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# The regional impact of EU association agreements: lessons for the ENP from the CEE experience

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## Abstract

The Eastern Enlargement of the EU saw a proliferation of association agreements with countries in the 'near abroad' under EU's European Neighbourhood Policy framework. Although such agreements are considered to be strictly welfare-enhancing, there is very little evidence to show their economic effects, including their distributional consequences across space, separately from other concurrent processes (transition, internationalisation, capital deepening, etc). This paper draws on the experience of pre-accession agreements in Central and Eastern Europe to estimate the effect that such agreements had on regional growth, and thus on the long-run evolution of regional disparities, in the associated countries. We apply an event-analysis and exploit the country variation in the timing of these agreements to identify their distinctive effect on regional growth, using regional data at the NUTS3 levels covering the period from the early transition phase (1991/92) until the eruption of the financial crisis (2008). Our results provide strong evidence that EU association agreements accelerate growth; but show that this is far from evenly distributed across space – with denser, larger and more diversified regional economies gaining the most. We discuss what these findings imply for regional growth and spatial imbalances in the new wave of associated countries under the ENP.

**Keywords**: association agreements; event analysis; regional growth; Central Eastern Europe

**JEL Codes:** F15, F55, R11, R15, O43

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# The regional impact of EU association agreements: lessons for the ENP from the CEE experience

## 1. Introduction

The collapse of communism in Eastern Europe brought about a radical geo-political reorientation of the countries belonging to the so-called Eastern Bloc. This included a proliferation of Trade and Cooperation Agreements with the European Union, which entailed an unprecedented degree of trade liberalisation and openness for the 'associated' countries. The intensity of this process varied across space, with countries in Central and Eastern Europe (CEE) moving soon after to deeper forms of integration, and eventually to EU membership, and countries located further east engaging with the EU through the more recently-established framework of the European Neighbourhood Policy (ENP). Although the latter is not supposed to lead to full EU membership, the partnerships established under this framework engender an almost continuous deepening of economic relations similar to what has in the past been the case with the CEECs (Monastiriotis and Borrell, 2012).

Association with the EU, and the preferential trade liberalisation that this entails, has long been considered in the literature as strictly welfare-enhancing. The opening up of markets allows for a more efficient allocation of capital, significant productivity gains through competitive pressures, technology importation via foreign investments (Monastiriotis and Alegria,

2011; Crescenzi et al, 2014), and sizeable agglomeration benefits through market access to the large pool of EU consumers (Ascani et al, 2012). To these positive economic effects, the political economy literature adds a host of other benefits, including pressures for democratisation, gains in administrative efficiency, the curtailment of corruption, and positive socialisation effects (Grabbe, 2006). Indeed, a number of studies have shown that, after an initial period of stabilisation, the associated countries entered a remarkable period of fast growth, with speedy income and productivity convergence with the EU 'core' and a notable restructuring of their economic base (Gács, 2003; Matkowski and Próchniak, 2007; Cuaresma et al, 2008; Rapacki and Próchniak, 2009). Despite this, evidence linking directly the process of EU association to (national) growth is rather hard to find in the literature – with only a handful of studies examining empirically this link (see, inter alia, Henrekson et al, 1997; Vanhoudt, 1999; Kejak et al, 2004; Badinger, 2005; Crespo Cuaresma et al, 2008), typically finding a positive but usually transitory effect on growth.[1]

The situation is less clear-cut with regard to the impact of EU association on regional growth. Theoretically, trade integration can have significantly differentiated effects at the regional level, as the trade diversion and market size effects that it entails can alter significantly existing (regional) comparative advantages and create new productivity or agglomeration advantages that may be distributed unevenly across space (Krugman, 1991; Fujita et al, 2001; Rodríguez-Pose, 2006; Minniti and Parello, 2011; Monastiriotis, 2014). In the empirical literature, concerning in particular the case of the CEECs[2], a large body of evidence exists showing that the process of EU approximation

[1] A broader literature exists, of course, on the growth effects of trade integration, regional trade agreements, and trade liberalisation at large (see, for example, Vamvakidis, 1998; Frankel and Romer, 1999; Wacziarg and Welch, 2008; Liu, 2014).
[2] For an earlier analysis see Neven and Gouyette (1994).

coincided with a significant widening of regional disparities and persistent polarisation in these countries. The literature broadly attributes these developments to the process of transition, and the resulting patterns of openness and restructuring, arguing that these favoured disproportionately those regions with closer proximity to the west (typically located in the western borders of the associated countries) and pre-existing agglomeration advantages and concentration of financial and political capital (typically, capital-city regions) (see, inter alia, Petrakos, 1996; Resmini, 2003; Petrakos et al, 2000; Longhi et al, 2004; Krieger-Boden et al, 2008; Kallioras and Petrakos, 2010). But, more so than in the literature on national growth, there is virtually no study that provides direct evidence linking these regional growth outcomes to the EU association process.

In this paper we seek to make a contribution in this direction, by devising an empirical strategy that allows us to examine the impact of EU association separately from that of other simultaneous processes (transition, development) – as a means for drawing conclusions about the regional-distributional impact of the EU association process in general and prospectively for the countries belonging to the European Neighbourhood Policy. Our main hypothesis is that, if EU agreements have a (differentiated) effect on regional growth dynamics, this would most likely be represented by a shift in growth trajectories between regions of different structures or potentials. To test this, we borrow from empirical approaches in the trade literature (see Baier and Bergstrand, 2007) and exploit the cross-country variation in the timing of these agreements as well as the differences in the intensity of trade integration provisioned by different types of agreements (trade and cooperation; association; accession) to identify the distinctive effect that these had on regional (and national) growth. We discuss in more detail

our empirical approach and our data in the next section. In section 3 we review the descriptive evidence concerning the patterns of regional growth in CEE during our study period. The results from our econometric analysis are presented in section 4. We find strong evidence that EU association has indeed a distinctive impact on growth, which is however spatially differentiated, broadly favouring regions of high levels of development and agglomeration and being less beneficial for more agricultural, peripheral and high-specialisation regions. We discuss the implications of this, both for the CEECs and prospectively for the ENP countries, in the concluding section.

## 2. Identifying the effect of EU association

The collapse of communism in 1989/1990 presented the EU with a significant challenge, as well as an opportunity and responsibility, to integrate the former communist countries (the so-called "return to Europe") but also to secure in this way the irreversibility of the transition process. Lacking at the time a formal process to facilitate this, the EU developed in 1993 the so-called Copenhagen Criteria, which became the overarching framework guiding the process of approximation with, and eventually accession to, the EU. In that early period, a first stage of association was through bilateral Trade & Cooperation Agreements, which provided for trade liberalisation in the associated countries in exchange of financial aid by the EU and technical assistance to the transition process. Subject to progress with democratisation and market liberalisation, the associated countries were eventually invited to submit a membership application and sign "Agreements Establishing an Association" (Europe Agreements), which kick-started the pre-accession process towards EU membership – which was concluded in 2004 for eight of

the CEECs and in 2007 for Bulgaria and Romania (see Table 1). Signing of such agreements became in a way a kind of endorsement by the EU of the transition policies deployed in each of these countries and transmitted strong signals to the markets, at home and abroad, about the position of each country in its path to post-communist transition and accession to the EU. In this sense, it had a potentially big impact on a range of factors affecting growth, from investment to export demand and from wage-setting to interest rates.

The uniqueness of this process (in that it has been gradual and prolonged but at the same time highly standardised) provides an incomparable case on which to study the effect that EU association has on economic growth and on its differentiation within countries. This is important not only for historical reasons but also because the process is to a large extent replicated today in the wider "European Neighbourhood", through the Stabilisation and Association process in the Western Balkans and the European Neighbourhood Policy framework in 16 countries in the east and south of the EU.[3]

In estimating this effect, and identifying it separately form that of other national-level developments (transition, restructuring), we are presented with an important problem of endogeneity. Arguably, the signing of EU agreements cannot be taken to be exogenous to national performance, including national growth: good performance reflects in part successful transition policies, which in turn are a pre-requisite for the signing of such agreements. Thus, in an econometric context, regressing growth on indicators

[3] The gradual deepening of these processes is strongly reflected in the 2011 review of the ENP and the establishment of the "more for more" principle, as well as in the new "Deep and Comprehensive" Free Trade Agreements, which replace the pre-existing "Partnership and Cooperation" Agreements.

capturing the progression of contractual relations with the EU would produce inflated estimates of the true effect of the latter on the former.

**Table 1. EU association milestones for the CEECs**

| Country | Cooperation Agreement | Europe Agreement | Accession to EU |
|---|---|---|---|
| BG | 1993 | 1995 | 2007 |
| CZ | 1992 | 1995 | 2004 |
| EE | 1995 | 1998 | 2004 |
| HU | 1992 | 1994 | 2004 |
| LT | 1995 | 1998 | 2004 |
| LV | 1995 | 1998 | 2004 |
| PL | 1992 | 1994 | 2004 |
| RO | 1994 | 1995 | 2007 |
| SI | 1997 | 1999 | 2004 |
| SK | 1992 | 1995 | 2004 |

Source: DG Enlargement and External Action Service; processed by the authors.

To overcome this problem, our empirical strategy is as follows. We rely on regional-level data and specify a regional growth model which explains the disparate evolutions in terms of regional growth in our sample by means of concurrent and initial-level variables. Exploiting the panel structure of our data, we introduce interactive country-year fixed-effects which control for time-variant country-specific shocks associated to the processes of transition and development. In this way, all variables in our model represent deviations, at the regional level, from the year-specific country average values. To capture the progression of EU association, from minimal contractual relations in 1991 to full membership in 2004/07, we subsequently introduce three shift effects (taking the value of 0 prior to the shift and the value of 1 from there until the next shift) corresponding to three milestones in the EU association process: the signing of a trade/cooperation agreement; the signing of an association/Europe agreement; and the enactment of EU membership (accession to the EU). As Table 1 shows, these three milestones vary in time across the 10 CEECs of our sample and thus their effect can be identified

separately from that of the country-specific time effects. More importantly, as the signing of EU agreements can safely be assumed to be exogenous to the pre-existing level of regional disparities in the associated countries, and indeed to the deviations of regional growth from their national average, we argue that these shift coefficients capture the causal effect that such agreements have on national growth. Finally, to estimate the impact of EU association at the regional level we introduce interaction terms between the shift effects and some of the key determinants of regional growth as identified in our baseline model. Again, given our controls for country-year idiosyncratic effects, we interpret the estimated coefficients on these interaction terms as the causal effect of each type of EU association on growth in the particular region-type.

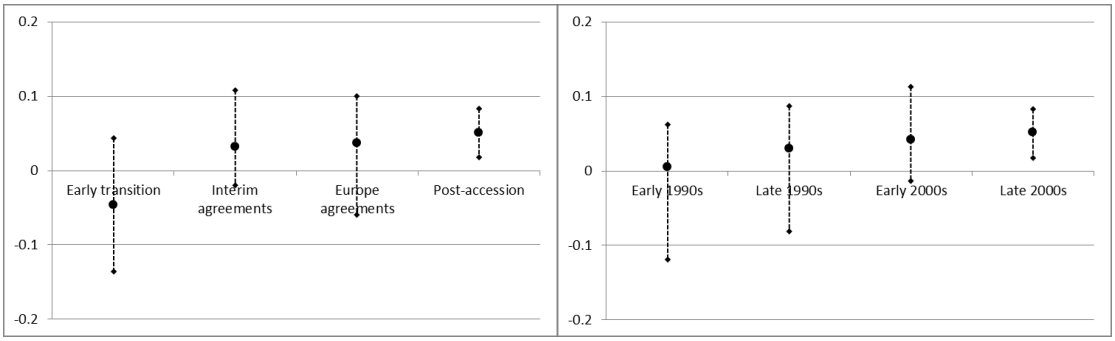
For the empirical analysis we use data from the Cambridge Econometrics database, complemented by data derived from Eurostat. Our data are at the NUTS3 level and cover the ten post-communist countries that acceded to the EU in 2004/2007, over the period from the early transition phase (1991) until the eruption of the crisis (2008). Our main variable of interest is the annual growth rate (in log-differences) of regional per capita GDP. We complement this with data on sectoral employment shares (via which we construct a Herfindahl index of specialisation), capital investment (via which we measure the investment rate, which is a proxy for capital growth – Agiomirgianakis et al, 2002), employment growth, and population density – as well as GIS information on the Euclidian distance between each region in our sample and its corresponding national capital.[4] We use this information in our analysis of the growth effects of EU association that follows.

[4] We have also used Eurostat data on exports by manufacturing sector to calculate a measure of export-orientation at the regional level, based on each region's contribution to national employment in each of the sectors. The method employed for the construction of this measure

# 3. Patterns of regional growth in the process of EU accession

The three milestones of EU association split naturally our sample into four periods: early transition (the period prior to the trade/cooperation agreements); interim period (from the cooperation agreement to signing a Europe/association agreement); pre-accession period (from the Europe agreement to EU accession); and post-accession period (from EU membership to 2008). A first look, then, into the question of the relationship between EU association and growth is by examining the descriptive patterns of growth across these four periods. Figure 1 presents this analysis for two period definitions: one in relation to EU agreements, as described above (Panel A); and a comparable one using ad hoc 5-year intervals (Panel B).

**Figure 1. Regional growth by period**




**Panel A** **Panel B**

Notes: Large dots show median values (median regional growth across all regions during the period), while the dotted lines show the values for the 9th and 1st deciles of the corresponding distributions. See the text for information on the definition of periods.

As can be seen, there seems to be a significant effect coming from the interim agreements, as growth in the second period in Panel A is significantly

does not allow us to use it in the econometric analysis (as all variation is captured by the country-year fixed-effects). Thus, we only make reference to this measure in our descriptive analysis.

different from that of the 'early transition' period. This contrasts to what is seen in Panel B, where the acceleration of growth rates over time (between the two 5-year intervals in the 1990s) was positive but much less dramatic. By implication, it appears that the signing of the first contractual agreements with the EU is a significant milestone in separating between weak and much improved growth performance. Still, it is not possible to make a causal inference from this observation: although one could argue that these agreements may had a causal impact on growth rates, it is equally plausible that interim agreements were offered to countries (and regions) that were showing robust signals of strong prospective growth performance.

Either way, quite interestingly, the period of Europe Agreements seems to be characterised by non-accelerating growth and much higher variability in terms of regional growth performance. This is unexpected, as the Europe Agreements represented the kick-starting of the pre-accession process and thus were the ultimate signal that the associated countries were certain to become at some later date full members of the EU. The result is even more notable given that the second part of this period (corresponding to the 'early 2000s' in Panel B) was a period of yet accelerating growth and declining disparities in regional growth rates. If a causal claim can be made, it would appear that – counterintuitively – the signing of Europe Agreements had a negative effect for the associated countries, decelerating their rates of growth – while for some regions at the bottom of the distribution the effect may have been negative even in absolute terms. In contrast, the last period (post-accession and late 2000s in Panels A and B, respectively) signifies a return to faster growth and, importantly, an impressive convergence in regional growth rates. Again, it is difficult to ascertain from the data whether this

implies a causal link between EU association (in this case, accession) and (regional) growth.

**Table 2. Average annual growth rates by period and type of region**

| Categories | Early transition | Interim Agreements | Europe Agreements | Post-accession |
|---|---|---|---|---|
| Specialised | -6.31% | 4.92%*** | 2.51%*** | 4.88%*** |
| Non-specialised | -2.69% | 3.55%*** | 3.64% | 5.51%*** |
| | *** | ** | *** | *** |
| Peripheral | -4.44% | 3.92%*** | 2.94%* | 4.99%*** |
| Central | -4.59% | 4.45%*** | 3.18%** | 5.42%*** |
| | | | | ** |
| Agricultural | -4.90% | 3.71%*** | 2.69%* | 4.90%*** |
| Non-agricultural | -4.11% | 4.68%*** | 3.44%** | 5.52%*** |
| | | | ** | *** |
| Dense | -4.46% | 4.59%*** | 3.08%*** | 5.61%*** |
| Sparse | -4.57% | 3.79%*** | 3.04% | 4.82%*** |
| | | | | *** |
| Export-oriented | -5.03% | 3.84%*** | 3.37% | 5.39%*** |
| Closed | -2.54% | 4.50%*** | 2.72%*** | 5.05%*** |
| | *** | | ** | |
| Developed | -4.35% | 4.57%*** | 4.10% | 5.75%*** |
| Less developed | -4.65% | 3.81%*** | 2.02%*** | 4.68%*** |
| | | | *** | *** |

Notes: *, **, *** show significance at 0.1, 0.05 and 0.01 respectively. Asterisks below each pair of cells indicate the statistical significance of the difference of the two mean values of the corresponding groups (e.g., specialised vs non-specialised). Asterisks to the right of each mean value indicate the statistical significance of the difference between this value and the corresponding value for the same group in the previous period (e.g., interim vs early transition). For the definition of groups and periods see the discussion in the text.

To look more closely at the regional differentiation of growth performances across the different EU association periods, in Table 2 we present the average annual growth rates for sub-groups of regions (specialised – non-specialised, peripheral – central, agricultural – non-agricultural, and with high or low population density, export orientation, or income levels), defined using the national median values within each period as the threshold criterion. With this, we can examine, descriptively at this stage, our hypothesis that the

impact of the association agreements has been different for different types of regions.

As can be seen, growth performance has varied sometimes significantly across the various groups and across the four periods of our analysis. In the early transition period all region types experienced significantly negative growth rates (at around -4.5%, as is also indicated in Figure 1). The shock was notably higher in more specialised and export-oriented economies[5], but it was rather uniformly distributed across regions of different levels of development (GDP per capita), degree of urbanisation (population density), proximity (distance from the national capital), and production structure (share of agriculture). The period following immediately after the signing of the first Trade and Cooperation Agreements ('interim agreements') saw a significant shift in average annual growth rates, which is statistically significant for each and every regional group. Interestingly, in the 'interim' period growth rates appear to have converged significantly between groups and types of regions, with the only remaining statistically significant difference (this time at the 5%) being between specialised and non-specialised regions – with the latter showing a slower recovery than the former.

The situation concerning these two types of regions reversed in the next period (after the signing of the Europe Agreements and before accession to the EU). Consistent with the evidence of Figure 1, growth rates in this period declined significantly (in a statistical sense) for many region types, but specifically for regions that were of high specialisation and population

[5] As already noted, specialisation is measured here relative to a national benchmark. In fact, the difference is more accentuated when using the global median (across countries within the same period) as the benchmark. In that case, the shock appears to have been bigger also in more agricultural, larger and less developed economies. This suggests that national economies with such characteristics have performed much worse during that period.

density and low export orientation and levels of development. In terms of actual growth rates, in this period growth rates appear particularly slow (relative to their counterparts) in agricultural, specialised, non-export-oriented and less developed regions. In turn, the post-accession period shows a significant revival of growth rates, for all region types. This time, however, the differences between region types are amplified and became significant for virtually every type of grouping (except for export orientation). This is in sharp contrast to what was observed in Figure 1, where growth disparities appeared to have declined significantly. By implication, this shows that while in the post-accession period regional growth rates became more convergent (Figure 1), at the same time *regional growth differentials became more systematic* – with regions clearly being sorted between high and low growth regimes on the basis of their structural characteristics. In particular, central, urbanised, diversified and non-agricultural regions significantly outperformed their counterparts post-accession.

This is a particularly powerful – and novel – finding. It shows that, if interpreted in causal terms, EU association has economic effects that are significantly and systematically differentiated across space. Not only that, but also that this systematic differentiation may be masked at the aggregate level (e.g., when looking at developments in terms of regional disparities at large). This calls for a more careful analysis in trying to identify the winners and losers of EU association (and economic integration more generally) and, in policy terms, for more careful and targeted interventions that would seek to support and compensate these losers. This offers a strong motivation to our econometric analysis that follows.

# 4. Econometric results

It is now customary to analyse regional growth using a neoclassical convergence specification, which makes regional growth a function of the initial (lagged) level of regional incomes. Although we considered this in our analysis, motivated partly by recent evidence about the non-linearity of the convergence process during the CEE transition (Monastiriotis, 2014) we opted for a more flexible production-function specification that imposes no restrictions on the model parameters.[6] Thus, our baseline estimating relationship is:

$$\Delta y_{rct} = \beta_0 + \beta_1 \Delta e_{rct} + \beta_2 I_{rct} + \mu_{ct} + \epsilon_{rct} \quad (1)$$

where $r$, $c$, $t$ stand for regions, countries and years, respectively; $y$ and $e$ are the natural logarithms of regional GDP and employment, respectively; $I$ is the ratio of capital investment to GDP (investment rate); $\Delta$ is a first-difference operator; $\beta_0$, $\beta_1$, $\beta_2$ are coefficients to be estimated; $\mu$ is a vector of country-year specific dummies; and $\varepsilon$ is an error term.

To this specification we add subsequently a number of region-specific controls (e.g., share of agriculture to total regional employment) or, alternatively, region-type dummies (e.g., 1 if the region is specialising in agriculture and 0 otherwise) – as well as regional fixed-effects controlling for the non-independence of observations within regions over time. As noted earlier, we also add a series of dummies (shift effects) corresponding to the various phases of relations with the EU and subsequently interact these shift effects with the region-type variables in order to estimate the impact of EU association at the regional level.

[6] As is well known, the beta-convergence model assumes constant returns to scale and diminishing returns to each factor of production individually, with a unit elasticity of substitution.

**Table 3. Regional growth and regional characteristics**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Employment growth | 0.252*** | 0.244*** | 0.242*** | 0.238*** | 0.188*** | 0.236*** | 0.236*** |
| | (0.0250) | (0.0269) | (0.0268) | (0.0267) | (0.0278) | (0.0250) | (0.0250) |
| Investment rate | 0.0500*** | 0.0137 | 0.00582 | 0.0248 | -0.0510** | 0.0297* | 0.0297* |
| | (0.0156) | (0.0168) | (0.0168) | (0.0174) | (0.0259) | (0.0160) | (0.0160) |
| Specialisation (Herfindahl) | | -0.113*** | -0.120*** | -0.115*** | -0.0747 | -0.00757*** | -0. 00757*** |
| | | (0.0327) | (0.0325) | (0.0325) | (0.0810) | (0. 00186) | (0. 00186) |
| Agriculture (employment share) | | -0.0226** | -0.0245** | -0.00682 | 0.0104 | -0. 00391** | -0. 00391** |
| | | (0.0105) | (0.0104) | (0.0112) | (0.0306) | (0. 00161) | (0. 00161) |
| Population density (log) | | 0.00318*** | -0.000410 | -0.000640 | 0.0240 | 0. 00379** | 0. 00379** |
| | | (0.00109) | (0.00128) | (0.00128) | (0.0242) | (0. 00156) | (0. 00156) |
| Distance from Capital (log) | | | -0.00197*** | -0.00121*** | | -0. 00301** | -0. 00301** |
| | | | (0.000369) | (0.000411) | | (0. 00152) | (0. 00152) |
| Regional Income (log GDP pc) | | | | 0.0153*** | 0.0556*** | | |
| | | | | (0.00369) | (0.00801) | | |
| Constant *(Early transition in col.7)* | -0.0531*** | -0.00483 | 0.0135 | -0.0285 | 0.0354 | -0.0398*** | -0.0398*** |
| | (0.0123) | (0.0144) | (0.0147) | (0.0178) | (0.0561) | (0.0125) | (0.0125) |
| Interim agreements | | | | | | | 0.0905*** |
| | | | | | | | (0.0181) |
| Europe agreements | | | | | | | 0.0731*** |
| | | | | | | | (0.0182) |
| Post-accession | | | | | | | 0.103*** |
| | | | | | | | (0.0181) |
| Regional fixed effects | No | No | No | No | Yes | No | No |
| Observations | 3,314 | 3,202 | 3,202 | 3,202 | 3,202 | 3,314 | 3,314 |
| R-squared | 0.597 | 0.608 | 0.612 | 0.614 | 0.623 | 0.602 | 0.602 |

Notes: Standard errors in parentheses. *, **, *** show significance at 0.1, 0.05 and 0.01 respectively. All regressions include interactive country-year fixed effects.

A first set of results is presented in Table 3. The base model (col.1) performs very well, with both coefficients significant at the 1% level. In columns 2-4 we add various controls for regional characteristics. As can be seen, specialisation is negatively related to growth (consistently across specifications). The share of agriculture is also found to be inversely related to growth, although the effect becomes insignificant when we control simultaneously for the regional level of development (col.4). Similarly, population density, whose effect on growth is positive, becomes insignificant in models that include the distance from the national capital. The latter has a consistently negative coefficient, showing that proximity to the main urban agglomeration is a significant contributor to growth. Most of these effects vanish when we introduce regional fixed effects (col.5), which seem to absorb much of the variation associated to the regional characteristics related to economic structure, location and agglomeration.

In col.6 we replace the continuous variables associated to regional characteristics with the dichotomous (dummy) variables used earlier in Table 2. As can be seen, all coefficients remain significant and with the same signs. In this model, specialised regions appear to grow more slowly than diversified regions (by 0.7 of a percentage point). Agricultural and peripheral regions also experience a growth penalty (of 0.4 and 0.3 percentage points, respectively), while urbanised regions have a similar-sized growth advantage. Adding to this model the shift effects associated to EU agreements produces results that are closely in line with the evidence presented earlier.[7] Net of national (country-year dummies) and regional characteristics, growth in the early transition period (before EU agreements) was significantly negative

[7] Note that given our controls for country-year effects, the coefficients on the regional regressors do not change when we include the period shift effects. The latter are estimated from the variation originally captured by the interactive country-year dummies.

(near -4%). The situation turned around quite impressively in the interim agreements period (+9%), but growth receded in the pre-accession period (7.3%) before recovering again and reaching its maximum net value (10%) post-accession.[8]

**Table 4. Regional growth by region-type and EU-relations period**

| | Specialisation | Agricultue | Density | Distance | Developmnt |
|---|---|---|---|---|---|
| Employment growth | 0.249*** | 0.243*** | 0.246*** | 0.252*** | 0.238*** |
| | (0.0249) | (0.0250) | (0.0250) | (0.0250) | (0.0248) |
| Investment rate | 0.0378** | 0.0481*** | 0.0483*** | 0.0496*** | 0.0521*** |
| | (0.0159) | (0.0156) | (0.0157) | (0.0157) | (0.0155) |
| Period effects by region-type | | | | | |
| Early transition | -0.0177*** | -0.0101** | 0.00133 | 0.00406 | -0.00551 |
| | (0.00587) | (0.00464) | (0.00457) | (0.00456) | (0.00468) |
| Interim period (TCA) | -0.00681 | -0.00731 | 0.00627 | -0.00331 | 0.00261 |
| | (0.00556) | (0.00469) | (0.00466) | (0.00463) | (0.00465) |
| Pre-accession (EA) | -0.00778*** | -0.00506** | 0.00213 | -0.00189 | 0.0146*** |
| | (0.00230) | (0.00205) | (0.00202) | (0.00202) | (0.00213) |
| Post-accession | -0.00355 | -0.00616* | 0.00859*** | -0.00411 | 0.0118*** |
| | (0.00370) | (0.00321) | (0.00319) | (0.00319) | (0.00335) |
| Period fixed-effects | | | | | |
| Constant (early transition) | -0.0389*** | 0.0486*** | 0.0537*** | 0.0549*** | -0.0538*** |
| | (0.0127) | (0.0124) | (0.0125) | (0.0125) | (0.0124) |
| Interim period (TCA) | 0.0857*** | 0.0909*** | 0.0902*** | 0.0957*** | 0.0903*** |
| | (0.0187) | (0.0184) | (0.0185) | (0.0185) | (0.0185) |
| Pre-accession (EA) | 0.0682*** | 0.0747*** | 0.0762*** | 0.0789*** | 0.0635*** |
| | (0.0184) | (0.0184) | (0.0185) | (0.0184) | (0.0183) |
| Post-accession | 0.0963*** | 0.105*** | 0.102*** | 0.109*** | 0.0952*** |
| | (0.0184) | (0.0183) | (0.0184) | (0.0184) | (0.0184) |
| Observations | 3,314 | 3,314 | 3,314 | 3,314 | 3,314 |
| R-squared | 0.600 | 0.600 | 0.599 | 0.598 | 0.605 |

Notes: Standard errors in parentheses. *, **, *** show significance at 0.1, 0.05 and 0.01 respectively. All regressions include interactive country-year fixed effects.

[8] The differences between the interim, pre-accession and post-accession periods are not significant statistically, unlike what was observed in the descriptive analysis (Table 2). They become however highly significant (even at 0.1%) when we remove the interaction between the country and year fixed effects.

Naturally, the question that emerges is how these period-related variations played out for regions of different structures and types. We explore this by interacting sequentially the categorical variables associated to regional characteristics (as reported in Table 2) with each of the period shift effects, to obtain region-type specific estimates of the impact of these shifts on regional growth.[9] Our estimates are presented in Table 4. As can be seen in the bottom panel of the Table, the period fixed effects remain consistent with those obtained in col.7 of Table 3. Also consistent and stable across specifications are the estimates for the production function variables (employment growth and investment share).

Turning to the period effects for specific region types (interaction terms, middle panel of Table 4) and reading horizontally across specifications, we see that the early transition period disadvantaged mainly agricultural and high-specialisation regions – while growth rates were not statistically different for regions of different development levels, proximity to the national capital, or population density. In contrast, the signing of interim agreements does not seem to have triggered systematic differences in growth rates between the groups of regions considered here: if anything, the pre-existing growth differences declined in this period. As we move to the Europe Agreements (pre-accession period), however, specialised and agricultural regions appear to become again disadvantaged and to record growth rates that are significantly lower than those of their non-specialised and non-agricultural counterparts (by 0.8 and 0.5 percentage points, respectively). Moreover, this time a significant advantage emerges for regions with above-median levels of development, which are estimated to grow by 1.5 percentage

[9] Results based on the interaction of the shift effects with the continuous measures of regional characteristics are consistent with the ones presented here. We avoid presenting them here due to space restrictions. These results are available upon request.

points faster than the less developed regions. The advantage remains, albeit somewhat declining, in the post-accession period. Further, in this period a clear growth advantage (of 0.86 percentage points) emerges also for high population density regions. Non-agricultural regions also continue to grow faster (by 0.6 percentage points), but the growth differential between specialised and non-specialised regions becomes statistically insignificant.

Summing up, our results suggest that EU association has indeed a differentiated impact on regions of different types. Entering pre-accession agreements has favoured non-specialised and non-agricultural regions, i.e. it created a relative disadvantage for those regions that experienced the most severe transition shock in the first years after the collapse of communism. Also favoured were regions of higher levels of development and as a result the period was one of sizeable divergence. The same type of regions (developed, non-agricultural), as well as regions of high agglomeration (population density), have been favoured by EU membership, registering higher growth rates in the post-accession period. This is consistent with arguments in the literature suggesting that EU membership strengthens forces of agglomeration that favour regions with high market potential, concentration, and specialisations in increasing returns sectors. Our analysis shows that this effect is causally related to the EU association process and it is not simply coincidental with other contemporaneous forces that may exert an influence on national and regional growth.

# 5. Conclusions: implications for the ENP countries

The analysis and evidence presented in this paper offers a useful account of the regional growth trajectories followed by the transition countries that acceded to the EU in the 2004/07 enlargement. Although the literature has already shown that regional disparities in these countries widened significantly in the process of transition, market openness and EU accession, evidence of a direct causal link between the process of EU association and national and regional growth is hard to find in the literature. Our study provides unequivocal evidence for this, showing that the EU association process indeed accelerates growth – although this growth is not evenly distributed across space. Of course, our study does not reveal the underlying forces that account for this EU association effect; but the patterns unveiled in the analysis of regional growth are indicative of the underlying processes that trigger growth – processes related to the exploitation of economies of scale, market size, urbanisation effects and industrial diversity.

As discussed earlier, our analysis is of direct relevance for the countries of the 'European neighbourhood' which are currently in a process of 'deeper association' with the EU under the ENP framework – not only in the east (Eastern Partnership) but also in the south (EMP / South Mediterranean Process). Although these countries are not likely to be offered the opportunity of full membership, nevertheless their contractual relations with the EU develop in a way which resembles much the cooperation (interim) and association (pre-accession) agreements signed by the CEECs in their role to EU accession. Today most ENP countries have active trade/cooperation agreements with the EU (so-called 'Partnership and Cooperation Agreements') and some already move to deeper forms of association (e.g., the

'Deep and Comprehensive Free Trade Agreements' with Moldova and Ukraine). To draw a parallel with our analysis, they seem to be at a stage similar to that corresponding to our 'interim agreements' period: at a point past the initialling of contractual relations but as yet not in a process of pre-accession. For this stage of EU relations, our analysis of the CEE sample showed that EU association can contribute significantly to national growth (see col.7 of Table 3), importantly without a significant (or, at least, discernable) effect on regional disparities. Interestingly, this is broadly speaking the experience of the ENP countries in the last ten years or so (especially in the east): in most of these countries growth has been particularly robust (at least prior to the crisis) while regional disparities have not been increasing particularly rapidly during the period (see Petrakos et al, 2013 for the most recent evidence on this).

If our parallelism is valid, then the next phase of association with the EU for the ENP countries may not be as fruitful, in terms of growth and spatial cohesion, as it may be anticipated. Based on our CEE-derived estimates, deeper association with the EU after a period of initial cooperation agreements may be associated with decelerating growth nationally and the re-emergence of old cleavages in terms of growth trajectories (e.g., between agricultural and non-agricultural regions) or even the emergence of new such cleavages (as we found for the case of regions with above-median levels of development in the CEE sample). Moreover, as these countries become more integrated into the EU structures and more open (politically and economically), new pressures will emerge that will concentrate disproportionately the generation of growth in regions with conducive characteristics – such as high rates of population density, per capita income and industrial diversity – at the relative expense of less competitive (agricultural, peripheral, narrowly specialised) regions.

Although it is of course possible that the experience of the CEECs with regard to the EU association process has been unique, the relative similarity of the ENP countries to the CEECs (e.g., in terms of initial conditions), as well as of the EU processes applied to the two regions, makes it rather likely that the pressures described above will materialise, to one extent or another, in the ENP case. This calls for a set of comprehensive, well-targeted and carefully-designed policy interventions that will seek to identify early any such signs and pressures and will apply the right instruments to help address the negative spatial-distributional effects of deeper EU association without stalling the overall very positive effects (both in terms of growth and more generally) that EU association generates.

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