Economic Modelling 37 (2014) 79–88

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/ecmod

Real convergence and its illusions ☆

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ARTICLE INFO

Article history:
Accepted 30 October 2013

JEL classification:
D58
E32
F41

Keywords:
Real convergence
Boom–bust cycles
Dynamic general equilibrium models

ABSTRACT

This paper uses a multi-country dynamic general equilibrium model to illustrate real convergence processes in a small open catching-up economy. Our results indicate that even if the convergence is driven by smoothly evolving processes, the dynamic adjustments of key macrovariables can be far from smooth. We also demonstrate that overly optimistic expectations about current or future productivity shifts can generate sizable boom–bust cycles. A comparison across alternative monetary regimes reveals that a flexible exchange rate helps to smooth real convergence processes and misperceptions associated with tradable sector productivity, while it generates more volatility in scenarios based on nontradable sector productivity developments.

1. Introduction

The world history is full of episodes of long- and medium-term shifts in countries' income per capita positions. This is also true for a relatively homogeneous and developed club of EU economies. Even within the euro area, as suggested by substantial diversity in past growth performance, still persisting differences in per capita output across its member states and diverse response to the recent financial crisis, the currently observed and possible future macroeconomic asymmetries cannot be attributed only to cyclical factors.

In this paper, we use the EAGLE, a multi-country dynamic general equilibrium model (Gomes et al., 2012), to analyze possible dynamic adjustments in a relatively small open economy undergoing real convergence processes. For illustrative purposes, we focus our calibration around the Spanish economy. Using the four-country setup of EAGLE, we link it not only to the rest of the euro area, but also to the US and the rest of the world.

We define real convergence as productivity catch-up. While there is probably no need to argue that this kind of long- and medium-term processes is highly relevant for a number of small economies, including current and definitely most of prospective euro area members, we briefly illustrate our case by referring to the past experience of the so-called peripheral countries of the euro area, i.e. Greece, Ireland, Portugal and Spain. As can be seen from Fig. 1, these countries' productivity relative to the rest of the euro area has been far from stable over the period 1970–2005. Several episodes of persistent catching up or falling behind can be identified for all four economies. Interestingly, the shifts in the relative position vis-a-vis the euro area can be driven by either tradable (Spain and Ireland) or nontradable (Greece and Portugal) sector developments.

This simple set of illustrations clearly suggests that long- and medium-term processes, which are differently distributed across sectors, can play an important role in accounting for asymmetric developments within the currency union, posing a challenge to common monetary policy. Therefore, examining how a catching-up (or falling behind) economy might respond to such scenarios seems to be highly relevant for understanding the nature and sustainability of the observed divergences within the euro area. Needless to say, this kind of developments will become even more relevant with the euro being adopted by the relatively poor EU member states from the ex-communist bloc.

Apart from highlighting the real convergence mechanics, we also demonstrate how misperceptions about productivity shifts may contribute to significant fluctuations in macroeconomic variables. We do so by considering scenarios in which economic agents treat a temporary shift in productivity as a permanent one or are faced with optimistic but false news about future productivity developments. Such scenarios can be thought of as a stylized description of expectations-led boom–bust cycles that have been observed in relatively poor European countries after they entered the euro area (the peripheral economies mentioned above) or fixed their currency to the euro (the Baltic countries). As the current euro crisis reveals, such country-specific developments can

☆ This paper was written while I was working in DG Economics of the European Central Bank. I have greatly benefited from the discussions with Javier Andrés, Günter Coenen, Pascal Jacquinot, Klaus Masuch, Matthias Mohr, Roland Straub and Rolf Strauch. I also appreciate the comments from other participants to the internal seminar at the ECB, the conference at the Banco de España and the EcoMod conference in Istanbul. Daria Taglioni provided invaluable help in collecting and processing trade data. All remaining errors are my sole responsibility. The usual disclaimer applies.

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http://dx.doi.org/10.1016/j.econmod.2013.10.032

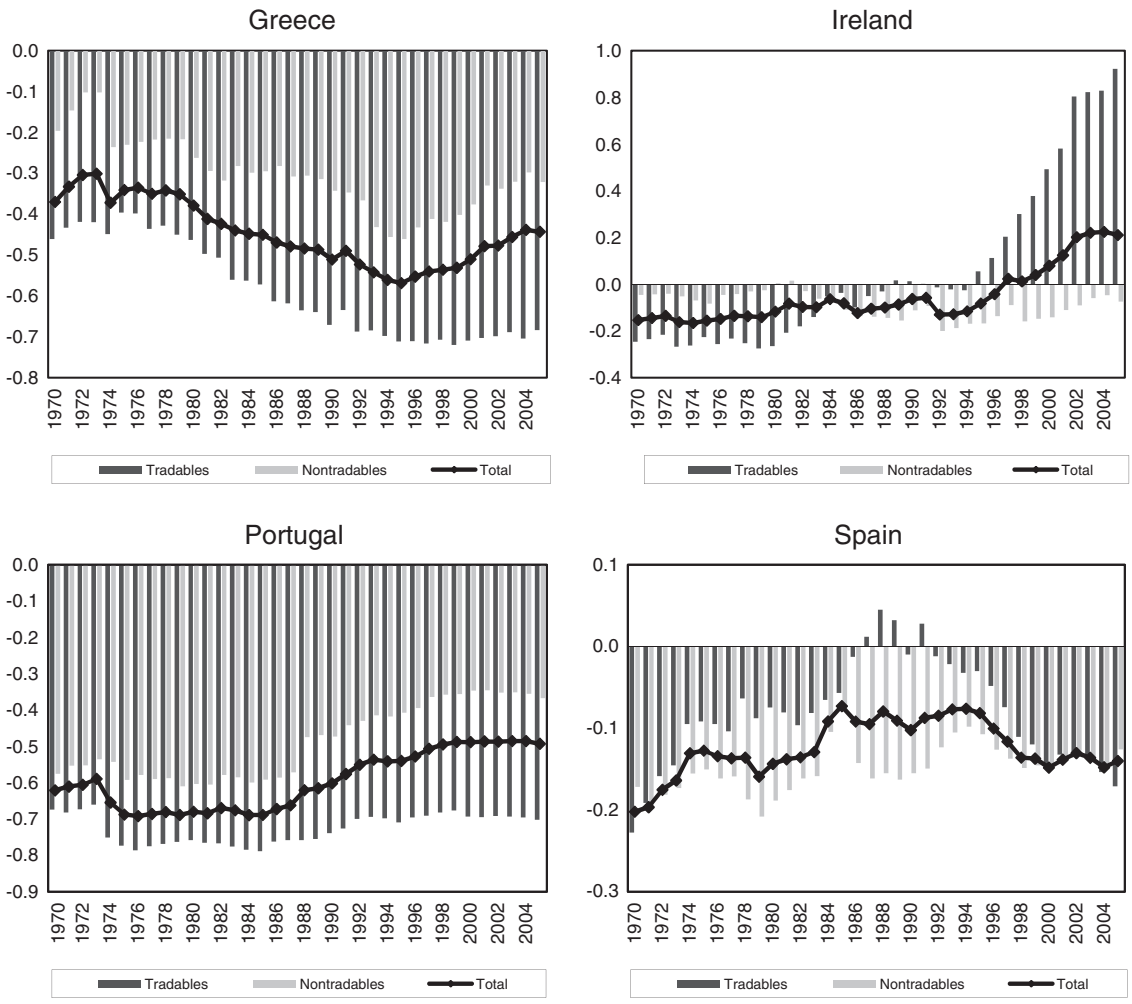

Fig. 1. Productivity gap in the peripheral countries vis-á-vis the rest of the euro area. Notes: The productivity gap is defined as the percentage difference between gross value added per hours worked in a given country and that in the rest of the euro area. Aggregation and comparison are based on industry specific purchasing power parities. The tradable sector comprises the following industries: agriculture (NACE A and B), mining and quarrying (C) and manufacturing (D). The nontradable sector covers the rest of the market economy, i.e. it excludes real estate activities (NACE 70) as well as community and social services (L to O). Source: Own calculations based on data from EU-KLEMS.

easily spill over to the rest of the monetary union, calling for a timely and coordinated policy response.

This paper is related to a number of contributions to the literature using large dynamic general equilibrium (DGE) models to investigate important policy issues (Coenen et al., 2008a; Coenen et al., 2008b; Everaert and Schule, 2006; Faruqee et al., 2005; Jacquinot and Straub, 2008; Karam et al., 2008; Laxton and Pesenti, 2003). However, none of these papers examine how real convergence is affected by the choice of the exchange rate regime. The idea of incorporating confusion about the nature (e.g. persistence) of productivity shocks into micro-founded macroeconomic models can be traced back at least to the seminal contribution by Kydland and Prescott (1982). See Beaudry and Portier (2004), Orphanides (2003), Schmitt-Grohe and Uribe (2008), Fujiwara et al. (2011) or Christiano et al. (2008) for more recent applications. These papers, however, are based on closed-economy models, so they neglect channels arising from international linkages, which are particularly important for relatively open current and prospective euro area members.[1] Also, they usually consider fluctuations in productivity (expected or unexpected) that are only transitory in nature. We argue that in the case of a catching-up economy, confusing temporary and permanent shocks or illusions about future permanent productivity improvements might be a more relevant description of reality.

The rest of this paper is organized as follows. Section 2 provides a brief overview of the EAGLE model. Its parameterization and calibration are discussed in Section 3. Section 4 defines and presents the real convergence scenarios. An illustration of possible misperceptions along the convergence path is presented in section 5. Section 6 concludes.

2. Bird's-eye view at EAGLE

The EAGLE ("Euro Area and Global Economy") model is a relatively large and comprehensive DGE model, designed to cover four regions of the world economy, two of which constitute a monetary union. It includes a number of real and nominal rigidities that have been found crucial in ensuring a reasonable empirical fit (Christiano et al., 2005). Below, we provide only a brief overview of the main features of EAGLE, referring the reader to Gomes et al. (2012) for details.

Except for the monetary policy regimes and some parameter values, each region covered in EAGLE is modelled in a symmetric fashion. The economic areas are linked with each other by bilateral trade relations and international financial markets, assumed to be incomplete and so allowing for only imperfect risk sharing across countries.

[1] It has to be noted that while our modelling setup accounts for international trade and cross-border borrowing, it abstracts from one important channel that was exposed during the recent financial crisis, namely large international spillovers resulting from financial market disruptions. See Beaton et al. (2010) for a multi-country model including this important transmission mechanism. In the current European context, with the euro area enveloped by a debt crisis, real convergence in the peripheral members may come to a halt.