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Economic Benefits from Deep Integration

20 years after the 2004 EU Enlargement

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Economic Benefits from Deep Integration: 20 years after the 2004 EU Enlargement

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ABSTRACT: EU enlargement has stalled since the last member joined over ten years ago, marking the longest period without expansion since 1973. This elapsed time contrasts with the potential income gains membership promises. Drawing on the biggest EU enlargement in 2004 and employing a synthetic difference-in-difference estimator on regional data, we estimate that EU membership has increased per capita incomes by more than 30 percent. Capital accumulation and higher productivity contributed broadly equally, while employment effects were small. Gains were initially driven by the industrial sector and later by services. Despite substantial regional heterogeneity in gains—larger for those with better financial access and stronger integration in value chains prior to accession—all regions that joined the EU benefited. Moreover, existing members benefited too, with average income per capita around 10 percent higher. The estimated gains suggest that deep integration carries significant additional economic benefits beyond simple trade unions, providing valuable lessons for future EU enlargement and regional integration efforts elsewhere.

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WORKING PAPERS

Regional Economic Benefits from Deep Integration

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I. Introduction

In the early 2000s, Europe's income gap to the United States narrowed by about 10 percentage points. Higher growth in countries that joined the European Union (EU) in 2004—referred to as "new EU member states" from now on—accounted almost entirely for the partial convergence.[1] After further enlargements in 2007 and 2013, no other country has joined the EU since, the longest period without expansion since 1973.[2] Currently, ten countries are candidates for EU membership, with many of them in the Western Balkans.[3]

The enlargement of a common market leads to a reallocation of resources, which in turn stimulates overall economic growth and promotes income convergence (Walz 1998). Access to the EU single market is at the core of EU membership. By harmonizing existing rules across borders and bringing down barriers to trade and factor movements, the single market facilitates the freedom of movement of goods, services, people, and capital. Joining the EU has additional dimensions. Prospective members negotiate with the EU across 35 chapters that outline the framework governing economic and social conditions, including key areas such as institutions and the rule of law. Each chapter must be successfully negotiated and implemented to ensure compliance with EU standards, paving the way for full membership. This distinguishes the EU from simple Free Trade Agreements and has been labelled as "deep" integration, with potentially larger benefits through efficiency and scale economy gains across a wide range of dimensions (Brou and Ruota 2011, Campos et al. 2019, Baldwin and Wyplosz 2012).

This paper takes a renewed look at economic benefits from deep integration in the context of EU enlargement. The 2004 enlargement presents an excellent opportunity for quantifying the impact of EU accession, given the presence of long pre- and post-accession periods in the data and no concurrent major shocks affecting either the treatment or donor group around the accession date.

We contribute to the existing literature by employing a novel estimation strategy, offering both a factor and sectoral decomposition of gains, and utilizing regional data to shed light on the heterogeneity of gains. Applying a synthetic difference-in-difference estimator (Arkhangelsky et al. 2021) to regional data, accession is estimated to have added more than 30 percent to income per capita. The results are highly significant and robust to alternative donor samples and accounting for pre-accession dynamics. Income gains are equally transmitted through productivity catch-up and capital deepening. While the industrial sector drove the gains initially, services started contributing significantly after a few years. While all regions in new member states gained in income from EU accession, effects vary strongly. Within country differences (e.g., ranging from 5 to 47 percent in Hungary) explain about 40 percent of the variation.[4] Exploring different regional characteristics reveals that regions with better access to finance and already better integrated through value chains prior to accession registered higher growth and productivity gains. Moreover, old member states gained too—on average close to 10 percent at the end of the sample (when dropping Greece)—as the expansion of the EU's single market allowed firms to expand production and reap efficiency gains.

[1] The following countries joined the EU in 2004: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

[2] Bulgaria and Romania joined in 2007 and Croatia in 2013. The United Kingdom left the EU in 2020.

[3] The candidate countries are Albania, Bosnia and Herzegovina, Georgia, Kosovo, Moldova, Montenegro, North Macedonia, Serbia, Türkiye, and Ukraine.

[4] We drop countries with only one region (Cyprus, Estonia, Latvia, and Malta) or two regions (Lithuania and Slovenia), so that the number only refers to the Czech Republic, Slovakia, Poland, and Hungary.

Our study is closely related to previous work that focused on country or aggregate gains from EU membership based on synthetic control groups.[5] Specifically, Grassi (2024) finds that income increased by 32 percent after 15 years for the aggregate group of countries that joined the EU in 2004, with no marked effect for the group of existing EU members.[6] Campos et al. (2019) provide country-by-country results covering all accessions from 1973 to 2004. Individual gains vary from low values of around 5 percent in Finland, Sweden, Poland, Slovakia, and the Czech Republic to more than 30 percent in Latvia ten years after respective accession. Greece is the only country with losses ten years after joining. Using regional data, Campos et al. (2022) quantify the effect of lost income per capita of Norway from opting not to join the EU at about 10 percent. Based on their results, the average Norwegian region could have increased productivity growth around 0.6 percentage points annually by joining the EU in 1995. Using a New Quantitative Trade Model to simulate general equilibrium effects of individual aspects of the EU (e.g. Schengen and Single Market), Felbermayr et al. (2022) put the cost of full EU disintegration (compared to 2014 as base year) for new member states in terms of real consumption at an average of about 15 percent, ranging from 10 percent for Cyprus to 23 percent for Malta.[7]

The remaining paper proceeds as follows. Section II describes the methodology and data. Section III presents the main results and Section IV establishes their robustness. Section V discusses the impact on existing member state regions and Section VI concludes.

[5] It is also related to other studies that leverage the 2004 enlargement for causal analysis. For example, Elsner (2013) studies the impact of lifting migration restrictions and Sandkamp (2020) the impact of antidumping duties.

[6] He draws the control regions from a donor pool of OECD countries that never joined the EU. Costa Rica, the Republic of Korea, and Norway are weighted respectively with 77, 13 and 10 percent for the control group of the region joining the EU. Australia, Iceland, Israel, Costa Rica, Norway, and Canada weighted with 29, 25, 22, 14, 7 and 3 percent, respectively, are the control group for the existing members.

[7] Chupilkin, Kóczán, and Plekhanov (2024) argue that of the 24 percentage points of GDP per capita convergence between Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia with Germany since 2004, 14 percentage points are due to EU membership.

II. Methodology and Data

Synthetic difference-in-difference estimator

To make causal inference about the impact of EU accession, we apply the synthetic difference-in-difference estimator of Arkhangelsky et al. (2021). We use regional rather than country level data to increase the reliability of estimates through a larger sample size and allow for a more granular analysis of income heterogeneity effects and initial conditions shaping them. The estimator weighs the untreated regions (i.e., those that did not join) in the so-called donor pool to match pre-treatment trends of treated regions (i.e., those that joined) and employs bootstrapping techniques for statistical inference. It controls for the external environment if it affects the treatment and donor group similarly. It is more flexible than standard difference-in-difference procedures by permitting a violation of parallel trends in aggregate data, and more flexible than standard synthetic controls by allowing for constant level differences between treatment and untreated groups. Standard synthetic control can result in a single unit accounting for the majority (or even the entirety) of the control group, making estimates susceptible to idiosyncratic factors in this unit. The estimator has been successfully applied to a variety of questions, including how global crises impact trade and financial openness (Jarret and Mohtadi 2023), whether the G20 Compact with Africa fostered growth (Fleuriet and Vertier 2024), and how foreign direct investment enhances product innovation among domestic firms (Deng, Lu, and Tang 2024).[8]

The estimation of the average gain from accession, A_{it} (with $A_{it} = 1$ if observation *i* is treated by time *t*, and zero otherwise) proceeds as follows:

$$\left(\hat{\tau}^{SDIDE}, \hat{\mu}, \hat{\alpha}, \hat{\beta}\right) = \underset{\tau,\mu,\alpha,\beta}{\arg\min} \left\{ \sum_{i=1}^{N} \sum_{t=1}^{T} (Y_{it} - \mu - \alpha_i - \beta_t - A_{it}\tau)^2 \hat{\omega}_i^{SDIDE} \hat{\varphi}_t^{SDIDE} \right\},$$

where Y_{it} is the outcome variable hypothesized to vary as a result of the treatment and $\hat{\tau}^{SDIDE}$ is the estimated average treatment effect on the treated generated from a two-way (α_i and β_t) fixed effect regression—with optimally chosen weights $\hat{\omega}_i^{SDIDE}$ across regions and $\hat{\varphi}_t^{SDIDE}$ across time periods.[9] The presence of unit-fixed effects implies that the estimator matches those regions who joined and control units on pre-treatment trends.[10] Clarke et al. (2023) provide a computational implementation of this estimator and details about the estimation of the weights and the bootstrap approach to establish statistical significance.[11] We estimate the model both jointly by pooling regions and for each region in new and existing member states separately.

The selection of the most appropriate donor pool involves trade-offs. Both regions from outside Europe and regions in old EU member states deserve consideration. Global non-European regions are arguably the least impacted by the treatment, but the available pre-accession sample for these regions is shorter. In addition, these regions differ structurally more from regions in new member states than those in old member states. The

[8] It has also been applied to non-macroeconomic questions such as how local shocks influence voting behavior (Cerqua, Ferrante, and Letta 2023), how improving public access to pollution information affects mortality (Barwick, Li, Lin, and Zou 2024), and how abortion bans in the Unites States impact fertility (Dench, Pineda-Torres, and Myers 2024).

[9] The standard difference-in-difference procedure assigns instead equal weights to all time periods and groups.

[10] The standard synthetic control method also optimally choses unit-specific weights but not time weights. It includes no unit fixed effects, so control and treated units maintain approximately equivalent pre-treatment levels.

[11] All 95% confidence intervals and p-values are based on Large-Sample approximations, as in Arkhangelsky et al. (2021).

data for regions in old member states allow for a longer pre-treatment period and much better matching of pre-treatment trends of treated and untreated regions. While this donor pool could bias the results downward if old member regions with positive weights benefitted from the associated market expansions,[12] it could also bias the results upward if regions with positive weights received less EU funds after 2004 (due to poorer countries joining) or were more impacted by idiosyncratic negative shocks, for example by the European Debt Crisis. Considering these merits and drawbacks, we choose all old EU member regions as baseline sample but test the robustness of the results using non-European OECD regions in Section IV.

Drivers of gains and initial conditions

To quantify the channels through which EU accession affected growth, we apply the estimator to the level of output as well as capital and labor stock sub-components of the traditional Cobb-Douglas production function, which we use to decompose the income gains:

$$\Delta y = \Delta tfp + \alpha \Delta k + (1 - \alpha)\Delta l, \quad (1)$$

where small letters denote logs, Δ denotes difference, *y* stands for output, *l* for employment, *k* for capital, *tfp* for the unobservable total factor productivity (TFP), and α for the capital share. The capital share, estimated as the average level of EU new member states' capital share in 2004 and 2022 is 0.57. In addition, we apply the estimator to real Gross Value Added (GVA) and its subcomponents (industry, services, and agriculture). Finally, we study the impact of initial conditions on regional gains. For that, we split regions in new member states in those below and above median characteristics and estimate the model separately for these sub-groups.

Data

For the baseline estimation, we rely on data for 45 NUTS2 regions in the ten new EU member states (treatment group) and 179 NUTS2 regions in 14 old EU member states (baseline donor pool).[13] Most data for these regions are from the Annual Regional Database of the European Commission's Directorate General for Regional and Urban Policy (ARDECO), which is based on harmonized data from Eurostat as well as national and international sources. It contains long historical time series starting in 1980, allowing for long pre-accession periods. We use real GDP, real GVA by sectors (at million EUR 2015), GDP per capita (at current market prices in million PPS),[14] total employment (in thousands of persons), and the real capital stock (at million EUR 2015) from this database.

In addition, we complement this data with information on initial regional conditions to study determinants of heterogeneity of income effects. First, we leverage measures of geographic and economic proximity between regions from Amendolagine et al. (2024). The former is based on distance between major regional cities, the latter is based on actual economic linkages in 2000 using cross-regional input-output information and reflects the value of bilateral value-added trade between regions. Second, we construct a measure of financial depth

[12] As new members join the EU, they contribute to its expansion. The expansion in 2004 expanded the population of the EU by 75 million, marking a sizable increase in the single market accessible to old member states.

[13] The 14 old EU members are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Sweden.

[14] Purchasing Power Standards (PPS) is a reference currency that allows for a more accurate comparison of economic performance and living standards of different countries by considering price differences and adjusting for inflation.

using the average ratio of long-term debt to sales of firms in each region in 2000 based on firm-level data from Orbis.[15]

In 2003, the year before accession, the average region in old EU member states (baseline donor pool) had a population of 1.8 million and a GDP per capita of 43 thousand PPS. The average region in new member states had a similar population size of 1.6 million, but a much lower GDP per capita of 19 thousand PPS. In the weighted donor pool, the income gap is much smaller (see Section III). Prior to accession, the most populated region in the new member states—Śląskie in Poland—had ten times more people than Malta, the smallest one. In addition, the former had a much higher GDP per capita, exacerbating the size difference in economic terms. In general, the economic size of regions in the sample differs substantially. In Section IV, we hence compare our baseline results, in which regions are pooled to the GDP-weighted gains of regions after estimating the gains for each region separately.

For a robustness check, as alternative donor pool, we use GDP per capita at current US prices in PPS from the OECD regional database covering 43 territorial level 2 regions from eight new EU Member States (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia) and 269 global non-European regions from Australia, Canada, the Republic of South Korea, New Zealand, and the United States. To align the size of regions, we use territorial level 2 regions for Canada and New Zealand and territorial level 3 regions for Japan, the Republic of South Korea, Australia, and the United States. This data only starts in 2001 and hence covers a shorter pre-treatment period.

[15] Using a similar measure, Petrakou, Bruno and Phelps (2023) argue that financial development supports regional growth in Europe.

III. Impact on New Member State Regions

GDP per capita gains

Figure 1 shows large and growing average income gains for regions that joined the EU in 2004. Since the accession, GDP per capita gains averaged 27 percent, with the gain exceeding 10 percent after 5 years and 40 percent at the end of the sample. The gain is equivalent to a 2 percentage points higher GDP growth rate per year. These income gains have considerably accelerated convergence within Europe.

Before the accession, we match for a decade the changes in GDP per capita between those regions that joined and those already in the EU (the baseline control group), suggesting that the estimator is effectively isolating accession effects starting in 2004. The estimator assigns non-zero weights to 115 donor pool regions, representing 64 percent of all donor regions. The maximum weight assigned to any region is 3.7 percent, with only two regions exceeding 3 percent and nine regions falling between 2 percent and 3 percent. The weighting reduces the income gap between new and old EU members before accession by more than half. While all countries contribute some weight to the control group, Greek regions have with 28 percent the highest weight, followed by Spain, and Germany. Collectively, regions from these three countries account for 60 percent of the control group. In Section IV, we provide different robustness checks, including a donor pool without Greece (as Greece experienced persistent income losses after 2009) and Germany (as Germany may have gained a lot from EU enlargement), and one with non-European regions as the donor pool.

Figure 2 presents the average gain by the end of the sample at the regional level. While all regions benefitted, the income gains vary from 78 percent in the Central and Western Lithuania Region to only 4 percent in Severozápad (Northwest) Region in the Czech Republic. Averaging across countries also reveals some country-level heterogeneity, with highest gains in the Baltics, consistent with Campos et al. (2019), and the lowest in Cyprus. Since the economic size of regions varies, we next contrast GDP weighted aggregate gains from the separate regional estimations to the pooled results. The gains are very similar and not statistically different at any conventional levels, with the gains averaging 28 percent until 2022 using GDP weights (vs. 27 percent in the pooled estimation).

Figure 1. 2004 EU Accession Effect on New MS

(Log difference of GDP per capita to control group)

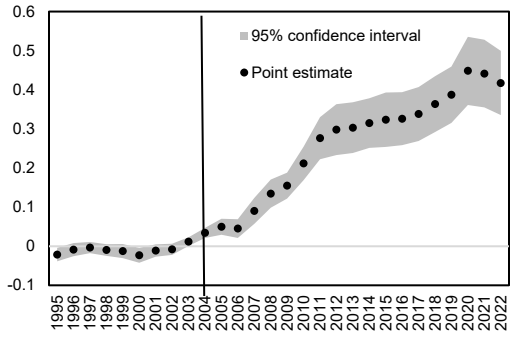
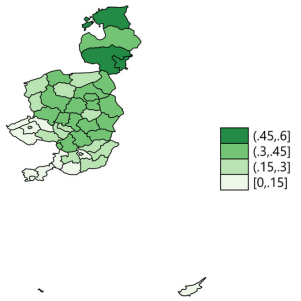


Figure 2. Region Specific Returns from Accession

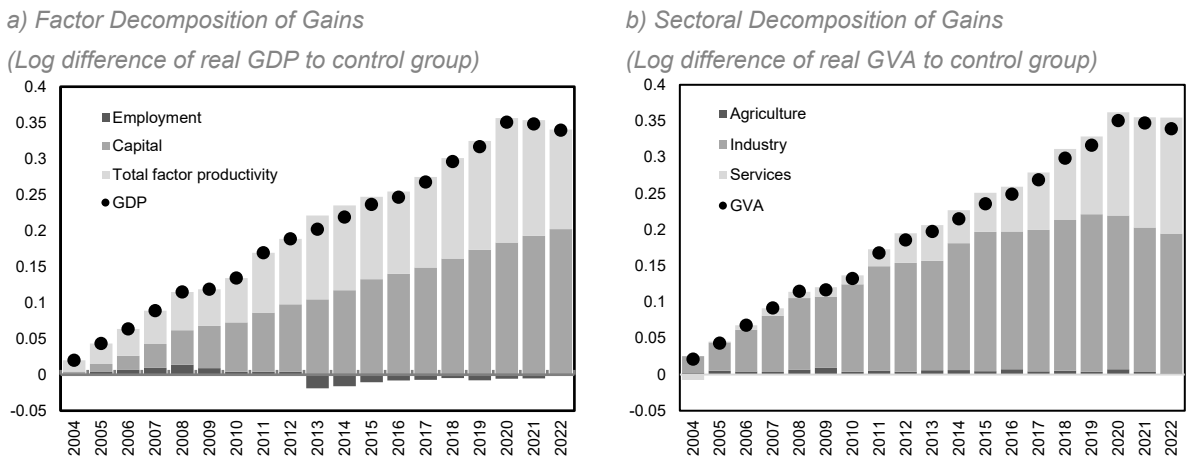
(Log difference of GDP per capita to control group)



Factor contributions

Panel a) of Figure 3 shows the gain in the level of real GDP and the decomposition into factor contributions. First, the real GDP gains are with 34 percent by 2022 somewhat lower than the GDP per capita gains in Figure 1, pointing to worse demographics in new members compared to the control group. In part, this reflects ageing and emigration to old member states, which higher labor force participation has offset. Second, it reveals that sustained capital accumulation contributed around 20 percentage points to gains in GDP by the end of the sample and hence slightly more than half. A large fraction of this capital has come through foreign direct investment (FDI), especially in the years prior to the Global Financial Crisis. Net FDI inflows averaged around 3.6 percent of GDP in new member states between 2004 and 2007. Another source for financing of investment have been transfers from the EU budget, including from cohesion funds.[16] Third, there is a very small negative employment effect on GDP. This effect reflects a combination of developments, including the employment rate, labor force participation, demographics, and migration.[17] Capital and employment effect together imply that accession has narrowed the capital-labor ratio gap between old and new members states. Fourth, increased productivity accounted for slightly less than half of the income gains from EU accession (14 percentage points). The contribution of TFP expanded rapidly following the accession but stayed constant and then slowly declined in the recent years, which may in part reflect a slowdown in the structural reform momentum and educational attainment gains (IMF 2024).

Figure 3. Factor and Sectoral Decomposition of Gains



[16] When applying the estimator directly to the capital stock, we find that—compared to a synthetic control group that showed the same changes of the capital stock for almost a decade prior—the capital stock started to diverge in the year of accession and has continued diverging, culminating into a 35 percent difference. Results are available upon request.

[17] We find little evidence that EU accession notably accelerated outward migration and hence the estimated treatment effect for GDP. While around a million people left the new EU members between 2004 and 2007, we did not find any evidence that EU accession accelerate emigration when applying the estimator to net migration. Results are available upon request.

Sectoral contributions

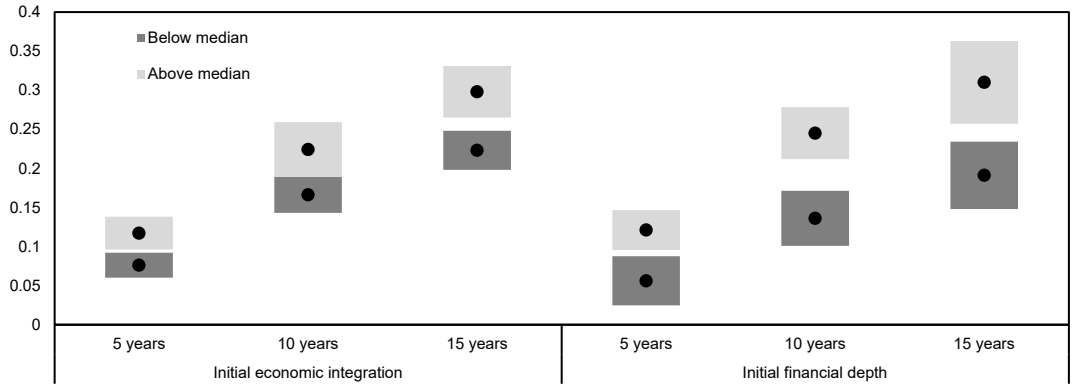
Panel b) of Figure 3 illustrates the increase in real Gross Value Added (GVA) and provides a decomposition into contributions from agriculture, industry, and services. The overall gain in GVA closely aligns with the aggregate gain in real GDP. The contribution from agriculture remains negligible. Initially, gains were predominantly driven by the industrial sector, likely attributable to the relocation of industrial production to new member states and a construction boom. However, the contribution from industry began to stagnate in 2019 and declined in 2021 and 2022, which may indicate that the benefits of EU accession for the industrial sector have been fully realized. In contrast, the services sector began contributing only in 2011, but has since increased its share, accounting for 16 percent of the higher GVA compared to the synthetic control group by the end of the sample period.

Initial conditions

We already showed that some regions gained more from EU accession than others. With goods and factor movements at the core of the single market and gains from EU enlargement driven by capital accumulation and productivity increases, we expect that regions better equipped to leverage access to the single market experienced greater benefits. First, we hypothesize that regions with stronger trade linkages with the single market prior to accession enjoyed an advantage after accession. Second, we test whether regions with more developed financial markets prior to accession—capturing both the availability and utilization of long-term financing options—found it easier to invest and expand production capitalizing on the new economic opportunities presented by the single market.

Figure 4. Accession Gains and Initial Conditions

(Log difference of GDP per capita to control group)



Note: The black dots show point estimates and the areas around them error bands. The impact shown is the treatment effect after 5, 10, and 15 years.

Figure 4 shows that the data supports these hypotheses. Regions initially better integrated with the old EU member regions gained more from EU accession. Dividing regions by median economic integration shows a nearly 10 percentage point higher average income gain over 15 years for more integrated regions. This effect is not driven by location: Separate regression results imply that geographical proximity to old EU members (measured by distance) did not impact the gains independently, nor did regions bordering old member states gain more than others (results not shown but available). Concerning access to long-term finance, differential income effects are even more pronounced. Regions with above median initial financial depth increased income per capita almost two-fold compared to those below the median.

Of course, other initial conditions could play a significant role too. For example, Cuaresma et al. (2012) show that regions containing capital cities and regions with a large share of workers with a higher education have been growing faster, particularly in Central and Eastern European countries. Splitting the sample along those dimensions we confirm these results. Regions with a capital city gained on average 27 percent after 15 years, while others gained on average 22 percent. Regions with a share of tertiary education above the top 20 percent quantile benefitted on average 1.5 times as much as others after 15 years.[18]

IV. Robustness

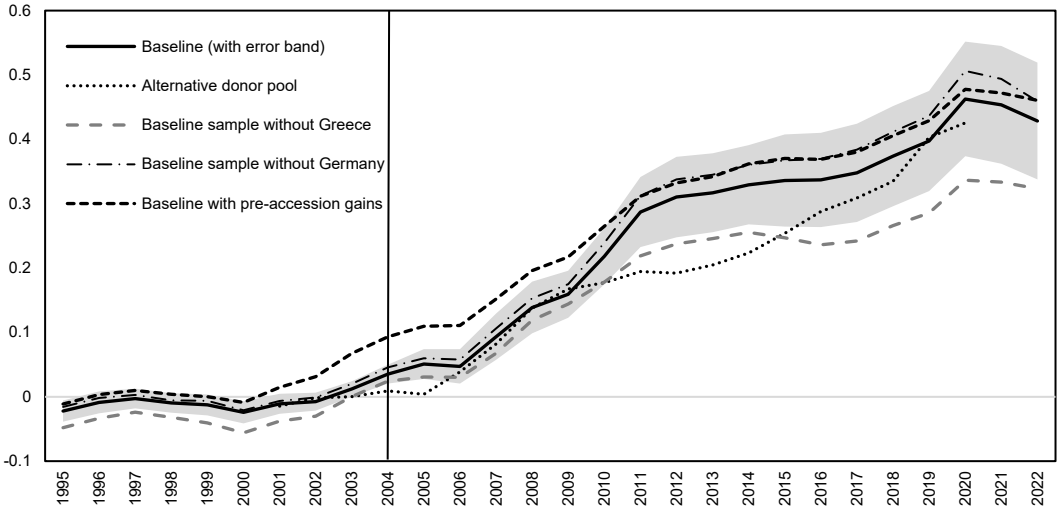
Different donor pools

First, we compare the baseline results to an estimation of the income gains from accession based on an alternative sample of OECD data, with a donor pool of non-European regions.[19] The estimator puts non-zero weight on 239 regions in the donor pool, representing 89 percent of all donor regions. The maximum weight assigned to any region is 2 percent, with only 15 regions falling between 1 percent and 2 percent. All countries contribute some weight to the control group, but U.S. regions have by far the highest weight (67 percent), followed by regions in the Republic of South Korea (13 percent), and Japan (11 percent). Figure 5 shows that the gains from this estimation are very similar for the first years and the end of the sample, with some divergence between 2011 and 2015. This reflects asymmetric effects of the European Debt Crisis on those regions that joined the EU in 2004 and those in the weighted control group of the baseline estimation.

Second, we exclude Greece, and then Germany, from the baseline donor pools. Results from the donor sample without Greece are indistinguishable until 2010, when they start to diverge. This estimation suggests permanently lower but still very material gains from the 2004 enlargement round. However, selectively excluding one country from the donor pool that was hit by a large negative shock may bias the estimate downwards, as it potentially leaves more regions in the remaining donor pool that benefitted from the enlargement. Hence, we also provide an estimate dropping Germany. Based on this alternative donor pool, the gains are somewhat larger than in the baseline from 2011 until the end of the sample.

[18] Detailed results are available upon request.
[19] Since Cyprus and Malta are not included in the OECD data, we exclude these from the estimation.

Figure 5. Robustness Across Donor Pools and Accounting for Pre-Accession Gains
(Log difference of GDP per capita to control group)



Accounting for pre-accession gains

Next, we allow for pre-accession gains. During the transition period, strong reform momentum and anticipation effects of future EU membership could have already raised incomes. We define as start of the transition period the year in which the EU passed its Agenda 2000, an important initiative aimed at facilitating future enlargements, and account for additional gains during the transition period by shifting the treatment year to 2000. As expected, this estimation identifies some gains already during the transition, resulting in larger gains five years after accession, which are now over 20 percent (compared to 16 percent in the baseline). However, the additional gains diminish over time and are insignificant six years after accession, confirming the previous estimate for returns from EU accession.

Different estimation strategies

Next, we compare our findings with estimates derived from a standard difference-in-differences (DiD) approach and a conventional synthetic control method (SCM). Table 1 indicates that the average treatment effect is 27 percent in the baseline. The gains increase to 31 percent when estimated using the DiD method. And they decrease to 16 percent when estimated using the SCM, though with a very wide 95 percent confidence band ranging from 0 to 33 percent. The former uses *all r*egions in the donor pool as the control group, which compromises the parallel trends assumption. The SCM aligns pre-period levels rather than trends, comparing *selected* regions in the donor pool with similar income levels but not necessarily with comparable growth trajectories during the pre-period. Furthermore, the selection of comparator regions in the SCM makes estimates very sensitive to the donor pool. Just dropping the region with the highest weight—the French region Mayotte, an island in Southern Africa with income below the accession countries and benefitting from significant transfers from France—increases the estimate from 16 to 32 percent, roughly in line with the other estimates.

Including covariates

Finally, we test for two covariates usually related to different income levels. We first control for the impact of the manufacturing share and then for the share of population with tertiary education. Since these data start a little later, the estimation is based on a shorter pre-period. However, as Table 1 shows, the shorter pre-period does not change the baseline gains, with the average treatment effect being nearly the same in both cases. When including the manufacturing share as a covariate, the gains from enlargement do not change, in line with significant gains for both manufacturing and services shown in Figure 3. When including the share of population with tertiary education, the treatment effect somewhat increases.

Table 1. EU Accession Effect with Different Methodologies and Covariates

Method	Covariates	ATT	P>|t|	95% conf. Interval	
Long pre-accession					
Synthetic Dif-in-Dif (baseline)	-	0.27	0.00	0.23	0.32
Dif-in-Dif	-	0.31	0.00	0.26	0.35
Synthetic Control	-	0.16	0.078	-0.01	0.33
Synthetic Control w/t Mayotte	-	0.32	0.040	0.015	0.62
Short pre-accession					
Synthetic Dif-in-Dif	-	0.27	0.00	0.22	0.32
Synthetic Dif-in-Dif	Manufacturing	0.27	0.00	0.22	0.32
Synthetic Dif-in-Dif	Tertiary education	0.29	0.00	0.24	0.34

V. Impact on Existing Members State Regions

First and foremost, EU enlargement helps new member states in catching up with existing ones. Additionally, by expanding the single market, enlargement can stimulate growth in existing member states. This occurs because all member states gain access to a broader set of production factors, leading to a more efficient resource allocation. Furthermore, firms can achieve additional economies of scale due to access to a larger consumer base.

We thus estimate the effects of the 2004 enlargement round on existing member state regions, utilizing all non-European regions as a donor pool. There are two caveats to consider. First, the limited data available for non-European regions results in a short period for matching pre-trends, which may affect the parallel trend assumption. Second, the EU enlargement likely represented a more significant change for new members than for existing ones. Consequently, shocks that affect both groups differently pose a greater risk to the identification of impacts on old members. A notable shock with heterogeneous impacts was the European Debt Crisis. Instead of controlling for the joint characteristics of strongly impacted EU members, we estimate the impact separately for old members that were strongly affected and those who were not.

Figure 6 shows the pooled impacts for three different groups of countries: all old member state regions, old member state regions excluding Greece, and old member state regions excluding those countries significantly impacted by the European Debt Crisis (Greece, Portugal, Ireland, Spain, Italy). The matching process does not create a synthetic control with parallel trends for any sample, but deviations are at least small and occur in both directions. Irrespective of the composition of the treatment group, there was an initial decline in GDP per capita in 2004 and 2005 relative to the synthetic control group due to a broad-based growth slowdown among old members (particularly in Germany and France), which was followed by an improvement relative to the control group up until the Global Financial Crisis. Gains continued to accumulate over time, hovering around five percent from 2008 to 2016, before increasing to about 10 percent by the end of the sample, when excluding countries affected the European debt crisis. The average impact on all old member states (what is the baseline donor pool in our estimate for new member states) hovers around zero through most of the sample, as modest gains in most regions are offset by large output drops in fewer regions affected by the European Debt Crisis, with the gain reaching 6.7 percent at the end of the sample. The estimates for all three groups point to gains from EU enlargement of around 5 to 10 percent, with the lowest estimate for the group including all old member states. Although these results should be interpreted cautiously, they suggest that old member states also benefitted from enlargement.[20]

[20] While the gains for old member states were expectedly lower than those for new member states, they were proportionally greater than the relative increase in market size.

Figure 6. 2004 EU Accession Effect on Old Member States

(Log difference of GDP per capita to control group)

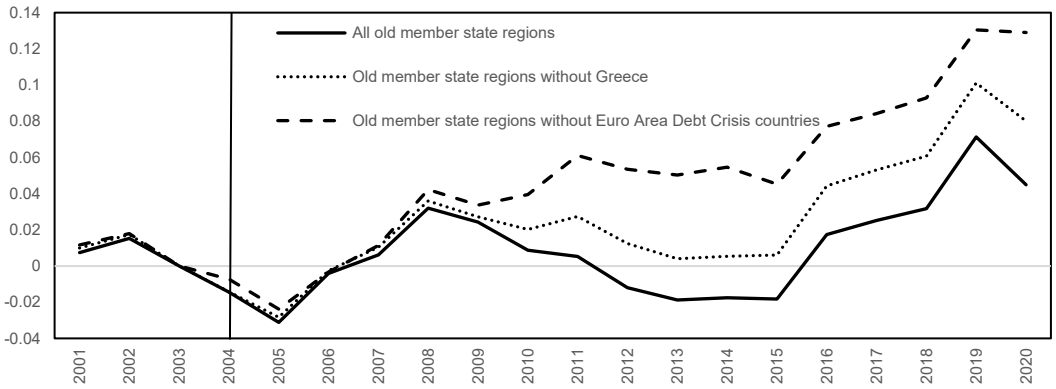
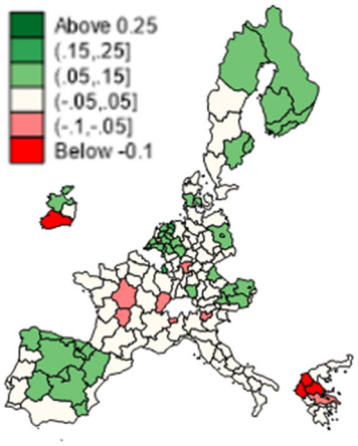


Figure 7 sheds further light on the heterogeneity across old member states and time presenting regional gains after five years (prior to the European Debt Crisis) and at the end of the sample. After five years, we already find some gains in Scandinavia, Austria, Germany, and Spain. After fifteen years, regions in Germany and Austria, which are well integrated with Central and Eastern Europe, gained the most. In addition, we find substantial gains in Scandinavia, but also in many regions farther away, potentially due to tourism (e.g., Portugal). In line with the previous discussion, the apparent losses for regions in Greece and Italy primarily reflect the repercussions of the European Debt Crisis and other country-specific developments post-2004 that overshadow potential benefits from market expansion associated with EU enlargement. As for new member state regions, we can now compare the pooled estimates from Figure 6 to GDP weighted aggregate impacts from the region-specific estimations. The latter are very similar but a little higher, adding around 1.5 percentage points to the overall gain.

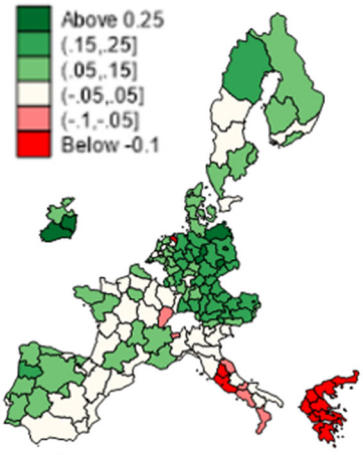
Figure 7. Old Member State Region Specific Returns from Accession

(Log) difference of GDP per capita to control group)

a) After 5 years



b) After 15 years



VI. Conclusion

More than two decades have passed since the largest EU enlargement in 2004. Another ten candidates are currently in different accession candidacy stages. While economic theory and pre-2004 simulations point to gains from deeper integration, post-2004 studies on the income gains from enlargement are rather scarce and quantifications of the effects in the overall literature inconclusive (Campos et al. 2019). Exploiting the 2004 enlargement, we provide a reassessment of the gains from deep integration using a novel estimation technique applied to regional data. Our estimates based on the synthetic difference in difference estimator, combining elements of DiD and SCM, point to large income gains averaging more than 30 percent for new members. This result is robust to various alternative specifications.

Compared to earlier studies that focused on country or aggregate level effects, we show that gains, while realized in all sub-national regions of new member states, were heterogeneous. The strength of the gains was not a reflection of fate, as simple geographic proximity to old member states was unrelated. Instead, it reflected initial conditions that allowed leveraging the market expansion. For instance, deeper initial economic integration in the production network of old member states, firms' access to long-term financing, and higher educational attainments all went along with higher income gains post accession. This suggest that certain pre-conditions make scaling up local production and benefitting from economies of scale associated with access to a larger single market easier. Policies to improve skills, deepen financial markets, and reduce cost for firms to establish cross-border production networks appear to have paid off.

Enlargement not only paid off for new member states, but also for existing members who stood to gain around 5 to 10 percent. With a few exceptions (those most affected the European Debt Crises), most regions in old member states gained, with gains highest in countries in the proximity of new member states, which were also the regions most integrated with the regions in the new member (Germany, Austria, and Scandinavia). But gains extended to regions further away (e.g., Portugal). The expansion of the EU's single market allowed firms to expand production and reap efficiency gains, including through higher investment in the accession countries.

For both groups estimated gains are beyond what was expected based on mostly trade-based or general equilibrium simulations prior to enlargement; and are at the upper end of what empirical studies focusing on overall income gain assessments found ex post. In part this reflects that those earlier studies looked at more narrower channels of transmission (e.g. tariff reductions), shorter time periods, and earlier accession rounds—possibly missing longer-run effects and placing a bigger weight on earlier enlargements when room for reform catch-up was smaller and the market expansion for new members was more limited.

The success of the 2004 EU enlargement serves as a compelling example for other regions seeking economic integration. The example of the EU highlights the benefits of deep integration, which promotes not only economic growth through the single market and financial transfers, but also political stability. While the experience of the 2004 EU enlargements suggests potential large economic gains for the next generation of accession countries and the Union as a whole, gains as large as those estimated for the 2004 round cannot be taken for granted. The income gap of today's candidates is comparable to those in 2004. But accession countries would need to implement more far-reaching reforms to overcome reform gaps in their economic and broader institutional setups larger than those between old and new member states in 2004. It is also unclear whether the EU would again fund major redistributive programs and whether increased complexity in an enlarged EU would hinder progress.

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