voisinage européenne va produire un volume important de littérature sur ces conséquences. Cette étude fait partie intégrante de cette littérature en identifiant les points communs et les différences entre les composantes de cette analyse, en mettant un accent particulier sur les changements de paradigme concernant la politique macroéconomique dans les pays MED et l'UE.

Income Convergence and the Impact of the Euro-MED Trade and Financial Integration on Macroeconomic Volatility

1. Introduction

Economic and financial integration efforts between the Mediterranean Partner (MPs) countries and the European Union (EU) were initially introduced by the Cooperation Agreements, which granted total exemption from tariffs on industrial products. These efforts were subsequently enhanced by the Association Agreements that were launched under the Barcelona declaration of 1995, which resulted in MPs reducing or even eliminating tariffs on European industrial imports. At the same time, MPs have opened up considerably to other countries, either under the framework of the EU-Mediterranean (MED) trade agreements, or in the context of widespread reduction in tariffs through the signing of the World Trade Organization (WTO) agreements. In early 2000, the Barcelona Process was replaced by the European Neighborhood Policy (ENP), which then was revised in 2015 and became the New European Neighborhood Policy. It is under this framework that the economic relations between the EU and their MPs are now being reshaped. The New European Neighborhood Policy provides a robust platform towards financial assistance through deeper financial integration, greater access to the common market, and better institutionalization of trade and financial relationships. The EU is also proposing a Deep and Comprehensive Free Trade Area (DCFTA) that will address agriculture, services, and non-tariff measures. Negotiations for the DCFTA are underway with Morocco and Tunisia. Within the context of this New European Neighborhood Policy and the role of the EU in facilitating the modernization, the transition, and international openness of the Mediterranean countries, this research study will assess the degree of income convergence between the two groups (EU and MED) resulting from those trade agreements, as well as macroeconomic volatility effects of those policies on a selected sample of MPs, in order to identify the winners/losers from these trade agreements.

Even though the sources of economic growth in the MED region are well documented in several studies, the literature on macroeconomic volatility and income convergence among the Euro-MED economies is rather thin. Yet, the subject of income convergence is an important one because it first deals with the issue of sustained economic growth in the MED region subsequent to the EU-MED free trade agreements, and second with the extent to which per capita income levels or living standards in low or middle-income MED economies tend to converge to the level of high income economies of the EU over time.

This said and in light of the signing of the above trade and financial integration initiatives and agreements, the objectives of this study are twofold. It first explores the issue of income convergence between the EU and its MPs, and then analyses whether enhanced trade and financial integration has contributed to reducing macroeconomic volatility in the MED region. Using the concepts of σ -convergence and β -convergence, this study evaluates empirically the hypothesis of income convergence in the Euro-MED region, over the period 1980-2016. Because of the introduction in early 2000 of the European Neighborhood Policy, the analysis is carried out sequentially, first for the period 1980-2000, and then for the whole period 1980-2016, in order to explore whether increased integration between the MPs and their European partners has

led to enhanced income convergence between the relatively poor countries of the south and the relatively rich countries of the north. Using panel data regression models, this study also investigates the impact of the Euro-MED trade and financial integration on macroeconomic volatility in the developing economies of the MED region over the period 1980-2016. Our empirical findings are expected to emphasize the role of sound fiscal and monetary policies in driving macroeconomic volatility. In regard to structural reforms, the development of the domestic financial sector is critical, as a high degree of financial sector development in the MPs is significantly associated with lower macroeconomic volatility. We argue that enhancing Euro-MED trade and financial integration might constitute a venue to circumvent the vulnerability of the small open MED economies to EU's and international shocks, and a mean to enhance consumption smoothing, and growth and employment creation opportunities, as well as income convergence and EU-MED financial integration.

The MPs economies are expected to further benefit from regional financial and trade integration with a proper allocation of savings, and a better ability to share financial risk by reducing consumption and income volatilities. While the initial finance literature had focused on the impact of financial integration on economic growth, more recent studies have shifted interest to the impact of financial integration on macroeconomic volatility. However, the empirical evidence on the effects of trade and financial integration on macroeconomic volatility is still very limited. Therefore, this study will add to the limited existing literature on developing countries by studying, the relationship between trade and financial integration and macroeconomic volatility in the MED region. This study also sheds light on the impact of enhanced regional trade and financial integration on income convergence and macroeconomic volatility in the Euro-MED region. In this context, we will answer the following question: is there a link between the degree of regional trade and financial integration and Gross Domestic Product (GDP) and consumption convergence and macroeconomic volatility in the MED region?

The remainder of the study is divided as follows. The next section lays down the theoretical framework. Section 3 reviews related literature. Section 4 outlines the empirical methodology. Section 5 offers a thorough discussion of the main empirical results and findings. Finally, section 6 concludes the study with some policy implication.

2. Theoretical Framework

Macroeconomic, political, and social instability are three main factors that have contributed to unsustainable MED growth. MED countries were not able to promote fiscal sustainability as well as price and exchange rate stability. Thus, and because of the recent financial and debt crises and the recent political and military turmoil unfolding in several MED countries, there has been a long period of macroeconomic instability that has contributed to volatile economic growth. Political and social unrest have helped autocracy rules to operate; hindering the proper functioning of market economies. Moreover, demographic factors are important for growth. As the development and economic integration process continued, MED countries experienced lower death rates, perhaps due to advances in medicine that reduced mortality rates, as well as higher birth rates. This meant higher population growth in this part of the world. In the standard neoclassical model with labour and physical capital, higher population growth lowers income because the existing capital has to be shared more thinly over the population of workers. This is also true when the model is augmented to include human capital, which has to be spread more thinly, implying that higher population growth lowers total factor productivity.

The concept of σ -convergence examines the behaviour of cross-sectional standard deviation of real per capita GDP over time. A reduction in the cross sectional standard deviation of GDP over time is interpreted as evidence of income convergence. The concept of β -convergence was introduced in the literature by Barro and Sala-i-Martin (1991, 1992) and derives from the transitional dynamics of the neoclassical growth model. In this case, the finding of mean reversion in GDP growth rates in a cross section of countries is interpreted as evidence of income convergence among those countries. Several empirical studies have used time series and cross section data to measure and evaluate convergence among countries and regions. Well-known papers in the literature include Baumol (1986), DeLong (1988), Barro and Sala-i-Martin (1991), Sala-i-Martin (1996), Ben-David (1993), Neven and Gouyette (1995) and Cheshire and Carbonaro (1995) and Michelis and Neaime (2004).

In this study, we outline several economic reasons for converging or diverging economies and state the measures of convergence that will be used in the empirical analysis. Convergence of two or more economic series, such as per capita GDP, is said to occur if the difference between the series becomes arbitrarily small or tends to some constant as time elapses. For random series, stochastic convergence requires that the probability the two series differ by a specified amount becomes arbitrarily small in the limit. If convergence fails to obtain, we say that the series diverge. Economic convergence is an important issue in growth theory and trade and development economics. If growth rates in real per capita GDP across countries converge over time as a result of say greater trade integration, then poor countries-in our case, MPs- will tend to develop faster than rich ones-in our case the EU countries-and catch-up with them eventually. This issue has given rise to the convergence hypothesis of whether poor regions or countries have the tendency to grow faster than rich ones (e.g. see Barro, 1991).

Economic theory is not entirely supportive of the convergence hypothesis. Whereas the standard neoclassical growth model predicts economic convergence, the more recent endogenous growth models reject convergence in general. In the neoclassical growth models of Solow (1956), Cass (1965) and Koopmans (1965), convergence is a natural outcome of exogenous technical change that migrates across countries with similar preferences and technology. Under the usual assumption of diminishing returns to reproducible capital, poor countries with low capital-labour ratios have high marginal products of capital and, therefore, tend to grow faster than rich countries with high capital-labour ratios. Moreover, free mobility of capital and labour across countries or regions will bid away differences in factor returns, and thus factor incomes will converge to their steady-state values over time, at which point convergence ceases to be operational. Any observed differences in steady-state incomes should reflect region-specific characteristics such as differences in human capital, natural amenities or cost of living differences (see Levine and Renelt (1992) and Sherwood-Call (1996)). Hence, the neoclassical growth model is consistent with strong economic convergence across different countries or regions.

In contrast, the new endogenous growth theories, pioneered primarily by the theoretical work of Romer (1986) and Lucas (1988), are less optimistic about economic convergence, and in general predict regional disparities or economic divergence. The new theories assume constant returns to scale with respect to a broad measure of capital that includes both physical and human capital that is accumulated through formal and informal education, training and experience. According to Romer, knowledge spill-overs from one firm have positive effects on the production possibilities of other firms. These spill-overs increase the return to human capital in regions with large amounts of physical capital. Lucas argues that the returns to skilled labour

may be higher in regions with large concentration of skilled workers due to external economics of scale. In this situation, skilled workers would migrate to regions with other skilled workers, thereby causing income in these regions to increase and diverge relative to income in other less developed regions. This result of economic divergence is quite different from the equalizing effect of labour migration on factor incomes in the standard neoclassical model. Economic divergence and regional disparities have also been predicted in a different setting by Krugman (1991). In his model a developed region coexists with a less developed one in a pattern that depends on transportation costs and returns to scale.

On the other hand, and since the early 1980s, monetary and fiscal developments in the MED region have shown signs of weaknesses. Deteriorations in the global economic outlook, coupled with political and regional tensions, limited fiscal and monetary space, and the aftermath of the recent debt and financial crises,¹ have been contributing in heightening and amplifying the already deteriorating monetary and fiscal environment in the region. Oil prices and revenues, interest and exchange rates have all been volatile, and many MED economies have moved from little debt to high levels of public debt and accumulated budget deficits. At the same time many MPs are moving towards greater participation in the global economy; mainly the continued efforts to enhance the Euro-Mediterranean trade agreements through the new ENP. The increasing trend towards financial and economic globalization is presenting the region with several challenges at the fiscal, financial and monetary levels. Greater monetary and fiscal coordination and cooperation within the MED region may turn out to be instrumental for the region to avert any type of financial or fiscal crisis in the future, to better cope with the costs of greater trade and financial market integration with the EU, and to enhancing consumption smoothing and income convergence opportunities.

Understanding the dynamics of macroeconomic volatility and its relationship with trade and financial market integration has recently gained considerable attention among policy makers and academics for a number of reasons (see Neaime 2005). First, the economic literature emphasizes the important role of sound fiscal, financial and monetary policies in driving macroeconomic volatility. Second, a number of studies have documented the declining volatility of GDP and consumption in the G7 since the mid-1990s resulting from enhanced financial liberalization and tried to furnish justifications for this decline. While MED economies are expected to become more open to trade and financial flows with the EU through the implementation of the European Neighborhood Policy, the more important developments over this period have been: (1) the implementation of the New European Neighborhood Policy in 2015; and (2) the introduction of a Deep and Comprehensive Free Trade Area (DCFTA) that will address agriculture, services, and non-tariff measures. Hence, a natural question is whether rising MED financial integration and the further enhancement of the Euro-MED trade agreements by themselves have an impact on the MPs’ macroeconomic volatility.

On the expected effects of the tariff reduction of the Mediterranean countries and greater trade and financial openness, this study will measure ex-post impacts. That is, the effects of the Association Agreements on the volatility of GDP, on the MPs consumption patterns, on MED employment, and on income convergence. This study will also identify who amongst the MPs could be classified as winners and who are the losers from this policy of openness; in terms of

¹ For a detailed discussion of the recent debt and financial crises and their spill over effects on the MENA region see Neaime (2005, 2008, 2012, 2015a&b, 2016, 2017) and Guyot et al (2014).

GDP growth prospects, employment creation and consumption smoothing and income convergence.

We examine the effects of financial and trade integration on macroeconomic volatility, in the following MPs: Egypt, Jordan, Lebanon, Turkey, Morocco, Tunisia, Algeria, and Syria. We study the volatility dynamics of output and consumption and other macroeconomic variables in the region. After highlighting these basic results, we will employ panel data regression models to analyse what factors are associated with consumption and GDP volatilities and their evolution over time. Finally, this study also analyzes how can the Neighborhood Policy (and its revised version) help MPs during the period of economic, political and social transition. For this, is it necessary in the short run for the MPs to pursue further the opening-up process of their trade and capital accounts?

4. Related Literature

The finance and growth literature were initially interested in establishing empirically the link between financial developments and growth. Schumpeter (1912) was the first to argue that financial intermediation is essential for technological innovation and economic growth. More recently, McKinnon (1973) has argued that there is a positive association between financial development and economic growth and that financial repression, such as government controls on interest rates, credit allocation, or restrictions on the trade and capital accounts tend to slow down financial development and economic growth. One important empirical paper is by Levine (1997). Using data for some 80 countries over the period 1960-1989, he tests the hypothesis that financial development induces economic growth. It is shown that financial development is strongly correlated with growth in investment, standards of living, and the efficiency with which economies employ physical capital. It is also shown that financial development is a good predictor of future rates of economic growth, investment, and economic efficiency improvements.

Subsequently, the focus has shifted from establishing a statistically significant link between financial developments and economic growth to the impact of financial developments and financial integration on macroeconomic volatility in general, and the volatility of the rate of growth of GDP and consumption in particular. It was shown that sudden capital account liberalization might induce increased GDP and consumption volatilities in developing countries, most of which do not have a well-developed financial sector to accommodate the highly volatile nature of short-term capital flows. For instance, Aghion et al. (1999) and Caballero and Krishnamurthy (2001), explore the impact of capital account liberalization on GDP and consumption volatilities. It is shown that capital outflows have contributed to increased consumption and output volatility. Bekaert et al. (2002) report that increased capital account openness increases the volatility of output and consumption in emerging market countries. However, using data for a sample of 74 countries over the period 1960-97, Easterly et al. (2001) find that a higher level of development of the domestic financial sector, and higher capital account liberalization are associated with lower GDP and consumption volatilities.

A closer review of this strand of the literature suggests that the impact of financial integration on the volatility of GDP and consumption is rather ambiguous. According to Baxter and Crucini (1995), the volatility of output increases while the volatility of consumption decreases with rising financial integration. Arnello and Mendoza (2002) argue that changes in the volatility of output and consumption are relatively small in response to changes in the degree of financial integration within the context of a stochastic dynamic business cycle model. Using

data for 25 OECD countries, Buch et al. (2002), examine the link between financial integration and the volatility of consumption. Their empirical findings report no association between financial integration and the volatility of consumption. However, Gavin and Hausmann (1996) report a significant positive association between financial integration proxied by capital flows, and consumption volatility. Using data for 93 countries over the period 1971-94, Denizer et al (2002) examine the sources of GDP volatility in developing economies. Their empirical findings suggest that a higher degree of financial integration is associated with lower output volatility in OECD countries, and higher output volatility in non-OECD countries. In addition, countries with more developed financial sectors are able to reduce GDP volatility through financial integration.

Other studies looked at trade integration as opposed to capital account integration. The theoretical impact of trade integration on macroeconomic volatility depends greatly on patterns of trade specialization and the nature of shocks. Kose, Prasad and Terrones (2003) examine the impact of rising trade and financial integration on international business cycle co-movement among a large group of industrial and developing countries. The results provide at best limited support for the conventional wisdom that globalization has increased the degree of synchronization of business cycles. The evidence that trade and financial integration enhance global spill-overs of macroeconomic fluctuations is stronger for industrial countries. One striking result is that on average cross-country consumption volatilities have not increased in the 1990s, precisely when financial integration would have been expected to result in better risk sharing opportunities especially for developing countries. Baxter (1995) argues that capital accumulation and international capital flows are central to understanding world trade and business cycles. The paper develops a two-country model of international trade within which capital accumulation and international investment flows play a central role. The paper explores the channels by which technology and fiscal shocks are transmitted to the domestic and foreign economies. The main findings are that the model capture many of the salient features of international business cycles. Another important factor in determining macroeconomic volatility is country size, and MED economies are relatively much smaller than EU's countries. Within this context, sudden changes in EU's interest rates might cause substantially large business cycle fluctuations in highly indebted MED countries, like Egypt, Lebanon, and Jordan and to a lesser extent Turkey. Head (1995) and Crucini (1997) show that business cycles fluctuations in large developed economies can have a significant impact on the dynamics of business cycles in small open developing countries.

Levine and Renelt (1992) examine whether the conclusions from existing studies using cross country regressions to search for empirical linkages between growth rates and a variety of economic policy, political and institutional indicators, are robust or fragile to small changes in the conditioning information set. Using sensitivity analysis, the paper finds that very few economic variables are robustly correlated with cross-country growth rates or the ratio of investment expenditures to GDP. However, the paper finds, a robust positive correlation between average growth rates and the average share of investment in GDP, and a positive and robust correlation between the average share of investment in GDP and the average share of trade in GDP. The paper argues that studies that use export indicators should not be interpreted as studying the relationship between growth and exports per se, but rather as studying the relationship between growth and trade defined more broadly. In addition, the paper finds that the inclusion of the investment share in the regression equation renders trade policy measure weakly correlated with growth. The paper also finds support for the conditional-convergence hypothesis: there is a robust, negative correlation between the initial level of income and growth over the

1960-1989 period, but this result does not hold over the 1974-1989 period. Frankel and Romer’s (1999) paper is an empirical investigation of the impact of international trade on standards of living. The paper argues that examining the correlation between trade and income does not identify the direction of causation between the two. That is why the paper uses an alternative instrument for trade: countries’ geographic characteristics, which are highly correlated with trade and plausibly not with other determinants of income. By using instrumental variables using geographic characteristics, the paper finds no evidence that OLS estimates overstate the effects of trade on income. Further, the paper finds a robust and positive effect of trade on income.

Sachs and Warner (1997) present their own view of the literature on cross-country growth, and present some of their own empirical findings. The authors use cross-country growth regression to analyse the effects of a set of variables on growth. The authors find that it takes 37 years for a country to close half the gap between its current income and its steady state income. Countries with tropical climates and landlocked countries have lower steady state incomes, hence lower growth. Higher government saving, increased global integration, and better institutional quality all raise steady-state income, therefore, bolster transitional growth. The authors also find that countries abundant in natural resources have lower growth. Concerning convergence, the authors include an index for openness in their regression equation and find that open economies do converge faster than closed ones. It takes only 17 years for an open economy to close half the gap between its current income and its steady-state income. Rebelo (1991) describes a class of models in which the disparity in growth rates across countries can be the result of cross country heterogeneity in government policy. All the models studied have the implication that the growth rate should be low in countries with high income tax rates and poor property rights enforcement. An increase in the income tax rate decreases the rate of return to the investment activities of the private sector and leads to a permanent decline in the rate of capital accumulation and in the rate of growth.

4. Empirical Methodology

As previously mentioned, we consider two well-known measures of convergence: σ -convergence and β -convergence. The concept of σ -convergence is concerned with the behaviour over time of the cross-sectional standard deviation of real per capita GDP, or some other relevant variable used to measure overall economic performance. Given a data set, if there is a decline in the cross-sectional standard deviation over time, then this is interpreted as evidence in support of convergence. This measure has been used by the European Commission in its reports of regional development in the EU.

The measure of β -convergence was suggested by Barro and Sala-i-Martin (1991, 1992) and derived as an approximation of the transitional dynamics of the standard neoclassical growth model. Briefly, following Barro and Sala-i-Martin (1991), the average growth rate of per capita output, y , in the time interval $(0, T)$, is given by the expression:

$$\frac{1}{T} \log \frac{y_T}{y_0} = \alpha - \frac{1 - e^{-\beta T}}{T} \log \frac{y_0}{y^*}, \quad (1)$$

where α is a constant, and the positive parameter β depends on the technology and preference parameters of the model and controls the speed of adjustment of y to its steady state value y^* . The larger is β the greater is the response of the average growth rate of y to the gap between y_0 and y^* , that is the faster is the convergence to the steady state. The model implies conditional convergence in the sense that what matters is y_0 relative to the steady state values of y^* which may differ across the Euro-MED region. For this reason, in order to properly identify β in

empirical work, it is necessary to control for cross-sectional differences in steady state values. On the other hand, if cross-sectional differences can be reasonably ignored, then equation (1) gives a form of unconditional or absolute β -convergence.

Overall, the variables that will be used to initially explain growth in MPs belong to four broad categories: (a) initial conditions, captured by initial real per capita GDP and schooling attainment; (b) policy variables, measured by economic openness, and government spending; (c) macroeconomic stability, measured by the reciprocal of the inflation rate; and (d) demography, measured by population growth. The empirical results will be obtained based on different empirical versions of model (1) extended by a vector of variables Z to account for conditional convergence as follows:

$$\frac{1}{T} \log \frac{y_{i,T}}{y_{i,0}} = \alpha + \gamma \log y_{i,0} + \phi Z_{i,T} + u_{i,T} \quad i = 1, \dots, n \quad (2)$$

where $y_{i,T}$ = the real per capita GDP growth rate for country i in year T ; $y_{i,0}$ = the initial period

real per capital GDP for country i ; $\frac{1}{T} \log \frac{y_{i,T}}{y_{i,0}} = \text{GY}$ = the growth rate of y in the interval $(0, T)$;

$Z_{i,T}$ = a set of explanatory variables from the categories (a), (b), (c), and (d) above, intended to keep the steady-state characteristics of the countries in the sample constant, as well as three dummy variables to capture decade effects for the 1990s, 2000s, and 2010s; $u_{i,T}$ = a random

error term; and $\gamma = -\frac{1 - e^{-\beta T}}{T}$.

The parameter $\gamma = -\frac{1 - e^{-\beta T}}{T}$ contains the convergence parameter β . For a given T , the higher is β the higher is γ in absolute value. It is also clear from this expression that as long as the parameter β is positive, the parameter γ will be negative, and hence a significantly negative estimate of γ is consistent with the hypothesis of income convergence in our cross section of EU-MED countries. Of the other regression parameters, α is a regression constant and ϕ is a vector of unknown regression parameters that capture the marginal effect on the growth rate of real per capita GDP due to marginal changes in the variables in Z . If the vector of parameters ϕ is set equal to zero, then equation (2) can be used to analyze unconditional or absolute convergence. Since our sample contains a diverse cross section of EU and MED countries with different steady state characteristics, we concentrate on analyzing and reporting the results for conditional convergence below. The estimated magnitude, sign and statistical significance of the γ and ϕ coefficients are a major concern of the present paper. Heteroscedasticity consistent Least Squares for cross section and panel (pooled) regression techniques will be used to estimate the empirical models. First cross section regressions for every 5 years, 10 years and the whole sample intervals will be estimated. Second, the data for 8 MED countries and 8 EU countries will be combined and panel regression models will be estimated in order to get more efficient parameter estimates.

In other words, a panel of cross section and annual time series data for 16 Euro-MED countries is used for the empirical analysis over the period 1980 to 2015. The MED countries are: Egypt, Jordan, Lebanon, Turkey, Morocco, Tunisia, Algeria, Syria, and the EU countries are: France, Germany, Belgium, Greece, Ireland, Italy, Portugal and Spain. The description of the data are as follows. GY: growth of real per capita GDP measured every five, ten or thirty

five-year time interval. INY is the initial level of per capita GDP at the beginning of every five, ten or thirty five-year period. GP is average annual population growth every five, ten or thirty-five-year period. SCL is average schooling years in the total population for every five, ten, or thirty-five -year period. G is the average share of government spending for every five, ten or thirty-five-year period. IINF is the inverse inflation rate for every five, ten or thirty-five-year period. OPN is openness, measured by the average of (exports +imports)/GDP for every five, ten or thirty-five-year period. Also, when the data is pooled, we construct two dummy variables to capture the effect of the different decades on the process of economic growth and integration in the Euro-MED countries; see Tables 3 below.

On the other hand, panel data econometric models are also used to highlight the main determinants of macroeconomic and financial volatility in the MED region, that may have resulted from greater integration with the EU. Two measures of trade openness—a dummy variable to capture restrictions on current account transactions² and a trade openness³ ratio—are used. To measure capital account integration and openness, we will use another dummy variable to capture restrictions on capital account transactions,⁴ and also a measure of gross capital flows⁵ to GDP. We will also include in our empirical analysis a number of variables drawn from the empirical literature that has examined various aspects of financial and macroeconomic volatility. In addition to the above measures of trade and financial openness, our set of independent variables includes the standard deviation of the terms of trade,⁶ the ratio of M2 to GDP and its volatility, the rate of inflation, and the volatility of the fiscal balance.⁷

The general version of the model takes the form:

$$\begin{aligned} \sigma_{i,t} = & \alpha_i + \beta CAR_{i,t} + \theta TO_{i,t} + \delta CPAR_{i,t} + \phi FO_{i,t} + \varphi \sigma_{TOT,i,t} \\ & + \mu(M2_{i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t} / GDP_{i,t} + \eta Inf_{i,t} + \kappa \sigma_{FPi,t} + u_{i,t}. \end{aligned} \quad (3)$$

where $i = 1, 2, \dots, N$ cross sections, and periods $t = 1, 2, \dots, T$, with $N=8$ MED countries and $T=36$ years, spanning the sample period 1980-2016. And where $CAR_{i,t}$ is a dummy variable capturing current account restrictions for country i at time t ; $TO_{i,t}$ is trade openness for country i at time t ; $CPAR_{i,t}$ is a dummy variable capturing capital account restrictions for country i at time t ; $FO_{i,t}$ is financial openness for country i at time t ; $\sigma_{TOT,i,t}$ is the terms of trade volatility for country i at time t ; $\sigma_{M2/GDP,i,t}$ is the volatility of M2/GDP for country i at time t ; inf is inflation for country i in period t ; and $\sigma_{FP,i,t}$ is the volatility of fiscal policy for country i at time t .

² This is a dummy variable, which takes on the value of 1 in the presence of trade restrictions and 0 otherwise.

³ The measure of trade openness used is defined as the ratio of total exports plus imports divided by GDP.

⁴ This is a dummy variable, which takes on the value of 1 in the presence of capital account restrictions and 0 otherwise.

⁵ Capital flows are defined as foreign direct investment plus portfolio flows.

⁶ Terms of trade for a given MED country i are measured as the ratio of country i 's Producers Price Index (PPI) to proxy the price of exports, and the Consumer Price Index (CPI) to proxy the price of imports.

⁷ Fiscal balance is defined as the difference between government spending (inclusive of debt service) and government revenues.

We estimate three different versions of the above model for the MED countries of Egypt, Jordan, Lebanon, Turkey, Morocco, Tunisia, Algeria, and Syria. The dependent variable $\sigma_{i,t}$ for each one of these different versions will represent respectively: (1) The volatility of the growth rate of GDP, (2) The volatility of the growth rate of consumption C; And (3) the volatility of the growth rate of total private and public consumption (C+G), as follows:

$$\begin{aligned} \sigma_{i,t}^{\dot{y}} = & \alpha_i + \beta CAR_{i,t} + \theta TO_{i,t} + \delta CPAR_{i,t} + \phi FO_{i,t} + \varphi \sigma_{TOTi,t} \\ & + \mu(M2_{i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t} / GDP_{i,t} + \eta Inf_{i,t} + \kappa \sigma_{FPI,t} + u_{i,t}. \end{aligned} \quad (4)$$

$$\begin{aligned} \sigma_{i,t}^{\dot{C}} = & \alpha_i + \beta CAR_{i,t} + \theta TO_{i,t} + \delta CPAR_{i,t} + \phi FO_{i,t} + \varphi \sigma_{TOTi,t} \\ & + \mu(M2_{i,t} / GDP_{i,t})_1 + \mu_1 \sigma_{M2,i,t} / GDP_{i,t} + \eta Inf_{i,t} + \kappa \sigma_{FPI,t} + u_{i,t}. \end{aligned} \quad (5)$$

$$\begin{aligned} \sigma_{i,t}^{\dot{C}+\dot{G}} = & \alpha_i + \beta CAR_{i,t} + \theta TO_{i,t} + \delta CPAR_{i,t} + \phi FO_{i,t} + \varphi \sigma_{TOTi,t} \\ & + \mu(M2_{i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t} / GDP_{i,t} + \eta Inf_{i,t} + \kappa \sigma_{FPI,t} + u_{i,t}. \end{aligned} \quad (6)$$

The intercept α_i is a country fixed effect that controls for country specific factors that do not vary over time. White heteroskedasticity-consistent standard errors and covariances will be computed. The independent variables will be selected on the basis of their potential relevance to this model, and because of their importance in depicting the impact of financial volatility on macroeconomic volatility. The residual covariance matrix for this set of equations is given by

$$\Omega = E(uu') = \sigma^2 I_N \otimes I_T. \quad (7)$$

Alternatively, the growth literature has related the two measure of β and σ -convergence to avoid any dichotomous treatment of the two measures as we do in the current research paper. Consider the following β -convergence equation:

$$y_{it} = c_i + (1 - \beta)y_{it-1} + \gamma_1 Z_{it} + \varepsilon_{it}, \quad i = 1, \dots, n; t = 1, \dots, T, \quad (8)$$

where y_{it} is the economic outcome (real per-capita GDP, or consumption) in country i at time t ; Z_{it} is a vector of explanatory variables (those in Equations (4)-(6) above or those from the categories (a), (b), (c), (d) mentioned below); $\varepsilon_{it} \sim \text{iid}(0, \sigma_\varepsilon^2)$; and c_i is an individual fixed effect. $\hat{\beta}$ and $\hat{\gamma}_1$ are the estimates of β and γ_1 , $\sigma_{y_t}^2$ and $\sigma_{z_t}^2$ are the empirical variances of y_{it} and Z_{it} (the average which should be computed for the sample of countries for each year), σ_i^2 the variance of the individual fixed effects, and $\hat{\sigma}_{\varepsilon t}^2$ is the estimated variance of the residuals. From equation (8), it is straightforward to derive the following conditional σ -convergence equation as follows:

$$\sigma_{y_t}^2 = \sigma_i^2 + (1 - \hat{\beta})^2 \sigma_{y_{t-1}}^2 + \hat{\gamma}_1^2 \sigma_{z_t}^2 + \hat{\sigma}_{\varepsilon t}^2, \quad i = 1, \dots, n; t = 1, \dots, T. \quad (9)$$

The stationary trajectory is obtained when $\sigma_{y_t}^2 = \sigma_{y_{t-1}}^2$:

$$\sigma_{yt}^{2*} = \frac{\sigma_t^2 + \hat{\sigma}_{\varepsilon t}^2 + \hat{\gamma}_1^2 \sigma_{zt}^2}{[1 - (1 - \hat{\beta})^2]}, \quad (10)$$

and the equation can be rewritten as follows:

$$\sigma_{yt}^2 = (1 - \hat{\beta})^2 \sigma_{y_{t-1}}^2 + [1 - (1 - \hat{\beta})^2] \sigma_{yt}^{2*}. \quad (11)$$

A general solution that follows from equation (11) is therefore:

$$\sigma_{yt}^2 = \sigma_{yt}^{2*} + (1 - \hat{\beta})^{2t} [\sigma_{y_0}^2 - \sigma_{y_0}^{2*}] + k(1 - \hat{\beta})^{2t}. \quad (12)$$

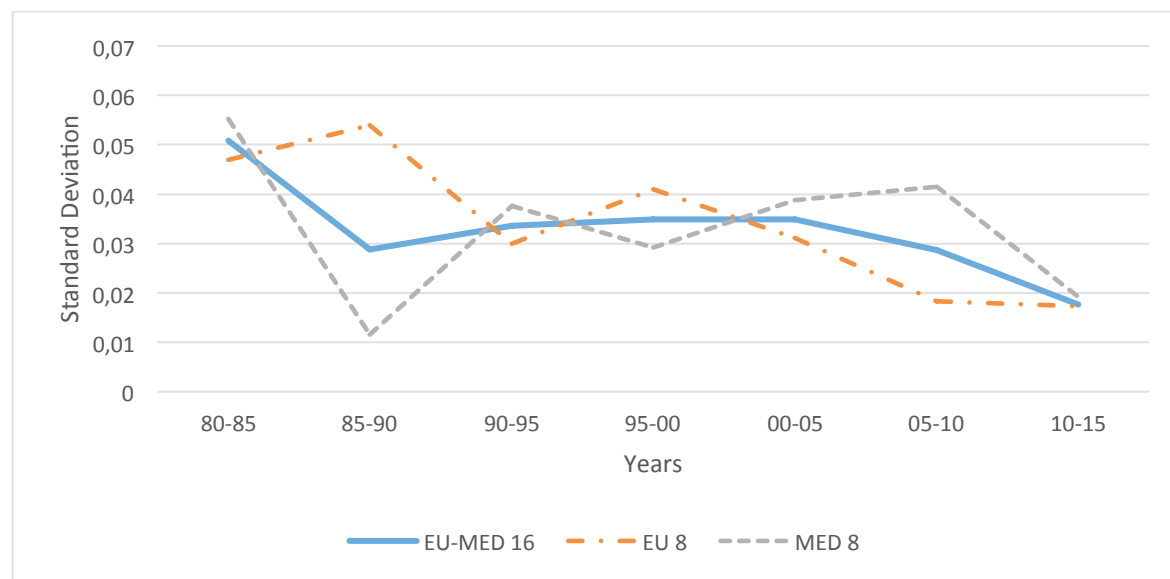
Equation (12) implies the following scenarios based upon the values and sign of $\hat{\beta}$: If $\hat{\beta} \leq 0$, we have both β and σ -divergence; If $0 < \hat{\beta} < 1$ and the initial dispersion between the economic outcome is less than the maximum dispersion for which the countries are considered to diverge ($\sigma_{y_0}^2 < \sigma_{y_0}^{2*}$), then β -convergence leads to a gradual reduction in the dispersion of the endogenous variables; And finally, if $0 < \hat{\beta} < 1$ and the initial dispersion between the countries is higher than the maximum dispersion for which the economic outcomes are considered to converge ($\sigma_{y_0}^2 > \sigma_{y_0}^{2*}$), then we observe a conditional β -convergence dynamics coupled with a σ -divergence.

5. Empirical Results

We first present the empirical results for σ -convergence and β -convergence for the Euro-MED group. Europe has been the core of high growth in the Euro-MED region, and thus studying convergence in this overall group is of some interest in itself and may provide some new insights about the process of trade integration and economic convergence in the Euro-MED region; the interdependent growth of the MED region has supposedly emerged under the formal integration framework of the Euro-MED Free Trade Agreements.

5.1 σ -Convergence

Figure 1 depicts the cross sectional standard deviations of the natural logarithms (logs) of the real per capita GDP at 5-year intervals from 1980 to 2015 for the three groups of the Euro-MED region. As seen in Figure 1, the cross sectional standard deviations of the log-GDPs for the EU-MED countries have been on a declining trend from 1980 to 2015. However, the standard deviations for the MED sub-sample reverted up in early 2000 all the way until 2010. The latter finding is not surprising, since the 2000-2010 sub-period includes the introduction in early 2000 of the European Neighborhood Policy, and the 2008-2010 period of financial and debt crises in the EU which affected most MED countries; plunging their economies into economic instability and recession. Consequently, using the criterion of σ -convergence, there is some evidence of economic convergence within the Euro-MED group of countries. However, this is not the case for the EU and MED subgroups. In both sub-groups of countries, the cross sectional standard deviations of the logs of real per capita GDP have moved in opposite directions throughout the sample period from 1985 to 2015. The increase in the standard deviations was rather moderate in the 1980s, and 1990s, but it accelerated in the 2000s, even more so for the MED countries.

Figure 1. Cross Sectional Standard Deviations of Log Real GDP per Capita, 1980-2015

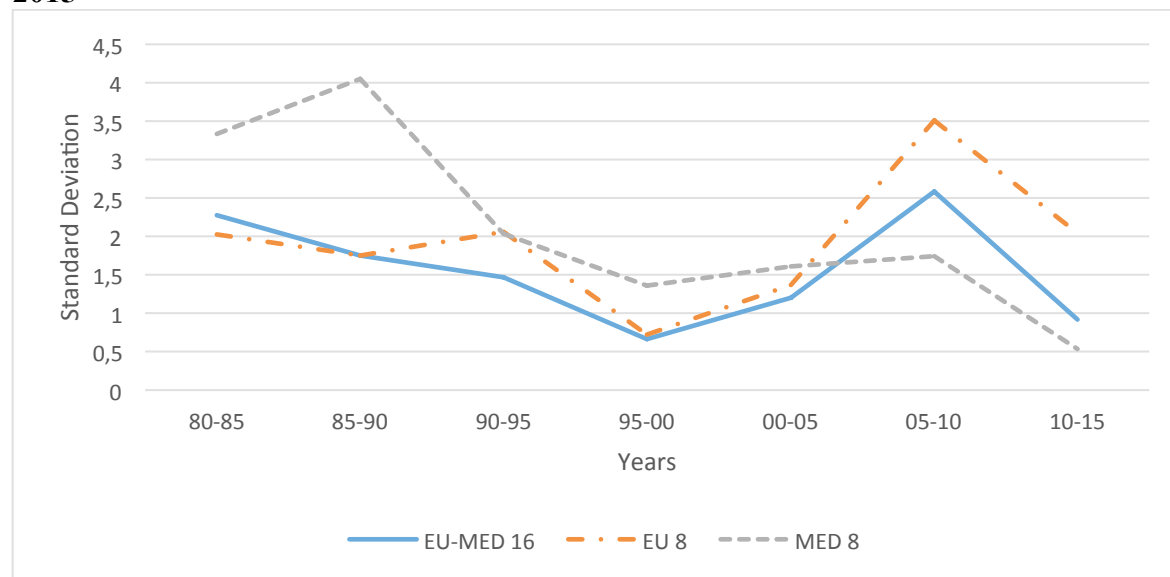
Source: Authors' Estimates.

Clearly, there does not seem to be evidence of σ -convergence within the Euro-MED countries during the period 2000-2015. On the contrary, the evidence in the data points to economic divergence in the two sub-groups of countries. A plausible explanation for this result is the fact that for most of the sample period the EU economies have experienced high average growth rates that nonetheless have been more volatile than the typically lower average growth rates of the less developed MED economies. A main reason for this may be the different stages of economic development that the MED economies have gone through, and the diversity of their economic structures that respond differently to random economic disturbances. For instance, Egypt, Jordan, and Lebanon, classified as small open economies and oil importers, with fixed exchange rates and high levels of public debt, faced sharp increases in interest rates and deteriorations in their terms of trade during the 2008 debt and financial crises and the oil price shocks of 2008-2015. As an oil exporter, Syria benefited from oil price increases before the crisis, but faced severe difficulties after 2008 due to declining oil and commodity prices and rising interest rates coupled with political and military turmoil after 2010. Similarly, Turkey was adversely affected by the 2010 European debt crisis and the EU's business cycle which impinged mainly on its exports to the EU. On the other hand, while oil price increases had minor direct impact on Morocco and Tunisia, which depend primarily on manufactured and agricultural imports from the EU, both countries were adversely affected by the EU's business cycles.

Figure 2 plots an alternative measure of σ -convergence in terms of the 5-year cross sectional standard deviation of the growth rates of real per capita GDP for the two groups of economies. As was the case with the standard deviation of the log-GDPs in Figure 1, the MED and EU countries show converging growth rates from 1990 to 2005, and diverging growth rates before 1995 and after 2005. The same is true on average for the growth rates of the EU economies but their growth rates are less volatile in between 1980 and 2005. Clearly, the inclusion of the developed EU economies in the Euro-MED region provides an element of stability in the region and an anchor toward which the MED economies tend to converge, in the

absence of major crises such as the Arab spring and the European debt and financial crises of the late 2000s.

Figure 2. Cross Sectional Standard Deviations: Real GDP per Capita Growth Rates, 1980-2015



Source: Authors' Estimates.

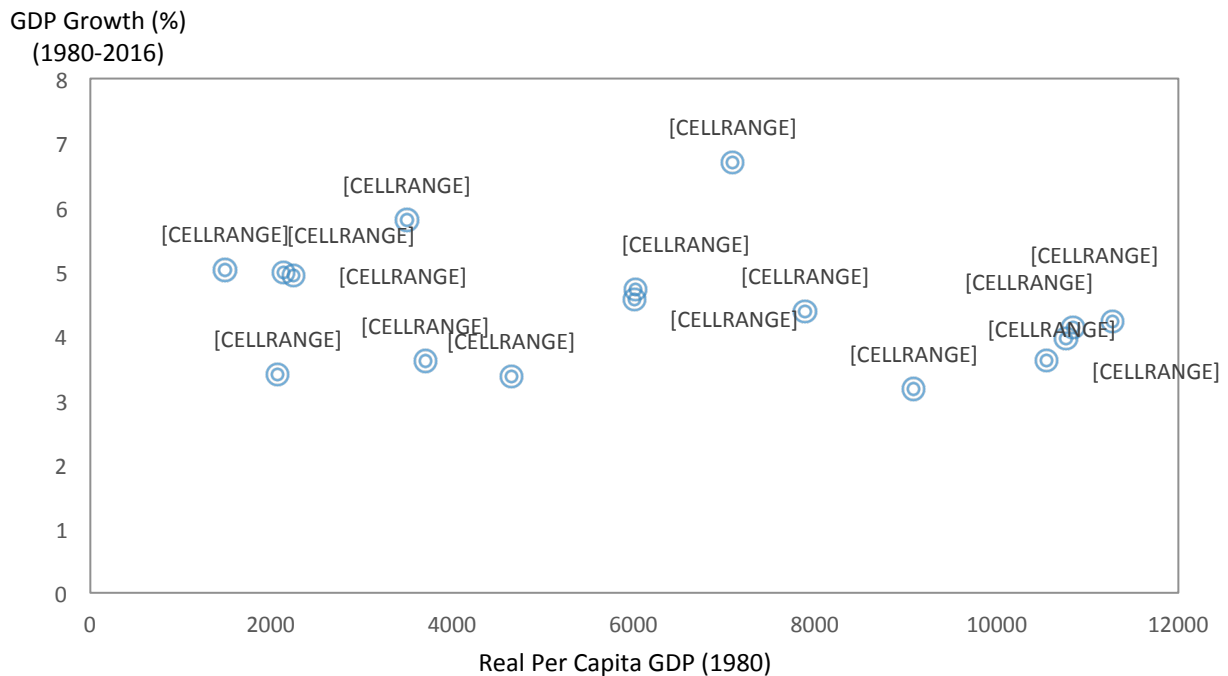
As shown by Barro and Sala-i-Martin (1995, pp. 384-85), σ -convergence is only a sufficient but not necessary condition for β -convergence. In fact, β -convergence, if it exists, will tend to contribute to σ -convergence, but random regional shocks that increase the variance of the error term u_{it} in equation (2) above, can cause σ -convergence to fail even in the presence of β -convergence. Consequently, we can gain additional insights about the process of income convergence in the Euro-MED region if we study β -convergence on its own merits. We turn to this analysis next.

5.2 β -Convergence

In this section, we present and analyze the results for β -convergence. As an exploratory step we examine absolute convergence graphically and then proceed to analyze the empirical regression results for conditional β -convergence sequentially. This way the direct effects of the Barcelona Process and the European Neighborhood Policy, as well as, the financial crisis of the late 2000s on the convergence process in the EU-MED region can be depicted more clearly.

Figure 3 plots the 1980 real per capita GDP against the annual growth rate of real per capita GDP over the 1980-2015 for the EU-MED (16). As seen in Figure 3, there is an inverse relationship between initial real per capita GDP and the growth rate of real per capita GDP. Consequently, the MED economies grew faster on average over the sample period than the developed economies of the EU. In other words, Figure 3 supports the hypothesis of absolute convergence in our sample of the EU-MED (16) countries.

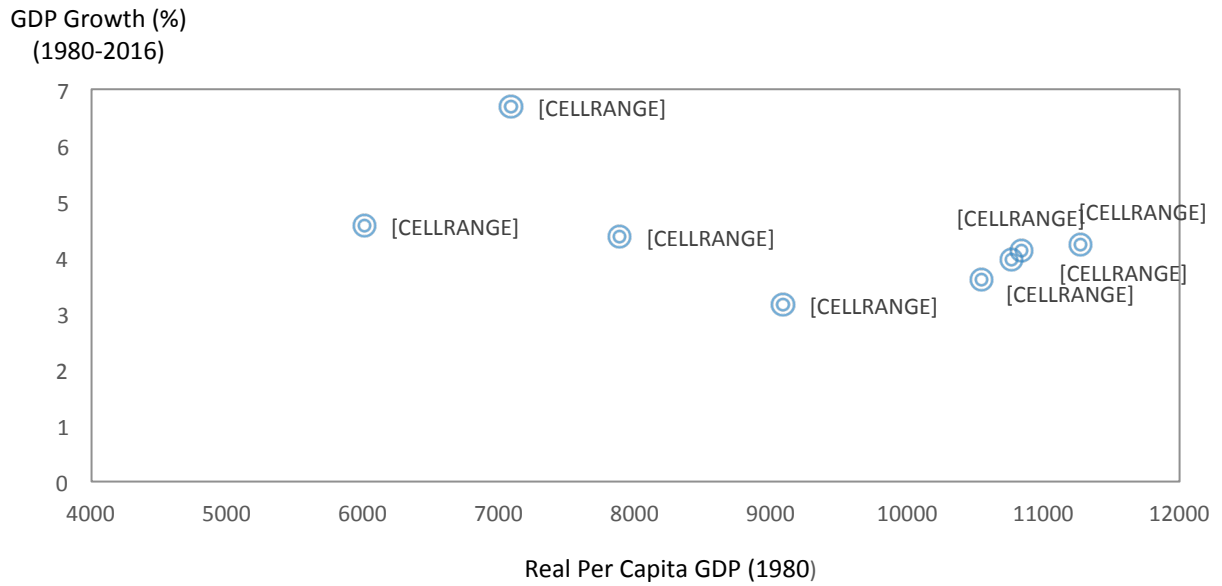
Figure 3. GDP Growth vs Initial GDP EU-MED (16)



Source: Authors' Estimates.

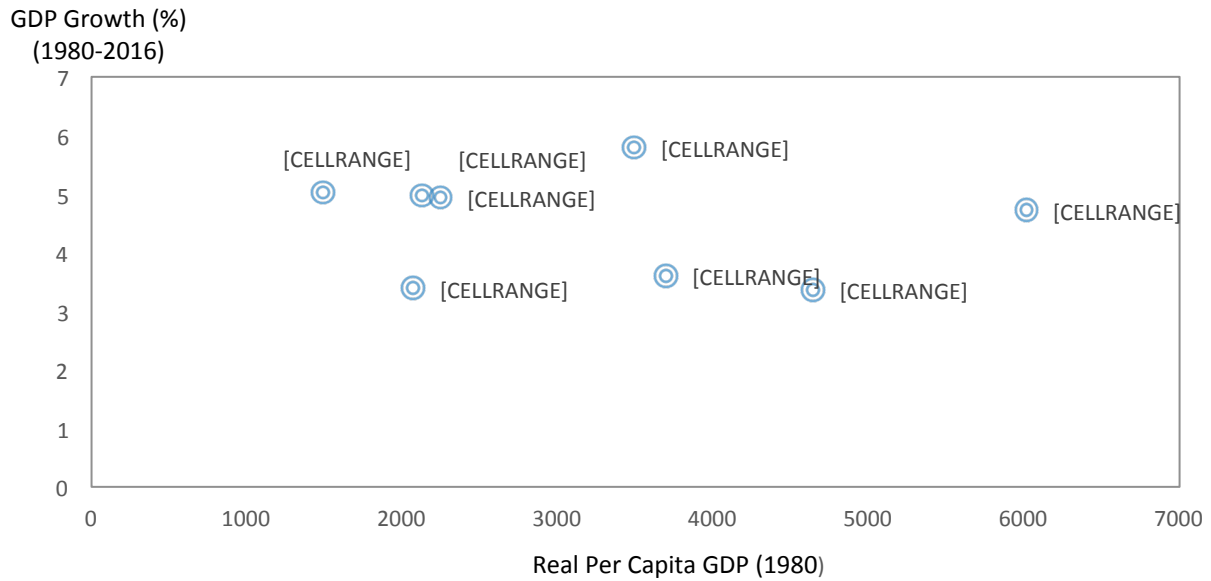
Figure 4 shows weaker evidence of absolute convergence for the EU economies, in that the scatter plot is more dispersed than in Figure 3 and the anchor of convergence is provided by the German and French economies. It is also evident from Figure 4 that removing Germany and France from the EU-MED group results in a failure of absolute β -convergence: if anything, in this case, the best fit through the data points is an upward sloping line. The same is true for the MED economies as shown in Figure 5. In this case Turkey provides an outlier observation that contributes to divergence. Even without Turkey there is no evidence of absolute convergence within the MED region.

Figure 4. GDP Growth vs Initial GDP EU (8)



Source: Authors' Estimates.

Figure 5. GDP Growth vs Initial GDP (MED 8)



Source: Authors' Estimates.

In the remainder of this section we use formal regression techniques to investigate the hypothesis of conditional β -convergence in the EU-MED region for the period 1980-2015. Table 1 reports the empirical results for the 5-year interval subsamples from 1980-1985 through to 2010-2015. The dependent variable in all regressions is average GDP growth over each sub-period. The explanatory variables in Z are INY, SCL, IINF, OPN and GP as defined earlier.

Table 1. Cross Sectional Growth Regressions for the Periods: 85-90, 90-95, 95-00, 00-05, 05-10, 10-15

	GY8590	GY9095	GY9500	GY0005	GY0510	GY1015
CON	3.21 (0.55)	6.45 (1.32)	7.12 (1.43)	-3.45 (-0.78)	10.65 (1.06)	3.45 (0.69)
INY	-0.002 (-0.63)	-0.002* (-2.45)	-0.0006* (-3.31)	-0.0007* (-3.55)	-0.0005 (-1.79)	-0.008* (-2.44)
SCL	0.42 (0.66)	1.11* (2.56)	0.73 (0.88)	1.09 (1.11)	0.043 (0.045)	1.11 (0.9)
IINF	-0.14 (-1.79)	-0.044* (-3.13)	0.55 (0.51)	0.27 (1.35)	-0.66 (-0.21)	1.29 (0.67)
OPN	0.06* (3.81)	0.017* (3.66)	0.011 (0.88)	0.0071* (2.12)	0.015* (2.87)	0.019* (5.12)
GP	-1.42 (-0.88)	-1.87 (-0.99)	-2.42 (-1.43)	2.77 (1.29)	-5.12* (-2.14)	-2.39 (-1.67)
Nobs	17	17	17	17	17	17
R ²	0.55	0.44	0.73	0.65	0.55	0.51
F	1.67	2.45	3.98	2.65	2.12	1.88

Source: Authors' Estimates.

NOTES: (1)*Statistically significant at the 5% level; (2)The t-statistics of coefficient estimates appear in parentheses; (3) The standard errors of the coefficient estimates are heteroscedastic consistent; (4) Dependent variable average real per capita GDP growth.

Economic growth is a long-run process that is realized over long time periods, longer than the five-year intervals considered in Table 1. Therefore, the results in Table 1 should be viewed as preliminary and indicative rather than definitive. They are reported here to indicate the variables that are important in explaining economic growth even over shorter time spans like 5 years. It is clear from Table 1 that initial GDP, INY, has a negative estimated coefficient, which turns out to be statistically significant in the 1990-95, 1995-00, 2000-05, and 2010-15 sub periods. The negative sign is as expected and is consistent with results obtained in several papers related to the literature on empirical growth and economic convergence, see, among others, Sala-i-Martin (1996) and references there in. The negative sign on the coefficient of INY signifies conditional income convergence among the 16 EU-MED countries. Theoretically, it is justified and provides support for the transitional dynamics of the neo-classical growth model, see Barro (1991). Among the other explanatory variables, economic openness, OPN, turns out to be an important factor for explaining economic growth and its effect is statistically significant at the 5 percent level in the 1985-90, 1990-95, 2000-05, and 2010-15 sub periods. Population growth,

GP, is also significant and has the expected negative impact on growth during the first half of the 2000s.

Table 2 reports the empirical cross section results for the 10-year intervals and the whole sample 35-year time span from 1980 to 2015. As seen from Table 2, over the 10-year time intervals the variables that are significant in explaining economic growth are macroeconomic stability, IINF, in the 1990s and 2000s and population growth, GP, in the 2000s. IINF as expected has a positive estimated coefficient and is statistically significant at the 5% level. OPN turns out to be strongly significant at the 5% level in the 1990s and 2000s (t-ratios 6.66 and 5.12 respectively) and it is estimated with the theoretically correct positive sign: the more open are the MED economies the greater will be their economic growth. GP as before has a negative impact on economic growth and it is statistically significant at the 5% level in the 1980s and 2000s. In terms of goodness of fit, we see that in the 1990s, 2000s, where we get some significant results, the coefficients of determination, R^2 , are estimated 60% and 63% respectively which are quite high for cross section regressions and are indicative of good explanatory power of the estimated models.

Table 2. Cross Sectional Growth Regressions for the Periods: 80-90, 90-00, 00-10, 80-15

VARIABLE	GY8090	GY9000	GY0010	GY8015
CONST	5.14 (0.898)	0.56 (0.10)	7.64 (2.10)	11.12 (1.33)
INY	-0.002 (-1.37)	-0.005 (-1.09)	-0.001 (-1.18)	-0.001* (-2.24)
SCL	0.99 (1.11)	0.77 (0.69)	0.054 (0.13)	1.31 (1.09)
IINF	0.19 (0.41)	-0.39* (-2.36)	0.423* (2.88)	0.25 (1.09)
OPN	0.019 (1.359)	0.029* (6.66)	0.027* (5.12)	0.039* (3.55)
GP	-1.39* (-2.44)	0.39 (0.41)	-3.12* (-2.77)	-4.11* (-2.31)
Nobs	17	17	17	17
R^2 :	0.55	0.60	0.63	0.60
F:	1.69	3.45	4.12	3.65

Source: Authors' Estimates.

NOTES: (1)*Statistically significant at the 5% level; (2)The t-statistics of coefficient estimates appear in parentheses; (3) The standard errors of the coefficient estimates are heteroscedastic consistent; (4) Dependent variable real per capita GDP growth.

The last column of Table 2 gives the results of the whole sample period 1980-2015. This 35-year time period spans the whole sample and it is long enough to capture important factors that affect economic growth. As seen in this column INY and OPN are statistically significant at the 5% level and the coefficients are estimated with the correct signs. Thus, initial conditions are

significant for economic growth and point to conditional convergence of national incomes across the 8 MED countries. Economic openness again has a positive effect on economic growth over the long run and it is statistically significant.

The empirical results so far have been based on the estimation of cross section regressions. Yet there are good reasons to believe that GDP growth rates are contemporaneously correlated across our sample of countries. For example, this contemporaneous correlation may arise due to EU's business cycles, coordinated policy efforts among government officials of MED countries and other missing variables that are not included in our estimated regressions. For these reasons, all the data were pooled and panel growth regressions were estimated in order to obtain more reliable and efficient estimates.

Table 3. Panel Growth Regressions: Pooled Five and 10 Years Periods from 1980 to 2015

Variable	GY5	GY10	GY10
CONST	6.65 (4.55)	7.87 (3.33)	8.76 (2.65)
INY	-0.005* (-4.12)	-0.006* (-2.98)	-0.005* (-2.92)
SCL	0.29 (1.32)	0.39 (1.13)	0.29 (0.88)
IINF	-0.03 (-0.71)	0.31* (2.32)	0.43* (3.44)
OPN	0.012* (3.45)	0.016* (3.77)	0.019* (5.21)
GP	-0.12* (-1.66)	-1.09 (-1.63)	-1.66 (-1.11)
G	-0.15* (-2.22)	-0.15 (-1.66)	-0.11 (-1.82)
DD1	----	----	-0.88* (-2.55)
DD2	----	----	-2.88* (-2.118)
Nobs	102	51	51
R ²	0.35	0.51	0.58
F	9.88	8.88	7.13

Source: Authors' Estimates.

NOTES: (1)*Statistically significant at the 5% level; (2)The t-statistics of coefficient estimates appear in parentheses; (3) The standard errors of the coefficient estimates are heteroscedastic consistent; (4) Dependent variable real per capita GDP growth.

Table 3 lays down the results for the panel growth regressions when the data is pooled for the 5-year and 10-year sub-periods respectively. For the 5-year interval pooled data, the initial GDP and economic openness have the correct sign and are statistically significant at the 5% level. Population growth has a negative effect on economic growth and is statistically significant at the 10% level. Also, government spending, G, has a negative estimated coefficient and is significant at the 5% level. For the 10-year interval pooled data, initial GDP, macroeconomic stability and economic openness have the correct sign and enter the growth regressions significantly at the 5% nominal level. This is true for these variables also in the case where the dummy variables DD1 and DD2 were included in the estimated regressions to capture the decade

effects of the 1990s and 2000s respectively. As seen from the last column of Table 3, both decades had a negative impact on economic growth but the decade of the 2000s had a statistically significant negative impact. Perhaps, this reflects the anticipation of worsening economic conditions in the MED countries. Further, in this estimated regression government spending, G , is statistically significant and has a negative impact on economic growth.

We turn next to study empirically the effects of increased economic integration within the Euro-MED region on the macroeconomic volatility of the MED countries. Table 4 below reports the panel regression results for the volatilities of the MED rate of growth of GDP and private consumption, and total private and public consumption. The capital and current account restrictions are both significantly associated with the volatilities of GDP, and private and total consumption. Indicating that the more the trade and financial integration of the MPs with the EU, the higher the volatility of GDP and consumption. This is in line with our earlier findings, indicating that the absence of capital and current account restrictions resulting from further integration with the EU is not associated with a decline in consumption volatilities. Financial openness, as proxied by gross capital flows to GDP, has a positive and significant effect on GDP and on private and total consumption. Increasing financial integration appears not to be associated with declining volatilities of consumption. Thus, the MED countries with gross capital flows that amount to a higher fraction of GDP have not yet started to benefit from capital market integration in terms of consumption smoothing possibilities.

Trade openness is significantly positively associated with GDP and consumption volatilities. This may be explained by the fact that the small open MPs are extremely vulnerable to EU’s shocks and business cycles, due to their extensive trade relation with the EU. This is also in line with Denizer et al (2002), and Easterly, Islam and Stiglitz (2001), who suggested that an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. The coefficient on the terms of trade is also significant, indicating greater vulnerability to shocks to the Euro exchange and inflation rates. The ratio of M2/GDP and its volatility, which proxy financial sector developments, are in fact associated with lower output and consumption volatilities. Thus, the depth of domestic MED financial markets has a crucial impact on volatility. Our results are again in line with Denizer et al (2002) and Easterly, Islam and Stiglitz (2001), who argued that a higher level of development of the domestic financial sector is associated with lower volatility. While the fiscal volatility measure does seem to affect negatively the volatilities of consumption and GDP, domestic inflation is associated with a significant increase in the volatilities of private and total consumption, but affects insignificantly the volatility of GDP.

Finally, in terms of goodness of fit, we see that for the three sets of regressions, the coefficients of determination, R^2 , are estimated at 78, 82 and 62 per cent respectively which are deemed quite high for cross section regressions and are indicative of good explanatory power of the estimated models.

Table 4. Panel Regression: MED Countries, 1980-2015

Exogenous Variable	Dependent Variable (Volatility of Growth Rate of)		
	$\sigma_{i,t}^{\dot{y}}$	$\sigma_{i,t}^{\dot{C}}$	$\sigma_{i,t}^{\dot{C}+\dot{G}}$
Constant	0.01	0.03*	-0.22
t-stat.	(1.33)	(2.45)	(0.33)
Current Account Restrictions (CAR)	-0.05*	-0.19**	-0.09*
t-stat.	(-2.33)	(-3.55)	(-2.12)
Trade Openness (TO)	0.04**	0.31**	0.27
t-stat.	(3.22)	(4.44)	(1.82)
Capital Account Restrictions (CPAR)	-0.02**	-0.09*	-0.004
t-stat.	(-4.30)	(-2.44)	(-1.1)
Financial Openness (FO)	0.01**	0.08*	0.30**
t-stat.	(3.66)	(2.88)	(4.5)
Terms of Trade Volatility (TOT)	0.42*	0.33**	0.23
t-stat.	(2.22)	(3.01)	(1.44)
M2/GDP	-0.05**	-0.88**	0.42
t-stat.	(-6.22)	(-4.2)	(0.99)
Volatility of M2/GDP	-0.19**	-0.66**	-0.77**
t-stat.	(-3.5)	(-3.22)	(-5.01)
Inflation	0.66	0.33**	0.04*
t-stat.	(1.43)	(3.99)	(2.22)
Volatility of Fiscal Policy (FP)	-0.1**	-0.02**	-0.45**
t-stat.	(3.21)	(4.44)	(3.55)
R Squared	0.78	0.82	0.62
Total Panel (Unbalanced) Observations			

Source: Authors' Estimates.

Notes: 1-White Heteroskedasticity-Consistent Standard Errors & Covariance. 2-The numbers in parenthesis are t-statistics. 3- A * indicates significance at the 5 percent level, while a ** indicates significance at the 1 percent level. 4- The panel estimation is carried out using the Seemingly Unrelated Regression (SUR) Method. Source: Author's Estimates.

6. Conclusion and Policy Implications

In this study, we used in a first stage the concepts of σ -convergence and β -convergence to evaluate empirically income convergence among a group of EU-MED countries over the period 1980-2015. We then presented a thorough empirical analysis of the implications of the Euro-MED partnership agreements on economic growth and on macroeconomic volatility in a sample of MPs. Because of the initiation of the Barcelona Process and the Neighborhood Policy in 2000, the empirical analysis was carried out sequentially, over 5 and 10-year periods, and then for the period as a whole: 1980-2015. The empirical findings show that there is weak evidence of income convergence for a group of EU-MED countries when analyzed in 5- or 10-year subintervals from 1980-2000 in single equation cross section regressions. However, we find statistically significant evidence of real per capita GDP convergence either when the whole

sample period 1980-2015 is analyzed or when the 10-year sub-periods are pooled and estimated in panel growth regressions. These are more plausible results both because economic growth and convergence are long run phenomena and because panel methods deliver more efficient parameter estimates. For the period 1980-2000, there is evidence of weak conditional income convergence in the group of EU-MED (16) countries, and this evidence becomes much weaker for the MED group of countries in between 2000-2015. The reason for these results is the negative effects of the European financial and debt crises on the Euro-MED region in general, and on the MED region in particular.

Macroeconomic stability and economic openness turned out to be statistically important factors and have the expected positive effect on economic growth in the MED countries. Indeed, in most of the estimated models, the variable that is consistently the most significant is economic openness. Of the other explanatory variables, population growth had the theoretically expected negative effect on economic growth as it is found in other studies on empirical growth. Government spending also had a negative effect on economic growth and is statistically significant as is population growth. Other empirical results have pointed to the fact that MED countries may be less susceptible to EU’s financial shocks if the domestic MED market is larger and/or more regulated. This is consistent with what economic theory would suggest and it has policy implications. In reality, some MED countries have chosen to impose capital controls to deal with financial market crises since it appears that the “culprit” is international capital flows although this policy practice may have undesirable long-term economic consequences.

The policy recommendations of the study may be divided into two main headings and can be summarized as follows: First, the various EU-MPs agreements have had an overall positive effect and should be reinforced and strengthened; And second, intra-regional trade and financial integration among MPs should also be strengthened. However, intra-regional coordination seems to be a particularly difficult policy challenge, arguably more of a challenge than the deepening cooperation with the EU.

Therefore, MED countries should improve their macroeconomic and financial policy coordination to effectively cope with the impact of greater trade and financial integration with the EU. This may be achieved for example through enhancing regional economic and financial integration. The establishment of a MED free trade zone will not only stimulate and enhance growth, but will also enhance intra-MED trade, thereby, reducing significantly the exposure to the EU’s business cycle, and controlling for the excessive exposure of these MED small open economies to macroeconomic developments in the EU. Moreover, if MED countries wish to achieve high economic growth they should pursue policies that further promote free trade and economic openness with the EU, as well provide an anchor of macroeconomic stability by means of policies that keep fiscal and monetary policies under control. Political and social unrest, as well as, financial and debt crises have a negative effect on economic growth and convergence in the region and, if possible, should be dealt with as soon as possible by appropriate political and macroeconomic policy action.

The economic literature shows that large economies can better absorb and neutralize the effects of external shocks. Controlling for the effects of shocks, however, is particularly more difficult in the case of the developing MED economies, which are smaller in size and nearly dependent on exports to the EU of very few commodities and on the import of a huge number of commodities. A direct consequence of an integrated capital market within the MED region will be to reduce the risks associated with greater EU-MED integration, and to dampen the vulnerability of MPs, especially those with high levels of debt, such as Lebanon, Jordan, and

Egypt, to the effects of fluctuations in EU’s interest rates. A larger MED financial market would lower the cost of raising capital, and would allow MED governments to service their huge debt at lower costs on one hand, and MED firms to rely more on the local market rather than tapping EU’s markets to raise capital, on the other. Lower costs of raising capital will subsequently translate into more investment, consumption, and GDP growth rates in the region. The MED region should accelerate the process of trade, financial, and economic integration with the EU in order to better absorb the negative effects of external political, financial and/or economic shocks. Efforts should also be exerted to speed up the implementation of the fiscal and monetary reforms to improve the inflow of portfolio and FDI into the region.

Another policy recommendation of the study is that MPs need to be more, not less, integrated with EU’s financial markets to be able to reap the benefits of financial integration in terms of improved risk sharing, and consumption smoothing opportunities. This recommendation will however require further analysis, as regional financial integration is associated with a variety of risks in the EU-MED region. To minimize those risks, MPs would need to implement sound macroeconomic and structural frameworks in tandem with further integration. For example, our empirical findings have emphasized the role of sound fiscal and monetary policies in driving macroeconomic volatility. Regarding structural reforms, the development of the domestic financial sector is critical, as a high degree of financial sector development is associated with lower macroeconomic volatility.

In short, for further trade and financial integration with the EU, MPs need to individually devote more efforts to pursue sound macroeconomic policies. This should be coupled with institutional reforms aimed at developing the financial sector in the respective MED economies. Subsequently, MPs should try to integrate horizontally while at the same time opening up further vertically (to the EU). It was shown that financial openness- as measured by gross capital flows as a ratio to GDP- is associated with an increase in consumption volatility, contrary to the notions of improved international risk-sharing opportunities through financial integration. The inherently unstable macroeconomic environment, political and military turmoil, as well as unsound monetary and fiscal policies in the MED region may explain this empirical irregularity.

Finally, the New European Neighborhood Policy provides a robust framework towards trade and financial assistance through deeper financial integration, greater access to the common market and better institutionalization of trade and financial relationships between the MED and EU countries. This research project will assist policy makers and academics in the EU and MED regions in redefining their trade, financial and macroeconomic priorities while designing new European Neighborhood Policies that will respond to the recent economic challenges. The new European Neighborhood Policy will spawn a large amount of literature on its consequences. This study constitutes an integral part of that literature by identifying the common and differing strands of analysis with particular emphasis on the changes made in the macroeconomic policy paradigm in both the MED and EU region.

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