Bilateral Trade and SEE–Eurozone Countries Growth Rate Alignment

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The aim of the paper is to explore the role of trade in aligning the synchronisation patterns between the South Eastern European (SEE) countries – Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR of Macedonia, Kosovo, Montenegro, Romania and Serbia – and members of the euro area. More precisely, we investigate whether bilateral trade flows affect output synchronisation between the euro area countries and SEE countries and compare trade-synchronisation patterns between the SEE countries and new member states that have not yet introduced the euro (NMS). The results show that the levels of output similarities between the SEE countries and NMS are different and that the SEE countries exhibit lower output correlation with the euro area members than the NMS. Exploring the role of trade in aligning growth patterns has in some cases found positive effects, much stronger for the SEE countries, which have lower trade intensity levels. We argue that the reason for these results is related to the fact that other factors could be dominant in the NMS countries (policy measures alignment within the EU), while for the SEE countries only trade relationships had the opportunity to exert noticeable effects in the analysed period.

Key Words: business cycle synchronisation, integration, South-East Europe
JEL Classification: F15, E32

Introduction

Despite their turbulent history, the South Eastern European (SEE) countries[1] have had a common goal – to join the European Union (EU). Even though membership in the EU is not a panacea, policy makers in the SEE countries realised that the market of more than 500 million inhabitants can provide an opportunity to boost GDP growth. However, within the package of joining the EU, the obligation to introduce the euro as soon as the country fulfils the Maastricht criteria comes into perspective.[2] Since

existing research shows that not all EU and even not all euro area members are suited to successfully handle common monetary policy (Bayoumi and Eichengreen 1993; Camacho, Perez-Quiros, and Saiz, 2006; Fidrmuc and Korhonen 2006), it is never early enough to investigate whether the common monetary policy of the ECB is suitable for prospective new EU/EMU members.

In order for a common monetary policy to work, there are several prerequisites. The argument most frequently used in the literature is the synchronisation of business cycles covered in the optimum currency area theory. The argument states that a common monetary policy will be effective if business cycles between (prospective) members are synchronised. In other words, if countries are in the same stage of a business cycle, then decisions from a central bank will have a similar impact in all countries.

However, evidence has shown that the business cycles of EU members are not in all cases synchronised. This opens the question whether policies that act towards synchronisation should be developed. Consequently, we can find a strand of literature claiming that business cycles can become aligned. Frankel and Rose (1998) argue that trade between countries plays a crucial role in this process. Countries that trade a lot will tend to have more synchronised business cycles.[3] Since trade is easier in a currency union due to reduction of transaction costs and trade barriers, this means that trade in the currency union should be higher (Rose 2000) and additionally help in bringing business cycles closer together.

Hence, we analyse whether there is evidence in similarity between growth patterns in the SEE countries and euro area countries. Furthermore, we investigate whether bilateral trade flows affect output synchronisation between the euro area countries and SEE countries and compare trade-synchronisation patterns between the SEE countries and new member states that have not yet introduced the euro (NMS).[4] The focus of the analysis in this paper is on the SEE countries, because they are next in line in the EU (and consequently EMU) integration process. Yet, existing evidence on these countries is scarce. The main goal of the present paper is to fill in this gap in the literature.

The structure of the paper is the following. The second section briefly reviews the related literature and explores differences in synchronisation patterns. The third section discusses empirical strategy and data. The fourth section presents and discusses results. The last section summarizes conclusions and gives directions for future research.

Related Literature and Descriptive Statistics

The literature covering topics such as optimum currency areas, business cycle synchronisation determinants, convergence of the NMS and determinants of these factors has been in focus ever since the EU started with the monetary union project. Certainly, the EU's eastern enlargement has additionally spurred empirical research studies, since the question of successful integration remains unresolved both in economic and political terms. Such situation has produced a vast amount of literature and policy discussions.

Related to the specific question analysed in this paper, empirical studies are frequently concentrated on the issue whether there is a business cycle synchronisation or not, even among the euro area countries (de Haan, Inklaar, and Jong-A-Pin 2008). Recent contributions also question whether similar patterns can and will be observed in the NMS (Fidrmuc and Korhonen 2006). The results of previous studies are not straightforward.

Kolasa (2013) argues that the business cycles of 5 CEE countries – the Czech Republic, Hungary, Poland, Slovakia and Slovenia – differ significantly from the euro area cycles despite the significant convergence related to the accession process. Jiménez-Rodríguez, Morales-Zumaquero, and Égert (2013) study the same CEE countries and find a relatively low degree of synchronisation. More precisely, idiosyncratic and country factors, rather than a global European factor, play a central role in real output variability. The authors argue that this is because the CEE countries implemented market-oriented reforms in different times and at different speeds. Broz (2010) and Frenkel and Nickel (2002), who analysed all new member states, argue that most of them do not have business cycles synchronised with the euro area.

On the other hand, there are studies claiming that (some) CEE countries have achieved convergence with the advanced EU economies. Darvas and Szapáry (2008) argue that Hungary, Poland and Slovenia have business cycle synchronisation with the euro area similar to the core euro area countries and even higher than the periphery countries. Traistaru (2004) isolates the same countries as the most prepared for the common monetary policy in terms of business cycle synchronisation. Gächter, Riedl, and Ritzberger-Grünwald (2013) analysed whether the CEE countries converged or diverged in terms of business cycle synchronisation with the euro area. They concluded that the business cycles of the CEE

countries had decoupled from the euro area's starting from the onset of the financial crisis, but that they re-coupled again at the end of the sample period. This re-coupling, together with the relatively high correlation of the new member states' cyclical components with the euro area, allowed Gächter, Riedl, and Ritzberger-Grünwald (2013) to conclude that the CEE countries had relatively favourable conditions to introduce the euro.

The SEE countries are less often covered in analyses of business cycle synchronisation, and results mostly show lower degrees of synchronisation. In that context, Gouveia (2014) investigated synchronisation of the SEE countries with the euro area and concluded that Slovenia and FYR of Macedonia had the strongest association with the euro area's business cycle and were the most prepared for the single European currency. The remaining SEE countries – Greece, Croatia, Serbia, Romania, Bulgaria and Turkey – have lower degrees of synchronisation of their business cycles with the euro area. Palaşcă et al. (2014) include FYR of Macedonia and Albania in their analysis and find a lack of correlation between trade and economic growth.

Even though there is mixed evidence about the level of business cycle synchronisation between the euro area members and new member states, there is a strand of literature that claims that we cannot assess the success of a monetary union based on historical data. The reason for that is that the creation of a (enlarged) monetary union changes the economic structure of the involved economies (Frankel and Rose 1998). Frankel and Rose (1998) focus on changing patterns of trade integration and business cycle synchronisation and argue that increased trade integration results in more synchronised business cycles. In other words, they argue that a country is more likely to satisfy the criteria for entry into a monetary union *ex post* than *ex ante*. Similar results are supported by Traistaru (2004), Babetskii (2005), Artis, Fidrmuc, and Scharler (2008), and Mendonça, Silvestre, and Passos (2011), among others.

Within that context, the findings from Benčík (2011), who argues that business cycles have become even more synchronised after the EU entry, provide a possible future direction for the economic dynamics in the analysed countries. However, the dynamics prior to the introduction of the euro remains much more ambiguous.

The literature has devised several methods to measure business cycle synchronisation. Most of them require longer time series and/or higher frequency data (at least quarterly) to provide evidence of synchronisation. Popular techniques include Christiano and Fitzgerald (2003) or Hodrick

and Prescott (1997) filters, which help in extracting the cyclical component from real GDP series. Business cycle synchronisation is then simply obtained by calculating the correlation coefficient between pairs of countries. Harding and Pagan (2002; 2006) developed a methodology for identifying peaks and troughs in business cycles based on quarterly data. Their methodology identifies turning points in the series by searching for the minima and maxima over a given time period. Business cycles are then considered to be synchronised if turning points in individual business cycles occur roughly at the same time. There are also multivariate approaches to identifying business cycles, such as NBER's methodology, which examines a set of quarterly and monthly indicators in order to detect business cycle phases in the USA.

On the other hand, Cerquieira and Martins (2009) use a measure for the level of correlation between business cycles which is suitable for annual data and which captures time variability, but without the use of overlapping windows, the latter being a method frequently used with filtering techniques. Overlapping windows result in a variable that is auto correlated, which causes problems for the econometric analysis, while Cerquieira and Martins (2009) deal with this problem by distinguishing negative correlations due to episodes in single years, asynchronous behaviour in turbulent times and synchronous behaviour over stable periods. Another nonparametric method available for detecting business cycle correlation with annual data is Wälti (2012), requiring relatively long time series, as it extracts the output gap using the HP filter. In addition, a simple growth rate differences method tries to mimic, even though not perfectly, the degree of business cycle synchronisation between countries. However, it is feasible for a shorter annual dataset like the one we have for the SEE countries.

In order to explore the differences in synchronisation patterns, we rely on the correlation of growth rates between the countries. Figure 1 shows that the SEE countries have a much lower correlation of growth rates with the euro area than the NMS, with the average correlation coefficient with the euro area of 0.41 and 0.71, respectively. If we exclude the EU members from the SEE group, then the correlation falls to only 0.35. Since the SEE countries are often referred to as late reformers, due to, among other reasons, delays in transition-related reforms, we could expect that the correlations would be higher when trade relations intensify.

The question is whether we can explain these differences in growth correlations. The importance of trade flows for business cycle synchronisa-

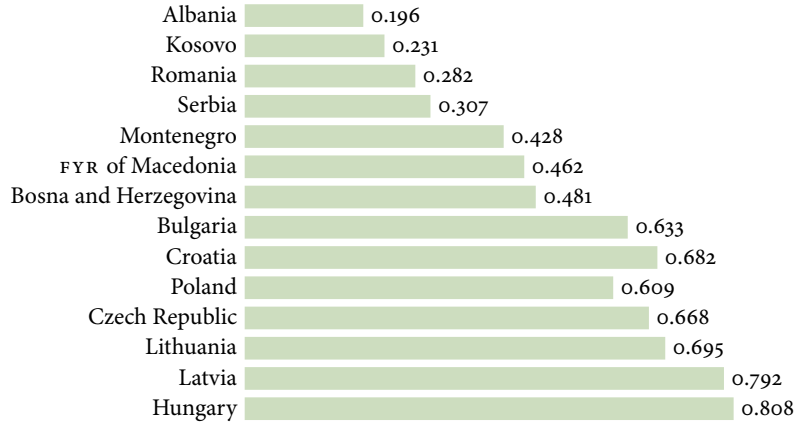

FIGURE 1 Correlations of Growth Rates between the Euro Area and the Individual SEE Countries and NMS (1997–2013)

tion has been frequently emphasized as a direct contributing factor (Clark and van Wincoop 2001; Siedschlag and Tondl 2011). Antonakakis and Tondl (2011) emphasize that the trade relationship is even more important for new EU member states in comparison to incumbent members. They also argue that this was additionally important during the latest economic crisis, when the decreased demand from incumbent members heavily influenced the crisis' dispersion throughout the EU. However, not only trade intensity but also trade patterns are important when considering the overall effect. Specifically, Kose, Prasad, and Terrones (2003) argue that if most of the trade between two countries is intra-industry in nature, then business cycle correlation is expected to increase. Previous analysis has shown that the trade between the South-East European countries and the EU is, on the contrary, mostly inter-industry in nature (Botrić 2012). Consequently, we might expect that trade by itself might not be enough to ensure synchronisation patterns to occur. Since previous analysis on the SEE countries is scarce, the aim of the rest of this paper is to investigate the trade impact in more details.

Empirical Strategy and Data

Analysis in the previous section has shown that there are differences in GDP correlation patterns between the late-reforming SEE countries and NMS. Following the tracks previously established in the literature, we investigate whether bilateral trade flows affect output synchronisation between these two groups of countries.

The important question of adequate measurement of variables im-

mediately comes into focus. As described in the previous chapter, commonly used indicators of output synchronisation rely on relatively frequent data in order to be able to detect dissemination of common movements. Since the analysis in this paper is focused on the late-reforming transition economies, including newly emerging states, such dataset was not available for all the countries based on the same methodology. Instead, we had to rely on annual data for the measures of output similarities and trade intensity. Hence, we use Cerquieira and Martins (2009) and growth rate differences in order to calculate our measures of output similarities.

Following Cerquieira and Martins (2009), we consider this synchronisation indicator:

$$synch_{i,j,t} = 1 - \frac{1}{2}\left(\frac{GDPgr_{j,t} - \overline{GDPgr_j}}{\sqrt{\frac{1}{n}\sum_{j=1}^{n}(GDPgr_{j,t} - \overline{GDPgr_j})^2}} - \frac{GDPgr_{i,t} - \overline{GDPgr_i}}{\sqrt{\frac{1}{n}\sum_{i=1}^{n}(GDPgr_{i,t} - \overline{GDPgr_i})^2}} \right)^2. \quad (1)$$

The second measure, borrowed from the output convergence literature, relies on differences in economic growth rates. Specifically, we have used the following expression to obtain the growth rate differences between the countries:

$$difference_{ijt} = GDPgr_{it} - GDPgr_{jt}. \quad (2)$$

When evaluating the expression, the growth rate (GDP*gr*) of a transition country was the first (*i*), while the growth rate of a euro area country was the second (*j*). Thus, the difference is the deviation of the growth rate in a country aiming to join the euro area in comparison to a specific country already a part of the euro area. Although both indicators can only detect synchronisation effects with limited success, by considering them simultaneously, we try to reduce this issue.

It is important to notice that our period of analysis entails the effects of the recent economic crisis.[5] Consequently, the growth rate for many of the analysed economies was at one period or another actually negative. The negative growth rates were relatively high in transition economies, contributing to the increase of the existing gap, rather than to the convergence process.

Trade effects have been measured with the trade intensity indicator,

based on the bilateral trade data obtained from the Eurostat COMEXT database. The trade intensity indicator has been assessed using the following expression:

$$trade_{ijt} = \frac{export_{ijt} + import_{ijt}}{\text{GDP}_{it} + \text{GDP}_{jt}}. \tag{3}$$

There is a large amount of literature that discusses the endogeneity of trade with respect to economic performance (e.g. Calderón, Chong, and Stein 2007; Inklaar, Jong-A-Pina, and de Haan 2008; Fidrmuc 2004). Specifically, we can assume that trade will foster similarities in the economic performances of a pair of countries, and at the same time, similarities in economic conditions will be positively associated with trade. Duval et al. (2014) discuss three possible ways to deal with this issue. The first is the inclusion of country-pair fixed effects that should capture other time-invariant factors such as geographical proximity or culture. The second is the use of the lagged trade intensity variable, while the last one resorts to the use of instrumental variables.

In order to address the potential endogeneity issue, we include changes in the trade intensity indicator, rather than the level in the estimating equation, and the dependent variable only indirectly captures the synchronisation between the countries. This is additionally important for the analysis of the countries in question. For certain analysed countries, the EU and, in particular, some of the euro area countries are major trading partners. At the same time, integration is expected to create additional trade flows. Thus, our specification explores whether these additional trade flows have effect on the output similarities in the analysed countries. Since trade intensity should have similar effects for the NMS and SEE, we try to identify whether there are differences between these countries. An overview of the evolution of trade intensity in the analysed period is presented in figure 2. The data clearly show that the evolution path of trade intensity during the analysed period for the NMS is quite different in comparison to the SEE countries – while in the NMS trade intensity with the euro area significantly increased during the analysed period, in the SEE countries we barely observe an upward trend. For that reason, conducting the analysis separately on the NMS and SEE samples will enable us to observe the differences that trade intensity has on the similarity indicators.

In order to be able to analyse whether there are specificities relevant for late reformers, we have performed analysis on three different samples.

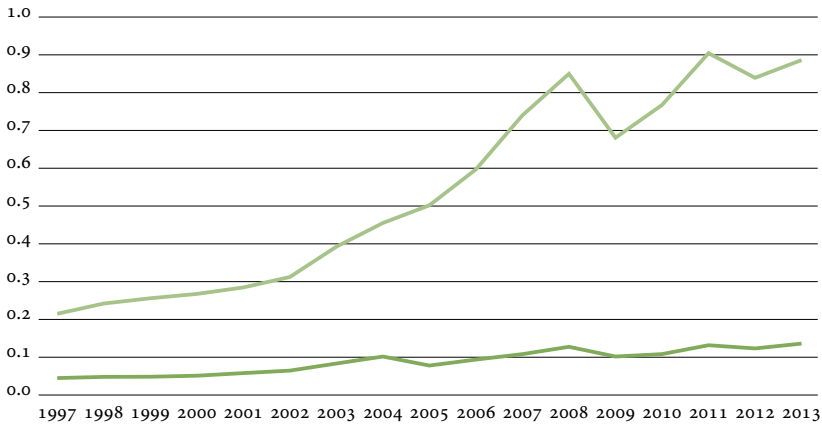

FIGURE 2 Average trade intensity with the Euro area in the SEE and CEE countries (dark – SEE, light – NMS)

The first sample considers all the analysed countries – those who became EU members already in 2004 as well as the other transition economies. The second sample considers only the EU member states that have not yet adopted the euro, but have been part of the EU since 2004. The last sample includes the transition SEE economies that are frequently considered to be lagging behind in many economic and social reforms.

We analyse these patterns within the standard gravity model framework. This implies that, in addition to the previously discussed indicators, we have also included the distance variable and whether or not two countries share a border (when that border is on either land or sea). Other potential gravity variables, such as language, common currency and historical colonial status, do not have variability between pairs of countries. We estimate the panel GLS model, allowing for heterogeneity in panels.[6]

The data sources used for the analysis in the paper are presented in table 1. Due to economic and political transformation, it was not possible to use data prior to 1997. Hence, the period of analysis covered in the paper is 1997–2013. The SEE countries include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, FYR of Macedonia, Montenegro, Romania and Serbia, while the new member states that have not yet introduced the euro include the Czech Republic, Hungary, Poland, Lithuania and Latvia. Slovenia, Slovakia and Estonia are excluded because they already introduced the euro within the analysed period. The euro area countries include Austria, Belgium, Germany, Finland, France, Greece, Italy, Ireland, Luxemburg, the Netherlands, Portugal and Spain.

TABLE 1 Data Sources

Variable	Description	Source
GDP	Real GDP in Euros (constant 2005 prices)	WDI, Eurostat
GDP growth rate	Real GDP growth rate (constant 2005 prices)	WDI
Exports, imports	Bilateral shares in GDP	COMEXT, WDI
Border	1, if border is either on land or see	Various Internet sources
Trade dummy	1, if trade agreement with the euro area country exists	Various Internet sources
Distances	Weighted distance (distwces)	CEPII

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

TABLE 2 Estimation Results, Dependent Variable Growth Rates Synchronisation Indicator

Item	Full sample	NMS	SEE
Variable[a]			
Constant	0.73*** (0.03)	0.80*** (0.03)	0.64*** (0.04)
Trade_change	0.03** (0.01)	0.02 (0.01)	0.03 (0.04)
Dist_dummy × 1000	−0.04** (0.01)	−0.07*** (0.02)	0.01 (0.02)
Border_dummy	−0.08** (0.04)	−0.14** (0.06)	−0.00 (0.05)
Diagnostics			
Number of observations[b]	2356 (168)	940 (60)	1416 (108)
Wald χ^2	11.69***	16.54***	0.85

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

Results and Discussion

This section contains two different sets of estimates – based on the choice of dependent variable. Furthermore, for each we present the estimates of the full sample, the sample consisting only of NMS and the sample consisting of the late-reforming transition SEE economies. Furthermore, following Duval et al. (2014), we present three sets of estimates – change in trade intensity, fixed effects and instrumental variable method. The results are in subsequent tables.

The results in table 2 reveal that when standard gravity approach is used with the growth rates synchronisation indicator of the bilateral

TABLE 3 Estimation Results, Dependent Variable Growth Rates Differences

Item	Full sample	NMS	SEE
Variable[a]			
Constant	1.06*** (0.17)	0.91*** (0.24)	1.24*** (0.24)
Trade_change	0.40*** (0.08)	0.29*** (0.08)	1.78*** (0.24)
Dist_dummy × 1000	0.40*** (0.11)	0.41** (0.16)	0.31** (0.14)
Border_dummy	0.62*** (0.27)	−0.41 (0.33)	1.33*** (0.37)
Diagnostics			
Number of observations[b]	2356 (168)	940 (60)	1416 (108)
Wald χ^2	39.16***	22.60***	75.43***

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

economies, the bilateral increase in trade does not seem to be significantly important in specifications for the NMS and late reformers.

Interestingly, we can see both in the full sample and in the NMS sample that the estimates were able to capture the concentration of the economic activity effects through the significance of distance and border dummies. Thus, although we do not explicitly include spatial effects in the estimation strategy, these effects are important for the economic patterns of core and periphery in the EU.

Table 3 presents similar results when we consider growth differences as a dependent variable. Here we find that increasing trade intensity between the euro area countries and the transition economies contributes to the convergence process. This would imply that intensifying trade relationship with the euro area countries is positively associated with increasing similarity between the countries measured by the growth rate differences. It is also interesting to observe that the estimated coefficient is higher for the group of late reformers than it is for the group of countries already in the EU over a longer time period. This might just reflect the scale effect – the late reformers have relatively lower levels of indicators and, consequently, when they are catching up, the effects are larger than for the economies that have already achieved a certain level.

The fact that our estimates reveal that changes in trade intensity are positively associated with similarity (full sample) and convergence indicators is important, since it confirms the positive effect of trade on the integration of the economies. It is also interesting to note that late reformers have higher coefficients than the NMS. Even though we have established

TABLE 4 Fixed Effects Estimation Results, Dependent Variable Growth Rates Synchronisation Indicator

Item	Full sample	NMS	SEE
Variable[a]			
Constant	0.46*** (0.03)	0.54*** (0.03)	0.36*** (0.04)
Trade	0.04*** (0.01)	0.02*** (0.01)	0.12*** (0.03)
Diagnostics			
Number of observations[b]	2524 (168)	1000 (60)	1524 (108)
F	12.68***	11.72***	14.46***
Corr(*u*, *Xb*)	−0.40	−0.53	−0.62
ρ	0.06	0.09	0.07

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

that there is a lag in the level of trade intensity (i.e. the NMS have a more intense trade relationship with the EU incumbent members), the potential for trade to have an active role in further integration process seems to be important.

The second estimation strategy relies on the fixed effects model, with only trade intensity (level, rather than change as in previous specifications) as an independent variable. The rationale for this approach is that fixed effects should capture all time invariant aspects, such as distance, language, cultural effects, etc. However, we do not correct for endogeneity in any way, so our initial assumption would be that the effect of trade on dependent variable is overestimated. The estimations are presented in tables 4 and 5.

Since this is a simple version of fixed effects estimation, the constant term can be interpreted as the average value of fixed effects. In all specifications, it remains significant. It seems that a large proportion of variance in the presented estimates is due to the differences across the panels, which in addition implicates the heterogeneity issue, corrected for in the previous estimates (tables 2 and 3). The correlation between the independent variables and the error term is generally not very large.

The results for the trade intensity indicator with the fixed effects model are less ambiguous than in the previous estimations. When the growth rate synchronisation indicator is used as a dependent variable, the results imply a positive and significant association with trade intensity, although at a relatively small scale (table 4). On the other hand, when the growth

TABLE 5 Fixed Effects Estimation Results, Dependent Variable Growth Rates Differences

Item	Full sample	NMS	SEE
Variable[a]			
Constant	1.44*** (0.13)	1.36*** (0.22)	1.17*** (0.16)
Trade	0.18*** (0.05)	0.08 (0.05)	0.80*** (0.13)
Diagnostics			
Number of observations[b]	2524 (168)	1000 (60)	1524 (108)
Wald χ^2	13.44***	2.61	35.57***
Corr(u, Xb)	−0.43	−0.37	−0.56
ρ	0.16	0.13	0.21

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

rate differences indicator is used as dependent variable, then the trade intensity coefficient is much larger and again seems to be positively correlated with the growth rate differences of the trading countries (except in the NMS subsample).

Although we assumed that using just the fixed effects approach would overestimate the influence of trade intensity on our very broad measures of synchronisation, the data did not support this assumption. Additionally, when we estimate the effect on the differences in growth rates (table 5), we can clearly see the distinction between the countries already in the EU and those that have only expressed their interest to join. It seems that for the countries within the EU the level of trade intensity has probably reached the threshold where it does not additionally influence the convergence of growth rates. This result is supported by Mendonça, Silvestre, and Passos (2011) who, even though they argue that trade and business cycles correlations are endogenous, suggest that trade has decreasing returns to scale. Other factors (such as coordination of economic policies) are probably more important than trade itself. For the SEE countries, whose trade intensity level is still low, other integration factors could be underdeveloped, resulting in stronger trade influences.

The final empirical approach used in the attempt to address the endogeneity relied on instrumental variables. Similar empirical strategy with only one independent variable – trade intensity levels – has been employed (generalized 2SLS random effects IV regression), where borders on land and sea, trade agreement dummy and distance were taken as

TABLE 6 IV Estimation Results, Dependent Variable Growth Rates Synchronisation Indicator

Item	Full sample	NMS	SEE
Variable[a]			
Constant	0.50*** (0.02)	0.61*** (0.02)	0.43*** (0.04)
Trade	0.02** (0.01)	0.00 (0.00)	0.05 (0.03)
Diagnostics			
Number of observations[b]	2524 (168)	1000 (60)	1524 (108)
Wald χ^2	5.23**	0.76	2.52
θ	0.00	0.00	0.00
First stage regression			
Constant	2.31*** (0.20)	4.37*** (0.84)	1.52*** (0.11)
Border	5.46*** (0.27)	13.29*** (0.48)	0.99*** (0.16)
Trade_dummy	2.34*** (0.14)	1.63** (0.79)	1.12*** (0.08)
Distances	−0.00*** (0.00)	−0.00*** (0.00)	−0.00*** (0.00)

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

instruments for trade intensity between two countries. The estimation method was random effects, due to the time invariability of the instruments used. The estimates are presented in tables 6 and 7.

The results of using models with instrumental variables do not unambiguously confirm the positive relation between trade intensity and different dependent variables found in the previous specifications. When trade intensity is related to the growth rates synchronisation indicator, we can observe positive association for the full sample.

However, for the relation between trade intensity and growth rate differences, a negative coefficient on trade intensity is found for the NMS. Part of the blame for the varying results could be associated with the choice of instrumental variables, which evidently have different roles in different specifications. Although from the methodological point of view instrumental variables should be the preferred empirical strategy in dealing with endogeneity, it is also notoriously difficult to find reliable instruments.

The empirical results suggest that trade is an important channel for synchronising the economies of the analysed countries. However, additional channels should also be explored to provide more information as to why the SEE convergence patterns differ from those of the NMS.

TABLE 7 IV Estimation Results, Dependent Variable Growth Rates Differences

Item	Full sample	NMS	SEE
Variable[a]			
Constant	1.86*** (0.15)	1.86*** (0.17)	1.90*** (0.24)
Trade	−0.02 (0.05)	−0.06* (0.03)	0.05 (0.21)
Diagnostics			
Number of observations[b]	2524 (168)	1000 (60)	1524 (108)
Wald χ^2	0.18	3.79*	0.06
θ	0.30	0	0.36
First stage regression			
Constant	2.69*** (0.22)	4.37*** (0.84)	1.62*** (0.13)
Border	5.39*** (0.31)	13.29*** (0.48)	0.99*** (0.19)
Trade_dummy	1.69*** (0.13)	1.63** (0.79)	0.74*** (0.07)
Distances	−0.00*** (0.00)	−0.00*** (0.00)	−0.00*** (0.00)

NOTES [a] Estimated coefficients (standard errors). [b] Number of bilateral cases in parenthesis.

The limitation of the research presented in this paper rests on the fact that the dataset does not include other possible determinants, such as capital flows (Dees and Zorell 2011) and industry specialisation (Sideschlag 2010). In addition, within the EU, a certain degree of coordination of monetary and fiscal policies should have an effect on synchronisation patterns, as well as on adopting similar institutional solutions. The related literature shows that these factors have had important effects on the analysed countries, contributing to the different experiences the NMS have had in comparison to the late reformers. As Inklaar, Jong-A-Pina, and de Haan (2008) argue, countries that have intense trade relations are also more likely to have similarities in other policy measures, which might influence the synchronisation of their business cycles. This argument may certainly be used in the case of the countries in our sample during their accession period, because they are explicitly included in the policy harmonisation processes. On the other hand, if these processes were that simple and with immediate effects, we would not have trouble in detecting similarities in business cycles within the EU.

Conclusions

The main aim of the paper was to explore whether the SEE countries exhibit the same or different patterns in the euro integration process as the

countries within the EU. The main contribution of the paper should be sought in the analysis of the convergence process of South-East Europe towards the EU. A specific question is related to business cycle synchronisation and trade effects in the light of the possible future euro adoption by the selected countries. The results should provide an additional insight into the relative position of the SEE countries in the EU enlargement process during their post-transition period. We have established that the levels of output similarities are different and that the SEE countries exhibit a lower output correlation with the euro area members than the NMS.

We have additionally explored the role of trade as a medium for aligning the growth patterns of the SEE countries and NMS with the euro area. Although the results are not robust across different estimation strategies, we argue that those specifications that were able to capture the positive role of trade are most relevant. Thus, increased trade relations between the countries are positively associated with business cycle synchronisation. Within this finding, it is also important to notice that the role of trade is more important for the SEE countries, which is in line with expectations.

An important issue not empirically assessed in this paper is the development of trade patterns between the analysed countries and the EU, which can also reveal the existing degree of integration between the economies. Specifically, the integration of the economies is expected to increase the level of intra-industry trade. This has been frequently documented for the NMS, but due to limited data, similar studies are not available for the SEE countries. Since trade patterns also reveal different economic structures between countries, future research efforts should reveal whether these structural effects are the reason for the inadequate speed of convergence in the European periphery.

Notes

1 The SEE countries in this paper include Albania, Bosnia and Hercegovina, Bulgaria, Croatia, Kosovo, FYR of Macedonia, Montenegro, Romania and Serbia.

2 It has to be noticed, however, that if a country does not fulfil the Maastricht criteria, it can stay out of the euro area forever.

3 This is subject to the type of trade – whether it is intra- or inter-industry trade. Higher intra-industry trade should lead to higher business cycle synchronisation and hence to easier euro adoption, while higher inter-

industry trade leads to increased asymmetric shocks and hence lower business cycle synchronisation.

4 New member states that have not yet introduced euro include the CEE countries: the Czech Republic, Hungary, Poland, Lithuania and Latvia. Slovenia, Slovakia and Estonia are excluded because they already introduced the euro within the analysed period.

5 Although the overall period is 1997–2013, the specific estimates presented below are restricted to the 2005–2013 period (in case of the SEE countries, due to data availability for Kosovo).

6 The literature frequently includes gravity model estimates with fixed effects. Our initial strategy also followed that path. However, the random effects estimates produced theta near 1 and fixed effects correlated with distance and/or border variables.

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