Inflation convergence in the EMU[☆,☆☆,☆☆☆]

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ABSTRACT

We study the convergence properties of inflation rates among the countries of the European Monetary Union over the period 1980–2013. Recently developed panel unit root/stationarity tests cannot reject the stationarity hypothesis. This implies that some countries have been in the process of converging absolutely or relatively. By using a clustering algorithm we statistically detect three absolute convergence clubs in the pre-euro period, which comprise early accession countries. In particular, Luxembourg clusters with Austria and Belgium, while a second sub-group includes Germany and France and the third The Netherlands and Finland. We also detect two separate clusters of early accession countries in the post-1997 period: a sub-group with Germany, Austria, Belgium and Luxembourg, and one with France and Finland. For the rest of the countries/cases we find evidence of divergent behavior. Robustness is checked by testing pairwise convergence in a Bayesian framework. The outcome broadly confirms our findings.

1. Introduction

Divergences in inflation rates could lead to imbalances in real interest rates, since the policy rate is the same for all the euro area countries.[1] These disparities among the member states' inflation rates could be exacerbated further by circular patterns. For instance, when a country's economic activity is relatively weak then low inflation rates are observed and thus real interest rates increase, which in turn contribute towards inflation divergence. There is an argument, which supports that inflation differentials

[1] As pointed out by Busetti et al. (2007) differences in real interest rates are effective on private consumption and might be relevant for investment expenditure depending on the degree of market integration.

within euro-area countries increased in magnitude since the start of the third Stage of the Economic and Monetary Union (EMU) in 1999. The implication of that (if true) could lead to difficulties not only on the field of the common currency but also on the production of the proper and harmonic macroeconomic policies for the individual countries. Moreover, diversifications among the Eurozone countries may occur due to the Balassa-Samuelson effect (Balassa, 1964; Samuelson, 1964), which states that dissimilarities exist among the countries' relative productivity of tradable and non-tradable sectors.

Since 1999 (with the implementation of Stage three of EMU), the elimination of the national stabilizers made euro-area economies vulnerable to economic shocks. Hence among others, relative prices and wage flexibility became extremely important factors in order to sustain the balance among the euro-area countries. Inflation differentials could be a part of this adjustment procedure and not the obstacle to economic policy (ECB, 2003). Thus, it is not surprisingly that inflation convergence within the Eurozone countries attracted much of attention the last twenty years, and that quite a few studies have addressed this issue (see e.g. De Grauwe, 1996a,b).

In this paper we analyze the process of inflation convergence among the EMU countries by considering the stationarity properties of inflation differentials. Contrary to the studies examined so far (with a few notable exceptions, see for example, Busetti et al., 2007 and Lopez and Papell, 2012), we investigate whether the introduction of the euro currency has made any difference in this process. We use twelve EMU countries and taking advantage of the third stage of EMU mentioned before we split the sample into two parts. The first subsample consists of the period before the introduction of the common currency that is 1980–1997 and the second subsample commences after the birth of the common currency, namely 1998–2013.

We examine whether inflation rates in the EMU countries converge using four testing procedures: Some recently developed panel unit root tests, pairwise unit root/stationarity tests on bilateral inflation differentials, a clustering algorithm to identify stability sub-groups using multivariate stationary tests, and a Bayesian pairwise convergence framework. These procedures allow us to consider whether the inflation convergence process differs for the early accession countries and the late accession ones. Our analysis will attempt to answer three distinct questions regarding the dynamics of national inflation rates in the euro-area. The first two are whether convergence actually occurred by 1997 as required by the Maastricht criteria for joining the EMU, and did the Exchange Rate Mechanism (ERM) supported the stability process? And the third, if yes, was inflation convergence among the Member States sustained during the post-euro period?

Four alternative methodologies are used in order to address these three issues. We employ some recently developed panel unit root tests, tests for long memory and tests for other forms of persistence. Since globalization there is a high dependence among economies. Thus, we investigate stationarity properties using a testing procedure which takes into account cross-sectional dependence (CSD)-see also Arestis et al. (2014).

We then test the hypothesis of absolute convergence, that is, whether or not inflation differentials were converging to zero. Of particular interest is whether convergence took place since the launch of the common monetary policy (pre-euro period) and whether it halted in subsequent periods (post-1997 period). Relative convergence is tested by applying tests which allow for structural breaks.[2]

European countries are certainly heterogeneous and therefore there might be convergence only within specific groups. Following Busetti et al. (2007) we employ an algorithm developed by Hobijn and Franses (2000) in the context of multivariate stationarity tests, that allows us to identify separate clusters of countries or convergence clubs for the pre-1998 and post-euro periods in terms of either absolute or relative convergence. Fourthly, we also consider an alternative approach for robustness purposes. In particular, we employ the methodology of Arakelian and Moschos (2008) for testing pairwise relative convergence in the presence of transitional dynamics, which is a flexible approach as it allows the parameters (both in the mean and the variance) of the underlying process to change over time.

By applying panel unit root tests, we show that the stationarity hypothesis seems to hold, before and after the birth of the common currency in 1997. This means that some differentials are stationary and therefore there might be clubs of countries which have been in the process of converging. Next, we examined the possibility that stability had occurred only for some subset of the countries. For the pre-euro period three absolute convergence clubs were identified all of which included early accession countries. A sub-group with Germany and France, one with The Netherlands and Finland, and a bigger sub-group with Austria, Belgium and Luxembourg. For the post-1997 period, Germany turned out to belong to a big sub-group together with Austria, Belgium and Luxembourg while France clustered with Finland. For the rest of the countries/cases we find evidence of divergent behavior. The evidence produced by the Bayesian framework points also to the same direction as the one of the clustering algorithm. Specifically, the decline in the mean is achieved in five out of the six pairs (for both the pre-1998 and post-euro periods) of the Austria, Belgium, Luxembourg sub-group, and for all three pairs (for the post-1997 period) of the Germany, The Netherlands and Finland cluster.

The reminder of the paper is organized as follows. Section 2 describes the data (for a literature review see supplementary Appendix C). In Section 3 we report the empirical results and discuss them within the concept of whether or not ERM promoted the convergence process between Eurozone inflation rates even before 1997 (as claimed by the European Commission, 2014), and of whether or not these inflation rates remained stable after the implementation of the common currency. Section 4 summarizes and concludes.[3]

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[2] We should mention that Conrad and Karanasos (2015a) demonstrate that in the presence of volatility spillovers, if this transmission mechanism is ignored, unit root tests will have poor power and size properties (see also, Conrad and Karanasos, 2015b and Canepa and Karanasos, 2016 and Karanasos and Kim, 2006).

[3] The four appendices A, B, C and D are relegated to the supplementary material. This can be found at the author's homepage http://www.mkaranasos.com/.