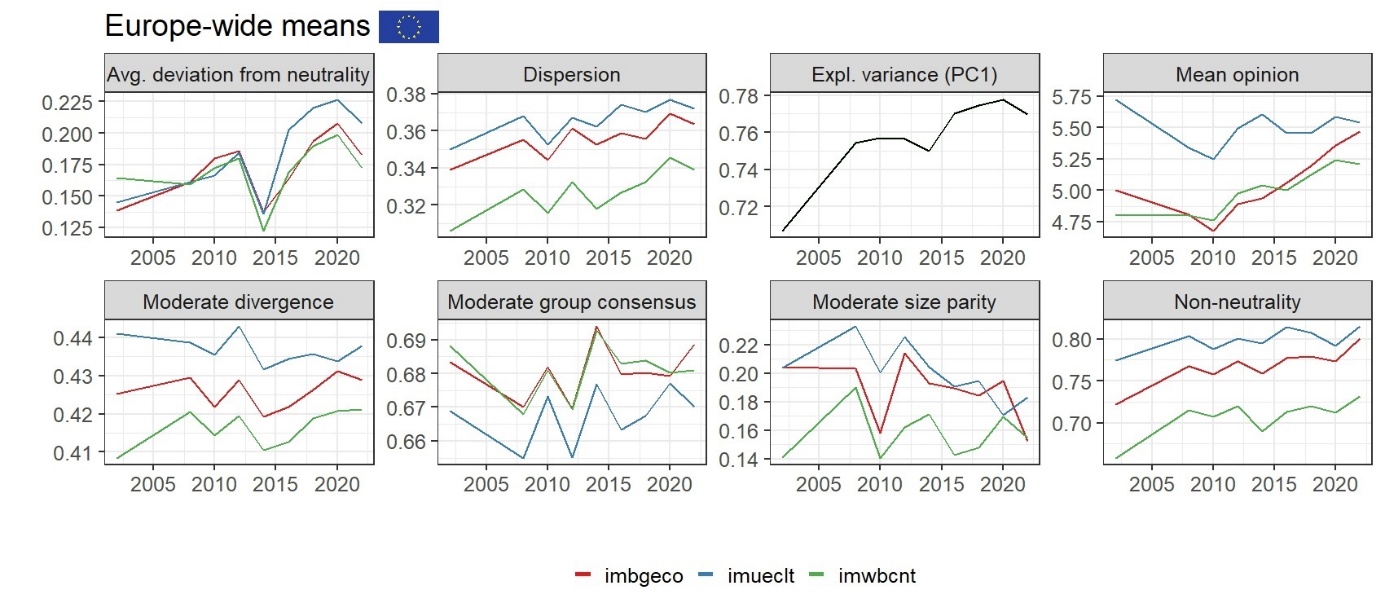
Results

Considering Europe as a whole by averaging across all countries, we found trends in the form of increases in polarization for almost all metrics and variables. We found increase in deviation from neutrality, increase in dispersion, increase in the explained variance of the first principal component, increase in moderate divergence and thus a decrease in moderate group consensus, a strongly fluctuating moderate size parity, and a very clear upward trend in non-neutrality. Paired with those findings, we found a tendency for an increase of the mean opinions towards a more approving sentiment. It is especially noteworthy that the year 2015 often seemed to mark a turning point in opinion dynamics (Fig 3.xx).

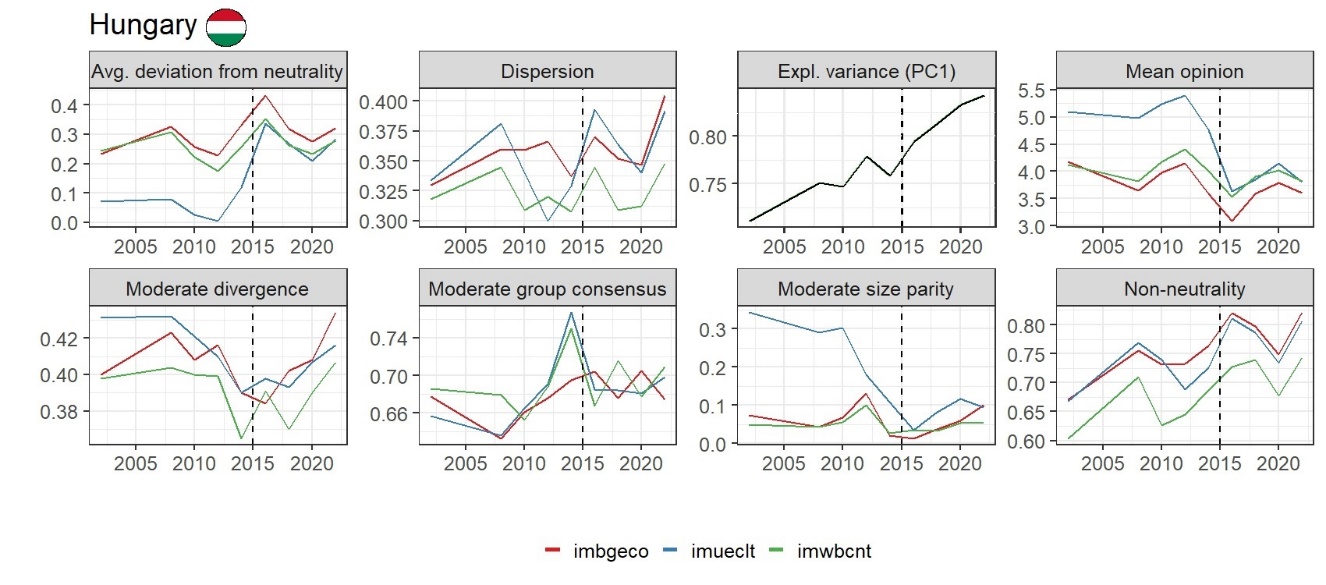


**Fig 3.xxx** The seven aspects of polarization and the average opinion over time on the European continental level averaged across all available countries between 2002 and 2022.Avg. deviation from neutrality: Shows the average extent to which opinions deviate from a neutral stance, i.e., an increase of acceptance **or** rejection. Higher values suggest stronger opinions, whether positive or negative, indicating increasing polarization. The trends for all three variables seem to show a general increase in deviation from neutrality, particularly noticeable after around 2015. This suggests that opinions on immigration have become less neutral and more pronounced over time. **Dispersion:** Measures the spread of opinions. Higher dispersion indicates a wider range of opinions, which can be a sign of polarization. The trends here are somewhat varied across the variables, but generally show an upward tendency, especially in the later years, implying that the range of opinions on immigration has broadened. **Expl. variance (PC1):** Refers to the explained variance of the first principal component of the PCA based on the three migration variables. A higher value suggests that a single underlying dimension (the general sentiment towards immigration) explains a larger proportion of the variance in opinions. The upward trend in this graph suggests that opinions on immigration have become increasingly structured, indicating an increase in polarization in the form of issue alignment. Mean opinion: This is not a polarization metric per se, but shows the average opinion for each variable on the Likert-scale. Small values indicate resentment, five indicates a neutral stance, and large values indicate approval. While "imueclt" generally maintains a higher mean opinion, all three categories show some level of fluctuation and a tendency to increase in mean opinion towards the later part of the observed period. The period around 2010 seems to be a turning point for all three, with opinions generally starting increase after that year. M**oderate divergence:** Captures the extent to which the average views of the moderately accepting and moderately opposing individuals diverge. The trends are somewhat fluctuating, but there appears to be an overall increase in moderate divergence, indicating an increase in polarization between the two moderate groups. **Moderate group consensus:** Assesses the level of agreement within the two moderate groups. The trends show a general decrease, implying that even among those with moderate views, there might be a decrease in internal consensus. Moderate size parity: Captures the ratio of the smaller to the larger group holding moderate opinions. Here, results are fluctuating heavily, making the result hard to interpret. **Non-neutrality: D**irectly measures the prevalence of non-neutral opinions. Higher values indicate a larger proportion of the population holding either positive or negative views on immigration. All three variables show a clear upward trend, especially after 2015, strongly suggesting a significant increase in the proportion of Europeans holding non-neutral opinions on immigration.

While the aggregated European data provided a valuable initial assessment, significant intra-European variation necessitated a more focused analysis. This section addressed this by examining immigration opinions in Hungary and Germany, two countries that may represent contrasting positions along the spectrum of public sentiment. This focused comparison allowed for the exploration of distinct socio-political contexts that potentially contribute to more polarized or differentiated viewpoints, revealing critical insights obscured by broader averages.

Hungary

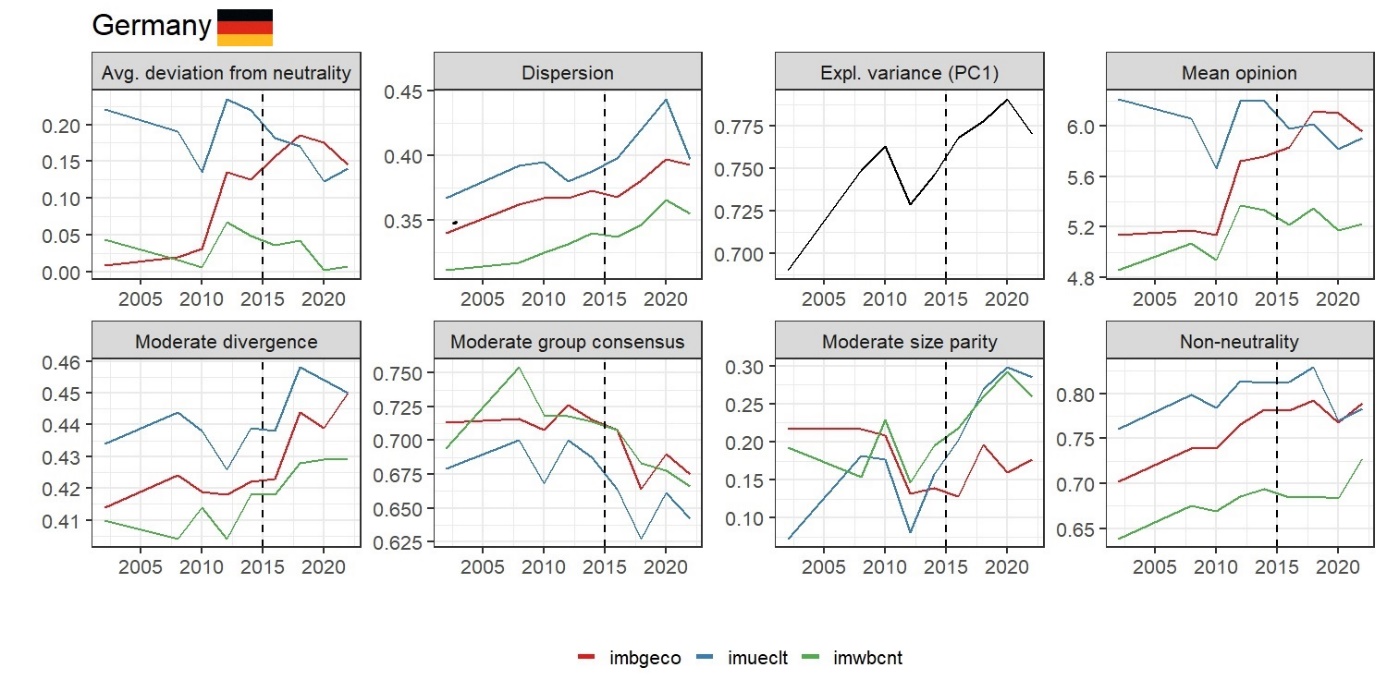
Considering Hungary, results strongly suggest that the period around 2015 was a critical turning point for public opinion on immigration. Before this time, average opinions tended to be slightly positive to neutral, with moderate levels of deviation and dispersion. The events around 2015 - the peak of the European migration crisis - appear to have triggered a significant shift: Average opinions turned sharply negative across all three dimensions (economic, cultural, and general impact). Opinions became more polarized, with individuals holding stronger views, both positive and negative, leading to higher average deviation from neutrality and increased dispersion within groups. Views on the different aspects of immigration became more aligned, as indicated by the increasing explained variance of the first principal component. While there were some fluctuations in the divergence between groups and the consensus within groups, the overall picture is one of a significant and sustained negative shift in public sentiment towards immigration in Hungary following the 2015 period. Opinions became more extreme, with a larger proportion of the population holding non-neutral views and a greater average deviation from neutrality, indicating polarization. Parallel to that, we found a shift towards negative sentiment, as the average opinion on all three measured aspects of immigration became more negative. Additionally, we found a growing divergence between moderate groups: The gap between those with moderately accepting and moderately opposing views widened. Also, The relative size of the moderately opposing group appears to have increased. Also, increased alignment of opinions was found as views on the economic, cultural, and societal impacts of immigration became more congruent. In summary, the refugee crisis seems to have acted as a polarizing event in Hungary, leading to more negative, less neutral, and more divergent opinions on the various facets of immigration. The increased explained variance in the first principal component suggests that attitudes towards immigration became more unidimensional and potentially more strongly linked to a general stance for or against it.



**Fig 3.xxx** The seven aspects of polarization and the average opinion over time for Hungary. Avg. deviation from neutrality: Shows how far, on average, opinions are from the neutral midpoint. Results indicate a general trend of increasing deviation from neutrality across all three aspects of immigration, particularly after 2015. This suggests that opinions became less neutral and more strongly held in either the positive or negative direction following the refugee crisis. The economic impact (red line) shows a notable spike in deviation around 2015 and remains relatively high. Dispersion: This indicates the spread of opinions within the population. Higher dispersion means a wider range of views. The plot shows a fluctuating pattern, but generally, dispersion seems to increase or remain at a higher level after 2015, suggesting that the refugee crisis might have led to a broader spectrum of opinions on immigration. Expl. variance (PC1): The explained variance of the first principal component from a PCA combining the three immigration aspects shows a clear upward trend, especially after 2015. This suggests that a single underlying dimension (the general attitude towards immigration) became increasingly dominant in explaining the variation in opinions across the three measured aspects. In simpler terms, opinions on the economic, cultural, and societal impacts of immigration became more aligned. Mean opinion: This displays the average opinion. For all three aspects, the mean opinion generally decreases after 2015, indicating a shift towards more negative average perceptions of immigration following the refugee crisis. The most pronounced negative shift appears in the perception of immigrants making the country a worse place to live (green line). Moderate divergence: This measures the gap between the average opinions of moderately accepting and moderately opposing groups. We observe an increase in moderate divergence after 2015 for all three aspects, suggesting that the views of those with somewhat positive and somewhat negative initial stances on immigration drifted further apart following the refugee crisis. Moderate group consensus: This shows the internal agreement within the moderately accepting and moderately opposing groups. Lower values indicate higher consensus. The plot shows varying trends, but there isn't a clear consistent pattern of increasing or decreasing consensus within these moderate groups across all three aspects after 2015. There are fluctuations, suggesting that the impact of the refugee crisis on internal group agreement was complex and varied depending on the specific aspect of immigration. Moderate size parity: This is the ratio of the smaller to the larger moderate group. A value closer to 1 indicates similar sizes. The plot shows a decrease in moderate size parity around and after 2015, particularly for the economic and societal impact aspects. This suggests that one of the moderate groups (likely the moderately opposing group, given the shift in mean opinion) grew in relative size compared to the other following the refugee crisis. Non-neutrality: This represents the proportion of individuals holding non-neutral views. There's a clear increase in non-neutrality across all three aspects after 2015. This reinforces the finding from the "Avg. deviation from neutrality" plot, indicating that more people moved away from a neutral stance and adopted a more definite positive or negative opinion on immigration after the refugee crisis. The data strongly suggests that the European refugee crisis of 2015 had a significant impact on the polarization of opinions about immigration in Hungary

Germany

The plots strongly suggest that the European refugee crisis of 2015 had a significant impact on the polarization of opinions about immigration in Germany across various dimensions. Following 2015. The average deviation from neutrality and the proportion of non-neutral individuals increased, suggesting that opinions became less neutral and thus more extreme. Dispersion increased, indicating a greater diversity of views. The mean opinion decreased across all three aspects of immigration. Moderate divergence increased, indicating greater polarization even among those not holding extreme views. Opinions within both moderately accepting and opposing groups became more varied. Moderate size parity decreased, suggesting a potential growth in the moderately opposing group. The explained variance of the first principal component increased, indicating that Opinions on different aspects of immigration became more aligned in a process otherwise known as issue alignment. In summary, the 2015 refugee crisis appears to have acted as a polarizing event in Germany regarding opinions on the economic, cultural, and overall impact of immigration, leading to more extreme views, a wider spread of opinions, a negative shift in average sentiment, and greater division even among moderate individuals.



**Fig 3.xx** The seven aspects of polarization and the average opinion over time for Germany. Avg. deviation from neutrality: Shows how far, on average, opinions deviate from the neutral point. For all three variables, the average deviation from neutrality generally increased after 2015, suggesting that opinions became less neutral and more polarized following the refugee crisis. Before 2015, opinions on the economic impact (red line) showed a period of increasing deviation, while cultural impact (blue line) and overall well-being (green line) showed more fluctuation but generally lower deviation. Dispersion: This measures the spread of opinions. Higher dispersion indicates a wider range of views. For all three variables, the dispersion generally increases after 2015, indicating that the refugee crisis was associated with a greater diversity of opinions on immigration. Before 2015, the dispersion for economic impact was consistently higher than for cultural impact and overall well-being. Expl. variance (PC1): This represents the amount of variance in the combined data of the three immigration aspects that is explained by the first principal component. A higher explained variance suggests that the opinions on these three aspects tend to move together. The plot shows a general increase in explained variance after 2015, particularly for the economic and cultural aspects. This suggests that after the refugee crisis, opinions on whether immigration is good for the economy, enriches culture, or makes the country a better place became more aligned. Mean opinion: This shows the average opinion on the original Likert scale. For all three aspects, the mean opinion decreases after 2015, indicating a shift towards more negative views on the economic, cultural, and overall impact of immigration following the refugee crisis. Before 2015, the average opinion on cultural impact was consistently more positive compared to the economic and overall well-being aspects. Moderate divergence: This measures the difference in average opinion between those moderately accepting and those moderately opposing immigration. An increase indicates greater polarization between these moderate groups. The plot shows a clear increase in moderate divergence for all three aspects after 2015, signifying that the gap between moderately accepting and moderately opposing individuals widened considerably following the refugee crisis. Moderate group consensus: This measures the agreement within the moderately accepting and moderately opposing groups. Lower values indicate higher consensus. For all three aspects, there's a general decrease in moderate group consensus after 2015, particularly for the economic and overall well-being aspects. This suggests that within both the moderately accepting and moderately opposing groups, opinions became more varied after the refugee crisis. Moderate size parity: This is the ratio of the smaller to the larger moderate group. A value closer to 1 indicates similar sizes. The plot shows fluctuations, but generally, the parity decreases after 2015, particularly for the economic and overall well-being aspects. This suggests that one of the moderate groups (likely the moderately opposing group, given the shift in mean opinion) became relatively larger after the refugee crisis. Non-neutrality: This shows the proportion of individuals holding non-neutral views. For all three aspects, there is a clear increase in non-neutrality after 2015. This reinforces the idea that the refugee crisis led to a significant rise in the proportion of people holding either positive or negative views on immigration, with fewer people remaining neutral.

Hungary vs. Germany

Similarities

Comparing the plots for Hungary and Germany reveals several interesting similarities and differences. In both countries, the 2015 peak of the refugee crisis appears to be a pivotal moment that generally led to increased polarization across several indicators. Following 2015, both Germany and Hungary show a clear increase in the proportion of individuals holding non-neutral views on immigration. This suggests that the crisis prompted more people to take a stance, either positive or negative, rather than remaining indifferent. The "Moderate divergence" plots for both countries indicate a widening gap in average opinions between moderately accepting and moderately opposing groups after 2015. This suggests that the crisis not only pushed people towards more extreme views but also created greater division among those with less strong initial opinions.

Differences

Before 2015, the levels and trends of the polarization indicators often differed between the two countries. For instance, Germany generally showed a higher average deviation from neutrality and dispersion for the economic impact of immigration compared to Hungary in the years leading up to the crisis. While the mean opinion on the impact of immigration generally decreased in Germany after 2015 (indicating a shift towards more negative views), the trend in Hungary is less consistently negative across all three aspects (economic, cultural, and overall well-being). For some aspects in Hungary, the mean opinion shows a more fluctuating pattern after 2015. The trend in "Moderate group consensus" after 2015 also differs. In Germany, there was a general decrease in consensus within moderate groups, suggesting more varied opinions within these groups after the crisis. In Hungary, the pattern is less consistent, with some aspects showing decreased consensus while others fluctuate or show a slight increase in certain periods. The changes in the relative sizes of the moderate groups ("Moderate size parity") after 2015 also seem to vary. Germany showed a general decrease in parity, suggesting one moderate group became relatively larger. Hungary's plot shows more fluctuation without a clear consistent trend across all aspects. While both countries show an increase in explained variance after 2015 (suggesting opinions on different aspects became more aligned), the magnitude and specific trends differ. Germany shows a more pronounced and consistent increase in explained variance for the economic and cultural aspects compared to Hungary.