20 years of EU Membership: What Explains the Accession Bonus?*

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2024 marked the 20th anniversary of the EU accession of ten economies. Their experience was characterised by rapid growth in per capita incomes. Of the 23 percentage points of average convergence observed between the EU-10 and Germany between 2003 and 2023, 6 percentage points are shared with other emerging markets with similar characteristics, while the remaining 17 percentage points can be thought of as an 'EU accession bonus', facilitated by rapid growth in exports relative to GDP as they became deeply integrated into supply chains. Looking at the impact of EU accession in earlier waves, 20 years after joining, we also estimate a large 'EU accession bonus' for Spain and Portugal (which joined in 1986). Austria, Finland and Sweden (which joined in 1995) outperformed their synthetic controls only in the longer term and when comparators exclude Iceland, Liechtenstein, Norway and Switzerland – non-EU economies with access to the internal market.

Journal of Economic Literature (JEL) codes: F15, F43, F63, O47

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1. Introduction

1 May 2024 marked the 20th anniversary of the European Union (EU) accession of ten economies: Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia. They were followed by Bulgaria and Romania in 2007 and Croatia in 2013. This study examines the experience of these economies over the last 20 years and compares it to experiences during the earlier accession

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waves, in particular those of Austria, Finland and Sweden (joining in 1995), Spain and Portugal (joining in 1986) and Greece (joining in 1981).

We rely on a synthetic control approach to estimate the 'EU accession bonus' – the additional benefit from EU accession beyond what could be expected purely based on income convergence. In particular, we use a combination of other countries which did not join the EU to construct a synthetic control, which resembles the country joining the EU before accession. We then compare the subsequent economic evolution of this 'counterfactual' country to the actual experience of the country which joined the EU. While EU accessions are non-random (with selection on variables we are unable to control for) and our estimates cannot be interpreted as strictly causal, the stylised facts that emerge from the analysis, including heterogeneity of experiences across different waves of accession, are nonetheless informative.

Our analysis relies on the synthetic control method developed by *Abadie and Gardeazabal* (*2003*) and is most closely related to *Campos et al.* (*2019*), who look at the effects of EU accessions from 1973 to 2004, but consider a shorter post-accession horizon.

In general, our results suggest that economies with lower income and weaker institutions at the time of accession experienced a substantial and lasting convergence dividend, while this does not appear to be the case for economies with higher income and stronger institutions at the time of accession.

The 'EU accession bonus' – the additional benefit from EU accession beyond what could be expected purely based on income convergence – amounted to around 17 percentage points for the 2004 accession economies 20 years on and around 33 percentage points for Spain and Portugal. Austria, Finland and Sweden outperformed their synthetic controls only when the latter group excludes Iceland, Liechtenstein, Norway and Switzerland – economies outside the EU with access to the EU's internal market.

If the convergence boost from accession is largest where income and institutional differentials are large, the remaining convergence potential for many economies from the recent accession waves is now limited. On the other hand, economies in the broader EU neighbourhood (the Caucasus, Moldova, the southern and eastern Mediterranean, Türkiye, Ukraine and the Western Balkans) could benefit substantially from continued economic integration with the EU.

This study is structured as follows: *Section 2* reviews the empirical literature on the economic benefits of EU accession, *Section 3* presents the empirical approach and data, and *Section 4* presents the results by accession wave. *Section 5* concludes.

2. Literature review

The early literature on the effects of European integration on growth argues that the effects of integration on growth worked mostly through the effects of trade integration. *Baldwin and Seghezza* (*1996*) survey the evidence and find that the main channel through which European integration accelerated European growth was through the boost to investment in physical capital, induced by efficiency gains brought about by trade integration (see also *Slaughter 2001*).

Despite the large body of literature on the benefits from trade liberalisation associated with the EU, from the Single Market, and from the euro, there is a relative dearth of econometric estimates on the benefits from EU membership. Many of the early studies suffered from the lack of a clear counterfactual, as highlighted by *Boltho and Eichengreen* (*2008*) and *Campos et al.* (*2019*). Most of these studies also openly warned against the lack of robustness of their results. *Henrekson et al.* (*1997*) estimate the benefits from membership to be about 0.6 to 0.8 per cent per year, but note that such estimates are "not completely robust" (p. 1551). *Badinger* (*2005*) estimates that "GDP per capita of the EU would be approximately one-fifth lower today if no integration had taken place since 1950", but cautions that the results are "not completely robust" (p. 50). *Crespo Cuaresma et al.* (*2008*) find large growth effects from EU membership, but warn that country heterogeneity remains a severe concern. *Ben-David* (*1993, 1996*) studies European integration as an engine for income per capita convergence. In his 1993 paper, he concludes that European trade integration leads to a reduction of income dispersion. To overcome identification problems, *Ben-David* (*1996*) contrasts the "trade-integration club" with alternative random clubs of the same size, in terms of number of countries involved and finds that, indeed, convergence is observed only for the trade integrated clubs. A related literature looks at the roles of various institutions in supporting convergence (see, for instance, *Szapáry and Vonnák 2024* on the role of monetary policy*).*

This study is most closely related to *Campos et al.* (*2019*), who use synthetic controls to construct counterfactuals for countries that joined the EU between 1973 and 2004. They find that growth effects from EU membership are large and positive, with Greece as the exception. Overall, their estimates suggest that, in the absence of the institutional integration, per capita European incomes would have been about 10 per cent lower on average in the first ten years after joining the EU (see also *Campos et al. 2022* on the productivity effects of the 1995 enlargement of the EU).

A recent study by the *IMF* (*2024*) also points to substantial income gains for the 2004 accession countries. After 15 years, GDP per person was more than 30 per cent higher on average than it would have been without EU accession. While all regions in the new EU countries gained, some gained more than others. Those already better integrated into value chains with the existing member states increased GDP

per person nearly 10 percentage points more than those which were less integrated pre-accession, irrespective of geographic distance. Regions with firms that had easier access to long-term financing gained close to 15 percentage point more than others (*IMF 2024*).

Similarly, *Grassi* (*2024*) finds that without joining the EU the GDP per capita of the ten new joiners in the 2004 accession wave would have been 24 per cent lower in 2019. At the same time, the same synthetic control approach does not identify a robust effect on countries that were already members of the EU before 2004. Furthermore, the analysis points to convergence in investment, consumption, government spending, export/import shares, employment rates, foreign direct investment and regulations indices (*Grassi 2024*).

Existing estimates of the benefits of EU accession thus fall in a wide range, from 5-per cent gains in per capita income from EU accession (*Boltho and Eichengreen 2008*) to 20-per cent (*Badinger 2005*), 24-per cent (*Grassi 2024*) and 30-per cent gains (*IMF 2024*).

3. Empirical approach and data

The synthetic control method was originally proposed by *Abadie and Gardeazabal* (*2003*), estimating the economic effects of the terrorist conflict in the Basque Country, and *Abadie et al.* (*2010*), examining the effects of aggregate interventions for policy analysis. It has since become widely applied in empirical research.

Synthetic controls are well suited to situations where no single unit alone may provide a good comparison (*Abadie 2021*) and where the series examined are not too volatile (*Abadie and Vives-i-Bastida 2022*). They can have important advantages relative to comparative case studies, regression or time series analysis or when aiming to estimate the effects of aggregate interventions affecting a small number of large units. While a drawback of comparative case studies is that the selection of the comparison units is not formalised, the synthetic control methodology formalises the selection of the comparison units using a data driven procedure (*Abadie 2021*). Synthetic controls may also allow for more flexibility than regression analysis (*King and Zeng 2006*), restrict weights to be between zero and one, explicitly illustrate the similarities and differences between the pre-trends of the treated and the control group (*Abadie et al. 2010*) and make explicit the contribution of each comparison unit to the counterfactual of interest. Time series analysis may be confounded by the presence of other shocks to the outcome of interest, and the arbitrary choice of a particular pre-trend time period.

Synthetic controls compare outcomes to a counterfactual based on other economies selected on pre-defined criteria. Using such weighted averages of many similar

economies also reduces the effects of other country-specific shocks which may confound the analysis. They also implicitly take year fixed effects into account by comparing economies joining the EU with other economies in the same year. For instance, while the global financial crisis could be expected to affect most economies (including economies joining the EU as well as their comparators), the synthetic control method selects comparators within a given year, thus allowing us to separate the effects of accession without picking up the impact of global confounding factors.

Synthetic controls offer a set methodology for the selection of comparators based on pre-defined criteria for pre-accession similarity. They are less sensitive to the time period examined and integrate both the economy's performance pre-accession (country-specific factors) as well as year fixed effects (global influences).

We use a combination of other countries not in the EU to construct a synthetic control country, which resembles relevant economic characteristics of the acceding country before accession. We examine similarity in terms of their pre-accession GDP in US dollars (USD), GDP per capita in USD, GDP per capita at purchasing power parity (PPP) and real GDP per capita growth. The subsequent economic evolution of this 'counterfactual' country without EU accession is then compared to the actual experience of the country joining the EU.

More formally, we observe countries (index *j*) for a number of periods (indexed *t*). The first unit joins the EU (the 'treatment') at time $T_0 + 1$. The remaining countries do not join the EU (no 'treatment'). We aim to estimate the effect of EU accession on GDP per capita during the accession year and subsequent years, ($T_0 + 1$, …, T).

The effects of EU accession are examined using a model of potential outcomes (*Rubin 1974*). Y_{jt}^N denotes the outcome observed for unit *j* at time *t* in the absence of EU accession. Y_{1t}^I denotes the outcome observed for the country joining the EU (the 'treated' unit). For the treated unit, we are interested in the potential outcome in the absence of treatment (Y_{1t}^N) and the treatment effect on the treated unit:

$$\tau_t = Y_{1t}^I - Y_{1t}^N \tag{1}$$

A synthetic control estimator of Y_{1t}^N is a weighted average of the outcomes of the 'donor pool' of *J* untreated units,

$$\hat{Y}_{1t}^N = \sum_{j=2}^{J+1} W_j Y_{jt} \tag{2}$$

where W_2,…,W_{J+1} are non-negative weights that sum up to one and represent the contribution of each untreated observation to the estimate of the counterfactual of interest. The weights are selected in a way that the resulting synthetic control resembles the affected unit before the intervention along the values of the predictor variables (*Abadie 2021*).

Specifically, we match on GDP in USD (economic size), GDP per capita in USD and PPP (level of development) and real GDP per capita growth in the years before EU accession (from 1995 for the 2004 accession wave and from 1990 for the 1995 accession round). Data are taken from the World Economic Outlook database[1] of the International Monetary Fund, covering the period 1980–2023.

The mean country has 104 synthetic controls, with an average weight of a comparator below 1 per cent. For instance, the synthetic counterpart of Poland is an average of many economies with larger weights assigned to China, Equatorial Guinea, India, Moldova, Saudi Arabia and Ukraine. Hungary has a relatively higher share of Gulf countries and former republics of the Soviet Union. Switzerland, UAE and Norway are assigned the largest weights in Austria's synthetic control, and Iceland and Switzerland in Finland's.

The procedure relies on the statistical package developed by *Abadie et al.* (*2011*). Weights are chosen to minimise the root mean square percentage error between pre-treatment differences in the treated economies and the control group.

4. Results

4.1. The 2004 and later accession waves

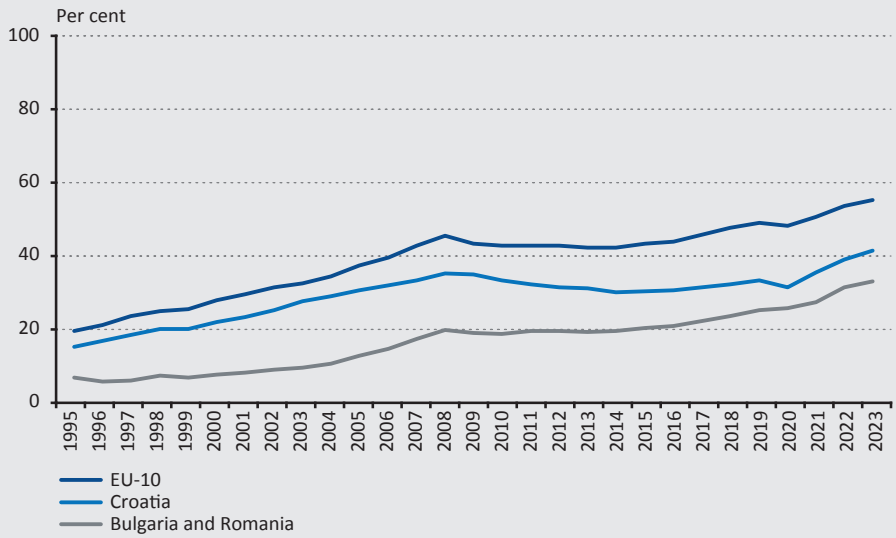
We start by looking at income per capita in nominal USD, the metric of most relevance to investors that choose a production location or exporters competing internationally. We also repeat the analysis using indices of GDP in real terms (see also *Annex, Figure 8*).

In 1995, the GDP per capita of the EU-10 economies (measured at market exchange rates) averaged 19 per cent of Germany's, only slightly above the average ratio observed today for the EU neighbourhood economies (14 per cent for the Caucasus, Moldova, the southern and eastern Mediterranean, Türkiye, Ukraine and the Western Balkans). It rose rapidly to 32 per cent in 2003 and 55 per cent by 2023 (see *Figure 1*). The experience of a typical (median) economy was similar. As of 2023, GDP per capita levels of the EU-10 economies ranged from 42 per cent of Germany's in Hungary and Poland to 66–73 per cent in Cyprus and Malta.

The economies that joined in 2007 and 2013 also experienced fast rates of income convergence. Bulgaria and Romania almost doubled their per capita incomes as a share of Germany's in the period 2007–2023, from 17 to 33 per cent, while Croatia's GDP per capita increased from 30 to 41 per cent of Germany's in the period 2013–2023.

[1] https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases

Figure 1
GDP per capita in the EU-10, Bulgaria, Romania and Croatia, as a percentage of Germany's, 1995–2023



Note: Market exchange rates. Simple averages across countries.
Source: IMF October 2024 World Economic Outlook database and authors' calculations

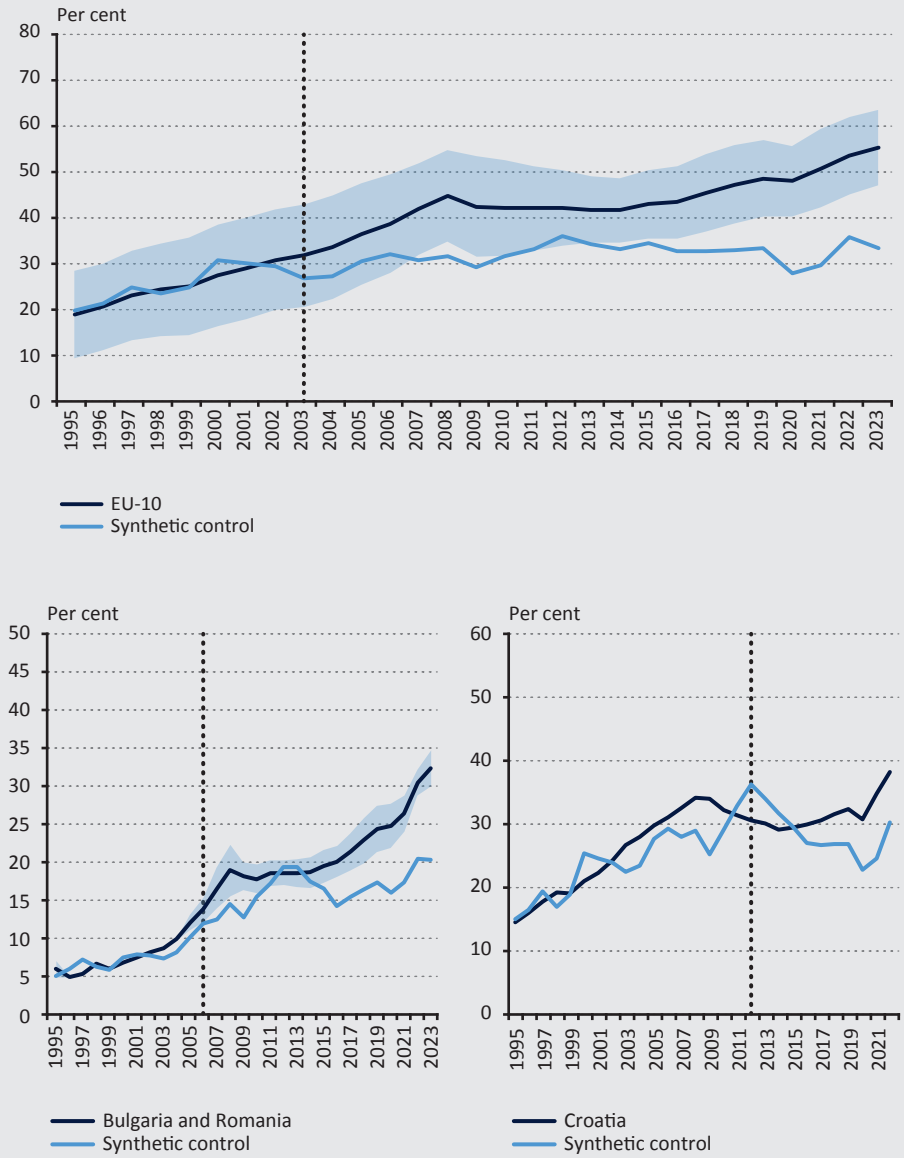
This performance is notable when compared with the income convergence observed between other emerging markets at similar levels of development and advanced economies. The synthetic control analysis suggests that of the 23 percentage points of average convergence observed between the EU-10 and Germany, 6 percentage points are shared with emerging market comparators, while 17 percentage points can be thought of as an 'EU accession bonus' (see *Figure 2*; for country-specific estimates, see *Annex, Figure 9*).

The accession bonus already started appearing around 2001–2002 as accession prospects firmed up and foreign direct investment (FDI) inflows to the EU-10 increased. At the same time, convergence in many comparator emerging markets slowed markedly after the 1997–1998 Asian financial crisis, resulting in a widening gap between incomes of the EU-10 and comparators.

While the 2008–2009 crisis took its toll, with the EU accession bonus briefly becoming statistically insignificant in 2012, growth rates above those observed for synthetic comparators returned afterwards.

The pattern is very similar in terms of GDP per capita growth in real terms. Here again, the EU-10 economies outperformed their synthetic comparators; the original positive effect was dampened by the global financial crisis, but has since re-emerged strongly.

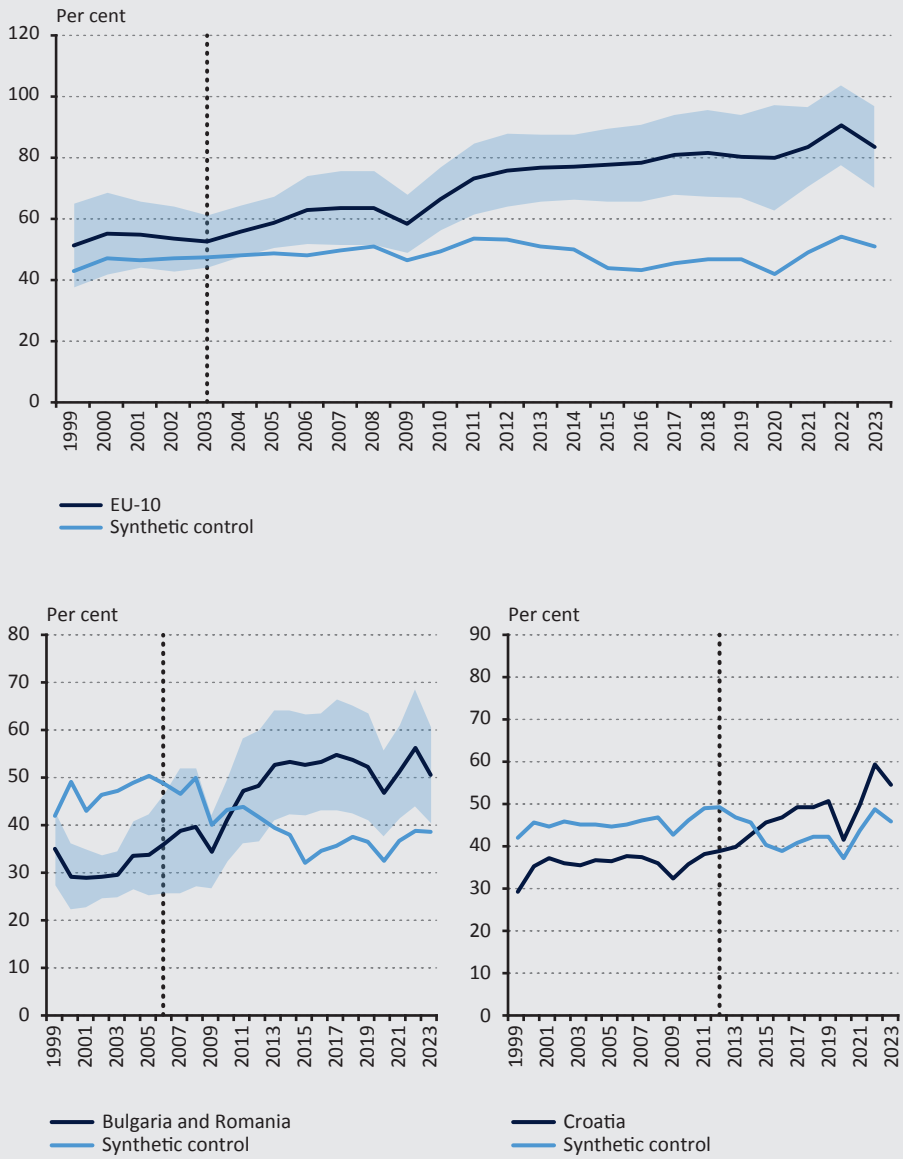
Figure 2
GDP per capita of the EU-10, Bulgaria, Romania and Croatia as a percentage of Germany's



Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Simple averages across countries. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

Figure 3
Exports in the EU-10, Bulgaria, Romania and Croatia as a share of GDP



Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

The 'EU accession bonus' has been underpinned by strong growth in exports as a share of GDP. The average exports-to-GDP ratio increased from 51 per cent in 1999 to 52 per cent in 2003 and 83 per cent in 2023 in the EU-10 economies as they became deeply integrated into European and global supply chains. In 2023, exports-to-GDP ratios ranged from 40 per cent in Romania to 131 per cent in Malta. By contrast, exports-to-GDP have been broadly flat among comparator economies over the last 20 years (see *Figure 3*).

Most EU-10 economies, as well as Bulgaria, Croatia and Romania, signed and ratified free trade agreements with the EU in the 1990s, with accession countries given more time to lower their tariffs than EU economies and accession economies able to reimpose tariffs if sudden imports harmed local industries.

In this case, too, the pre-accession ratio of exports to GDP was only slightly higher than today's average ratio across EU neighbourhood economies, which stood at 44 per cent as of 2023.

Beyond the benefits from trade and foreign direct investment inflows (as sources of financing and technological spillovers) and additional financing from foreign direct investment and EU cohesion funds (*IMF 2024*), the 2004 accession group also benefitted from wide-ranging reforms. For instance, Hungary reduced its corporate income tax rate and adjusted the value added tax to broaden the tax base, reduced tax evasion and improved revenue collection. The Slovak Republic introduced a flat tax rate and significantly simplified the tax code. In Poland, the government strengthened the powers of antitrust authorities and privatised state-owned enterprises. Slovenia established an independent competition watchdog and liberalised the telecommunications and industry. In the 10 years prior to EU accession, reform progress in the accession economies significantly outpaced the world average in the areas of domestic finance, external finance, product markets and trade liberalisation, though in the 10 years following accession, only product market reforms continued at a pace significantly above the world average (*IMF 2024*).

In contrast to earlier enlargements, the 2004 enlargement was preceded by a long preparation process, which entailed substantial institutional changes both for entrants and for the EU itself (see *Bache et al. 2011*; *Campos and Coricelli 2002*). With that, the 2004 enlargement was the first one with a conscious effort to ensure sufficient degrees of institutional integration before the official accession date (*Bruszt and Campos 2017*; *Campos et al. 2019*).

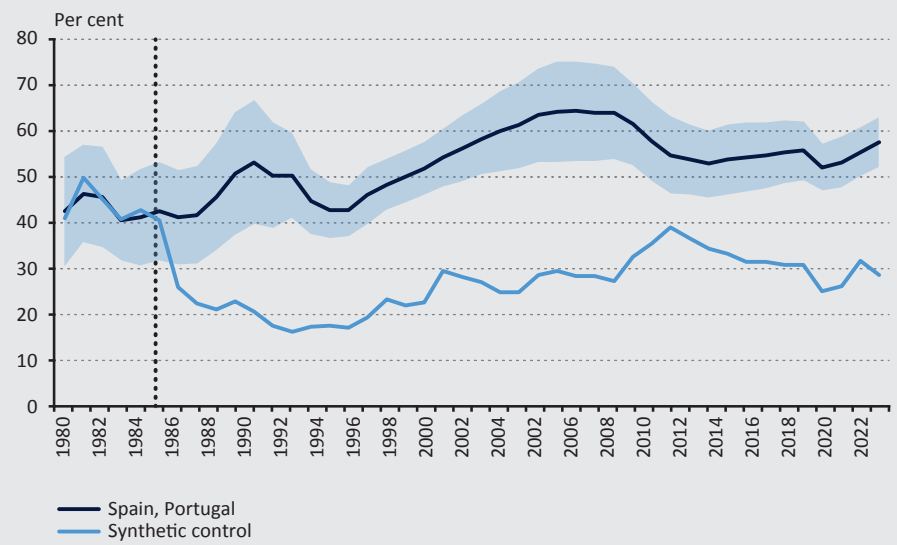
4.2. The 1986 accession wave

Spain and Portugal joined the EU in 1986 with income levels of around 40 per cent of Germany's at that time. They converged towards Germany's GDP per capita by 15 percentage points over the following 20 years, despite notable productivity challenges (see *de Souza and Diaz 2024*). The performance of their synthetic control

during that period was underwhelming, pointing to a significant accession bonus (see *Figure 4*; for country-specific estimates, see *Annex, Figure 9*).

The estimated outperformance in this case is greater in nominal USD terms than in real terms, in part reflecting a broader experience in comparator emerging markets in recent decades: while convergence with high-income economies was observed in real terms, it has been weak to non-existent at market exchange rates as the exchange rates of many emerging market economies have weakened (see *EBRD 2019*). In particular, synthetic controls for Spain and Portugal include several economies in Latin America and the Middle East which experienced depreciation in response to the Latin American debt crisis of the 1980s or the 1986 oil price collapse. By contrast, EU accession may have shielded Spain and Portugal from external turbulence by placing them under a stable institutional umbrella, providing structural and cohesion funds, and encouraging investment and trade links with existing member states (see *Annex, Figures 8* and *9*). EU accession also bestowed on Portugal, Spain (and Greece) a stronger currency than conceivably would have been the case in a counterfactual scenario.

Figure 4
GDP per capita of Spain and Portugal as a percentage of Germany's



Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Simple averages across countries. Dashed lines denote the year before accession.

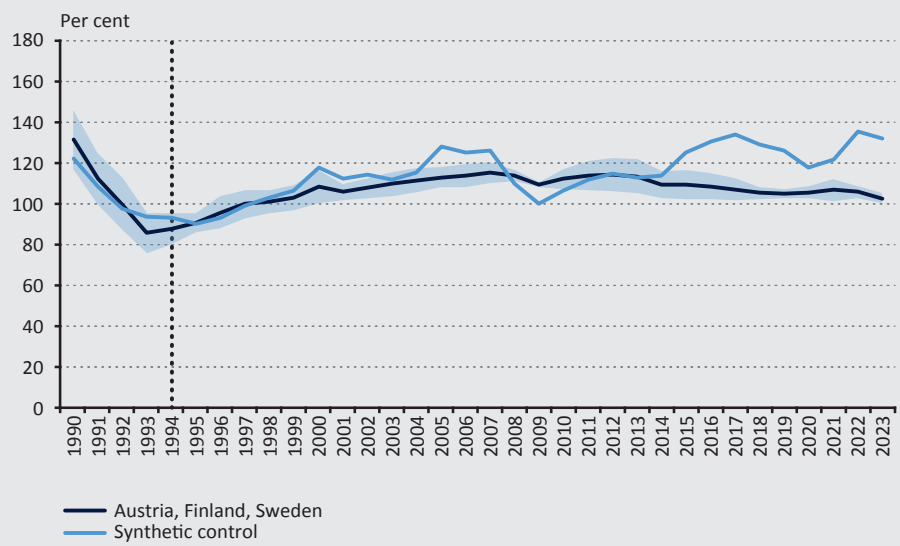
Source: IMF October 2024 World Economic Outlook database and authors' calculations

Due to data limitations, it is difficult to run a fully comparable exercise for Greece. If we attempt it with a very short pre-accession series, the results are similar to those obtained for Portugal and Spain. Most of that outperformance was undone in the 2010s, however, in the aftermath of the debt crisis, in line with the findings in *Campos et al.* (*2019*).

4.3. The 1995 accession wave

Turning to the 1995 accession wave, when Austria, Finland and Sweden joined the European Union, we find no robust evidence of an accession bonus. Over the period 1994–2023, Austria, Finland and Sweden outperformed Germany, but their synthetic controls pointed to even faster convergence (see *Figure 5*; for country-specific estimates, see *Annex, Figure 9*). In part, this reflects the inclusion of Iceland, Liechtenstein, Norway and Switzerland – countries which benefited from being part of the internal market – in the synthetic control donor pool. Excluding these countries from the synthetic control group points to a substantial accession bonus for these economies as well, albeit detectable only in the longer term (see *Annex, Figure 10*; also in line with the findings of *Campos et al. 2022*). Smaller, less robust estimates of an accession bonus may also reflect the smaller scope for convergence in terms of GDP per capita and institutions, as well as a relatively smaller size of the internal market at the time (*IMF 2024*).

Figure 5
GDP per capita of Austria, Finland and Sweden as a percentage of Germany's



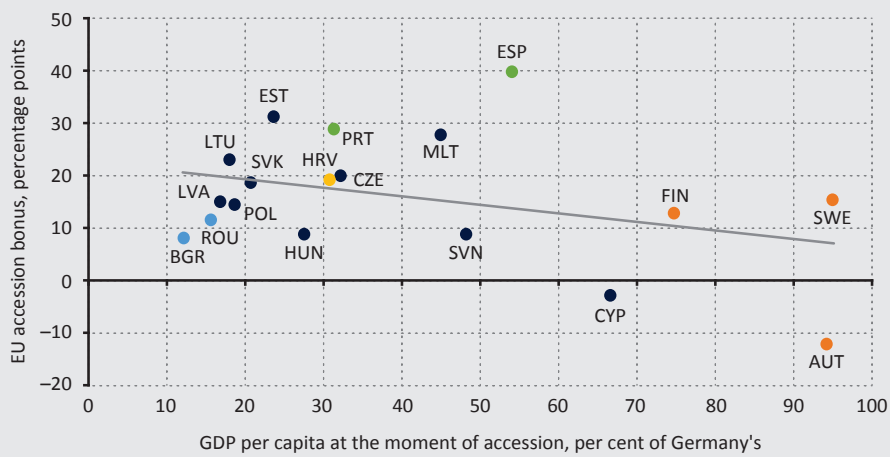
Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Simple averages across countries. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

4.4. Larger accession bonuses where income gaps are greater

Comparing accession bonuses across countries joining in different waves suggests that lower-income economies with weaker institutions tended to enjoy larger EU accession bonuses over the long term (see *Figure 6*; the pattern is robust to including alternative estimates for the accession bonus of Austria, Finland and Sweden, excluding Iceland, Liechtenstein, Norway and Switzerland from the donor pool). The estimated accession bonuses are particularly large for Estonia and Portugal, which joined at around 23 and 31 per cent of Germany's GDP per capita, respectively. On the other hand, Austria, Cyprus, Finland and Sweden, which joined at around 67–95 per cent of Germany's GDP per capita, enjoyed a lower accession bonus. This gradient appears to be somewhat starker than implied in *Campos et al.* (*2019*), who look at accession gains over a 10-year period and find the largest gains for Latvia, Lithuania and Estonia and much more limited gains for Greece, Sweden, Finland, Czechia and the Slovak Republic. *Figure 6* (showing gains over 20 years) points to relatively smaller gains for the Slovak Republic than in *Campos et al.* (*2019*), who look at accession gains over a 10-year period as growth slowed sharply after the global financial crisis (see *Annex Figure 9*).

Figure 6
Accession bonuses and income gaps



Note: Different colours indicate different accession waves. The EU accession bonus calculated based on 20 years after accession and the latest available data for Bulgaria, Romania and Croatia.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

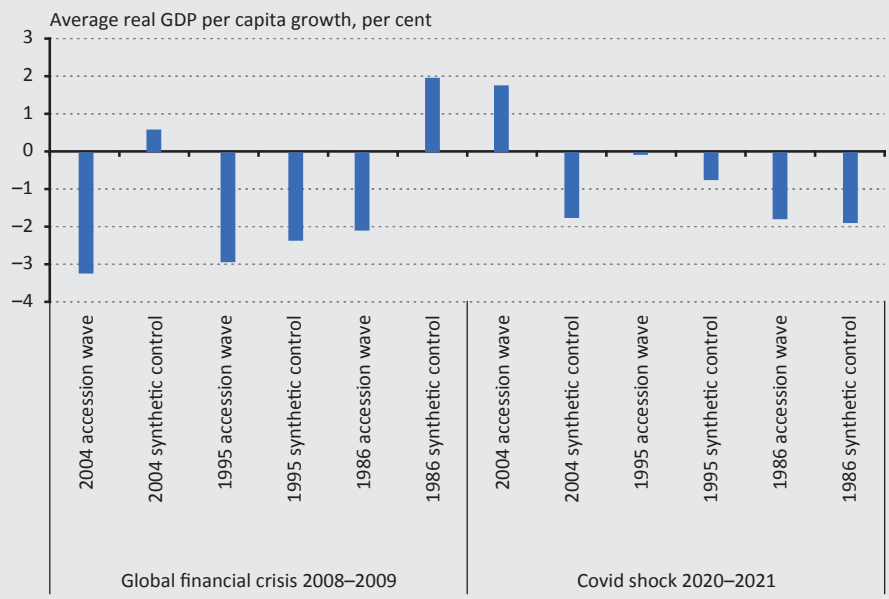
Larger gains for countries with larger GDP per capita differences relative to the rest of the bloc is consistent with the observation that economic unions are most helpful when there is arbitrage for income and institutions (*EBRD 2012*). Income arbitrage, for instance, can be leveraged through enhanced economic integration

where lower-income economies provide cost-effective assembly benefitting from manufacturing designs developed in higher-income economies as well as transfer of technology. Unlike income, the extent of initial openness to trade does not appear to be correlated with the estimated accession bonuses.

4.5. Robustness to shocks

The synthetic control methodology matches countries of interest to similar economies in the same years, hence accounting for the impact of common shocks. Nonetheless, the EU accession may also affect the economies' robustness to shocks in the long term. As illustrated in *Figure 7*, across all waves, the countries that became part of the EU were hit harder by the global financial crisis than their synthetic controls, with the crisis reducing the magnitude of the estimated accession bonus, possibly on account of stronger transmission of shocks in more open, integrated economies. On the other hand, those economies, on average, experienced smaller GDP per capita declines during the Covid-19 pandemic, in large part reflecting stronger fiscal stimulus packages compared with those of their synthetic controls.

Figure 7
The effects of global financial crisis and pandemic: EU members versus synthetic controls



Note: Average annual growth rates.
Source: IMF October 2024 World Economic Outlook database and authors' calculations

5. Conclusions

Relying on a synthetic control methodology, we find substantial gains from EU integration for many, though not all, countries which joined the EU between 1986 and 2013. In particular, we find an EU accession bonus of 17 percentage points for the 2004 wave, 11 percentage points for the 2007 wave and 20 percentage points for the 2013 wave, compared to 33 percentage points for the 1986 joiners. Existing EU member states did not suffer and, in fact, may have gained from EU accession (*Grassi 2024*; *IMF 2024*).

In general, our results suggest that economies with lower income and weaker institutions at the time of accession experienced a substantial and lasting additional convergence dividend, while this does not appear to be the case for economies with higher income and stronger institutions at the time of accession. Further research could examine other channels through which higher-income economies with more advanced institutions may have benefited from membership, including various features of the common market for goods and services.

Overall, if the convergence boost from accession is largest where income differentials and institutional differentials are at play, this suggests that the remaining convergence potential in the existing EU member states is limited while the potential from involving the EU neighbourhood is substantial.

The EU neighbourhood economies (the Caucasus, Moldova, the southern and eastern Mediterranean, Türkiye, Ukraine and the Western Balkans) have GDP per capita levels ranging from about 10 per cent of Germany's in Ukraine to 24 per cent of Germany's in Türkiye. For Moldova and Ukraine, this corresponds broadly to the level at which Bulgaria joined, while Türkiye is around the levels of Estonia or the Slovak Republic, though with relatively lower levels of openness. Based on historical experience, this could point to a potential EU accession bonus of 10 to 20 percentage points.

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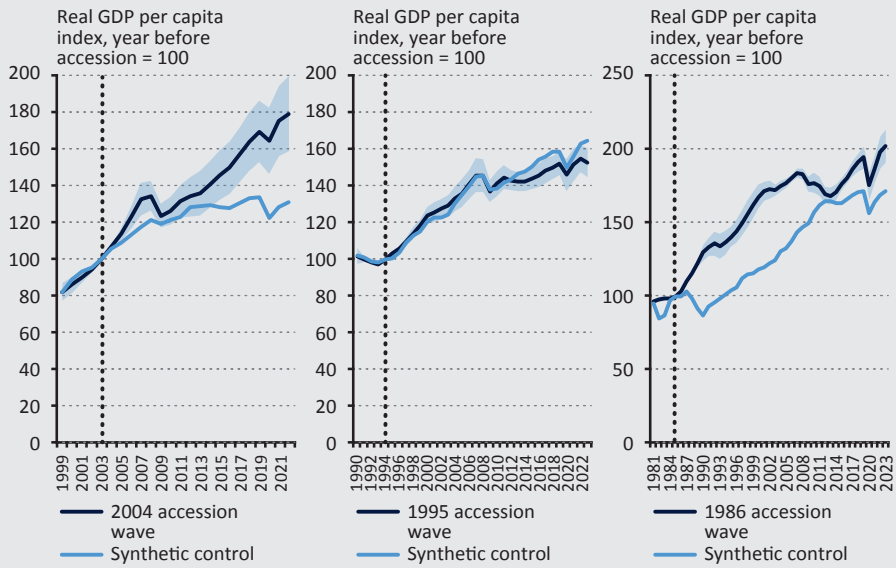
Annex

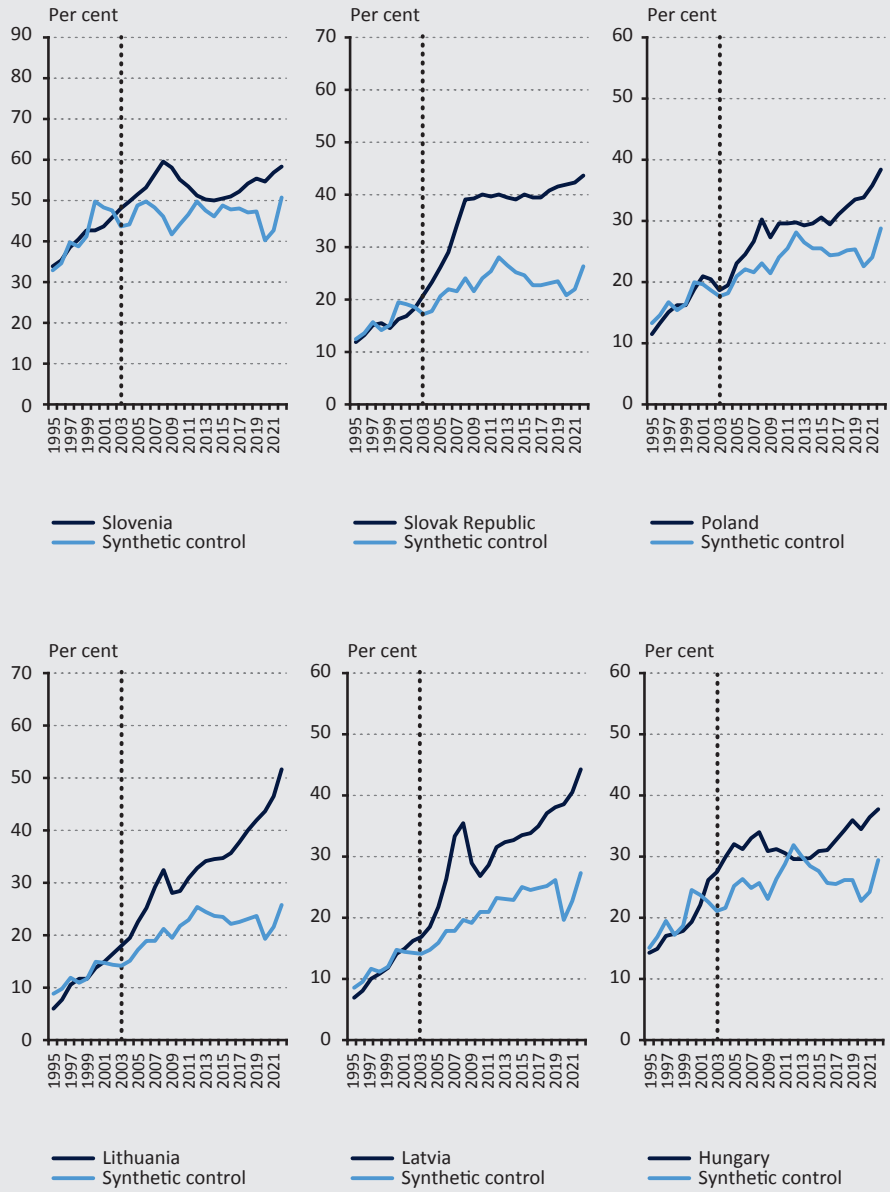
Figure 8
GDP in real terms: Synthetic control estimates



Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Simple averages across countries. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

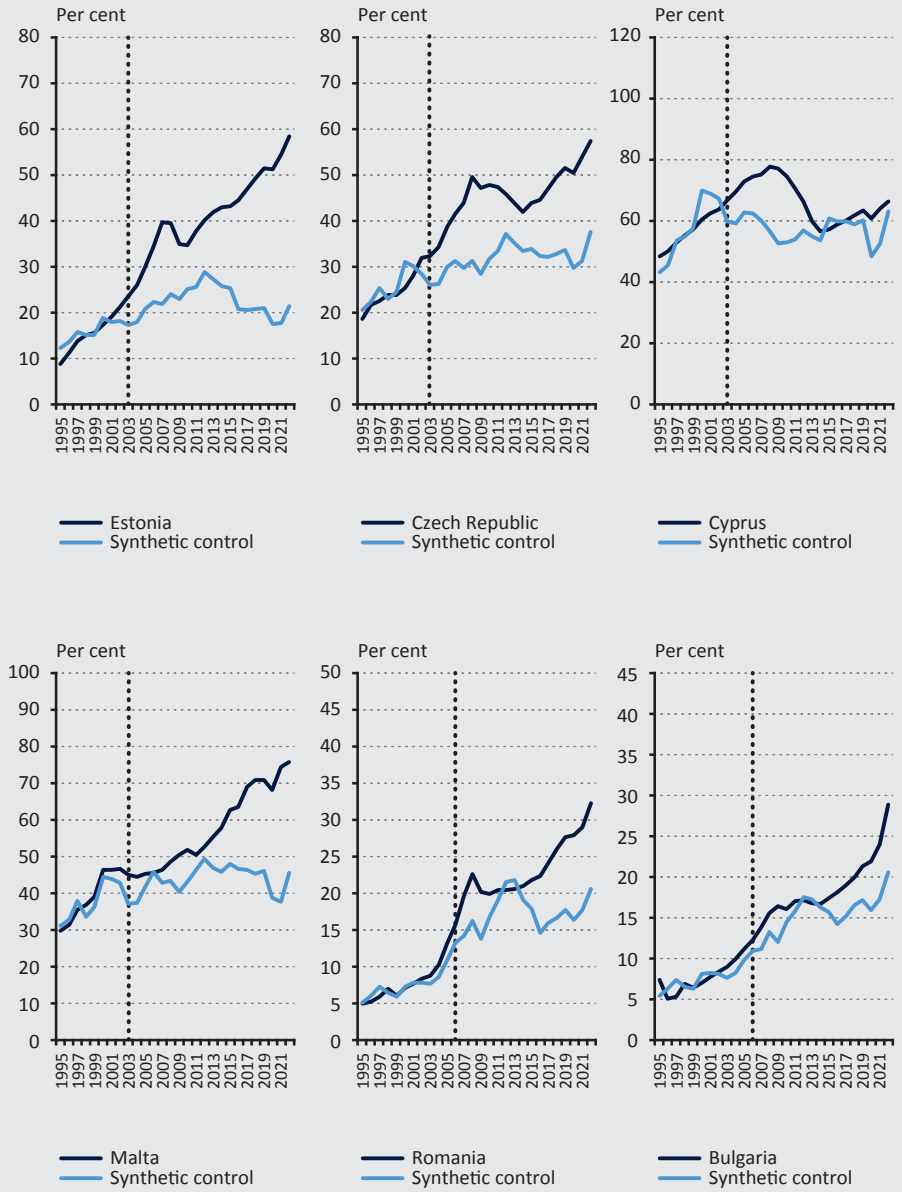
Figure 9
GDP per capita at market exchange rates: Synthetic control estimates for individual economies



Note: Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

Figure 9
GDP per capita at market exchange rates: Synthetic control estimates for individual economies



Note: Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Dashed lines denote the year before accession.

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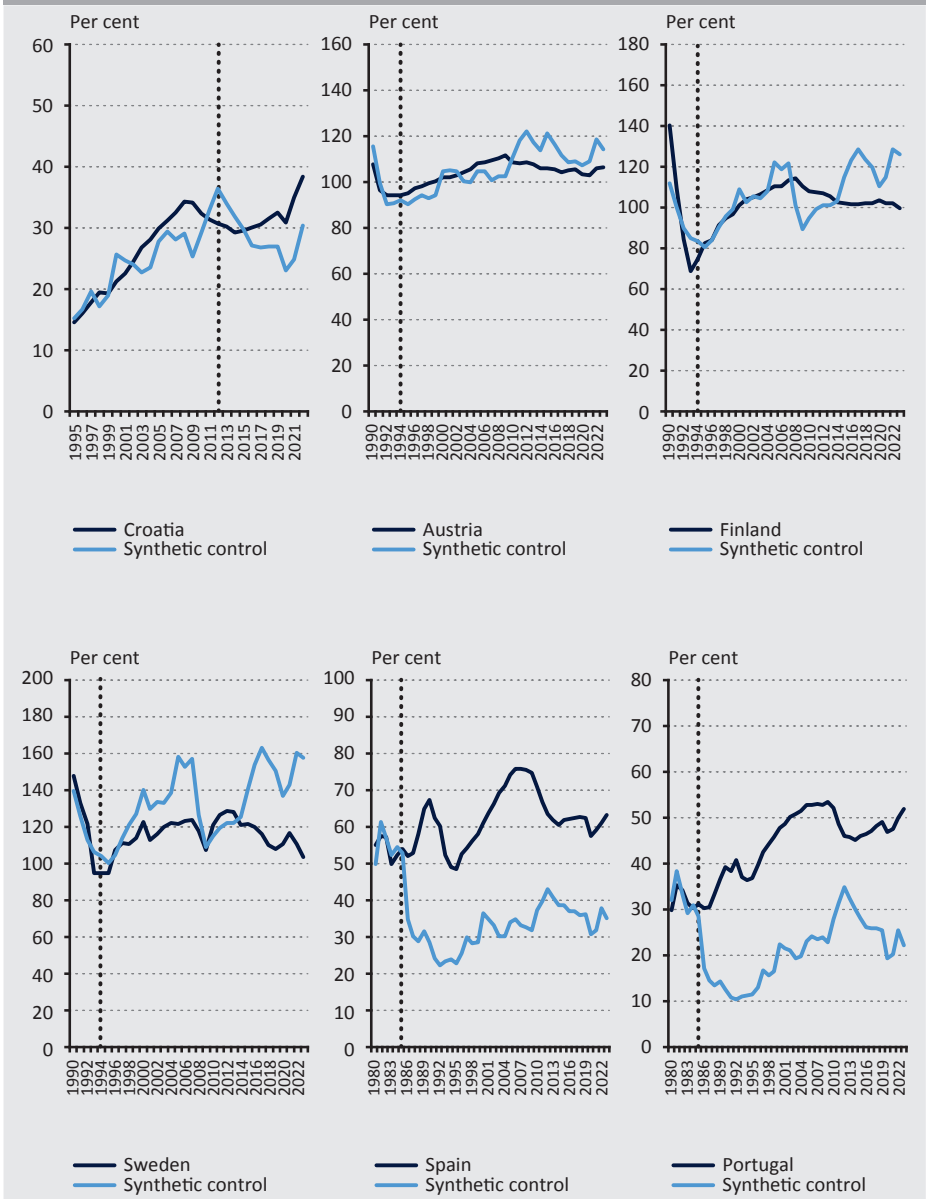
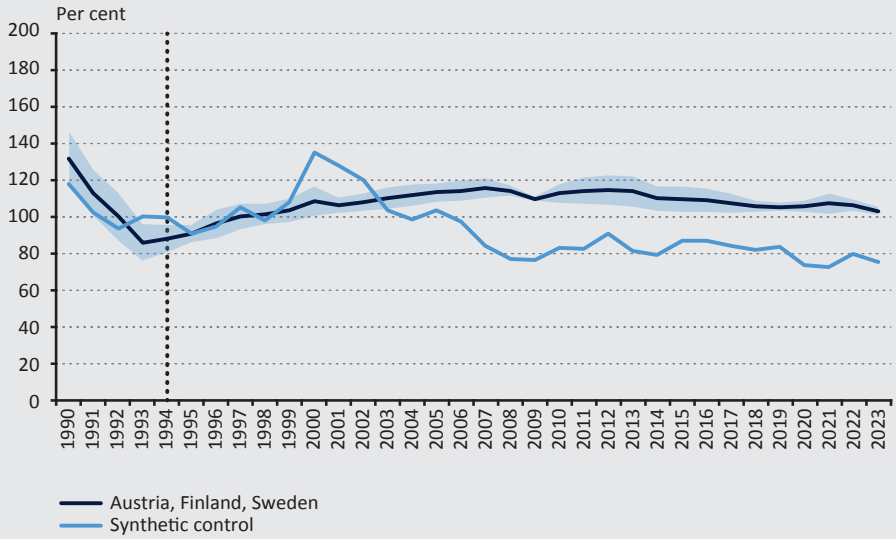
Figure 9
GDP per capita at market exchange rates: Synthetic control estimates for individual economies



Note: Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations

Figure 10
GDP per capita of Austria, Finland and Sweden as a percentage of Germany's, excluding Iceland, Liechtenstein, Norway and Switzerland from the synthetic control pool



Note: 95-per cent confidence interval shown. Synthetic controls based on GDP and GDP per capita in nominal USD, GDP per capita in PPP USD, and real GDP per capita growth. Simple averages across countries. Dashed lines denote the year before accession.

Source: IMF October 2024 World Economic Outlook database and authors' calculations