

Complex Europe: Quantifying the Cost of Disintegration

Gabriel Felbermayr, Jasmin Gröschl, and Inga Heiland

Key Messages

- Reversing the European Union's integration process would entail significant economic costs for the EU member states.
- Dissolving the EU Single Market would have the strongest negative effects on EU member countries' production, trade, and income levels.
- Central and Eastern European countries would suffer proportionally higher losses, while established EU members such as Germany, France, or Italy would suffer less.
- While other integration reversal steps would result in comparably lower costs, they should not be underestimated, as the resulting absolute costs will accumulate year after year after the disintegration shock.



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Complex Europe: Quantifying the Cost of Disintegration

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On 1 January 2023, Croatia became the newest member of the Schengen Agreement of the European Union (EU) and also joined the Eurozone. This will not only mean a new currency and the elimination of border controls – allowing thus free movement within the Schengen area. It will also mean reductions in barriers to trade between Croatia and other EU member states. The Schengen Agreement and the Eurozone are part of the engine of European integration, namely the reduction of trading costs between the member countries in various dimensions as well as in trade with third countries. This includes the European Customs Union, the European Single Market, the Eurozone, the removal of customs barriers in the Schengen area and the EU's free trade agreements with third countries – all of which are milestones that have created the world's largest free-trade area in terms of value added. This article aims to highlight the importance of reducing trade costs and show what far-reaching effects a reversal of the European integration process through a gradual dismantling of these milestones would have on trade, production, and income across the EU member states and their trading partners.

The effects presented here are based on the results of a comprehensive empirical analysis by Felbermayr et al. (2022), which used a gravity model to derive the trade effects of individual integration steps and, based on this, simulated the effects of a gradual disintegration in Europe on welfare, production, value creation and income in a general equilibrium framework.

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Gravity Analysis: Single Market Effects are the Largest in Services Trade

The gravity analysis shows that the EU Single Market has boosted trade in goods among member countries by about 46%. In terms of the estimated trade elasticity, this corresponds to a reduction in non-tariff trade costs of about 13 percentage points (pp). In the service sector, the trade-creating effect and the savings in trading costs are significantly higher, at 64%, corresponding to a trade cost saving of 28 pp. Membership in the Eurozone yields trade cost savings of about 3 pp in goods trade and about 10 pp in trade in services. The evaluation of the Schengen Agreement is more involved. The effects of removing border controls in the Schengen area depend largely on whether the transit countries between the two trading partners also belong to the Schengen area (Felbermayr et al, 2018). Accounting for this complication, we find that reducing controls at the border results in trade cost savings of 11 pp for goods and 5 pp for services. Across sectors, we detect a large degree of heterogeneity; the pharmaceutical industry and business-related services have benefited the most from EU membership.

Simulation Analysis: The Unravelling of Intra-EU Trade and Production Networks

Based on the estimates of the gravity analysis, we simulate the effects of a counterfactual dismantling of different integration steps on income, value added, production and trade based on a model by Caliendo and Parro (2015). In this way, we document how much lower the growth in trade, production and value would have been if individual steps of the integration had not taken place. To make statements on the individual EU integration steps, we develop and simulate the following seven (counterfactual) scenarios:

- (1) A collapse of the European Customs Union. We assume that, instead of tariff-free trade, most-favored nation (MFN) tariffs will be levied between EU member states, as they are currently granted to third countries under the rules of the WTO.
- (2) Dismantling of the European Single Market through the introduction of non-tariff trade barriers (NTB) in intra-EU trade. Non-tariff barriers to trade have been eliminated in the internal market, for example through the mutual recognition of norms and standards or a uniform framework for competition policy.
- (3) Dissolution of the Eurozone, which causes transaction costs for the members of the monetary union due to reimposed currency exchange.

- (4) Breakup of the Schengen Agreement and reintroduction of border controls within the Schengen area.
- (5) Undoing all regional free trade agreements (RTAs) between the EU and third countries in force in 2014. This affects the agreements with South Korea, Mexico, Norway, Turkey, and Switzerland. The agreement with South Korea is used as a reference for the simulation.
- (6) Complete collapse of all European integration steps, including free-trade agreements with third parties, and
- (7) Complete EU dissolution and additionally termination of all net fiscal transfer payments between EU members, such as those laid down within the EU's structural and agricultural funds.

All scenarios have in common that they assume an undoing of trade cost savings that are inferred from historical accessions or policy changes in the EU from 2000 to 2014.

The Impact on Production and Trade

Table 1 shows the production and trade effects of rolling back the major steps of European integration. It depicts how output, gross and value-added trade would change under the different scenarios. Changes in gross trade are only of limited significance with regard to the value-added effects triggered by changes in trade costs. We therefore also show the “VAX ratio”, the relationship between value added and gross exports. This is an indicator of the relative importance of trade along the value chain. The table distinguishes between the effects on the 13 mostly Central and Eastern European countries that joined the EU after 2000 (“new EU countries”) and the “old” member countries.

Looking at the changes in production, five effects are particularly interesting. First, new member states are much more affected by disintegration than the old ones. A reversal of all integration steps would cause a 9.1% drop in production among the new member countries, compared to 5.3% for the old member countries. Second, the dissolution of the Single Market has quantitatively greater effects than all other disintegration steps together. This is true even when net transfer payments are considered. Third, the summed effects of scenarios (1)-(5) are higher (in absolute values) than the effect of reducing all integration steps (scenario 6). This reflects the complementarities between the individual integration steps. For example, the losses from the dissolution of customs duties are lower if the Single Market is dissolved at the same time, since the customs basis is then lower. Fourth, non-EU countries would benefit from a total collapse of the EU and would see output growth of around 0.1%. Fifth, the changes in the share of domestic value added in total production are smaller than the absolute changes in production. Value added falls less than production as a result of disintegration; the

reason for this is that the reintroduction of trade barriers causes production to shift to more value-added-intensive sectors. This is of particular importance as value added has a major impact on welfare.

Regarding trade, the elimination of the European Single Market triggers the largest effects. It leads to a drop in intra-European trade of 14%. Similar to the production effects, the new member countries also suffer higher trade effects than the older EU members. The same applies to the dissolution of the Customs Union and the Eurozone, but with significantly lower or partially insignificant effects. When all integration steps are rolled back, trade effects are dominated by the Single Market effect. New member countries suffer losses of 23-27%, while old member countries record a 25-31% drop in exports. It is striking that value-added trade is less affected by disintegration than gross trade.

Table 1: Changes in aggregate output, gross trade flows and VAX-ratios.

	Output				Exports to			
	gross (in %)	VA/Output (in pp)	Old EU Gross (in %)	Old EU VAX (in pp)	New EU gross (in %)	New EU VAX (in pp)	Non-EU gross (in %)	Non-EU VAX (in pp)
S1 Customs Union (MFN tariffs)								
old EU	-0.86	0.27	-7.83	1.40	-8.87	1.91	0.16	-0.60
new EU	-1.86	0.53	-8.19	1.42	-8.91	2.75	0.24	-1.29
non-EU	0.04	-0.03	0.34	-0.17	-0.08	0.13	0.08	-0.08
S2 Single Market								
old EU	-2.95	0.20	-13.11	1.15	-13.99	1.16	-0.89	-0.36
new EU	-5.34	0.33	-13.31	0.96	-14.14	1.65	-1.06	-1.08
non-EU	0.10	-0.05	-0.15	-0.37	-1.40	-0.47	0.18	0.04
S3 Euro								
old EU	-0.58	0.08	-1.87	0.52	-0.82	0.10	-0.29	-0.04
new EU	-0.20	-0.01	-0.58	-0.01	-0.34	0.20	-0.10	0.02
non-EU	0.10	-0.01	-0.23	-0.00	0.19	-0.17	0.03	0.01
S4 Schengen								
old EU	-0.94	0.06	-4.17	0.58	-5.46	0.87	-0.82	0.07
new EU	-1.82	0.12	-5.21	0.73	-3.67	1.18	-0.93	-0.23
non-EU	0.02	-0.02	-0.76	0.08	-1.09	-0.06	0.06	0.00
S5 RTAs								
old EU	-0.13	0.00	0.08	0.00	0.21	0.05	-0.69	0.17
new EU	-0.17	0.03	-0.11	0.11	0.02	0.13	-1.03	0.34
non-EU	-0.04	-0.00	-0.84	0.06	-1.59	0.46	-0.01	-0.00
S6 All								
old EU	-5.27	0.55	-25.25	3.01	-27.02	3.39	-2.53	-0.67
new EU	-9.09	0.91	-25.76	2.67	-25.58	4.90	-2.86	-2.02
non-EU	0.12	-0.09	-1.65	-0.31	-4.09	0.04	0.30	0.01
S7 All w Transfers								
old EU	-5.89	0.53	-26.07	2.97	-31.11	0.16	-2.20	-0.57
new EU	-11.95	0.28	-23.74	3.08	-27.19	2.06	0.86	-1.70
non-EU	-0.00	-0.06	-2.72	-0.44	-9.05	-3.95	0.13	0.08

Note: Bold numbers indicate statistical significance at least at the 10%-level based on 1,000 bootstrap replications. VAX means domestic value-added content of exports. New EU members are the 13 mostly Eastern European countries who joined after 2003.

Source: Felbermayr et al. (2022).

Impact on Income

Real consumption effects differ vastly across countries and integration agreements. Table 2 shows that the breakdown of the European Single Market accounts for the largest share for member states, followed by the Schengen Agreement and the Eurozone. Zooming in on the Single Market (S2), we find significant and sizeable negative welfare effects for EU member states. The largest effects on consumption occur in the smallest EU economies like Malta (-14.6%) and Luxembourg (-13.5%). Most new EU members experience large reductions in real consumption if the EU Single Market is dissolved. In particular, our simulations predict large effects for Hungary (-8.2%), Slovakia (-8.1%), the Czech Republic (-7.4%), Estonia (-7.2%), Bulgaria (-6.9%), and Slovenia (-6.8%). But established small EU members, such as Belgium (-7.1%), Ireland (-6.9%), and Austria (-5.6%) also experience similar negative effects. The welfare effects on large EU economies, such as Germany (-3.6%), France (-3.0%), or Italy (-2.7%) are in comparison much smaller. Some third countries would see significant but small negative effects, such as the United States (-0.03%).

Dissolving the EU Customs Union and replacing tariffs on intra-EU trade flows by MFN tariffs (S1) leads to much smaller effects on consumption compared to dissolving the Single Market. The biggest losses occur in Ireland (-0.4%), the Czech Republic, Luxembourg, Poland, and Slovenia (-0.3% each), while most other EU countries experience negligibly small negative effects relative to the status quo. Non-EU countries tend to gain slightly. Interestingly, a few EU countries (Cyprus, Malta, Portugal, and Greece) experience positive real consumption effects. These are not implausible, given that the re-introduction of (small) tariffs, in contrast to the other steps of dismantling EU integration, has a positive first-order effect on income.

In the Eurozone dissolution scenario (S3), we find negative effects for all member states. However, only in the case of Luxembourg (-2.53%) and Germany (-0.7%) are the effects statistically significant. Outsiders to the Monetary Union, in particular non-euro EU countries, tend to lose as well. Countries outside Europe are hardly affected. Dismantling the Schengen Agreement affects negatively not only members to the agreement, but also all other geographically European countries. The predicted losses are statistically significant for most countries, ranging between -4.2% in Estonia to -0.75% in France. Peripheral and poorer members to the agreement, such as Hungary, Slovakia, the Czech Republic, and the Baltic countries lose most from a breakdown of the Schengen Agreement. Small but richer economies (Austria, Belgium, Netherlands, Portugal, Poland, Slovenia, Switzerland, and the Nordic countries), due to their strong dependency on intra-European trade, also lose a significant share of their real consumption, ranging from -1.4% to -3.1%. At the lower end are large European economies, like Germany, France, Spain, or Italy. Due to its geographical location,

Greece would suffer the smallest loss among Schengen members, with -1.0%. Geographically European countries that are outsiders to the agreement, like Turkey (-0.8%), Russia (-0.6%), Cyprus (-1.8%), and Ireland (-1.0%) also lose in terms of consumption, as they trade much with other European countries and thus benefit from open borders. Next, we look at a collapse of all RTAs which the EU has signed with third countries (S5). While South Korea (partner to the EU's most comprehensive third-country agreement) experiences a sizeable loss in real consumption (-0.5%) due to the reintroduction of NTBs and MFN tariffs, EU countries experience insignificant or small welfare losses, of -0.1% at most (Ireland). We do not find negative effects on the EU's other RTA partners, Turkey and Mexico.

In S6 (complete roll-back of all EU integration steps), we find that all EU members experience significant losses in real consumption, but heterogeneity exists across countries depending on their degree of integration and economic structure. Small economies like Malta (-19.4%) and Luxembourg (-18.1%), as well as new EU members (Estonia -11.8%, Slovakia -11.6%, Hungary -11.5%, Slovenia -10.0%, Latvia -9.9%, or the Czech Republic -9.9%) lose most, while established EU economies show a wider spread: Belgium (-10.2%) with the largest and the Spain (-3.7%) with the smallest losses in real consumption relative to the status quo in 2014. Among outsiders to the agreements, the EFTA members Switzerland (-1.5%), Norway (-1.7%), and other countries close to the EU such as Turkey (-0.8%) as well as the United States (-0.05%), which is an important trade partner for the EU, are also negatively affected. Finally, we include fiscal transfers into the complete EU collapse scenario (S7). Unsurprisingly, net transfer recipients in the baseline lose more in terms of real consumption, and the additional losses correlate strongly with the transfer cuts. For countries like Hungary, Lithuania, and Bulgaria, where transfers account for more than 5% of real income, the welfare losses almost double. Net contributors like Germany and Sweden, on the other hand, lose less. However, the benefits that net contributors can reap from ending transfer payments fall far short of compensating for the losses from a dissolution of the EU agreements. In the case of Germany, for example, these benefits amount to only 0.2pp, compared to a loss of 5.2% from the collapse of the EU.

Table 2: Changes in real consumption in %, baseline year 2014

Scenario:	Customs Union (S1)	Single Market (S2)	Euro (S3)	Schengen (S4)	Other RTAs (S5)	All (S6)	All w Transfer (S7)
AUS	-0.01	-0.05	-0.00	-0.02	-0.01	-0.08	-0.04
AUT	-0.04	-5.60	-0.88	-1.55	-0.02	-7.76	-7.57
BEL	-0.15	-7.06	-0.99	-2.53	-0.04	-10.20	-10.61
BGR	0.03	-6.92	-0.08	-1.50	-0.05	-8.30	-14.54
BRA	-0.00	-0.03	-0.01	-0.01	-0.00	-0.05	-0.02
CAN	-0.01	-0.04	-0.00	-0.02	-0.01	-0.07	-0.03
CHE	0.02	-0.14	-0.06	-1.29	0.02	-1.46	-1.41
CHN	0.01	-0.02	-0.01	-0.01	0.00	-0.02	-0.01
CYP	0.43	-6.15	-1.02	-1.76	-0.00	-8.12	-9.95
CZE	-0.31	-7.40	-0.16	-2.33	-0.04	-9.86	-12.88
DEU	-0.12	-3.55	-0.65	-1.04	-0.05	-5.23	-5.00
DNK	-0.00	-4.27	-0.03	-1.56	-0.04	-5.71	-5.66
ESP	-0.05	-2.53	-0.34	-1.02	0.09	-3.69	-4.50
EST	-0.10	-7.22	-1.00	-4.23	-0.05	-11.79	-15.52
FIN	-0.00	-3.72	-0.35	-2.32	-0.04	-6.07	-5.97
FRA	-0.02	-2.96	-0.44	-0.75	-0.02	-4.07	-4.03
GBR	0.08	-2.61	-0.04	-0.58	-0.04	-3.12	-3.29
GRC	0.31	-2.67	-0.30	-1.04	-0.14	-3.72	-8.27
HRV	-0.08	-5.12	-0.10	-1.41	-0.01	-6.51	-7.63
HUN	-0.17	-8.24	-0.16	-3.48	-0.07	-11.53	-19.23
IDN	0.00	-0.01	-0.00	-0.00	-0.01	-0.02	-0.00
IND	0.01	-0.02	-0.01	-0.01	0.01	-0.01	0.01
IRL	-0.37	-6.94	-0.86	-1.11	-0.09	-8.97	-9.45
ITA	-0.06	-2.69	-0.46	-1.02	-0.03	-4.09	-4.28
JPN	0.01	-0.01	-0.01	0.00	0.00	0.00	0.02
KOR	0.03	-0.02	-0.01	0.00	-0.53	-0.55	-0.54
LTU	-0.27	-5.91	-0.03	-3.03	-0.02	-8.82	-15.51
LUX	-0.25	-13.47	-2.53	-2.86	-0.20	-18.06	-18.71
LVA	0.10	-6.32	-0.73	-3.47	0.00	-9.85	-14.89
MEX	0.00	-0.03	-0.01	-0.01	0.01	-0.04	-0.01
MLT	0.18	-14.56	-2.45	-3.90	0.13	-19.38	-22.62
NLD	-0.23	-5.11	-0.70	-2.03	-0.06	-7.70	-7.75
NOR	0.04	-0.31	-0.05	-1.42	0.01	-1.73	-1.69
POL	-0.25	-5.11	-0.08	-2.03	-0.03	-7.18	-12.09
PRT	0.18	-4.29	-0.59	-1.95	-0.01	-6.34	-9.19
ROU	0.00	-4.70	-0.10	-0.08	-0.08	-4.94	-9.44
ROW	-0.03	-0.10	-0.02	-0.02	-0.04	-0.16	-0.11
RUS	-0.05	-0.13	0.04	-0.61	-0.03	-0.76	-0.73
SVK	-0.11	-8.11	-1.09	-2.83	-0.03	-11.57	-14.40
SVN	-0.26	-6.76	-1.13	-2.32	-0.06	-9.99	-13.40
SWE	-0.05	-4.26	-0.04	-2.23	-0.02	-6.29	-5.89
TUR	0.12	-0.14	-0.05	-0.82	0.24	-0.74	-0.71
TWN	0.01	-0.04	-0.02	-0.01	-0.00	-0.06	-0.05
USA	-0.00	-0.03	-0.01	-0.01	-0.00	-0.05	-0.03

Note: Table shows average effects by country obtained from 1,000 simulations based on bootstrapped parameter estimates. Bold numbers denote statistical significance at least at the 10%-level according to bootstrapped distribution of simulated effects.

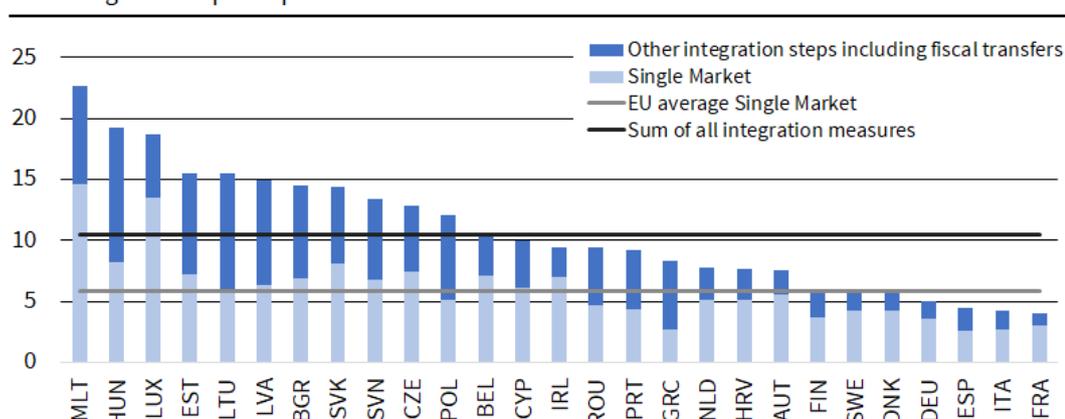
Source: Felbermayr et al. (2022).

Figure 1 presents the results graphically. The horizontal lines represent the EU-wide averages for the effects of the Single Market (green) and for the sum of all integration measures (dark purple). The Figure shows that most of the positive effects of EU integration can be attributed to the Single Market. For countries like Germany, this accounts for approximately 80% of the overall effect. In smaller countries, which benefit greatly from net transfers, the relative contribution of the internal market is much smaller. In Poland or Hungary, it is approximately 50% of the total effect, and in Lithuania it is less than 50%.

Figure 1:

The Effects of Reversing EU Integration

Percentage of Real per Capita Income



The horizontal lines present the EU-wide averages for the effects of the Single Market (grey) and for the sum of all integration measures (black).

Source: Own calculations; Felbermayr et al. (2022).

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Conclusion and Policy Implications

The counterfactual analysis of a reversal of the European integration process clearly points out that disintegration would impose considerable costs on the EU member states. Above all, the dissolution of the European Single Market would have a major impact on production, trade, and income in the individual countries. If other integration steps were withdrawn, the effects would be smaller, but should not be underestimated since the resulting absolute costs will accumulate year after year after the disintegration shock.

Conversely, the high costs of disintegration show that EU member states could derive high welfare gains from any additional reduction in trade costs. Orienting itself towards the principle of economic subsidiarity and an integration policy of the various clubs, European policy should thus allow those countries for which the transfer of competences to the supranational level goes too far or too quickly to participate in much freer trade within the EU.

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