THE THEORY OF ENDOGENOUS OPTIMUM CURRENCY AREAS: A CRITICAL NOTE

1. INTRODUCTION

One of the freshest shoots of the theory of Optimum Currency Areas (OCAs) states that a number of optimality features, that are absent among a group of countries wishing to set up a monetary union, can be generated by the monetary zone itself, once the latter has come into being. Thus the stress on endogeneity of some elements of monetary integration founding the viability of a monetary union.

The new theory of endogenous optimal currency areas (or e-OCAs) has been developing since the late 1990s, putting forth remarkable results from the standpoints both of theoretical analysis and empirical research. The aim of this paper is to try to examine critically this new strand of literature, from the early studies to the most recent developments.

The rest of the note is structured as follows. Section 2 describes the building blocks of the initial theory and is complemented by Section 3, which is devoted to tracing back the origins of the new paradigm. Section 4 focusses on an old controversy concerning the future of the European Economic and Monetary Union (EMU), depending on the probability of occurrence of asymmetric shocks. Section 5 considers the bulk of empirical studies trying to assess the trade multiplying effects of a monetary union, one of the main results of the initial theory. Extensions of such theory are analysed in general terms in Section 6, whilst Section 7 concludes with some concise final remarks.

2. THE BIRTH OF A NEW PARADIGM

One of the major refinements of the OCAs theory took place just on the eve of the setting up of the eurozone, when a number of breakthrough papers reversed the traditional arguments of the
optimality of a currency union establishing what in a short time became a completely new paradigm, known in the current literature on the subject as the endogenous OCAs (or e-OCAs) theory. Whereas in the past the early founding studies in the 1960s, and subsequently the new OCAs theory, developed after the resumption of interest for the topic fostered by the EMU project, aimed at identifying respectively the classical criteria of optimality or fresh optimality meta criteria such as typically the co-movements of business cycles, in order to try to operationalise them (Mongelli, 2008; Tavlas, 1993; Bayoumi and Eichengreen, 1997), now the emphasis was put on possible convergence (or divergence) effects produced by the currency unions, after their start.

Thus in the agenda of the international economist the old standard question: ‘Is this particular group of countries in a position to set up an optimal currency area, i.e. a viable monetary union, being characterised by an absence of asymmetric shocks or by the presence of efficient mechanisms to offset them?’, has been changed in its opposite: ‘Can the effects of a monetary union, in the aftermath of its inception avoid or contrast possible asymmetric shocks, warranting its stability?’

The starting point of the endogeneity new approach was the realisation that creating a currency union introduces a dramatic change in the structure and policies of the economies within the area, calling for an application of the Lucas critique. As a consequence, all prevailing conditions before the union and backward looking data can shed no light on its functioning and the process engendered by its configuration. Against such a background Frankel and Rose (1996) started an initial body of research based on the links between trade, as a measure of economic integration, on the one hand, and international business cycle correlations, on the other, finding that within currency unions the two phenomena are significantly tied (Frankel and Rose, 1996, 1997, 1998; Frankel, 1999; Rose, 1997, 2000, 2004; Rose and van Wincoop, 2001). Hence, their much cited conclusion referred to the case of European monetary integration that:

“Countries which join EMU (...) may satisfy OCA criteria ex post even if they do not ex ante!”

in a nutshell the catchphrase of the rising endogeneity paradigm.

The results of this first strand of research were at the outset presented by its authors not as a novel theory but simply as an outcome of empirical research, since they were well aware of the fact that enhanced trade intensity could result in higher specialisation
of countries belonging to the currency union too, and therefore in more idiosyncratic business cycles, as emphasised by Krugman (1993). Nevertheless they hinted at a possible economic explanation of the link between trade intensity and income correlations, based on the relevance of intra-industry trade, and some time later Fidrmuc (2002) showed in more details how intra-industry trade causes a convergence of business cycles, underlining also the importance of structural variables for the synchronisation of the latter. In addition Corsetti and Pesenti (2002) explained that endogeneity can be driven also by market-based pricing strategies by forward-looking firms in an imperfect competition setting and that more synchronised business cycles are produced even in the absence of an increase in intra-industry trade. At this point the new theory concluded its infancy stage and a fresh general interpretation of the working of endogeneity factors in OCAs analysis became a standard building block of the economics of monetary integration.

3. At the origins of the theory of e-OCAs

In short, according to the endogenous OCAs (or e-OCAs) theory the setting up of a currency union reduces the obstacles to trade, abolishes the exchange-rate risk, improving at the same time a set of preconditions (such as price transparency, lessened market segmentations and the like) that are equivalent to the removal of borders in a very large sense. As a matter of consequence trade between member countries will be bound to increase well above what a simple pegged rate system among different currencies would justify and, provided the structure of trade is mainly of the intra-sector kind, trade integration translates into income correlation (Tavlas, 2009).

The path-breaking feature of this fresh approach is clear enough and can scarcely be overstated by pointing out that the endogeneity initially taken into account by Frankel and Rose (1996) is mainly restricted to trade effects of the currency unions and that in the past similar or different integration-promoting mechanisms had been emphasised in the relevant literature. Without going back to the first burgeoning papers of the launching of the OCAs theory in the 1960s, the key intuitions of endogeneity factors before Frankel’s

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1 One the clearest hint of endogeneity in the early OCAs literature can be found in von Neumann Whitman (1967), according to whom currency unions become viable not by the fact of birth, but through experience.
and Rose’s contributions were due to Mundell (1973) and Emerson et al. (1992).

Concerning the first input, in a paper not enough considered in times it was written, Mundell (1973) points out that optimality of risk-sharing is achieved when countries display a high degree of heterogeneity. In particular this means that within a currency union or in a pegged exchange rate system, in the absence of hindrances to capital movements, international portfolio diversification can occur in order to spread the risk of asymmetric shocks. In its turn the reduction of asymmetric shock probability creates economic convergence within the area. Since all that is the outcome of the currency union allowing free capital transfers, we find here an ante litteram example of endogeneity through the channel of financial integration, not taken into account by the subsequent works of Frankel and Rose (1996, 1997, 1998).

As to the study of Emerson et al. (1992), it contains some general hints about possible endogeneity mechanisms put into action by the EMU formation, as Frankel and Rose (1996) themselves recognise in a note in their founding paper. As pointed out by Fontagné and Freudenberg (1999), drawing on Kenen’s (1969) intuition that diversified economies with a large share of intra-industry trade experience more symmetric shocks, the Emerson Report singled out the working of the so-called ‘Mechanism 13’, which fosters the viability of the European currency union. Thanks to the combined effects of the single market and of the monetary union, asymmetries between member countries will be decreased, weakening the role of comparative advantages, with a final outcome in which industry-specific shocks will become endogenously common to a wide majority of them².

4. The future of EMU: Commission’s vs Krugman’s views

So far, we have assumed that the trade between member countries created by monetary integration is of the intra-sector type, engendering positive outcomes for the currency union sustainability. However, we have seen that an alternative interpretation is available in literature. With regard to effects of increased trade intensity within

² This interpretation seems not to be shared by Mongelli (2008), despite the opening epigraph of his paper, taken from the Emerson Report (1992), maintaining the following: “EMU will have a very pervasive impact on the working of the economy”. 
a currency union, taking into account the impact of scale economies on patterns of specialisation, it is also possible that member countries specialise in different industries, giving rise to inter-industry trade and generating asymmetric shocks in the case of country-specific disturbances, with less correlated business cycles. As a consequence, endogenous outcomes of additional trade flows will be pernicious to the stability of the monetary union, diverting it from optimality conditions. We find here the Krugman and Eichengreen effect, which contrasts strongly with the Frankel's and Rose's results.

As far as EMU is concerned, from the theoretical standpoint it is an open question which of two opposite interpretations of the direction of endogeneity produced by closer trade links will be confirmed by its actual functioning. The disparity between what De Grauwe (2009) christens the optimistic (or Commission's) and the pessimistic (or Krugman's) views has not yet been really decided. Nevertheless, following De Grauwe and Mongelli (2004), a possible consensus clarification is emerging. Two factors, in particular, seem to reduce the weight of the pessimistic argument: the smaller role played by economies of scale in the bulk of modern economies, the service sector, and the fact that possible patterns of specialisation within a monetary union may be spread across regions belonging to different member countries. In short, within EMU trade-induced endogenous effects will probably translate into more synchronised business cycles, at least in the long run, with the result of enhancing the eurozone stability.

5. Evidence on trade

The early formulation of the e-OCAs theory was accompanied by a large empirical literature, attempting to evaluate the intensity of the trade surge linked to the setting up of a currency union. The breakthrough study was made by Rose (2000), who found a surprising result. According to his computations, entering a monetary union tripled the trade flows of the country which had decided to join. The author himself confessed to have been somewhat sceptical about the scale of the expected outcome, but subsequent works confirmed the size identified in this start study. However following inquiries on the

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3 With reference to Krugman (1993) and Eichengreen (1992), as described by Frankel and Rose (1996).
Rose effect reduced the assessed impact, in particular with regard to the role played by reciprocal trade within EMU. Presently, despite the widespread criticism over some aspects of the Rose methodology levelled by a number of authors, the relevance of trade enhancing consequences of monetary integration seems to be well established, even if single evaluations may differ, however involving generally less generous estimates. As to the limited trade effect of EMU, a possible interpretation could be that a large part of the expected increase has materialised during the European Monetary System period and the run up to the final stage of the currency union. In addition it is also conceivable that the huge trade impact anticipated by Rose (2000) will require a very long time span to be fully generated.

In Szebeni (2004) one can find a summary of the main empirical works devoted to this topic. Complemented by a number of more recent papers on the same subject presently we have at our disposal a mixed picture. Despite a prevalent consensus on the positive impact on reciprocal trade of joining a currency union, assessments of the Rose effect may vary widely. According to a meta-analysis contained in Szebeni (2004), in 34 papers written in the period 2000-2004, starting with the seminal contribution of Rose (2000), estimates of trade effects ranged from 376 to 6 per cent, omitting an outlier which reported a -31 per cent (the only negative evaluation). As to the euro effects, estimates were lower on average, stretching from 6 to 39 per cent. Subsequent studies in the second half of the decade 2000-2010 showed results of EMU trade-creating impact varying from 112 per cent to almost zero (Baldwin et al., 2008). Yet, following Rose (2008), in general terms such impact was in the range of 8 to 23 per cent.

Among the studies devoted to assessing the Rose effect a specific group concerns the monetary unions of the past or historical experiences of pegged exchange rates similar to them such as the gold standard. Interestingly enough in Flandreau and Maurel (2001) alongside López-Córdova and Meissner (2003) one discovers trade boosting impacts not too different from those estimated for the more recent examples of currency unification forms. It seems therefore that the main elements of the e-OCAs theory can be considered as structural permanent features of monetary integration. However, the persistence of long-run links between currency agreements and remarkably large trade flows akin to the early results found in Rose (2000) could also be a sign of a reverse endogeneity: currency unions could be established simply because trade was already intense (Ritschl and Wolf, 2003).
6. Extensions

Recently the e-OCAs theory has been extended beyond the initial boundaries of the trade and business-cycle synchronisation components. New factors of endogeneity have been identified and a general theory of endogenous OCAs is taking shape. One of the first extensions was made with regard to Foreign Direct Investments and in this case too, the setting up of a currency union displayed a multiplying impact on such a kind of financial flows (Warin et al., 2009; De Grauwe and Mongelli, 2005).

However the major innovation in this field was the detection of new sources of endogeneity, working after the start of a monetary union in several areas. In De Grauwe and Mongelli (2005), alongside Mongelli (2008), we can find a first comprehensive picture of the different kinds of endogeneities so far studied. In short, we can list them as follows:

i) the endogeneity of economic integration, which is mainly displayed in prices and trade flows. Beyond what we have already seen concerning the Rose effect and the progressive synchronisation of business cycles, monetary integration is bound to enhance price transparency and to reduce inflation divergences and price discrimination, even if in the case of EMU the trend towards price convergence seems to have subdued after the launch of the single currency (Engel and Rogers, 2004);

ii) the endogeneity of financial integration, which acts as an insurance scheme through integration of capital markets. Indeed risk sharing across regions by the latter can be five times more effective than resorting to the federal budget in the US for absorbing asymmetric shocks (Asdrubali et al., 1996), even if financial integration in the eurozone is still in its infancy (Giovannini, 2003);

iii) the endogeneity of synchronisation of output and shock symmetry, which can be fostered also by knowledge and technology spillovers beyond the channels put forth by the early e-OCA literature (Coe et al., 1997);

\[\text{An interesting case in point of endogenous effects linked to financial integration is the experience of the 'Europe tax', that allowed Italy to enter the first wave of eurozone members and whose reimbursement was made possible by savings produced by the reduction of the debt service burden, following a fall in interest rates once financial markets anticipated the eurozone entry (Praussello, 2010).}\]
iv) the endogeneity of labour and goods market flexibility, which can be strengthened by product market deregulation and the ensuing reduction of total rents to be distributed, weakening labour unions (Blanchard and Giavazzi, 2003).

In addition other cases of endogeneities have been singled out in terms, for instance, of a disciplining effect or even political institutions generated by monetary integration (De Grauwe and Mongelli, 2005).

Finally Mongelli (2008) finds evidence of a relevant impact of institutional processes on optimal features of a monetary union, which he calls an exogeneity of OCA, in the framework of an ‘OCA theory in reverse’.

The endogeneities which have been considered up to now in short bear a positive sign, meaning that they help ex post enhance the viability of the monetary union, but of course the picture would be incomplete without taking into account also the possible destabilising effects endogenously generated. Among what could be called negative endogeneities, i.e. factors produced by the very working of monetary integration putting its existence in jeopardy, we have identified the long-run divergences due to deepening of trade intensity linked to economies of scale and regional specialisation, following the Krugman-Eichengreen effect. As already hinted, we believe that the latter can be deemed to be bound to decrease in a framework of intra-trade flows between similar countries and increasing relevance of service industries.

However we need also to consider short-run divergences created by different regional business cycles within the eurozone, with two groups of countries experiencing respectively high rates of growth and inflation, on the one hand, and economic stagnation and a low price dynamics on the other (Koronowski, 2009)\(^5\). If such divergences

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\(^5\) Blanchard’s (2006) theory of revolving slumps offers an explanation of internal divergences observed in the aftermath of EMU. Once within the eurozone, member countries, whose anti-inflationary credentials were low, experience in the short run a decrease in interest rates, an increase in capital inflows and eventually an economic expansion. Yet, when the capital stock has reached a new equilibrium, the economic boom runs out of momentum and, in the absence of increases in labour productivity, growth declines and a loss of competitiveness emerges, which cannot be offset through the exchange rate depreciation. As a result, compared with core eurozone countries, such as Germany or France, peripheral countries record divergences in terms of growth rates and employment levels.
prove really to be short-termed in their nature, they could be offset by the long-run positive endogeneities due to the Rose effect, according to the Commission’s view on the future of EMU.

Yet, possibly a general theory of e-OCAs is lacking a fiscal counterpart, that could be offered by a recent model of optimal fiscal union (OFU) suggested by Fidrmuc (2010). Indeed, a centralised budget allows fiscal redistribution between regions in view of absorbing asymmetric shocks, but so only up to a limit imposed by the threat of secession. An interesting character of OFU consists in displaying greater gains from negatively correlated temporary disturbances, thus reducing the risk of asymmetric shocks imperilling the viability of the union.

7. Concluding remarks

In this note we have considered critically the endogenous OCAs (or e-OCAs) theory putting into perspective the subsequent contributions within this new strand of literature on conditions and outcomes of monetary integration in the form of an extreme pegging of exchange rates achieved through the setting up of a monetary union.

Focussing on the early studies having identified a relevant link between the creation of a monetary union and an upgrading of trade intensity between member countries, on the one hand, and the increase in trade flows and the similarity of their business cycles, on the other, we have seen that the initial surge in trade is due to the ultimate abolishing of exchange rate autonomy implied in a monetary union, whose effects go well beyond those produced by softer forms of monetary integration. At the same time we have singled out the analytical conditions heading to co-movements in business cycles, underlining the weight of intra-sector trade between similar countries.

In addition we have followed the developments of the novel research domain taking into account new types of endogeneities both positive and negative, alongside some possible factors of exogeneity due to impact of institutional processes.

In doing so we have followed the birth of a fresh paradigm concerning monetary integration, from its infancy fed mainly with trade and business cycle components to its full blossoming based on additional kinds of endogeneities, extended to fields such as those of financial integration and market flexibility.
At present all elements of a satisfactory theory of e-OCAs are probably available, including also those bearing a negative sign, such as possible factors of short-run divergences in business cycles or long-term regional specialisation, which could translate into asymmetric shocks putting at risk the viability of a monetary union.

Added with the recent beginning of a reflection on optimal fiscal union all that bodes well for the renovation of the general half a century old theory of OCAs.

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ABSTRACT

The paper critically considers the endogenous Optimum Currency Areas (or e-OCAs) theory, focussing initially on early studies having identified a relevant link between the creation of a monetary union and an upgrading of trade intensity between member countries, on the one hand, and the increase in trade flows and the similarity of their business cycles, on the other. Developments of this novel research domain are described, discovering new types of endogeneities both positive and negative, alongside some possible factors of exogeneity due to impact of institutional processes. Presently several elements of a satisfactory e-OCAs paradigm seem to be available, but the theory still lacks a much needed ripe relationship with the nascent reflections on optimal fiscal unions.

Keywords: OCAs, Endogenous Optimum Currency Areas, EMU, Eurozone, Monetary Union
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RIASSUNTO

La teoria delle aree monetarie ottimali endogene: una nota critica

La nota considera in termini critici la teoria delle aree monetarie ottimali endogene, partendo dai primi studi che avevano messo in luce una relazione diretta fra la costituzione di un’unione monetaria e un aumento dei flussi commerciali fra paesi membri, da un lato, nonché fra il commercio reciproco e i co-movimenti dei loro cicli economici, dall’altro. Vengono anche descritti i recenti sviluppi di questo nuovo filone di ricerca, identificando altri tipi di endogeneità, con segni sia positivi, sia negativi, accanto ad alcuni possibili fattori di esogeneità dovuti ai processi istituzionali. Attualmente sembrano essere presenti molti elementi, in grado di dar vita a un nuovo paradigma interpretativo dell’endogeneità delle aree monetarie ottimali, per quanto sia ancora necessario completare il quadro con una riflessione matura che si estenda anche al caso dell’ottimalità delle unioni fiscali.