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TEN YEARS OF EMU:
Convergence, Divergence and New Policy Priorities

Nicos Christodoulakis[*]

Abstract

Has the single currency promoted or hindered convergence among the countries of the Eurozone? On the one hand, asymmetric shocks have subsided after the creation of the single currency and FDI has been substantially promoted both inside and outside the EMU as a result of reduced exchange rate volatility, more integration and better institutional functioning. On the other hand, an examination of the catching-up process between the less and more affluent countries of the Eurozone suggests that convergence has been fading since the EMU was initiated in 1999. Another worrying development in the Eurozone is the emergence of unprecedented CA deficits in the southern Eurozone countries, while the northern Eurozone group enjoys substantial surpluses. Although both groups of countries have attracted increased FDI flows after EMU, there seems to be a sharp differentiation regarding size and composition. In the southern countries, the housing sector has attracted relatively more investment than the production sector, while the reverse seems to be the case in the northern group. Thus, investment in the northern (southern) Eurozone countries has increased traded (non-traded) output and caused an improvement (deterioration) in the trade balance. To face such imbalances, new policy priorities are required in the Eurozone that put more emphasis on convergence and competitiveness.

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Nontechnical Summary

As the tenth anniversary of EMU approaches, a debate is under way in both the economics profession and European political bodies as to whether the single currency has promoted or hindered convergence among the countries of the Eurozone.

On the one hand, there is wide agreement that asymmetric shocks have substantially subsided since the creation of the single currency, and also that FDI flows have been substantially promoted both inside and outside the EMU as a result of reduced exchange rate volatility.

But when one comes to examine the developments in per capita income in the Eurozone countries, there is little support for convergence. By employing various measurements of convergence to analyse the co-movements among output indicators, most of them are found to show that a process of divergence has been under way since the implementation of EMU in 1999.

The levels of both national income (using GNI data) and domestic economic activity (using GDP data) are found to be diverging, in contrast to the substantial progress that took place before 1999. Regional convergence is also examined and found to be waning, though the evidence is less conclusive. Risk-sharing strategies in the presence of asymmetric shocks and labour immobility are leading to capital stock migration within the EMU and this is resulting in higher variability of GDP, but less so with respect to GNI.

The discrepancies between GDP and GNI indicate imbalances in the current account. In fact, one of the most worrying developments in the Eurozone is the recent emergence of CA deficits in the southern European countries, while the northern constellation of the Eurozone enjoys substantial surpluses. Although both categories are receiving more FDI after EMU than before, it appears that the southern countries are more attractive for investment in housing than in the production sector. This is putting in motion the so-called 'Rybczynski effect', which is shifting the composition of output in favour of the non-traded sector, thus causing a deterioration in the trade balance. This issue is now emerging as a matter of policy concern in the EU and has triggered a discussion on new priorities for competitiveness so that a better internal and external balance can be achieved.

1. Introduction

The paper considers developments in a number of output indicators and external balances in the Eurozone countries both before and after the creation of the Economic and Monetary Union (EMU) in order to assess how convergence in economic fluctuations and the level of income across the member states has been affected by the adoption of the single currency in 1999. Although multi-faceted and sometimes vague, the notion of 'economic convergence' has been deeply entrenched in European politics from the early period of the Founding Fathers up to the present, perhaps more so than any other objective in the plethora that have been ambitiously accumulated by Brussels over the years. During the past half century, the drive for economic convergence has shaped several ideas and visions of the Union and has frequently become the test-bed of many policy initiatives. One of the most far-reaching among them was the massive transfer of Structural Funds towards the least-developed regions of the European Union initiated

in the mid-1980s. The programme was conceived, and expanded, on the grounds of achieving greater 'cohesion' and assimilation in areas stretching from the Finnish province of Kainuu to the island of Crete and from the Subcarpathian region to Coimbra by the Atlantic.

One of the most critical assumptions for the successful implementation of EMU was that economic fluctuations would converge, becoming less pronounced and more synchronised, since a single monetary policy could be efficiently conducted only in the absence of conflicting views on the direction of correction of the cycle.

The pre-EMU debate during the 1990s was also dominated by the so-called 'nominal convergence' of fiscal and monetary indicators, which became a prerequisite for an economy to join the EMU. Although the public debates at that time questioned the relative merits of 'nominal' versus 'real' convergence, it was widely viewed that participation in EMU would nevertheless speed up both types of convergence in many ways. Dyson (2000), for example, argues that EMU was expected to be a powerful top-down instrument for catalysing convergence not only of markets, but also of policy-making institutions and welfare-state provision.

But above all, 'convergence' was meant to imply a gradual rise in real incomes and welfare in a non-inflationary environment (Kok, 2004). In a characteristic speech on the first anniversary of EMU, the President of the European Central Bank (ECB) remarked that the single currency would enhance regional growth and prosperity by helping SMEs and promoting more trade opportunities (Duisenberg, 2001). For several countries it was precisely this prospect of accelerating real convergence that helped governments to win public support for carrying out the fiscal and market reforms that were necessary to qualify for the EMU project. Thus, as noted by Begg (2003), after EMU was established and started to get more consolidated, attention was inevitably focused more on whether its benefits were shared equitably by its members.

Pledges to that end were never in short supply. Responding to the high expectations of the time, the 'Lisbon Strategy for Growth' launched in 2000 included a comprehensive set of targets to gauge the effectiveness of policy reforms in the member states as a means to accelerate convergence. Quite naturally, top among them was the target of bridging the income gap between the most and least affluent areas in the EU. Hence, the question of whether the single currency has actually promoted or hindered convergence in regional and national incomes is legitimately regarded as one of primary importance for policy evaluation in EMU and a political prerequisite for increasing support among European citizens for further integration.

Another crucial aspect of the pre-EMU considerations was the existence of prolonged and substantial trade and current account imbalances between the European economies. Deficit countries were frequently confronted with the dilemma of either having to devalue their currencies to improve their external deficits at the expense of domestic inflation and deteriorated terms of trade, or seeing their labour force migrate to the more developed regions of Europe. The Economic and Monetary Union project was in many ways inspired by the realisation that by adopting a common monetary policy the European economies had a lot more to gain in welfare terms than being engaged in tit-for-tat devaluations to redress the imbalances in their current accounts. The gains from adopting the single currency ranged from the elimination of exchange rate volatility and transaction costs to the facilitation of factor mobility within the EU, which was supposed to foster growth and enhance competitiveness across countries. Thus, major current

account imbalances could be avoided and the pressure for beggar-my-neighbour policies would subsequently disappear.

Although never formally considered as an explicit target in the Stability and Growth Pact, external imbalances were not expected to diverge sharply in the euro area, at least not to the extent witnessed over the last few years, with current accounts ranging from a post-EMU average deficit of almost 7% of GDP for Greece to an average surplus of 7% for Finland. Such phenomenal deviations in the current account constitute a new and mostly unforeseen type of asymmetry in the Eurozone that blends uneasily with the national and regional income divergence. As the deficit-prone countries are also lagging behind in terms of per capita income, the only policy choice they have is to embark on far-reaching structural reforms to raise competitiveness and enhance growth1.

However worrisome such developments might seem for the sustainability of the common currency, they did not attract extensive policy attention after the EMU was established. The assumption in the European policy-making bodies was perhaps that swollen CA deficits are no more than a transient phenomenon as countries enjoy a post-EMU consumption spree due to the fall of interest rates. For example, Blanchard and Giavazzi (2002) disregarded any explosive possibility in the medium run and, discussing "whether the current attitude of benign neglect vis-à-vis the CA in the Eurozone is appropriate, or whether countries such as Portugal or Greece should worry and take measures to reduce their deficits … conclude, to a first order, that they should not" (Introduction, p. 3, my emphasis).

Only when CA deficits reached alarming levels in the last few years did a public debate on the potential threats to the economies of Southern Europe and their viability within the Eurozone start to take place. Blanchard (2006) turned away from his early benign-neglect suggestions and stressed that as "CAD steadily increased… within the Euro, Portugal (and) Spain (have) reason to worry, (… as) deficits are too large, …(and) implications can be bad" (Introduction, p. 5). More to the point, Gros (2006), in a comparative study of Germany and Italy, extends the risks of external imbalances to the potential abandonment of the monetary union by warning that if the "current trend could continue … leading to an ever increasing loss of competitiveness… Italy's participation in EMU would be in doubt … as the country would need a massive devaluation" (p. 17).

According to the 'twin deficit' proposition, current account imbalances are demand-driven effects engineered by large fiscal deficits; for example, see Gruber and Kamin (2008), who attribute the large US CA imbalances to the oversized government deficit. In other cases, CA deficits are explained by intensive investment to enhance supply-side capacity, especially in periods of transition, as for example in the emerging markets of Eastern Europe. Aristovnik (2006) finds that as potential domestic output exceeds the current level of production, most transition countries are justified in running relatively high current account deficits. However, the evidence for the Eurozone countries does not support such views on the deterioration of current account deficits. In a recent study for Italy, Spain, Portugal and Greece, Arghyrou and Chortareas (2008) suggest that "other factors beyond income growth may explain the CA positions of these countries" (p. 755) and document that developments in the real exchange rate are a decisive factor.

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1 For if a Government tries to contain the external deficit by traditional demand-cutting measures, this will inevitably exacerbate the income gap vis-à-vis the most-developed economies.

The present paper suggests that the divergence between external accounts may be at least partly attributed to the different patterns of inward and outward FDI across the countries of the Eurozone. Although both the northern and the southern group have attracted increased FDI flows after EMU, there seem to be noticeable differences in size and composition. In the southern countries, the housing sector seems to have attracted more investment relative to that in the production sector, while the reverse appears to be the case in the northern group. This has led to a shift in the composition of traded and non-traded capital stocks in the Eurozone economies and to the so-called 'Rybczynski effect', according to which an increase in a factor of production shifts the composition of output in favour of the sector which is relatively intensive in that factor. Thus, investment in the northern (southern) Eurozone countries tends to increase traded (non-traded) output and, in first place, causes an improvement (deterioration) in the trade balance. On the other hand, factor payments stemming from FDI endowments enter the current account and the net outcome is unclear. A country that receives FDI mainly in the traded sector raises productivity and the trade balance beyond the income outflow, so that its current account improves. The current account is likely to deteriorate when FDI takes place mainly in the housing sector, so that international competitiveness is not improved and the trade balance worsens.

The rest of the paper is organised as follows. Section 2 examines the convergence and assimilation of the business cycles of the various economies and then the catching-up process between the least and most developed Eurozone countries is assessed by employing four indicators of per capita income. By using the standard Hodrick-Prescott (1980) filter on per capita GDP, higher convergence of business cycles is found to have taken place across the member states after the EMU was established. On the other hand, using standard measures of dispersion and catching-up speed, it is found that post-EMU developments in incomes are diverging, in contrast with a visibly stronger convergence process before EMU implementation.

In Section 3, the Eurozone economies are classified into two groups according to whether they are in surplus or deficit in their trade balances and current accounts after the creation of EMU. This results in one group consisting of the northern economies, with strong external surpluses, and another group comprising the southern economies of the Eurozone, which show unprecedented current account deficits. This section also examines how the different patterns of post-EMU foreign direct investment flows into the two groups have impacted upon the composition of output.

In Section 4, the paper addresses some limitations of the existing EU policy framework that make it inadequate for addressing the weakening process of convergence in the Eurozone. More extensive coordination and policy focusing is required at the EU level in order to reverse the current process of divergence, thus making the Eurozone more successful and delivering the European project. The conclusions are summarised in the final section.

2. Measuring Convergence

In the literature of economic integration, convergence is a broadly defined concept used to describe diverse issues ranging from income-dispersion indices to the assimilation of trade patterns and the affinity of social policy. Appropriate indicators of income convergence include fluctuations of GDP around its trend and the variability of income in per capita terms measured as

gross domestic product or gross national income at the national or regional level and in real or purchasing-power terms.

Convergence is assessed by looking at two measures of dispersion: the coefficient of variation and beta-convergence (Barro and Sala-i-Martin, 1995). The coefficient of variation measures the cross-country standard deviation of a time series expressed as a percentage of the mean in each particular period. Beta-convergence measures the speed at which lagging-behind countries tend to 'catch-up' with the most advanced members of the group under examination. The first approach is employed to study the dispersion of business cycles and between per capita incomes in the Eurozone countries. The second is used to assess the acceleration or deceleration of the convergence process after EMU was started.

2.1. Business Cycles

One of the most critical tests of EMU was expected to be the extent to which idiosyncratic shocks impinging upon particular economies would lead to asymmetric economic fluctuations of such intensity that could jeopardise the viability of the common monetary policy. This issue had attracted a lot of attention and debate before EMU was formally established; see, among many others, Cohen and Wyplosz (1989) and Weber (1990). The critical question was whether the economies involved in the integration process would have similar or differing responses to shocks with regard to timing, intensity and persistence. In the case of asymmetric responses to shocks, EMU would come under strain, as it would have to respond to different business cycle patterns across each member state and this sooner or later could lead to its disintegration; see Bayoumi and Eichengreen (1992).

A different approach stemmed from the so-called 'endogeneity' argument in the theory of currency unions – see, for example, Tenreyo and Barro (2003), who argue that currency unions are likely to decrease the co-movement of output. Using trade data of twenty industrialised countries over thirty years, Frankel and Rose (1996) establish that economies with closer trade links tend to have more tightly correlated business cycles. The conclusion logically following from the endogeneity argument is that ex-ante differences in business cycles should not hinder the implementation of the single currency. Christodoulakis et al. (1996) found that most of the pre-EMU dispersion was due to idiosyncratic aspects of national policies that naturally would tend to diminish afterwards. In a similar vein, a study commissioned by the European Parliament (1998) pointedly argued that "many of the asymmetries might be removed by the coordination within EMU of economic policies, the alignment of legislation (e.g. in the area of financial services or labour law) and by the fact of monetary union itself" (summary/conclusions, no. 3).

To find out whether the implementation of EMU has affected the pattern of business cycles in the individual economies, we examine the fluctuations of their outputs around the trend. Per capita output of any type in constant prices (y) is decomposed into a trend (z) and cycle (u) for each country j (j=1,…,n) in period t according to:

$$y_j(t) = z_j(t) + u_j(t)$$

(1)

Employing the Hodrick-Prescott method2, we obtain the cycles of per capita GDP in constant prices for the first 12 Eurozone countries. As clearly demonstrated in Figure1a, GDP cycles have become more symmetric and less intensive after EMU.

Second, we evaluate a measure of the dispersion of fluctuations across the members of the Eurozone, defined as the percentage ratio of the standard deviation of cycles over the trend mean, namely:

$$VBC(t) = 100 \cdot SD[u_j(t)] \left/ \left[\frac{1}{n} \sum_{j=1}^{n} z_j(t) \right] \right. \tag{2}$$

The cross-country variability of business cycles (VBC) is depicted in Figure 1b and shows a substantial reduction from around 2% of the trend mean in the early 1990s to around 1% in the most recent years. The above results imply that the implementation of EMU not only was not hindered from prior business cycle asymmetries, but also coincided with further dampening and more synchronisation among countries. It is less clear, however, whether this moderation was a direct impact of EMU or an effect coincidental with the more globalised international environment prevailing after 2000; for a discussion see Schelkle (2007). Giannone and Reichlin (2006) evaluate a wide range of business cycle indices3 confirming that the gaps between the member states are smaller after EMU and the cycles mostly synchronised. However, they notice that a similar moderation is observed in other non-EMU economies of the OECD.

Other studies seem to be more conclusive on the EMU-induced dampening and synchronisation of business cycles, due to an increase of intra-trade activity and closer coordination of fiscal policies. Altavilla (2004) presents evidence showing that, since the establishment of the Maastricht Treaty, EMU members' business cycles have become more assimilated between themselves than with the United States. In a similar vein, Schiavo (2007) attributes most of the dampening to the 'endogeneity' effect of EMU, i.e. the fact that member states tend to move more closely together once they belong to the same monetary union.

As a matter of fact, several idiosyncratic shocks that fell upon the European economies in the 1990s and caused severe asymmetries in their growth patterns did not originate from the lack of a common monetary policy. For example, the banking distress in Finland and the demand surge in Germany in the aftermath of unification produced strong idiosyncratic fluctuations of GDP. As none of these episodes was repeated, it is not surprising that the cyclical movements subsided considerably. But other types of pre-EMU shocks, including uncoordinated demand management and the failure of the ERM in several countries during 1992–1993, could be attributed – at least partly – to the absence of a single monetary policy. The very existence of EMU precludes several such shocks by ruling out devaluations and making the common monetary policy have symmetric demand effects across member states.

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2 This procedure is based on the definition of the business cycle component of a variable as the deviation from its smoothed trend; see Hodrick and Prescott (1980). In commonly used econometric software the representation of this smoothed trend is a time-sequence that minimises a second-order criterion of smoothness.

3 The covariance of GDP per capita growth rates shown in Figure 4 for the period 1999–2007 is close in magnitude to those reported in the calculations over the period 1993–2003 (Table 3, col. 6). Comparisons over the period in the early 1990s are not possible as they omit the years 1990–1992 to avoid the excessive shocks associated with German unification.

2.2. National and Regional Income Convergence

To assess how convergence of incomes proceeded before and after EMU, two well-established methods are employed: First, so-called 'σ-convergence' is defined similarly to (2) as the variability of per capita income (VPI) in constant prices:

$$VPI(t) = 100 \cdot SD[y_j(t)] \Bigg/ \left[\frac{1}{n} \sum_{j=1}^{n} y_j(t) \right] \tag{3}$$

where $y_j(t)$ is a measure of income in country j (j=1,…,n) at time t. Four measures of income are taken in turn, namely GDP, regional GDP, GDP in Purchasing Power Standards (PPS) and gross national income (GNI), all expressed in per capita terms and constant prices for the eleven European countries, excluding Luxembourg4. The data are described in the Appendix. Computing the dispersions as in (3), we obtain the results graphically depicted in Figure 2a–c. The following remarks can be made:

The dispersion in per capita GDP in PPS terms reached its lowest level since 1996 in 2003, but then started increasing again, and in 2007 it surpassed the level it had back in 1997.

The most noticeable reduction in dispersion among the member states before EMU pertains to regional incomes, which fell by more than four percentage points over the period 1995–1997. The convergence process is found to not continue after 1999, confirming earlier studies on the post-EMU weakening of regional convergence; see, for example, Martin (2001) and Gardiner et al. (2004).

The cross-country dispersion indices for per capita GDP and GNI evolve upwards after 1992, in contrast with their downward pattern up to that year. The variability index rises to around 31% of the Eurozone average, effectively returning to the level it had in the mid-1980s.

All these findings suggest that the process of income convergence between the Eurozone members has been at best halted or substantially reversed, depending on the index under consideration. Moreover, GNI seems to have a smoother pattern of dispersion than that of GDP for most of the period after EMU, in contrast to following virtually the same course before EMU. A reason for the slower deviation of GNI relative to GDP may be the so-called strategy of risk-sharing. According to this, factor endowment and economic activity are spread across countries as a way to reduce the impact of idiosyncratic shocks that impinge on a particular economy of the union. Thus, while GDP varies when affected by shocks, risk-sharing reduces the transmission of output fluctuations into national income and consumption.

In the early 1990s the two indices of GDP and GNI dispersion were almost identical, which implies that income risk-sharing was hardly taking place at that time. But subsequently, and all the more after EMU, GNI evolved differently than GDP, suggesting that a higher degree of risk-sharing was employed in the Eurozone to alleviate the impact of idiosyncratic shocks and smooth consumption over time. Kalemli-Ozcan et al. (2004) estimate that the degree of risk-sharing in the European Union has increased substantially since the mid-1990s due to increased cross-ownership

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4 As commonly done in similar measurements, Luxembourg is not included in the sample – otherwise its pervasive hikes of income due to capital movements would exert a disproportionate influence on the euro-area average.

of assets across countries and is expected to grow further in EMU, as transaction costs have decreased and several institutional impediments have been lifted. In contrast, the cross-country GDP developments seem to be sharply diverging5.

Another fact is that, although not improving any further, the dispersion index in regional incomes does not deteriorate to the same degree as happens with the other indicators. This can be attributed to the continuation of growth-fostering interventions in the least-developed areas financed by the Structural Funds, the positive impact of which on regional convergence has been extensively researched; see, for example, Cappelen et al. (2003) and Christodoulakis and Kalyvitis (2002).

The Third Community Support Framework (CSF) over the period 2000–2006 was for some countries lower than the funds allocated to Eurozone regions through the Second CSF (1994–1999), as several regions achieved substantially high growth rates during the previous years that made them no longer eligible for cohesion funding. However, it seems6 that national governments used national resources to compensate for the reduction, so that total public investment over the period 1999–2007 stayed on average at 2.71% of GDP among the eleven Eurozone countries, only slightly below the average public investment of 2.74% of GDP over the period 1996–1998.

2.3. Catching-up

Another widely used concept in convergence measurement is the speed at which lagging-behind members of a group are 'catching-up' with the most advanced. Reviewing this process, European Economy (2008, ch. 8, p. 106) finds that convergence has indeed weakened for some countries, such as Spain and Italy, although it claims that catching-up still applies for the EU members as a whole. But it fails to note that after EMU the convergence dynamics appear to be meaningful only when the newly accessed and faster-growing emerging economies of Eastern Europe are included in the test. This can hardly be taken as an indication of convergence that is attributable to the adoption of the single currency, since most of these countries are not yet participating in the Eurozone, while Slovenia, Cyprus and Malta account for only a small share of the total population.

 It seems more meaningful that the growth rates of per capita incomes are juxtaposed vis-à-vis the income levels of the Eurozone countries solely and for the two periods separately. Using the first year of each period as the base, simple correlations are obtained over two equal periods before (1990–1998) and after EMU (1999–2007). The results in Figure 3 show a negative correlation coefficient (ρ=-0.11), indicating that catching-up dynamics were present before EMU, albeit not particularly strong. However, even this weak correlation vanishes after EMU and is reversed in sign (ρ=+0.045).

Due to the small size of the available sample, the above results may be highly sensitive to the choice of the first year. For this reason we also examine two other types of catching-up equations that can be estimated by using a larger number of observations. The first is a time-moving version of the familiar beta-convergence equation:

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5 This measure concerns the level of each country's GDP and should not be confused with the reduction in fluctuations discussed in Section 2.1, which is a measure of the cycle.
6 Eurostat data; see the Appendix.

$$\left[\frac{y_j(t)}{y_j(t-s)} - 1 \right] = c + d_j - \beta \cdot \log \frac{y_j(t-s)}{\overline{y}_j(t-s)} + \varepsilon_j(t) \tag{4a}$$

The l.h.s. is the growth rate of per capita GDP $y_j(t)$ in country j $(j=1,...,n)$ over s periods, while the logarithmic term on the r.h.s. denotes the gap of that country relative to the mean of the group ($\overline{y}$) s periods back. If β takes a high value, an initial gap in per capita income is bridged over time by achieving a higher growth rate, but not quickly enough if β is low. Thus, β represents the speed of convergence, while c is a constant, d_j is a country-specific dummy and ε_j is the error term.

Another formulation for measuring convergence is to consider how the period-by-period per capita GDP growth rate depends on a smoothed average of lagged discrepancies in the level of GDP of each country relative to the group mean:

$$\left[\frac{y_j(t)}{y_j(t-1)} - 1 \right] = c + d_j - \beta \cdot \log \sum_{k=1}^{s} \frac{y_j(t-k)}{\overline{y}_j(t-k)} + \varepsilon_j(t) \tag{4b}$$

Both the above formulations are not specific to the choice of reference year, but still depend on the lag s over which the growth rates and level gaps are measured. Choosing a high or a low value for s corresponds to measuring convergence over the long or the short run respectively. Indicatively, we choose here a lag of $s=4$, which represents a medium-term consideration of convergence, as this is the typical duration of a government in most countries of the European Union and it also happens that several convergence reports are published at similar frequency to assess progress relative to their predecessors.[7]

The pooled group includes the eleven initial Eurozone countries (excluding Luxembourg) and the estimation takes place over the two equal-size periods 1990–1998 and 1999–2007, before and after EMU respectively. Equation (4a) is estimated using pooled least squares with cross-country fixed effects and an autoregressive structure AR(1) given by $\varepsilon_j(t) = \rho\varepsilon_j(t-1) + \omega_j(t)$, where $\omega_j(t)$ is an i.i.d. process. The estimation of equation (4b) employs EGLS of similar structure but now with cross-weights to improve the autocorrelation statistics. Unit-root tests are performed for the growth rates and the level gaps of per capita GDP and the hypotheses are rejected at the 5% level as shown in Appendix B. The results are summarised in Table 1.

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7 Estimates with other lags produce similar comparisons between the pre-EMU and post-EMU speeds of convergence and are available from the author on request.

Table 1: Pool Estimates of the Catching-up Process before and after EMU

	Pre-EMU (4a)	*Post-EMU (4a)*	*Pre-EMU (4b)*	*Post-EMU (4b)*
constant	0.04 (3.069)	0.029 (0.95)	0.357 (2.55)	0.25 (2.37)
beta	1.22 (4.93)	0.68 (3.20)	0.25 (2.40)	0.15 (2.17)
AR(1)	0.755 (12.15)	0.88 (17.73)	0.439 (4.54)	0.48 (5.59)
R2-adj	0.76	0.90	0.39	0.56
DW	1.08	1.06	1.92	2.18

Note: T-statistics are shown in parentheses.

The results for both types of estimated equations reveal a significant weakening in the speed of convergence between the pre- and post-EMU periods, as the beta coefficient falls from 1.22 and 0.25 to 0.68 and 0.15 for the two cases respectively. The weakening in the catching-up dynamics may be explained by a variety of factors, including asymmetric developments in productivity and inadequate growth in the less developed economies. These can be attributed, at least partly, to post-EMU reform fatigue, as several governments found it politically expedient to continue a process that was frequently seen by public opinion (and conveniently accepted by short-term governments) as only a transitory obligation that expires on accession to the Monetary Union. Duval and Elmeskov (2006) argue that the up-front costs of structural reforms may be larger under a common currency and more restricted use of fiscal policy. The slowdown of market reforms was combined with depressed world demand and resulted in low growth and recession in several EMU countries, thus limiting the convergence process.

3. Current Account Deficits

3.1. The Emergence of New Asymmetries

One of the most worrying, and least foreseen, developments in the Eurozone is the unprecedented widening of deviations in both the trade balances and the current accounts of the member states. Table 2 shows the average balances for a period of nine years before and nine years after EMU. Two groups of Eurozone countries are considered, according to whether their trade balances have been on average better or worse after EMU. The group characterised as 'North' includes six countries (but again not Luxembourg) and shows an average improvement of 3.23 percentage units of GDP in its trade balance, as opposed to an average deterioration of 3.78 units of GDP in the group of five countries symmetrically termed the 'South'.

With the exception of Ireland[8], the current accounts of the northern group are in surplus after EMU and most of them (except Ireland and Belgium) improve further by an average of 1.52 percentage GDP units, while in the south they all deteriorate by 3.39 units. Three of the southern

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[8] After 2003, Ireland experiences CA deficits due to rising factor payments abroad. However, the country continues to enjoy high surpluses in its trade balance, and this justifies its inclusion in the northern group.

Eurozone countries experienced CA deficits ranging between 5% and 9% of GDP on average during the last five years, almost three times the average range they had in the early 1990s. On the other hand, the northern countries of the Eurozone had CA surpluses as high as 9% of GDP, despite the hard euro policy pursued by the ECB.

Table 2: Trade Balances (TB) and Current Accounts (CA) in the Eurozone as % of GDP

Countries	1990–98 TB	1999–07 TB	Change in TB	1990–98 CA	1999–07 CA	Change in CA
AT	0.16	3.93	3.78	-1.38	0.36	1.73
BE	3.48	3.79	0.31	4.32	3.84	-0.48
FI	4.57	7.41	2.84	0.47	7.06	6.59
GE	0.44	3.81	3.37	-0.54	2.24	2.78
NL	4.90	6.58	1.68	4.13	5.37	1.23
IE	12.15	13.93	1.78	1.78	-1.61	-3.39
NORTH	**3.35**	**6.58**	**3.23**	**1.35**	**2.88**	**1.52**
IT	2.44	0.60	-1.84	0.57	-1.01	-1.58
FR	0.84	0.30	-0.54	0.80	0.56	-0.24
PT	-7.55	-8.63	-1.08	-2.19	-8.76	-6.57
SP	-1.04	-3.79	-2.74	-1.64	-5.41	-3.77
EL	-6.95	-11.89	-4.94	-2.39	-6.71	-4.32
SOUTH	**-0.91**	**-4.68**	**-3.78**	**-0.88**	**-4.27**	**-3.39**

Note: Unweighted period averages.
Source: IMF World Economic Outlook 2008, and Eurostat.

This represents a wholly new type of asymmetry in the Eurozone. Despite the fact that most of the southern European economies were historically prone to deficits, none of them saw its CA deteriorate so fast and extensively in the past. For example, until 1999 Spain's CA deficits as percentage of GDP were only 1.1% worse than Germany's, but in 2007 the gap surpassed 15 percentage points, as Spain had a deficit of 9.8% while Germany achieved a surplus of 5.4% of GDP.

Although there is no established benchmark at which point a CA deficit may cause an economy-wide crisis, it is useful to recall that the balance of payments crises in Latin America over the last three decades took place with external deficits ranging between 6 and 8% of the respective countries' GDP, a level far below the recent ones seen in the southern Eurozone countries.

To assess the implications that a large external deficit may have on the economy, Shelburne (2008) calculates the ratio of the CA deficit to total capital formation and uses it as an indicator of the risk associated with the easiness of the country's financing from abroad. These ratios are depicted in Figure 4b for the southern Eurozone countries and show a rise in the post-EMU period, especially over the last four years. For Greece, Portugal and Spain, they have risen to levels of 35–45%, making the financing of investment depend crucially on the availability of international credit. The situation has been further aggravated by the global banking crisis of 2008, as the tightening of external deficit financing in combination with domestic budget

imbalances has led to unprecedented rises of sovereign borrowing costs in Eurozone countries[9] never seen before in the EMU era.

3.2. CA Deficits and FDI Flows

The 'twin-deficit' proposal can be examined[10] by looking first at simple correlations between the CA and government deficits in the southern group. As Figure 5 demonstrates, the two deficits were weakly positively correlated *(ρ=0.1917)* in the period before 1999, but this does not survive EMU, as Figure 5b shows[11]. During that period, government balances became more streamlined towards the 3% threshold imposed by the Stability and Growth Pact, but at the same time the CA deficits became even wider.

Perhaps a more promising framework for explaining the vastly diverging developments in the external balances is to examine whether the imbalances are 'supply-driven' and what factors might have led to different patterns of productivity and trade in the Eurozone countries. One suitable supply-side framework is the two-sector model of a small open-economy as described by Turnovsky (1996). The model assumes that two types of capital are accumulated in the economy, one of which is traded internationally and the other is non-traded. In the present context, inward FDI is of the former type, while the second can be taken to express the capital stock invested in the housing sector. There are two sectors in the economy, one producing internationally traded goods while the other produces goods traded only domestically. Both types of capital are employed in both sectors of the economy, in a way similar to that developed by Wincoop (1990). However, factor intensities are different across the two sectors and the economy can be relatively capital-intensive either in the traded or in the non-traded sector, depending where the traded capital is employed more intensively.

The difference in capital intensity gives rise to the so-called *'Rybczynski effect'*, according to which an increase in a factor of production shifts the composition of output in favour of the sector which is relatively intensive in that factor; see Rybczynski (1955). Inward (outward) foreign investment can be treated as a rise (reduction) in the stock of traded capital that enters both sectors of production. The following implications for the two possible cases of relative intensity in traded capital can be derived from the Rybczynski effect:

Case I: If the economy is relatively capital-intensive in the production of traded output, FDI will be directed in greater proportion to the traded sector. In this case, traded output expands relatively more than the output of the non-traded sector and, assuming that global demand for exports does not change given the small size of the economy, this improves the trade balance.

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[9] The highest spikes in the spreads between the rates of ten-year bonds and the German bund were seen for Greece and Italy, which are characterised by both CA and budget deficits. However, the spreads also went up for Spain due to a high external deficit in spite of a low debt-to-income ratio and a surplus budget.

[10] More properly, the link between the two deficits should be examined by looking for the existence of Granger-causality between the two deficits, but the short time-span after EMU makes the results of little value.

[11] If anything, Figure 5b suggests that there might be two subsets in the data showing a negative correlation between CA and government balances.

Case   II : If the economy is relatively capital-intensive in the non-traded sector, then most of the internationally traded FDI will be attracted by the housing sector and production will shift towards the non-traded goods. As a result, the trade balance deteriorates.

Distinguishing between investment in the housing sector and investment in productive activities, a different pattern of inward investment and output composition emerges for the two groups: when FDI flows into an economy that is relatively capital-intensive in the productive sector, it is channelled mainly into that sector and leads to higher traded output. Normally, this accumulation also leads to substantial productivity improvements and, thus, stronger competitiveness in international markets. In contrast, if the economy is capital-intensive in the housing sector, FDI goes mainly to the non-traded sector, thus reducing traded output and boosting aggregate demand. As a result, prices rise, the real exchange rate appreciates and international competitiveness falls. Therefore, the differentiation in the structure and composition of the economy has profound consequences for the supply side and can be used to explain at least part of the divergence in the current account trade balances in the Eurozone.

To examine the above implications of the Rybczynski effect, the correlations between trade balances and inward FDI stocks are evaluated for the two Eurozone groups. As shown in Figure 6a, the correlations are found to be positive for all the northern Eurozone countries, while those shown in Figure 6b for the southern countries are all negative. This can be taken as an indication that FDI flowing into the northern group has been directed relatively more to the production sector, while FDI to the south has been mainly channelled towards the non-traded sector.

Another indication that FDI flows to the southern Eurozone countries were mainly directed into real estate may come from the pattern of housing prices. Using house rental prices, Figure 7 shows that the house price increases in the southern group were higher than those in the north. In the northern group, Ireland experienced a housing bubble of a size comparable with those in the south, but nevertheless it managed to attract substantial productive investment leading to trade surpluses even higher than before EMU (see Table 2).

Apart from the composition of the FDI flows, there also seems to be a substantial difference in the volumes of investments attracted by the two Eurozone groups. In the event of the EMU, there has been a massive net FDI inflow (i.e. inflows net of outflows) to the northern countries of the Eurozone and an opposite net outflow from the southern countries. Figure 8 demonstrates that the two Eurozone groups had more or less similar net flows of FDI before EMU, but this changed dramatically when EMU was put in place. After 1999, the northern countries were able to accumulate a stock of foreign capital that went on a net basis up to 10% of their GDP on average. In contrast, FDI inflows into the southern countries have been surpassed by outward investment and this has led to a lower capital stock on a net basis. Filippaios and Papanastassiou (2008) provide extensive evidence of the fact that the northern countries have shown greater adaptability to the new conditions created by EMU in attracting substantially more FDI flows from the US. The unequal distribution of FDI flows between the northern and the southern group is in agreement with the fact that Net Factor Payments from Abroad (NFIA) to the North are negative, leading to CAs that are lower than the trade balances, as shown in Fig. 4a. In the South, the substantial outflow of FDI has resulted in positive NFIA on average, hence the current account deficits are lower than the corresponding trade deficits.

4. Facing the Asymmetries: In Search of New Policy Priorities

When EMU was implemented in 1999, there were high expectations that the smooth functioning of the single currency would catalyse major improvements across the social and economic spectrum, making additional policy targeting seem superfluous. This benign neglect constituted a departure from earlier policy patterns adopted by the European Union, in which intermediate targets were typically set within specific time-frames and adequate financial resources were allocated to accomplish them. For instance, the Community Support Framework was a time-framed and outcome-specific tool aimed at reducing regional discrepancies where applied. Similar initiatives have been undertaken regarding more efficient mobilisation of knowledge capital or in order to coordinate enterprise networks. The same clear-objective pattern was adopted in preparing for the EMU, when the Stability and Growth Pact was conceived as a rule-abiding fiscal framework necessary to redress the lax state of public finances in several countries.

Contrary to the comforting implications of the *'endogeneity'* argument in a monetary union, the smooth introduction of the single currency and the successful dampening of inflation during the first ten years of EMU did not prove sufficient to symmetrically raise productivity across countries and speed up real convergence. In a monetary union as envisaged by Mundell (1961), factor mobility should work to equalise the marginal rates of return over all countries. But in EMU reality, mobility has thus far worked mainly for capital relocation and this seems to have aggravated the asymmetries in productivity in tradable sectors and caused vast asymmetries in the external balances of the Eurozone countries.

It is true that one year after the formal start of EMU, an ambitious policy supplement was launched to encourage the European economies to raise competitiveness and achieve real-economy improvements. The Lisbon Strategy included several social and economic objectives claimed to be the fast way for driving the Union to meet the challenges in the new era of globalisation. Income convergence was explicitly at the top of the new priorities, but with no binding objectives or time-frame attached to it. Although there was no direct reference to CA targets, the Strategy also advocated a rise in productivity that would cure the imbalances. But despite the initial thrust given to it by governments and its endorsement by several public institutions, it did not prove sufficient in speeding up growth and convergence in the EU in general and the Eurozone in particular. The reasons why the Lisbon Strategy did not deliver on its targets might include the following:

(a) It included too many targets and this frequently diluted the policy focusing and resulted in inadequate financing. In its five-year assessment report, the High Level Group headed by Kok (2004) admits that *"the progress of the Lisbon strategy has suffered from incoherence and inconsistency, both between participants and between policies"* (p 39). It went on to suggest that *"a better reflection of the priorities of the European Union in its budget would further enhance coherence at the European level"*.

(b) It set the same framework and objectives for all EU countries, irrespective of the fact that some of them were already in the Monetary Union, while others could still make use of a more independent monetary policy to face some idiosyncratic shocks that were threatening their productivity.

(c) The lack of prioritisation in its objectives led to substantial revisions of its *'main message'* to better serve the needs of the time. When it was launched in 2000, it was viewed as the vehicle to make Europe *'the most competitive knowledge society'* in the world by the year 2010. The emphasis was on promoting education and raising scientific and innovation potential in Europe to enable it to compete with the US and other, emerging economies. A few years later, a mid-term look at the Lisbon Strategy revealed that the outcomes were somewhat disappointing, particularly with regard to employment. Responding to the bleak findings, the Strategy was re-launched as an agenda for *'Growth and Jobs'*, with the main focus on increasing labour market participation (EC, 2005).

Barely two years later, the EU Presidency attempted yet another refocusing, this time on *'the four priorities'* of (i) energy sufficiency, (ii) unleashing the potential of small and medium-sized enterprises, (iii) increasing employment *'flexicurity'* and (iv) improving education standards (Barroso, 2007). Although each new set of priorities in no way contradicted its predecessors, it caused confusion that diminished the overall credibility of the Strategy as a results-oriented process.

(d) Unlike the Stability and Growth Pact, whose enforcement in each particular country is extensively assessed and debated in the EU policy groups, the Lisbon Strategy is examined once a year and receives little public attention in each country. Rather than following specific and universal rules, its implementation is encouraged by example and autonomous national initiatives, thus lacking a direct market response to its progress or the lack of it.

Given these features of the Lisbon Strategy, it is clear that the weakening of the income convergence process and the vast disparities shown in current account balances can be addressed only if economic policy is refocused on such specific issues and if further policy coordination, time frames and oversight are introduced in the Eurozone concerning the containment of external imbalances. The emergency situation caused by the international credit crunch in the autumn of 2008 can only make this policy shift more urgent and, hopefully, more far-reaching.

5. Conclusions

The paper examined a number of output and income indicators in order to assess the degree of convergence across the economies of the Eurozone after the introduction of the euro in 1999. Business cycles were found to be much less intensive and more synchronous than before EMU, thus suggesting that a higher degree of moderation and homogeneity in economic fluctuations has prevailed since the single currency was established. This has enabled the conduct of the single monetary policy, as participating countries experience more or less common economic peaks and recessions and, therefore, seek a similar pattern of interest rate changes over the cycle.

The second finding concerned the dispersion in per capita output, which is found to have systematically increased after EMU. By employing various measures of GDP, such as per capita in constant prices, regional or in Purchasing Power Standards, it is found that after a period of convergence in the late 1980s and early 1990s, dispersion in GDP per capita has risen sharply. This, in consequence, has brought the catching-up process between the less and more developed countries of the Eurozone to a halt, reversing the pre-EMU dynamics of convergence. Given that *'real convergence'* was envisaged as the natural continuation of the *'nominal convergence'* phase

that had preceded accession to EMU, its reversal may be seen by public opinion and policy makers as a limitation of the single currency and turn into an obstacle for further integration and reforms.

But the most crucial asymmetry in the Eurozone has been the emergence of huge disparities in current accounts and trade balances, with the northern members of the group reaping large surpluses while the southern ones suffer huge external deficits. Despite the fact that at the Eurozone level most of these asymmetries are mutually dissipated and lead to an aggregate balance, deficit countries are burdened in terms of productivity and job losses. In periods of global financial strain, external deficits may also increase the cost of borrowing, as became evident during the 2008 crisis.

CA deficits do not seem to be caused by fiscal excesses, but rather they are associated with supply-side effects stemming from differences in the composition of FDI flows to Eurozone countries. Countries with relative capital intensity in exporting industries have attracted more foreign investment in the traded sector and, as a result, have seen their external balances flourish. On the other hand, countries with relative capital intensity in the production of non-tradable goods and, more particularly, in the housing sector have attracted FDI mainly in the real-estate market and suffered housing bubbles, excessive consumption and external deficits. The existing policy framework in the Eurozone is not adequate to address such disparities and new priorities should be adopted including improvements in productivity and the restoration of external balances. To this effect, the so-called 'Lisbon Strategy for Growth' should be prioritised on achieving more convergence and competitiveness for the Eurozone members.

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Appendix A: Data Sources

*Eurozone countries***:** The twelve countries that participated in the Eurozone from the first round are considered here (AT, BE, EL, FI, FR, GE, IE, IT, LX, NE, PT and SP). Although Greece (EL) was authorised to join the Eurozone in 2000 and became a member on 1 January 2001, it is treated the same as the other countries that participated as from 1 January 1999. Luxembourg is left out from most of the Eurozone indicators constructed for the present study, because its huge financial transactions relative to its population would jeopardise any meaningful comparisons with the other member states.

Per capita GDP, GNI and GDP in PPS: Eurostat, data series, 2008; in constant euros 2000.

Per capita regional income: Eurostat, regional indicators, containing 144 NUTS-2 regions of the 12 first-round Eurozone countries.

Current account, Trade balance: Eurostat, data series, 2008; as ratios to GDP.

Capital formation: Eurostat, Data series, 2008; as percentage of GDP.

Public investment: Eurostat, Data series, 2008; as percentage of GDP.

Foreign direct investment, stocks and flows: UNCTAD, Beyond 20/20 WDS, Major FDI indicators (WIR 2008).

Factor income from abroad: OECD, annual data.

House rental prices: Eurostat, annual average index (cp041, avx)

Appendix B: Unit-root tests

Unit-root tests are performed for the growth rates for one and four periods as in the l.h.s. in equations (4a) and (4b) respectively and for the level gaps between a country's per capita GDP and the group mean. Both the null hypotheses of a common unit-root or individual unit-roots are tested over the period 1990–2007, without using individual intercepts in the estimations. The results show a clear rejection of the null hypotheses for all cases at the 5% level and below.

Table 3: Unit-root Test for the Pooled Series of Growth Rates and Level Gaps.

Series	g=y/y(-1)-1		g=y/(y(-4)-1		y/y_mean	
	statistic	Prob	statistic	Prob	statistic	Prob
Common process Levine, Lin & Chu-t	-5.36	0.00	-3.89143	0.00	-4.68814	0.00
Individual processes Augmented Dickey-Fuller	59.30	0.00	41.2677	0.00	48.3484	0.00
Phillips-Perron	56.85	0.00	35.00	0.0387	55.0734	0.0001

Figure 1a: Per Capita GDP Fluctuations in the Twelve Eurozone Countries
(expressed as % of the trend in each country's GDP per capita in constant terms)
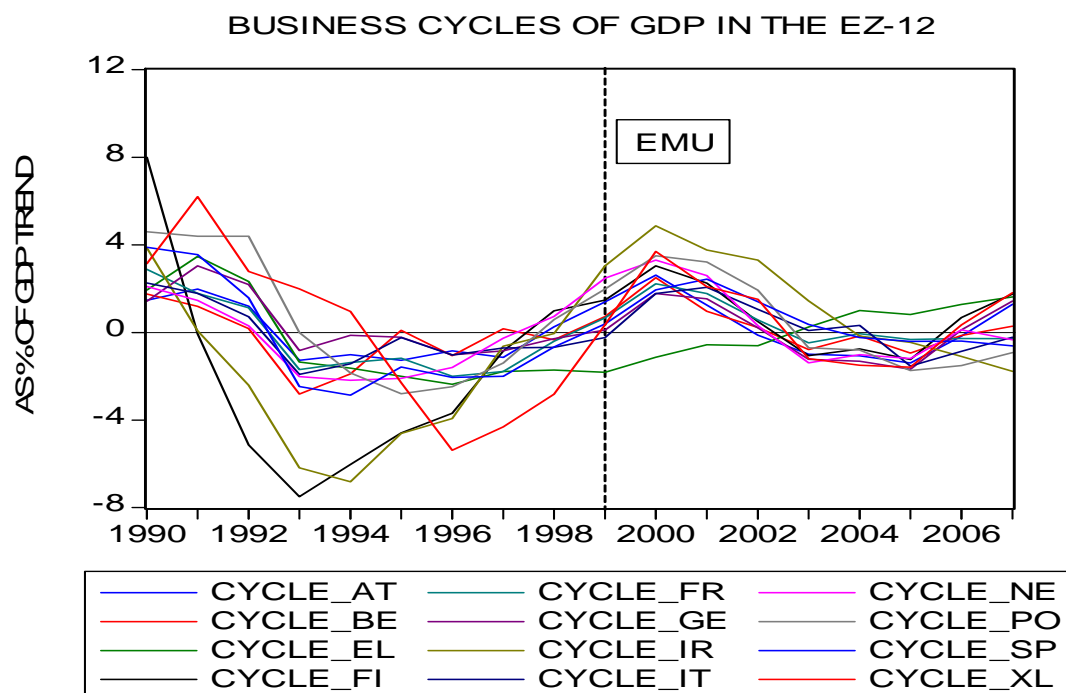
Figure 1b: Dispersion of Per Capita GDP Fluctuations in the Twelve Eurozone Countries (Standard Deviation of Cycles as % of the Trend Mean)
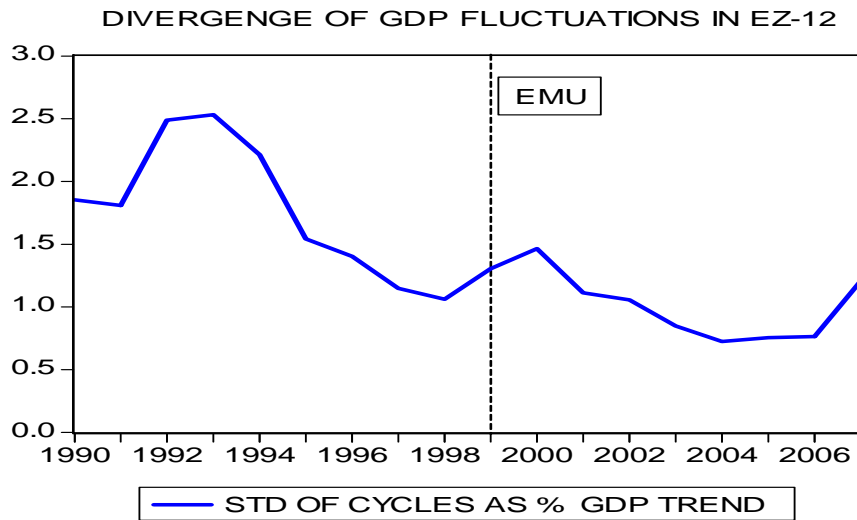
Figure 1c: Variances of GDP Per Capita in Constant Prices before and after EMU
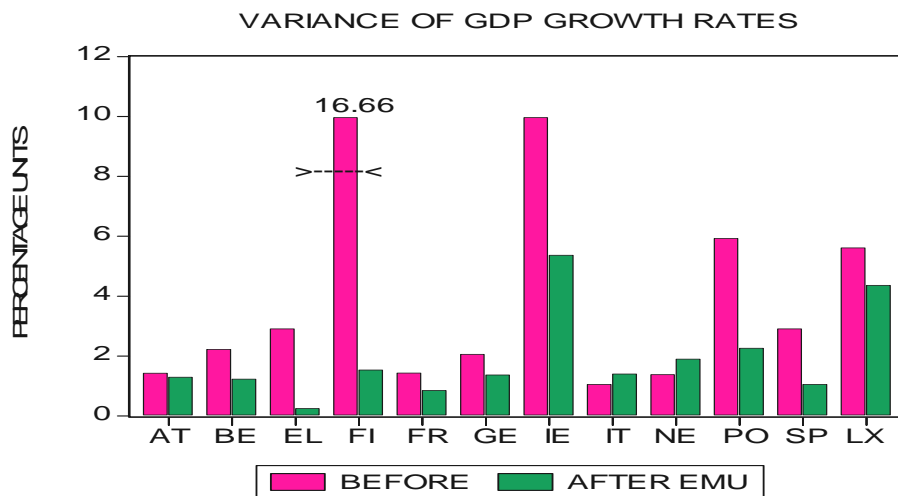
Figure 2a: Dispersion of Per Capita GDP Expressed in PPS Terms

VARIABILITY OF GDP-PPS IN THE EZ-11
(% of Standard Deviation to the Mean)
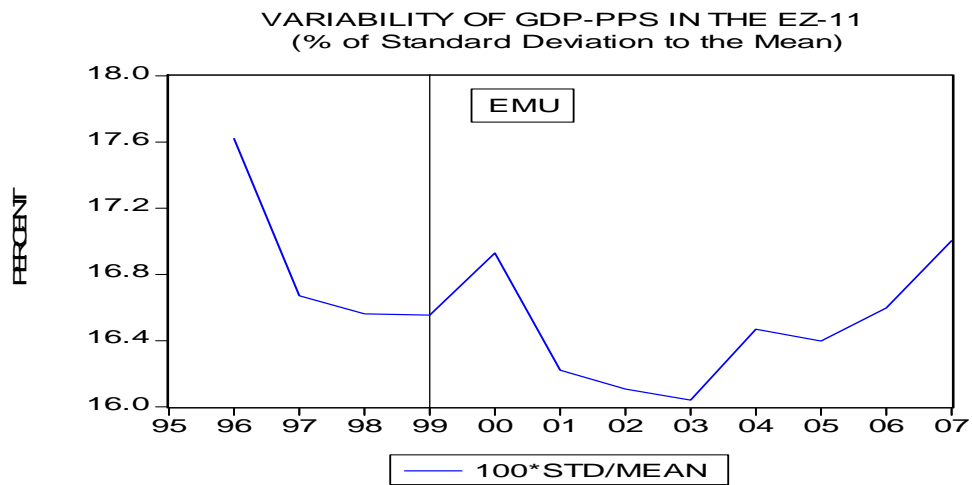
Figure 2b: Dispersion of Per Capita Regional Income
(Standard deviation as % of the regional income mean)

VARIABILITY OF REGIONAL GDP IN THE EZ-1
(Standard Deviation as % of GDP PER CAPITA)
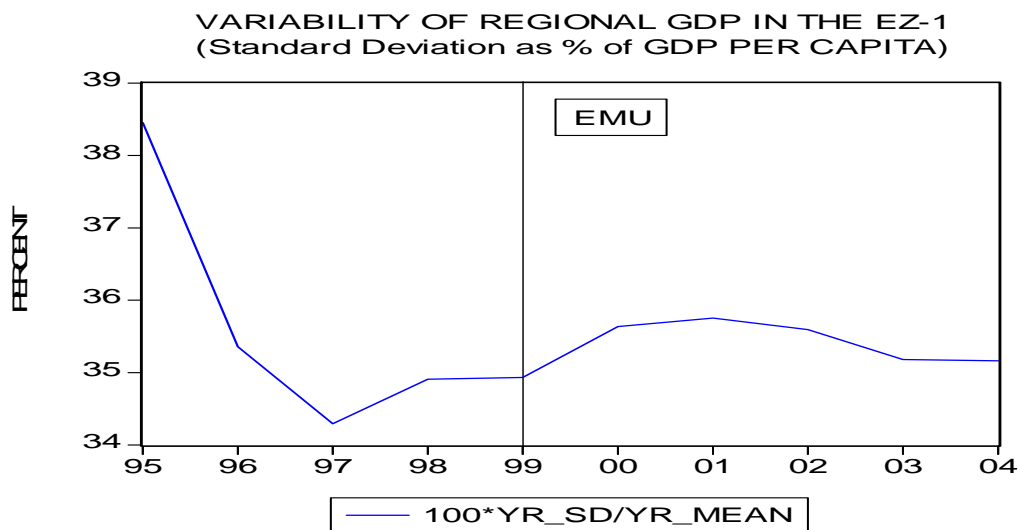
Figure 2c: Dispersion of Per Capita GDP and GNI in Constant Prices (Standard Deviation as % of the Mean)

VARIABILITY OF GDP AND GNI IN EZ11
(In per capita constant prices. Source: Eurostat)
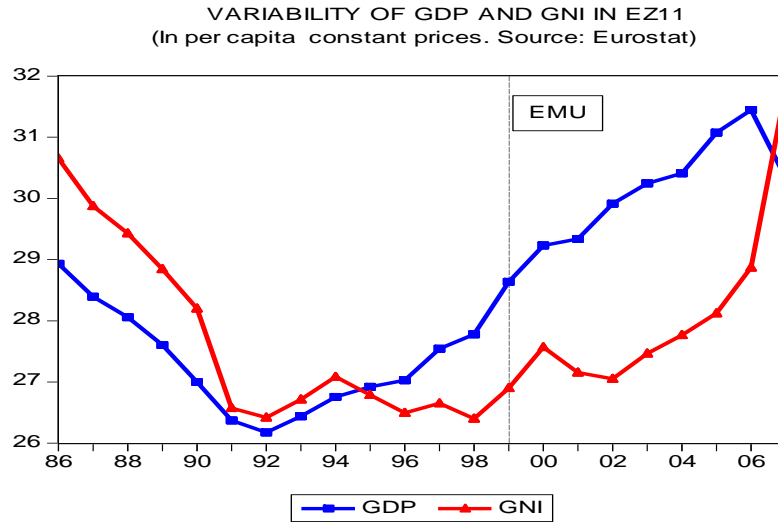
Figure 3a: Pre-EMU Correlation of Growth Rates with Initial Per Capita Incomes
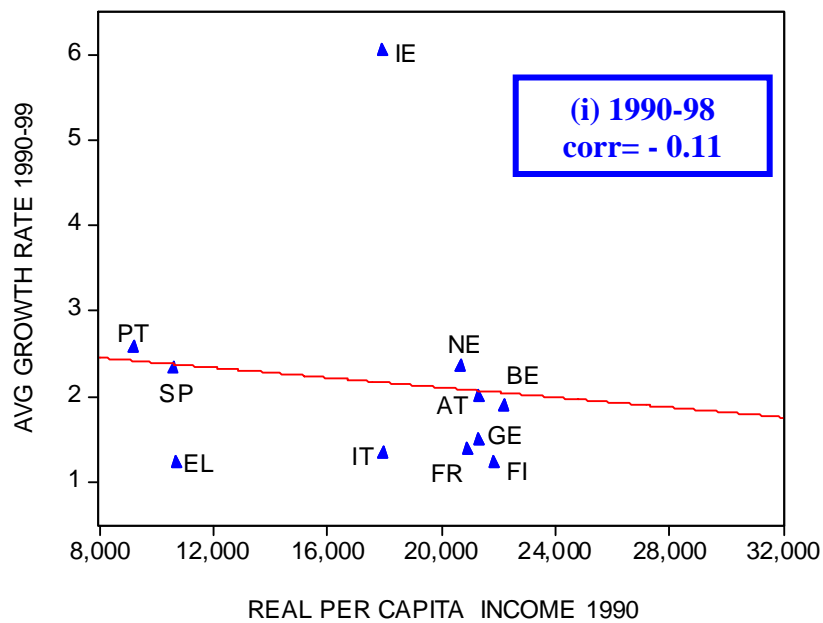
Figure 3b: Post-EMU Correlation of Growth Rates with Initial Per Capita Incomes
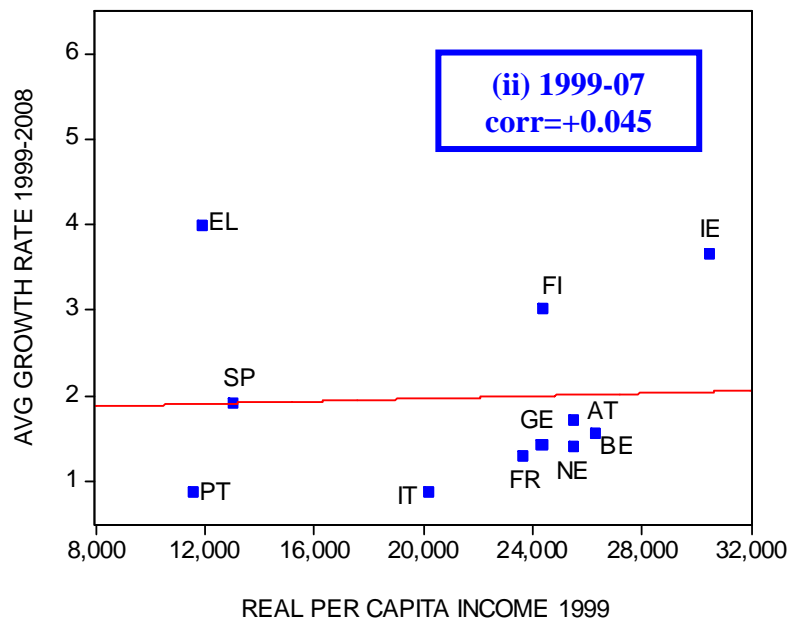
Figure 4a: Current Accounts and Trade Balances as % of GDP in the Two Eurozone Groups
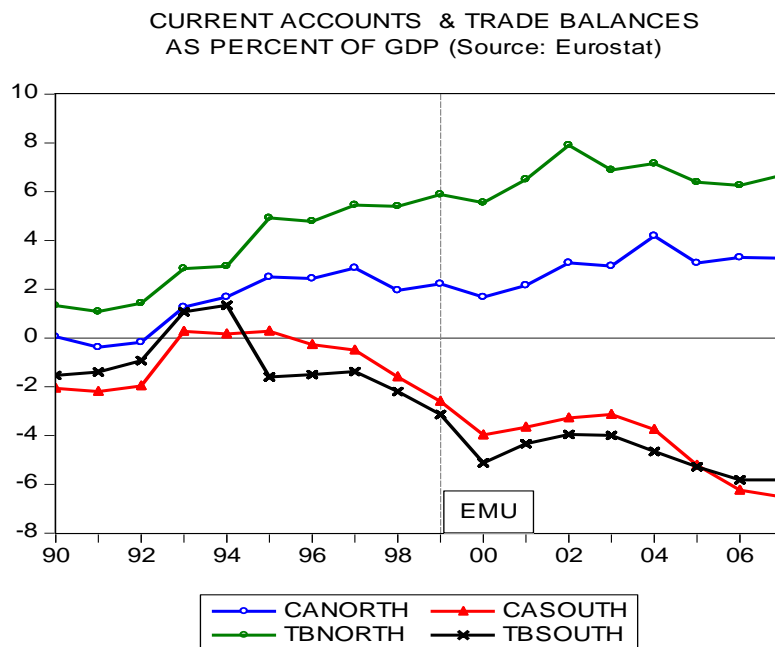
Figure 4b: The Ratio of CA Deficits to Capital Formation for the Five Southern Eurozone Economies

FOREIGN OWNERSHIP OF
CAPITAL FORMATION (%)
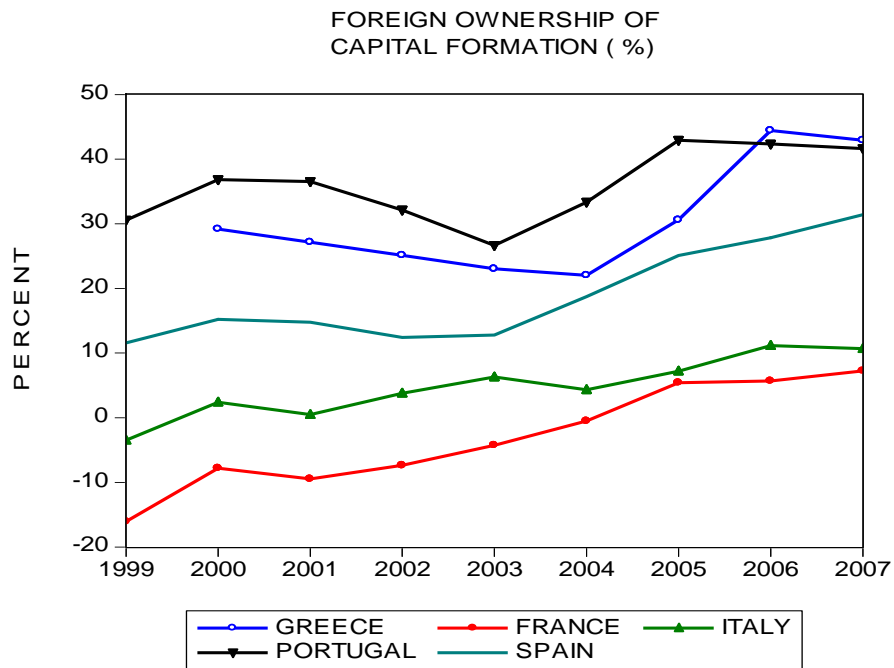
Figure 5a (above) and 5b (below): Correlation between CA Balances and Government Balances in the Southern Eurozone Countries before and after EMU
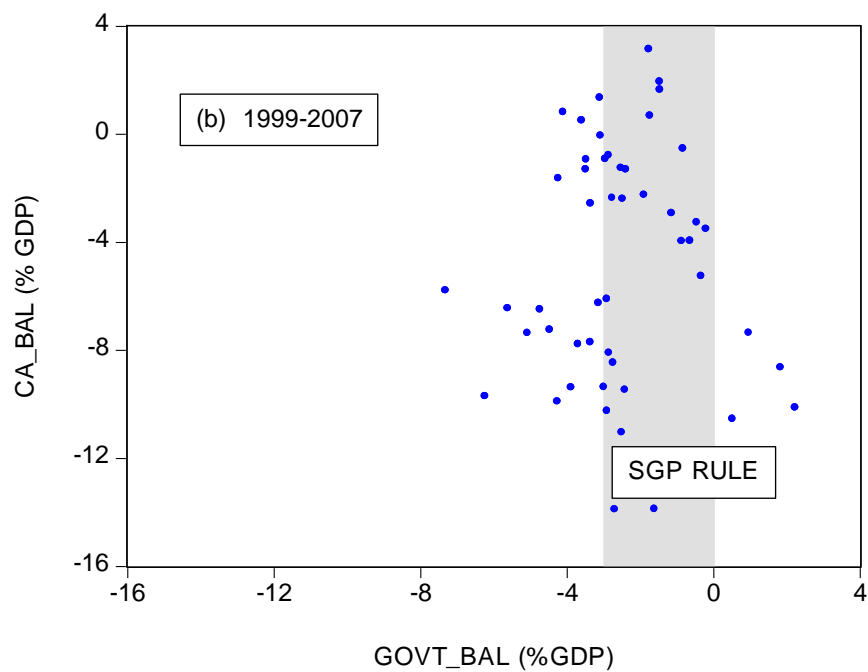
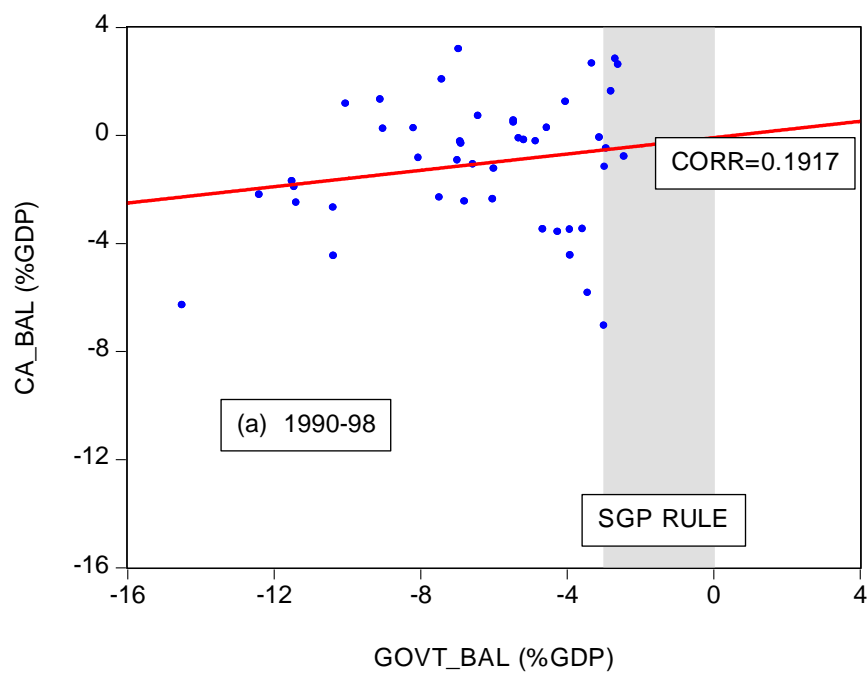***Figure 6a: Correlations between Trade Balances and Inward Investment
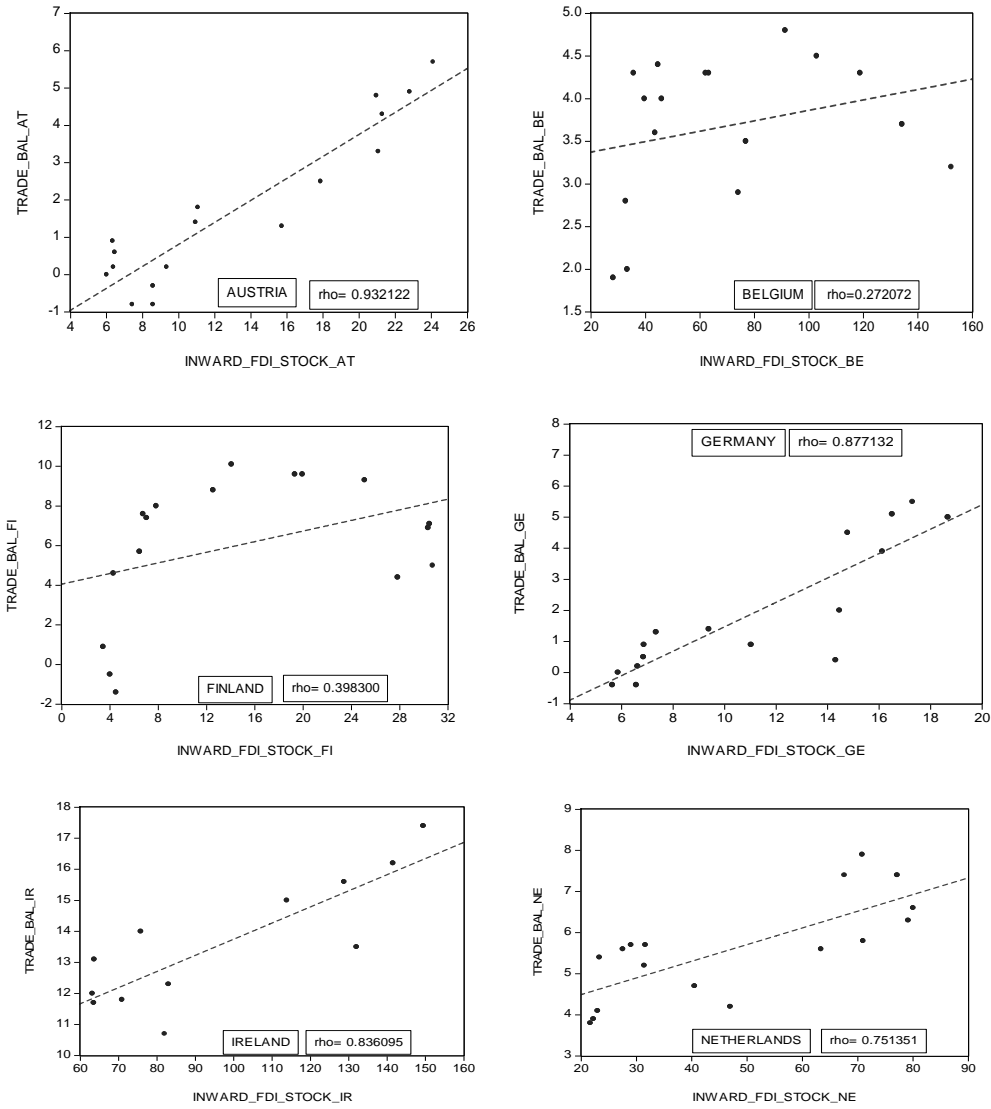in the Northern Eurozone Countries 1990–2006***

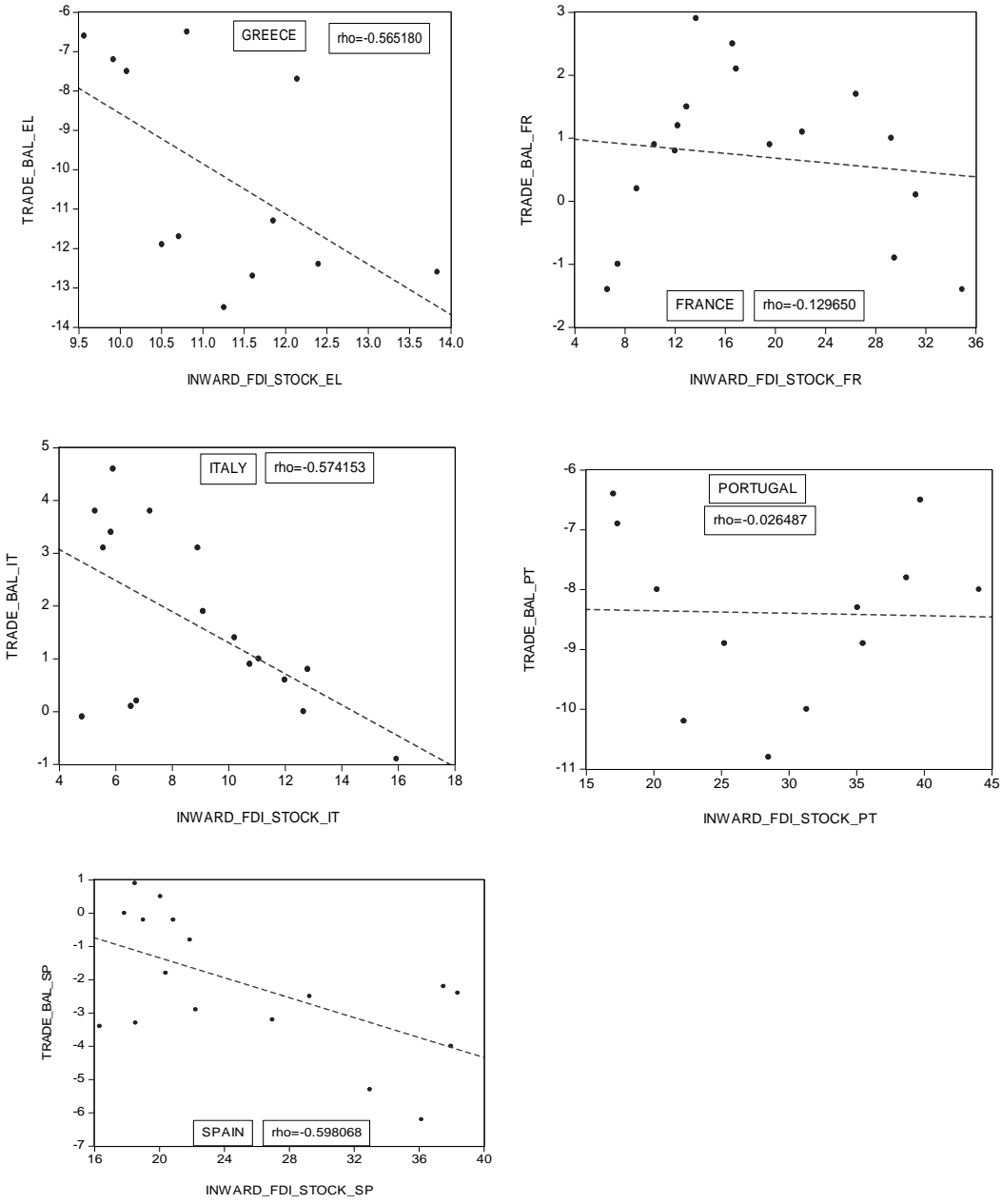*Figure 6b: Correlation between Trade Balances and Inward Investment in the Southern Eurozone Countries 1990–2006*
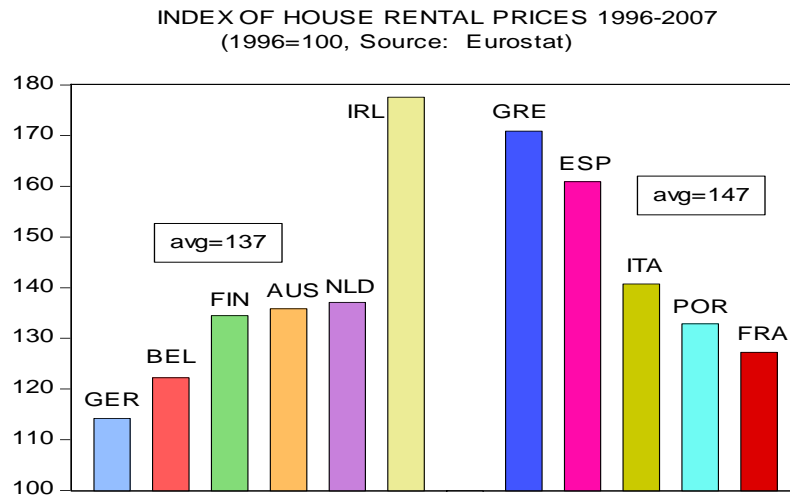
*Figure 7: Index of House Rental Prices in the Two Groups of the Eurozone*

INDEX OF HOUSE RENTAL PRICES 1996-2007
(1996=100, Source: Eurostat)

Note: The average index for the two groups is shown in boxes. Excluding Ireland, the index falls to 128, 14% lower than that of the south.

Figure 8: Net FDI Flows (Inward – Outward Investment) in the Two Groups of the Eurozone

NET FLOWS OF FDI IN THE EUROZONE
(Source: UNCTAD, UN)
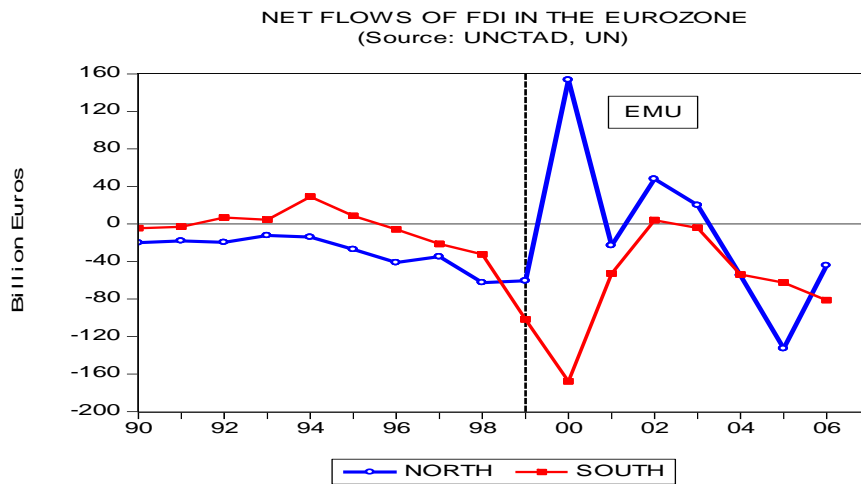
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