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Regional Deprivation and Populism - Evidence from Germany and the U.S.

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ABSTRACT

REGIONAL DEPRIVATION AND POPULISM - EVIDENCE FROM GERMANY AND THE U.S.

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A widely held view is that increasing globalisation and inequality are fostering support for populist actors. Surprisingly, when focusing on Germany and the U.S., populist voting is highest in less globalised regions with rather equal income distributions. Addressing this puzzle, I ask how the regional variance in populist voting can be explained. In my answer, I introduce the concept of spatial inequality, which describes the regional inequality within countries, and construct a measure of public goods scarcity. I argue that the spatial inequality induced feeling of being left behind is positively correlated with populist voting and that this effect is mitigated by public goods provision. Using county level data to develop spatial inequality and public good scarcity indices, I can provide empirical support for these arguments. The findings have important implications for understanding the sub-national variance in populist voting and the role of relative economic deprivation as well as public goods provision.

Keywords: Populism, Voting Behaviour, Inequality, Public Goods, Regional Economics

JEL classification: D31, D63, D72, H41, R11

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1 Introduction

Although having lost the latest U.S. presidential election, the number of votes won by populist incumbent *Donald J. Trump* still exceeded many expectations. Similarly, the right-wing populist German party *Alternative für Deutschland* (AfD) experiences continuing support. United in their right-wing populist rhetoric, the AfD and Mr. Trump advocate nativist positions and claim to speak for 'the people' and against 'the elite' (see Mudde, 2004; Rydgren, 2005). The resonance of campaign slogans like "take back your country"[1] and "make America great again"[2] suggests existence of deep and persistent societal grievances within both countries.

Research concerned with these grievances and the determinants of right-wing populist voting often focuses on economic and cultural changes as well as – especially in recent years - rising inequality, all usually associated with globalisation (see, e.g., Kriesi et al., 2008; Margalit, 2019; Mukand & Rodrik, 2020; Rodrik, 2018). In theory, this means that regions directly affected by globalisation through imports, labour (migration) and rising inequality should display the highest vote share for right-wing populist actors. Surprisingly, right-wing populist voting in Germany and the United States is highest in less globalised regions with rather equal income distributions. Republican strongholds like South Dakota and Alabama have low GINI scores and similarly small import to GDP ratios. A similar pattern emerges in Germany with AfD strongholds like Saxony and Thuringia displaying low inequality and equally low import to GDP ratios. Additionally, these regions also show low numbers of migrants. These patterns are even more pronounced on the county level, with rural areas not directly affected by the forces of globalisation displaying particularly high right-wing populist vote shares.

In the light of these insights, my paper addresses the question of how the sub-national variance in right-wing populist voting can be explained. The answer I propose has two components. First, I introduce the concept of *spatial inequality*, which describes the regional inequality that arises as some counties strongly benefit from globalisation and become more prosperous while less globalised counties are left behind economically. I argue that this globalisation induced spatial inequality is a previously overlooked determinant of right-wing populist voting, as spatial inequality leads to societal polarisation, which creates favourable conditions for the populist anti-elite/people-centrist rhetoric and group conflict narratives to resonate with voters. Second, I argue that the effect of spatial inequality on right-wing populist voting can be mitigated by the provision of public goods. This is because the inequality induced feeling of being left behind can either be compensated by an adequate provision of public goods or will be even more pronounced if citizens additionally experience public goods scarcity.

[1] German Federal Centre for Political Education, "Alternative für Deutschland (AfD)" by Jochen Franzke, August 2, 2019, URL: https://www.bpb.de/politik/wahlen/wer-steht-zur-wahl/brandenburg-2019/294116/afd.

[2] The Washington Post, "How Donald Trump came up with 'Make America Great Again' ", by Karen Tumulty, January 18, 2017, URL: http://wapo.st/2iybIUx?tid=ss_tw

The mechanism I propose draws on an extensive body of globalisation and inequality as well as populism research. Although previous research has found that globalisation can reduce but also increase inequality (see, e.g., Firebaugh, 2009; Milanovic, 2016; Wade, 2004), many scholars point to a general pattern: Globalisation achieves a drop of inequality between nations, but inequality surges within nations because of the uneven spread of globalisation benefits (Freeman, 2009; Niño-Zarazúa et al., 2017). In analysing this uneven spread of benefits, the 'losers' of globalisation, i.e., people with low skills, directly affected by globalisation, are usually suspected to vote for anti-globalisation populist actors (see, e.g., Becker et al., 2017; Kriesi & Pappas, 2015).

While early research concerned with the determinants of populism has often focused on the socioeconomic predispositions and economic insecurities of these 'losers' of globalisation (see, e.g., Swank & Betz, 2003), more recent work has shifted the focus away from individual socioeconomic predispositions and towards the relationship between populist voting and rising inequality within nations (see Pástor & Veronesi, 2021). However, due to conceptual and definitional ambiguities, this relationship between inequality and populist voting has to be established more clearly. Additionally, previous research has mainly focused on the direct effect of globalisation on nations as a whole and ignored indirect effects of globalisation, especially at the sub-national level.

I address this research gap by developing the concept of globalisation induced spatial inequality and introducing it as an important component in explaining sub-national variance in right-wing populist support. In doing so, I shift the focus away from socioeconomic predispositions as well as the direct effect of globalisation and absolute inequality within regions towards relative inequality between these regions and thereby the indirect effect of globalisation. Further, I draw on recent economic research and argue that the provision of public goods mitigates the effect of spatial inequality on populist voting (see Diermeier, 2020). To test my arguments, I use county level data from Germany and the U.S. to develop county-specific spatial inequality and public good scarcity indices.

The paper is organised as follows: First, I review the literature concerned with the demand-side of populist support. Second, I provide some stylised facts on the lack of a clear correlation between commonly used measures of globalisation as well as inequality and populist voting. Third, I discuss the effects of globalisation on inequality in greater detail and elaborate why a new measure of inequality is needed. Fourth, I introduce this measure of spatial inequality and how it is calculated. Fifth, I argue how spatial inequality provides fertile ground for populist actors to rally 'the people' against 'the elite'. Sixth, I work out how public goods provision mediates the relationship between spatial inequality and populist voting. Seventh and last, I analyse the proposed mechanism by running county level regression analyses in Germany and the U.S. on the relationship between spatial inequality, public goods scarcity and populist voting.

2 The Demand-Side of Populism

In general, variance in populist support is often explained with different cultural and economic factors that fuel the demand side of populism. The discussed economic factors often centre around economic insecurities rooted in increased import penetration, labour market competition, and rising income inequality, all associated with progressing globalisation (Autor et al., 2020; Burgoon et al., 2019; Colantone & Stanig, 2018; Dippel et al., 2015; Pástor & Veronesi, 2021; Swank & Betz, 2003). The literature concerned with these effects of globalisation argues that globalisation divides societies into winners and losers, with the latter belonging to less educated and working-class strata (Becker et al., 2017; Kriesi et al., 2008; Teney et al., 2014). The argument is that these 'losers' of globalisation feel that the political elite is unable to control globalisation, making them vote for populist actors, as they promise to put a stop to globalisation and the disruptive transformations associated with it (see Mudde, 2013).

Besides these economic factors, cultural explanations have gained a significant amount of attention in recent years. Frequently discussed among these cultural explanations are the fear of migration, the decline of traditional structures as well as status anxieties induced by increasing ethnic diversity and declining cultural hegemony (Arzheimer & Berning, 2019; Gidron & Hall, 2017; Inglehart & Norris, 2016). An important factor in the context of cultural determinants that is closely connected to other cultural explanations are nativist sentiments, which are often identified as the main driver of right-wing populist voting (Betz, 2017; Bowles, 2020; Hawkins et al., 2020; Otjes et al., 2018; Riedel et al., 2018; Rooduijn & Akkerman, 2017; Schwander & Manow, 2017; Van Hauwaert & Van Kessel, 2018).

Many contributions have shown that the explanatory power of these cultural determinants outperforms economic explanations on the individual level, especially when focusing on right-wing populist voting (Hobolt, 2016; Margalit, 2019). Analyses focusing on the individual level in Germany provide further evidence in support of this finding by showing that AfD voters are not systematically different from voters of other parties in terms of their individual socioeconomic predispositions (Lengfeld, 2017). However, they display important differences in their nativist and populist attitudes that can explain differences in populist support, especially in Eastern Germany (Pesthy et al., 2021). Having said that, the recent electoral success of right-wing populist actors can only hardly be explained with cultural attitudes alone, as these attitudes have in many cases proven to be rather stable across time (see Ademmer & Stöhr, 2018). Hence, something has to activate these sentiments to translate them into right-wing populist voting (see Hawkins et al., 2020).

Although the cultural and economic explanations of populist voting are often distinguished from one another, some contributions have tried to connect them to identify the activating root-causes of populist voting. These contributions argue that the electoral success of populist actors

is always triggered by crises, whereby the nature of the crisis is irrelevant (Albertazzi & McDonnell, 2008; Di Piramo, 2009). Based on this notion, it is argued that the recent electoral success of populist actors in Europe and the U.S. can best be explained with underlying globalisation shocks (Guiso et al., 2019; Rodrik, 2018). According to this argument, the globalisation induced crises of recent years provide a fertile ground to activate the demand-side of populist voting. The specific narrative along which populist actors mobilise voters is then highly contextual and can run along economic or cultural conflict narratives that are present in society, e.g., migrant workers from Latin-America, distributional conflicts with refugees, feared cultural infiltration or a general labour-capital conflict.

While globalisation shocks like the European financial crises and the China import shock have been analysed thoroughly (see, e.g., Algan et al., 2017; Autor et al., 2016), slowly unfolding effects of globalisation have been neglected. This is especially problematic, as these processes can likewise pave the way for voters to become susceptible to populist narratives. Looking at the prolonged effects of globalisation, contributions have started to focus on the 'places that don't matter', i.e., places in long term economic decline (McKay et al., 2021; Rodríguez-Pose, 2020). This economic decline is, however, not rooted in the fact that these regions are heavily exposed to global forces, but rather results from these places being ignored and abandoned, preventing them from prospering in the wake of advancing globalisation. Research concerned with the provision of public goods supports this finding in providing evidence that the notion of being left behind is a precursor to populist voting (Diermeier, 2020).

Three central aspects become evident from this review. First, on the micro-level cultural factors like nativist attitudes hold considerable explanatory power as a determinant of right-wing populist voting, while socioeconomic predispositions are seemingly of lesser importance. Second, as these attitudes and predispositions are rather stable across time, they seemingly need an activating force to explain the recent surges in (right-wing) populist voting. Third, this activating force comes in the form of globalisation induced grievances that are not necessarily visible on the micro-level but only measurable on the macro- or meso-level.

I build on these three findings and complement the previous research by focusing on the meso-level and identifying the root-causes of societal grievances that make people susceptible to right-wing populist narratives in the first place. In detail, I analyse the effect of globalisation induced spatial inequality on right-wing populist support in connection with the provision of public goods to explain the sub-national variance in the electoral success right-wing populist actors in Germany and the U.S.

3 Globalisation and Populist Voting

The recent electoral success of populist actors is - as the literature review in the previous section has shown - often explained as a backlash against ever progressing globalisation (see, e.g., Bergh & Kärnä, 2021; Cerrato et al., 2018; Inglehart & Norris, 2016; Rodrik, 2018). While this explanation seems straightforward, the exact mechanism that links globalisation to populist voting is still rather opaque and can - in theory - take many forms (Rodrik, 2021).

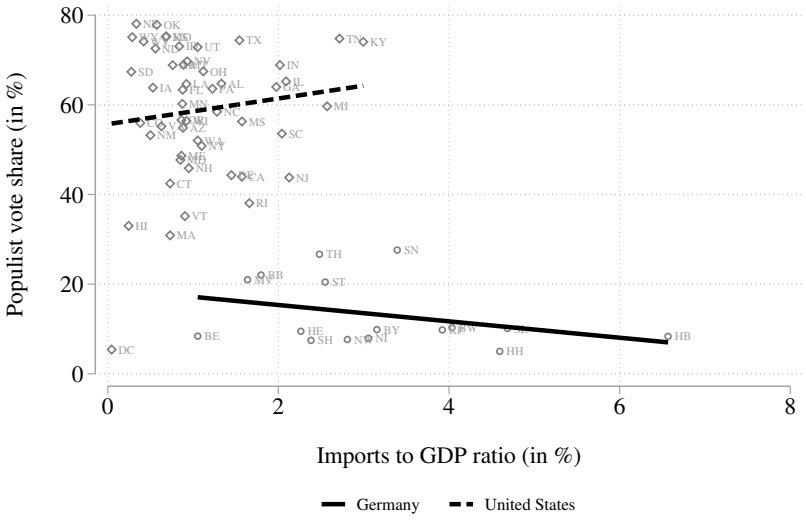
Two mechanisms on how globalisation is linked to populist voting are especially prominent in the literature. First, it is argued that (right-wing) populist voting is a backlash against cultural globalisation, i.e., increased migration in connection with negative attitudes towards migration and a feared loss of identity or status (see, e.g., Gidron & Hall, 2017; Inglehart & Norris, 2016; Margalit, 2019; Naoi, 2020; Sides et al., 2018). This literature usually assumes a direct effect of migration in that being exposed to an influx of asylum seekers (Dinas et al., 2019; Vertier & Viskanic, 2018), an increased share of migrants in general (Edo et al., 2019; Eichengreen et al., 2017; Otto & Steinhardt, 2014) or from specific origin countries (Becker, Fetzer, et al., 2018; Halla et al., 2017; Hill et al., 2019) increases the populist vote share in a given region.

Second, previous research has argued that right- but also left-wing populist voting is a backlash against economic globalisation (see, e.g., Autor et al., 2020; Rodrik, 2018; Swank & Betz, 2003). A particularly prominent explanation is that trade shocks - and especially the "China import shock" - have increased societal polarisation and contributed to populist voting by individuals affected by these shocks (Baccini & Weymouth, 2021; Colantone & Stanig, 2018; Dippel et al., 2017; Jensen et al., 2017; Steiner & Harms, 2021).

Similar findings have been produced for financial globalisation with mortgage repayment shocks due to currency revaluations and debt exposure (Ahlquist et al., 2020; Gyöngyösi & Verner, 2020) as well as financial crises (Funke et al., 2016; Mian et al., 2014). The resulting economic insecurity of the voters affected by economic globalisation, i.e., the 'losers of globalization' are thereby identified as a root cause of populist voting (Dal Bó et al., 2018; Hobolt & Tilley, 2016; Kriesi et al., 2006). An additional factor that has been raised by the literature in this context is globalisation induced individual inequality, which is also strongly related to income insecurity (Duca & Saving, 2016; Guiso et al., 2017; Mukand & Rodrik, 2020; Persson & Aggeborn, 2017; Stoetzer et al., 2021; Voorheis et al., 2015).

Irrespective of whether aspects of economic or cultural globalisation are the dominating factors in explaining populist voting, previous research suggests that populist voting should be especially high if voters are directly affected by globalisation. To investigate this proposition, Figure 1 plots the correlation between import exposure and right-wing populist voting on the state level in Germany and the U.S. The focus on imports is motivated by the works of Autor et al. (2016) and Colantone and Stanig (2018).

Figure 1: Import exposure and populist voting in Germany and the U.S.



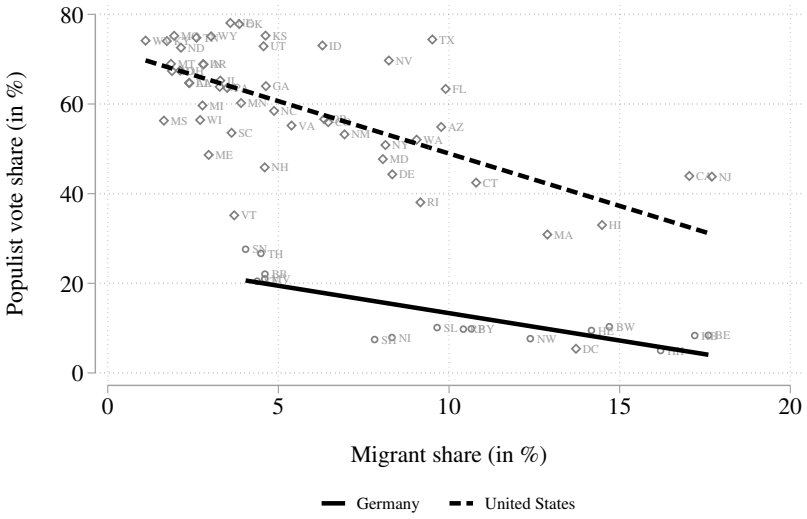
Notes: The figure shows the correlation between the import to GDP ratio and the populist vote share on the state level in Germany (solid line) and the U.S. (dashed line) with the individual scores of the states in German (grey circles) and the U.S. (grey diamonds). The import data comes from the German Federal Statistical Office (2017) and the U.S. Bureau of Economic Analysis (2020). The vote share data comes from the German Federal Election Commissioner and the MIT Election Data and Science Lab. For a detailed data description see Table A1.

The figure shows that populist vote shares are not positively correlated with import to GDP ratios in both countries. In Germany the correlation is in fact negative, while no clear correlation can be identified in the U.S. This is in line with previous contributions that found no correlation between economic globalisation and right- as well as left-wing populist voting in Europe (see, e.g., Bergh & Kärnä, 2021).

Shifting the focus from economic to cultural globalisation, Figure 2 plots the correlation between populist voting and the share of foreign population by states. Similar to Figure 1, the figure shows that no positive correlation between migration and populist voting can be detected in Germany and the U.S. Even more surprising, the populist vote share is negatively correlated with migration in both countries. Hence, populist voting is especially pronounced in states with lower migrant shares.

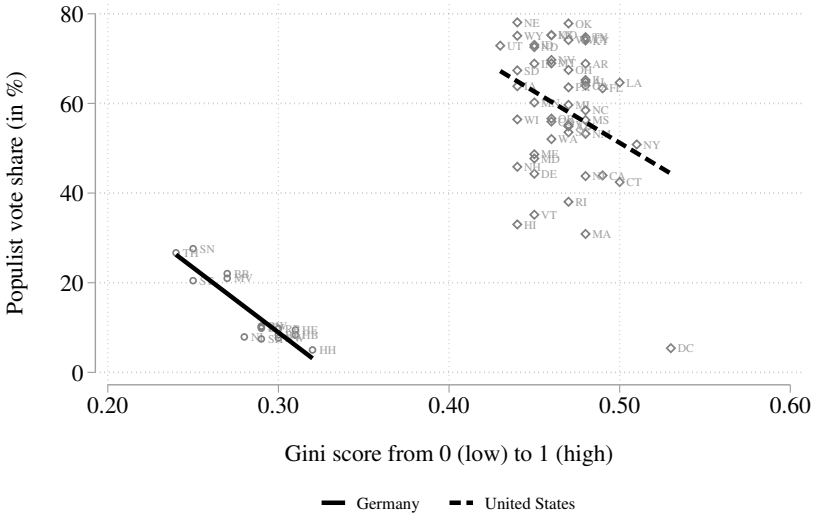
An additional factor raised in the literature is economic inequality, often connected to progressing globalisation. Figure 3 plots the state-level Gini coefficients against the respective populist vote shares. The figure strikingly shows the absence of a positive correlation between inequality and populist voting. Again, a strong and negative correlation can be detected on the state level in Germany, while the correlation is only slightly negative in the U.S. From this follows, that states with high individual income inequality display lower populist vote shares than states with lower inequality between citizens.

Figure 2: Migration and populist voting in Germany and the U.S.



Notes: The figure shows the correlation between the migrant share in the population and the populist vote share on the state level in Germany (solid line) and the U.S. (dashed line) with the individual scores of the states in German (grey circles) and the U.S. (grey diamonds). The data comes from the German Federal Statistical Office and the Policy Map Project. The vote share data comes from the German Federal Election Commissioner and the MIT Election Data and Science Lab. For a detailed data description see Table A1.

Figure 3: Inequality and populist voting in Germany and the U.S.



Notes: The figure shows the correlation between the Gini inequality measure and the populist vote share on the state level in Germany (solid line) and the U.S. (dashed line) with the individual scores of the states in German (grey circles) and the U.S. (grey diamonds). The data comes from the German Federal Statistical Office and the Policy Map Project. The vote share data comes from the German Federal Election Commissioner and the MIT Election Data and Science Lab. For a detailed data description see Table A1.

In sum, although the arguments and causal mechanisms put forward by the literature that proposes a connection between progressing globalisation and populist voting are convincing, the evidence of the descriptive analysis of Germany and the U.S. suggests that the voters exposed to economic and cultural globalisation are not the ones driving the right-wing populist support. Rather, right-wing populist support is high in less or equally globalised regions that show rather equal income distributions. However, I do not argue that there is no connection between globalisation, inequality and populist voting. Rather, I argue that the relationship between globalisation and populist voting is an indirect one that runs through globalisation induced rising inequality between sub-national regions. To capture this relationship, it is important to work out the effect of globalisation on inequality.

4 Effect of Globalisation on Inequality

The effect of globalisation on inequality is heavily debated in the literature. Previous research has provided evidence that globalisation reduces poverty and inequality (e.g., Firebaugh, 2009; Milanovic, 2013) as well as proof for the opposite (e.g., Wade, 2004). This polarised picture stems from the fact that globalisation and inequality can be defined and operationalised in various forms, with methods and data also varying greatly (Mills, 2009; Ravallion, 2004).

An important component in narrowing down the complex relationship between globalisation and inequality is to subdivide the concepts along different operationalisations. While globalisation is a rather elusive term (see James & Steger, 2014), *economic* and *cultural* globalisation can be defined rather precisely. Economic globalisation refers to the growing interdependence of national economies through cross-border production and trade of goods and services as well as investment flows (Dicken, 1998; Yeung, 2002). In contrast, cultural globalisation describes international diffusion of people with different cultural backgrounds (Norris & Inglehart, 2019), the cross-border exchange of cultural goods and services (Kluver & Fu, 2004) as well as the international convergence of values and norms (Raab et al., 2008).

When scholars place globalisation in the context of inequality, they usually want to assess the impact of *economic* globalisation. But, just like globalisation, inequality can be defined in various ways. Ravallion (2004) proposes a comprehensive classification of inequality along three dimensions: horizontal vs. vertical inequality, absolute vs. relative inequality and country- vs. people-weighted inequality. These three dimensions by Ravallion (2004) are sketched in the following paragraphs. While the first and second dimension are outlined for conceptual clarity, the third dimension is of great importance for my approach.

The first dimension distinguishes between *country- vs. people-weighted inequality* and addresses the fact that countries are usually equally weighted in assessing global convergence and divergence of incomes (Ravallion, 2004). The alternative approach would be to equally

weigh individuals at a given income level within countries and use this measure to assess the between country income inequality. Using these population instead of country weights, studies find a convergence of global incomes (Bourguignon & Morrisson, 2002; Milanovic, 2005; Sala-i-Martin, 2002; Schultz, 1998). The second dimension Ravallion (2004) addresses is the difference between *absolute vs. relative inequality*. While relative inequality captures the individual income differences in relation to the mean, absolute inequality grasps the absolute difference between individual incomes (see Kolm, 1976). This absolute inequality addresses the fact that although all incomes in a given country might rise, some incomes might rise more than others.

The third dimension of Ravallion (2004) is concerned with *horizontal vs. vertical inequality* or more specifically, the horizontal vs. vertical effects of globalisation on inequality. Ravallion (2004, p. 15) defines the horizontal impact as changes amongst ex-ante equal individuals. The concept captures the fact that globalisation induced income increases of parts of the population and income losses of other parts can equal each other out, leading to a net inequality increase of zero in vertical terms. However, heterogeneity in economic predispositions makes some people within countries winners and others loser of globalisation processes (Kriesi et al., 2006). When the group of winners is larger than the group of losers, between country income inequality decreases (vertical inequality), while within country inequality nonetheless rises (horizontal inequality) (Ravallion, 2004).

Using this conceptual clarity, a general pattern in the effect of globalisation on inequality emerges. Due to the increased mobility of goods, capital and labour as well as the spread of technological innovation, globalisation achieves a drop of inequality *between* countries, i.e., a convergence in global income (see, e.g., Milanovic, 2005; O'Rourke, 2001). But research also finds a stark surge of inequality *within* countries because of the uneven spread of globalisation benefits (see, e.g., Bourguignon, 2015; Freeman, 2009; Niño-Zarazúa et al., 2017). Based on this finding, I argue that an important component in assessing the impact of globalisation on inequality and thereby its effect on populist voting is the horizontal within country inequality that arises on the sub-national level between regions, i.e., *spatial inequality*.

5 The Neglected Measure of Spatial Inequality

In this paper, I argue that spatial inequality is a largely neglected measure of income inequality and a previously overlooked determinant of populist voting. While a large number of publications is concerned with capturing the effect of income inequality on societal polarisation and populist voting on the country- i.e., macro-level (Duca & Saving, 2016; Guiso et al., 2017; Mukand & Rodrik, 2020; Persson & Aggeborn, 2017), only a small set of studies is concerned with income inequality on the meso- or micro level. The few existing studies, however, use the

Gini coefficient on the meso-level (Jesuit et al., 2009) or the income shares of certain portions of the population on the micro-level (Hartmann et al., 2022; Stoetzer et al., 2021; Voorheis et al., 2015). Due to the previously outlined limitations of these measures of inequality, these studies are not able to capture the desired concept of within country inequality.

A notable exception to this is the approach by Dorn et al. (2018), in which three different measures of income inequality are employed to measure the effect of income inequality on extremist voting in Germany between 1990 and 2014. Two of these measures are located on the household level and capture the household income difference to the national median as well as the difference to the national poverty line. The third measure quantifies inequality via the county median income on the regional level. Dorn et al. (2018) find a positive correlation between all three measures of income inequality and extremist voting.

Building on these findings, I extend this study in three ways. First, by moving from the analysis of extremist voting to the analysis of right-wing populist voting[3], with the argument that the proposed mechanism between income inequality and voting behaviour is strongly related to the societal polarisation that is directly picked-up by the rhetoric of populist actors. Second, with the U.S., I include a second country in the analysis to rule out the possibility of a confounding variable bias, as Eastern and Western Germany have still not achieved convergence in economic and cultural terms (Kreutzmann et al., 2019; Pesthy et al., 2021). If the mechanism can also be empirically detected in the U.S., the argument can be made that the correlation between populist voting and income inequality in Germany is not entirely based on the aftermath of Germany's division. Additionally, if a correlation can be established in both countries, the argument can be made that the correlation is independent from country specific factors in the U.S. like the two-party system or election type.

Third, I specifically focus on income inequality on the meso- and not the micro-level. Previous contributions have shown that the socioeconomic profile and direct exposure to economic globalisation of populist voters' does not systematically differ from voters of other parties (Hainmueller & Hiscox, 2007, 2010; Rooduijn, 2018). Rather, differences exist on the regional level (Colantone & Stanig, 2018) with the possible connection being that people vote for populist actors based on pessimistic sociotropic evaluations of their local communities irrespective of whether they themselves benefit or lose from progressing globalisation (Hays et al., 2019). Therefore, the concept of spatial inequality does not only capture the possible correlation between individual income inequality and populist voting but also the effect that individuals with adequate incomes are motivated to vote for populist actors, because they just witness the regional income inequality in their social and societal environment as well as a decline in the middle class' income share. This type of inequality can, however, not be captured with tra-

[3]This is a considerable difference as none of the German populist parties are currently classified as extremist by the German Verfassungsschutz, which is the coding approach by Dorn et al. (2018)

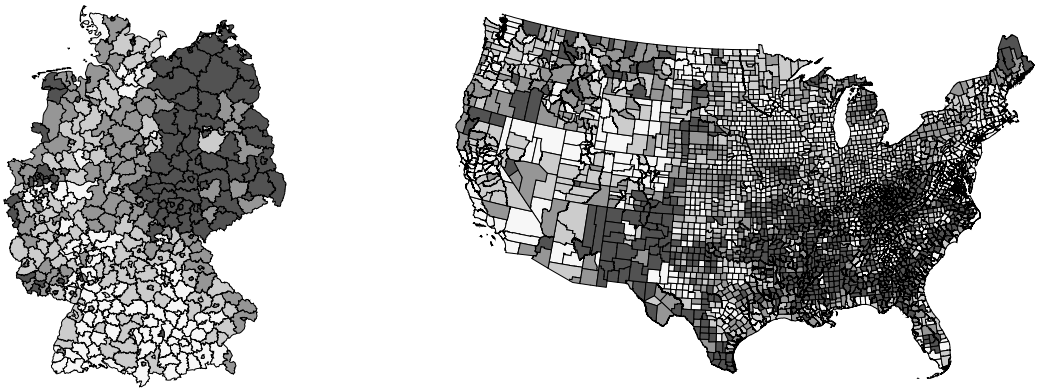
ditional measures of inequality but is a specific type of horizontal within country inequality, which I term spatial inequality.

The spatial inequality index is calculated as the difference between the county level median household income and the average national median income. The median household income for the U.S. comes from the Census Bureau (Census, 2019a). For Germany, I use the average disposable income per capita, which is retrieved from the German Regional Atlas (Destatis, 2017b). Using the average in per capita income in Germany and the median household income in the U.S. does not bias the estimates, as the household income in both cases is analysed in relative terms to the national average and median.[4] I calculate spatial inequality (SI) as the difference between the county average/median income and the average national (median) income with the following equation:

$$SI_c^n, t = 100 * \frac{I_c^n, t - \overline{MI}_t^n}{I_t^n} * -1$$

where *SI* is the spatial inequality in a county (c) of country (n) in a given year (t). Spatial inequality is a function of a respective county's average/median income (I) minus the corresponding national average (median) income ($\overline{MI}$) and divided by the average (median) income. The product is multiplied with -100 to give the percentage point difference in spatial inequality with higher values indicating higher spatial inequality. Figure 4 plots the calculated the spatial inequality in Germany and the U.S.

Figure 4: Spatial inequality in Germany and the U.S.



Notes: The figure shows the spatial inequality in Germany (left map) and the U.S. without Alaska (right map) on the county level. Darker regions indicate a higher spatial inequality. The colouring scheme for Germany is: White (-63 to -7), light grey (-7 to 0), grey (0 to 9), dark grey (9 to 27). The colouring scheme for the U.S. is: White (-172 to -11), light grey (-11 to 4), grey (4 to 17), dark grey (17 to 56). The data comes from the German Regional Atlas and the U.S. Census Bureau.

The figure shows that both countries display a large regional variance in spatial inequality. The values range from -63% (white) to 27% in Germany (dark grey) and -172% (white) to 56%

[4]The income data is only missing for one county in the U.S.

(dark grey) in the US. The figure also shows regional clusters of spatial inequality. In Germany, spatial inequality is most pronounced in Eastern Germany with some smaller clusters in Western Germany, like in the Ruhr region, a heavily industrialised former mining region. In the U.S., the picture is more diverse with clusters in the Deep South, the Northwest and New Mexico but also several smaller clusters in less populated counties. Based on this first descriptive insight the question arises how spatial inequality is connected to populist voting.

6 Spatial Inequality and Right-Wing Populist Support

In this paper I propose a two-step answer on how spatial inequality effects populist support. First, I elaborate how economic grievances can be linked to voting for right-wing populist actors whose main political issues are not entirely centred around economic grievances and inequality but strongly focus on cultural and nativist policy positions. Second, I argue why the link between economic grievances and right-wing populist voting is more pronounced on the regional than on the individual level.

In defining populism, I follow Mudde (2004, p. 543) who states that populism is a thin ideology in which the population is "separated into two homogeneous and antagonistic groups, 'the pure people' versus 'the corrupt elite' ". Right-wing populists are further characterised by "strong conservative and nationalist positions" and a focus on "cultural and moral values, national self-interest and identity, and authority" (Bayerlein, 2021, p. 413). Usually classified as right-wing populists, Mr. Trump and the AfD do not extensively focus on economic grievances and inequality but a variety of issues, that centre around nationalism, traditional and authoritarian values as well as hostility towards minorities with economic issues only being addressed in relation to these sociocultural topics. At first glance, these sociocultural issues are therefore not directly related to economic grievances and spatial inequality.

Moving beyond the superficial impression that economic grievances are not related to right-wing populist voting, I argue that spatial inequality increases the societal polarisation between rich counties and counties left behind, which in turn creates favourable conditions for the populist anti-elite rhetoric that 'the corrupt elite' is not acting for the benefit of 'the left behind people'. On the surface, this output condition might be more beneficial for the host-ideology of left-wing populists to resonate with the electorate. But, whether or not societal polarisation can be utilised by populists for their own gains depends less on the origin of the societal polarisation and more on the prevalence of societal group conflicts that fit into the narrative put forward by - and rooted in the host-ideology of - populist actors.

The right-wing populist 'we vs. them' rhetoric usually centres around three different groups: the elite, the majority, and the minority (Rodrik, 2018). Despite this rhetoric, right-wing populist actors provide narratives who 'the elite' and 'the minorities' are for the purpose of politi-

cal mobilisation. To achieve this mobilisation, the narratives have to resonate with pre-existing cleavages salient in society. This consideration is based on symbolic theories of political behaviour in that individuals form symbolic predispositions like prejudices, nationalism and xenophobia, which can then be activated by political actors by linking them to other issues like economic decline (Hays et al., 2019; Sides & Citrin, 2007). From this point of view, economic and cultural explanations are not competing with but are closely related to each other (Baccini & Weymouth, 2021; Ballard-Rosa et al., 2022; Mutz, 2018; Noland, 2019).

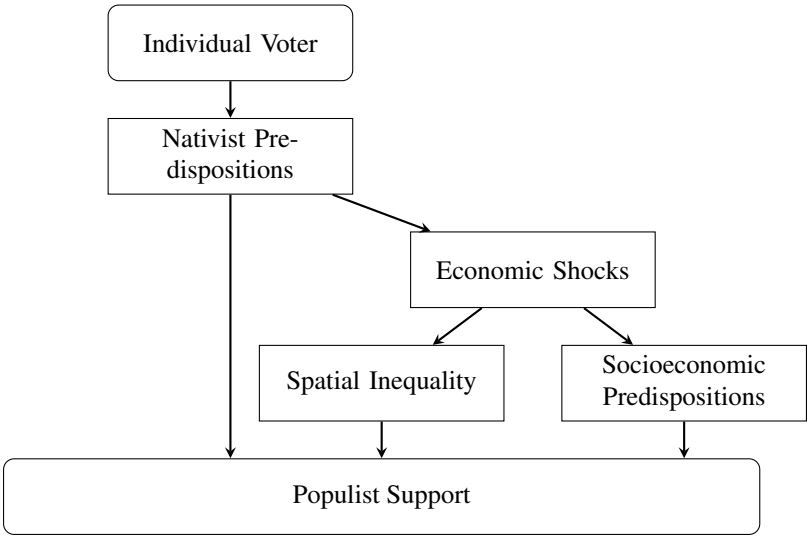
The close relationship between economic and cultural explanations is based on the fact that the specific form of populism is determined by societal symbolic predispositions and cleavages, i.e., left-wing populism if the mobilisation occurs along an economic cleavage and right-wing populism if the mobilisation narrative is rooted in a cultural conflict dimension (Funke et al., 2020). In Germany and the U.S., the cultural conflict dimension is highly salient in societies, making a high vote share for right-wing populists more likely.

Based on these considerations, the main argument is that cultural in-group vs. out-group symbolic predispositions can be activated by economic grievances like spatial inequality and lead to surges in right-wing populist voting even though the populist actors do not directly address the economic but cultural grievances deeply rooted withing societies. Thus, spatial inequality as an economic phenomenon can affect populist voting by activating symbolic predispositions in the form of hostilities towards minority groups. Previous research has already provided evidence for the activation of populist voting potential through economic shocks (Autor et al., 2020; Autor et al., 2016; Colantone & Stanig, 2018; Rodrik, 2018). The only difference is that spatial inequality is a slowly unfolding economic shock, which can remain undetected for a prolonged period of time nevertheless activating symbolic predispositions like nativism. These predispositions are also again more common in rural areas, further enforcing the mechanism (see Huijsmans et al., 2021).

The proposed link between spatial inequality and right-wing populist voting is also more pronounced on the regional than on the individual level. Previous contributions have shown that individuals with weak socioeconomic profiles directly affected by globalisation are not more likely to vote for populist parties (Rooduijn, 2018). Therefore, regional differences between populist voting can hardly be explained with egocentric motivations of voters. Rather, an additional path emerges via sociotropic motivations (Hays et al., 2019). In this line of reasoning, the economic grievances that activate the symbolic predispositions are not individual grievances but empathy based collective grievances that stem from the feeling that the people living in a certain area have been forgotten by the political elite.

In detail, this means that a person living in an area with relatively high spatial inequality will perceive his region/community as left behind based on the notion that other regions are better off economically. Depending on the pre-existence of nativist predispositions, this economic

Figure 5: Causal mechanism spatial inequality and populist support



shock in the form of spatial inequality, can make the individual voter susceptible to anti-elite and cultural conflicts narratives, in which 'the elites' and 'the others', i.e., migrants, are framed as responsible for everything that is wrong.

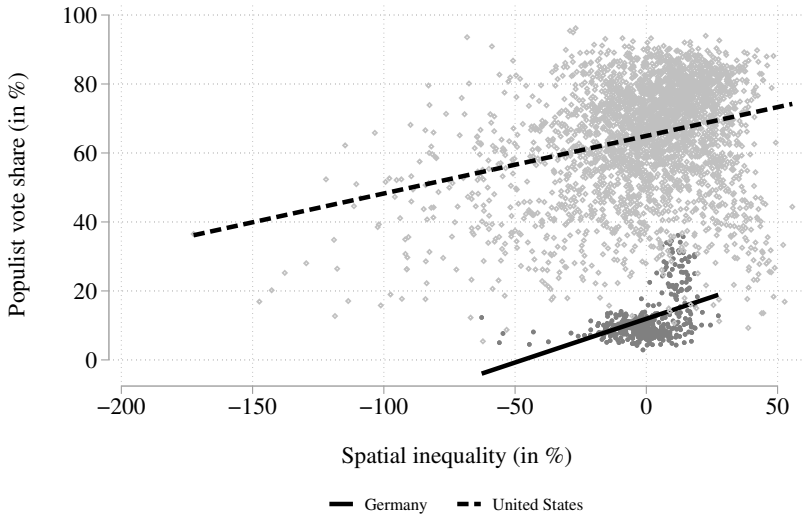
Previous contributions have already shown that people are able to correctly perceive the condition of their local environment (McKay, 2019; Newman et al., 2015) and this perception influences their voting decisions (Bolet, 2021). Based on these considerations and previous findings three possible pathways emerge of how individual voting behaviour is connected to populist support. Figure 5 schematically graphs these three paths.

The first and most obvious path runs via nationalist, xenophobic and racist predispositions (*Nativist Predispositions*), which make people vote for right-wing populist actors irrespective of socioeconomic predispositions, globalisation shocks or economic grievances (see Arzheimer & Berning, 2019). However, these nationalist predispositions hardly change over time. Therefore, an additional mechanism has to be at work that can explain the temporal variance in populist support. This variance is located in economic changes, which display higher variance across time and regions (*Economic Shocks*).

Although often discussed, contributions have shown that socioeconomic predispositions (*Socioeconomic Predispositions*) are not strongly correlated with populist support (Hainmueller & Hiscox, 2007, 2010; Rooduijn, 2018). Rather, the mechanism that links economic shocks to right-wing populist voting works via sociotropic considerations of (perceived) regional economic decline (*Spatial Inequality*) and not the personal dismay. Therefore, I argue that economic shocks and the resulting grievances can pave the way for the activation of negative predispositions by right-wing populist actors (Mayer & Nguyen, 2021, see also). To shed more

light on the proposed connection, Figure 6 plots the correlation between spatial inequality and right-wing populist voting in Germany and the U.S.

Figure 6: Spatial Inequality and Populist Voting in Germany and the U.S.



Notes: The figure shows the correlation between spatial inequality and the populist vote share in Germany (solid line) and the U.S. (dashed line) with German (dark grey circles) and U.S. (light grey diamonds) counties. The data to calculate spatial inequality comes from INKAR and the PolicyMap. The vote share data comes from the German Federal Election Commissioner and the MIT Election Data and Science Lab. For a detailed data description see Table A1.

The figure shows that high spatial inequality scores are positively correlated with right-wing populist vote shares in Germany and the U.S. The strength of the correlation is also quite similar in both countries. From this follows that counties with higher spatial inequality also display higher vote shares for right-wing populist actors. This empirical finding strongly supports the previous argument on the connection between spatial inequality and populist voting. From this, the following hypothesis is derived.

Hypothesis 1: Spatial inequality is positively correlated with populist voting.

However, when looking more closely at the data it becomes evident that some counties display high spatial inequality but nevertheless only show moderate populist support. The question becomes how these counties are seemingly able to cushion the blow of spatial inequality so that economic grievances do not translate into populist voting.

7 Scarcity of Public Goods

In this last section, I argue that the provision of public goods is a crucial component in mitigating the effect of spatial inequality on right-wing populist voting in Germany and the U.S. I base

this argument on the notion that the spatial inequality induced feeling of being left behind is reinforced by inadequate provision of public goods, i.e., medical care, education facilities, public transport, or broadband internet. Other contributions have already shown that rural areas differ in their political attitudes and also display a particularly high populist vote share when they lack a comprehensive public goods infrastructure (Diermeier, 2020; Kenny & Luca, 2021; Lüders et al., 2021; Rodríguez-Pose, 2020).

I follow these approaches to explain the fact that some counties display only moderate populist vote shares although showing relatively high spatial inequality. I argue that this is the case, because the mechanism that connects spatial inequality to populism closely resembles the mechanism outlined by previous contributions, which links public good provision to populist voting. It is the same feeling of abandonment by an elite in the metropolitan centres, which is perceived as being increasingly distant and not interested in the needs of people in non-prospering rural areas (Franz et al., 2018). This perception makes people in rural areas susceptible to the people-centrist and anti-elite rhetoric of populist actors. Conversely, the effect of spatial inequality on populist voting can be mitigated by public good provision, while public goods scarcity will further elevate existing grievances.

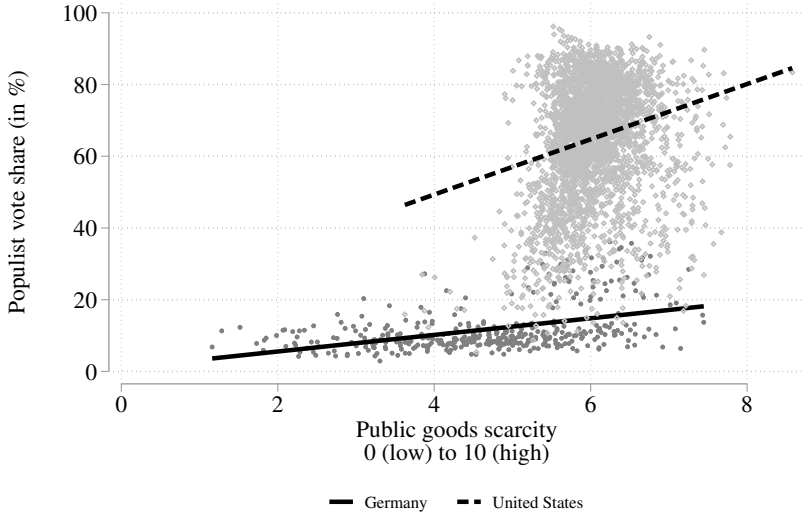
Based on Diermeier (2020), I measure the scarcity of public goods by combining the measures of four central components of public goods provision. These four components are the medical infrastructure, school density, traffic infrastructure, and broadband internet availability. The data for Germany comes from the INKAR database by the Federal and State Statistical Offices of Germany (INKAR, 2017). In detail, the medical infrastructure is measured as the combined standardized score of the hospital beds per 1,000 inhabitants (from 2017) and physicians per 10,000 inhabitants (from 2017). The school infrastructure is measured by the number of pupils in general education schools per 100 inhabitants (from 2017), with lower numbers indicating less adequate school infrastructure. The internet infrastructure is measured with number of households without a broadband internet connection (from 2017). Last, the traffic infrastructure is measured as the combined score of the average car journey time to the nearest motorway junction in minutes (from 2017), average car travel time to the nearest long-distance train station in minutes (from 2017), and the proportion of inhabitants with more than 1 kilometre linear distance to the next public transport stop with at least 10 departures per day (from 2017).

For the U.S., the data comes from the PolicyMap project (PolicyMap, 2019). Analogous to the data from Germany, the scarcity of public goods is again based on the four central components of public goods. The medical infrastructure is measured by combining the standardised rate of primary care physicians per 1,000 people (from 2016) with the rate of hospital beds per 1,000 people (from 2016). The school infrastructure is measured by the average percentage of students enrolled in public schools (from 2015-2019), which has been aggregated from the school district level to the county level. The internet infrastructure is measured with average

number of households without a broadband internet connection (from 2015-2019). The traffic infrastructure is measured by the average percent of workers who commuted to work using public transportation (from 2015-2019).

Using the four components of the public goods provision, I constructed a single measure of public goods scarcity by combining the four standardised components equally weighted. The resulting index ranges from 0 (no scarcity) to 10 (absolute scarcity). The values of the variable range from 1.2 to 8.6 with an average scarcity score of 4.7 in Germany and 6.0 in the U.S. To shed further light on the explanatory power of the public goods scarcity measure, Figure 7 plots the correlation between public goods scarcity and populist voting.

Figure 7: Public Good Scarcity and Populist Voting in Germany and the U.S.



Notes: The figure shows the correlation between public goods scarcity and the populist vote share in Germany (solid line) and the U.S. (dashed line) with German (dark grey circles) and U.S. (light grey diamonds) counties. The data to calculate public goods scarcity comes from INKAR and the PolicyMap. The vote share data comes from the German Federal Election Commissioner and the MIT Election Data and Science Lab. For a detailed data description see Table A1.

Based on the theoretical considerations and descriptive evidence, I argue that both factors - spatial inequality and public goods scarcity - both contribute to relative regional deprivation and often occur jointly, as economically deprived regions often show low provision of public goods (Feler & Senses, 2017). However, this also means that populist support is expected to be lower if the provision of public goods is adequate. Note that I do not argue for an interaction between both factors but that both factors contribute to right-wing populist voting independently, i.e., the effect of spatial inequality is not expected to be stronger if public goods scarcity is also high and vice versa. Rather, I argue that both factors work via the same mechanism of relative regional deprivation with one factor being able to compensate for the other. From this I hypothesise:

Hypothesis 2: Counties with high spatial inequality display a lower populist vote share, if the provision of public goods is higher.

In sum, I argue that spatial inequality is a previously neglected determinant of right-wing populist voting, as spatial inequality leads to societal polarisation, which creates favourable conditions for the anti-elite/people-centrist and 'us vs them' rhetoric to resonate with voters with nativist predisposition that have the sociotropic perception of economic decline. Second, I argue that this effect of spatial inequality is mitigated if the provision of public goods is adequate. This is because the inequality induced feeling of being left behind is reinforced or dampened by public good provision.

8 Estimation

Moving beyond the descriptive evidence of the previous section, I run econometric models to analyse the correlation between right-wing populist voting and spatial inequality as well as public goods scarcity. The main analysis calculates the predicted right-wing populist vote share (RWPVS) on the county level at given levels of spatial inequality and public goods scarcity. The effect of spatial inequality and public goods scarcity on populist voting are in a first step assessed in a joint sample of German and U.S. counties. In a second step, the sample is split up into a German and a U.S. sample to estimate whether the effect found in the joint sample also holds for the individual samples. This section first introduces the sample and the operationalisation of the variables and proceeds by providing details on the econometric model. Lastly, the results of the analysis are discussed.

8.1 Sample

The two hypotheses are tested with a comprehensive dataset that covers the U.S. presidential election of 2020 and the German federal election of 2021 on the county level.[5] In detail, the dataset contains information on the spatial inequality, scarcity of public goods provision and election results from 3,543 counties in Germany and the U.S. The sample countries are chosen for two specific reasons: First, the U.S. and Germany represent two distinctly different types of regimes in terms of political system (presidential vs. parliamentary) and electoral rules (first-past-the-post vs. proportional representation). From this follows that the correlation found in the analysis does most likely not stem from country or region-specific factors but from a systematic correlation between populist voting and the identified determinants. Second and most pragmatically, sub-national data is still scarce for many countries. This goes especially

[5]Note that some data pre-dates the election years. As a robustness check, I also calculate the correlation for the elections in 2016 and 2017 respectively. For further details see subsection 'Robustness Checks'.

for data related to public goods. However, for Germany and the U.S. the data needed for the analysis is available on the county level.

8.2 Main Variables

The main variables of interest the county level RWPVS (PopVote), the spatial inequality score, and the scarcity of public goods. The spatial inequality score (*SIQ*) is calculated as the difference between the county level median household income and the average national median income. The median household income data for the U.S. comes from the Census Bureau (Census, 2019a). For Germany, I use the average disposable per capita income, which is retrieved from the German Regional Atlas (Destatis, 2017b). The calculated relative income differences are normalised to generate the *SIQ* score ranging from 0 (low) to 10 (high). Normalising the *SIQ* enables me to later compare the size of the coefficients.

The scarcity of public goods (*PGS*) is measured by combining four central components of public goods provision. These four components are the medical infrastructure, school density, traffic infrastructure, and broadband internet availability. The data for Germany comes from the INKAR database by the Federal and State Statistical Offices of Germany (INKAR, 2017). For the U.S., the data comes from the PolicyMap project (PolicyMap, 2019). Using the four components of the public goods provision, I constructed a single measure of *PGS* by combining the four standardised components equally weighted. The resulting index ranges from 0 (no scarcity) to 10 (high scarcity).

The vote share data for Germany federal election comes from the German Federal Election Commissioners Office (Bundeswahlleiter, 2021) in combination with the pooled county level data compiled by ZEIT Online and Fusionbase (2021). The data on the U.S. presidential election is taken from MIT Election Data and Science Lab (MIT, 2020). For Germany, the identification of right-wing populism is based on the PopuList by Rooduijn et al. (2019). Based on this, the only party coded as right-wing populist is the AfD. Therefore, the right-wing populist vote share in Germany is equivalent to the vote share of the AfD. For the U.S. the coding justification of Donald Trump as a right-wing populist is based on the comprehensive coding of Funke et al. (2020).

8.3 Control Variables

The control variables introduced to the model are chosen based on the possible correlation with the dependent as well as the independent variables of the analysis. The first control variables centre around demographic factors as previous studies have shown that political preferences differ between men and women as well as religious and secular people (see, e.g., Arzheimer & Carter, 2009; Hobolt et al., 2011; Iversen & Soskice, 2001). The variables are operationalised

as the share of men in the population (*Gender*) and the share of citizens with a Christian denomination (*Religion*). Additionally, socioeconomic control variables are introduced into the model. Based on other contributions, I control for the influence of unemployment with the unemployment rate (*Unemployment*) and the import exposure (*Imports*) on the correlation of interest (Bolet, 2021; Colantone & Stanig, 2018; Gidron & Hall, 2017; Rodrik, 2018). Last, I also control for the share of people that belong to the group of people targeted in the populist rhetoric (*Group*), i.e., people of Latin American descent in the U.S. and asylum seekers in Germany (see, e.g., Adkisson & Peach, 2018; Arzheimer & Berning, 2019). The coding and sources of the control variables are displayed in Table A1.

8.4 Model

The model I apply in the analysis is a generalised linear model (GLM) as proposed by McCullagh and Nelder (1989). The GLM estimators is designed for nonlinear regressions where the assumptions of the standard ordinary least squared (OLS) regressions are violated due to the distribution of the dependent variable. Using GLM allows me to account for the fact that the dependent variable in the model is the percentage of voters that voted for a right-wing populist actor. The values of the variable can therefore only range from 0 to 100. In detail, I use a GLM model with a binomial dependent variable specification and a logit link function. Using this approach, I assure that the predicted values of the dependent variable are bound between 0 and 1, i.e., 0 and 100 percent. The baseline model is defined by

$$PopVote_{n,s,c} = \beta_1 * SIQ_{n,s,c} + \beta_2 PGS_{n,s,c} + \beta_3 \chi^j_{s,c} + \omega_n \gamma n + \kappa_s \pi s + \pi_c \lambda_c + \varepsilon, \quad (1)$$

with the logit link function given with

$$g(PopVote_c) = log(\frac{PopVote_c}{1 - PopVote_c}) \quad c = 1, ..., 3543, \quad (2)$$

where *PopVote* is the right-wing populist vote share in a county (c) of a state (s) in a country (n) that is regressed on the spatial inequality (*SIQ*) and the public goods scarcity (*PGS*) variable. Additionally, with χ a vector of the described control variables j on the state- s or county level c is included. Further, terms denoting country fixed effects (γ) and state fixed effects (π) with the corresponding coefficients. The logit link function takes the predicted *PopVote* value of the individual county observations (c) and binds it to 0 and 100. To tackle the heteroscedasticity, the models are run with robust standard unless indicated otherwise.

8.5 Results

The results of the first regression analysis are displayed in Table 1. In this analysis, the populist vote share (PopVote) in both countries is regressed on the respective spatial inequality (SIQ) and public goods scarcity (PGS) scores. The first model only reports the coefficient for both variables while including country fixed effects and robust standard errors. Both coefficients are positive and statistically significant indicating that spatial inequality and public goods scarcity are both positively correlated with right-wing populist voting.

The next model introduces state fixed effects to control for the unobserved variance on the sub-national level. Including state and country fixed effects reduces the size of the SIQ variable coefficient but has a slightly increasing effect on the size of the PGS variable coefficient. The following models address the impact of county and state specific factors in greater detail by gradually introducing the control variables. The first set of control variables addresses the above identified demographic variable Gender and Religion. Including these variables decreases the size of the SIQ and PGS coefficients.

The following model drops the previous set of control variables and introduces the control variables on socioeconomic differences. While the size of the PGS coefficient slightly increases through switching the control variables, the size of the SIQ coefficient more than doubles. The last variable, controlling for the group addressed in the right-wing populist rhetoric, is included in the next model. The size of the coefficients again slightly decreases. The last model introduces a combination of all control variable groups. In this model, both coefficients are smaller than in the previous models, while they both remain statistically significant. Taken together, the analysis jointly concerned with Germany and the U.S. reports statistically significant coefficients for the SIQ and PGS variables although the different model specifications result in some variation in the size of the coefficients of both variables.

In order to assess whether the found statistically significant correlation of both variables is also relevant in substantial terms, I jointly estimate the marginal effects of the SIQ and PGS variable. The model used to calculate the marginal effects is Model 6, as it reports one of the lowest AIC (prediction error) values and includes the control variables. The marginal effects are calculated between the 5th and 95th percentile of the SIQ and PGS distribution in the joint sample. The results are plotted in Figure 8. Since it is a joint sample, the predicted RWPVS has to be interpreted with some caution, as the vote share distribution varies quite substantially between both countries. Nevertheless, it is important to analyse the substantial relevance of the correlation also in the joint sample. The plot shows that both variables jointly determine the predicted RWPVS with high values of one variable increasing or compensating the effect of the other variable. The compensating effect is especially evident, when focusing on the upper- and lower-right corner. Focusing on the upper-right corner, the predicted RWPVS is especially high, when the PGS is equally high. When moving from the upper-right to the lower-right

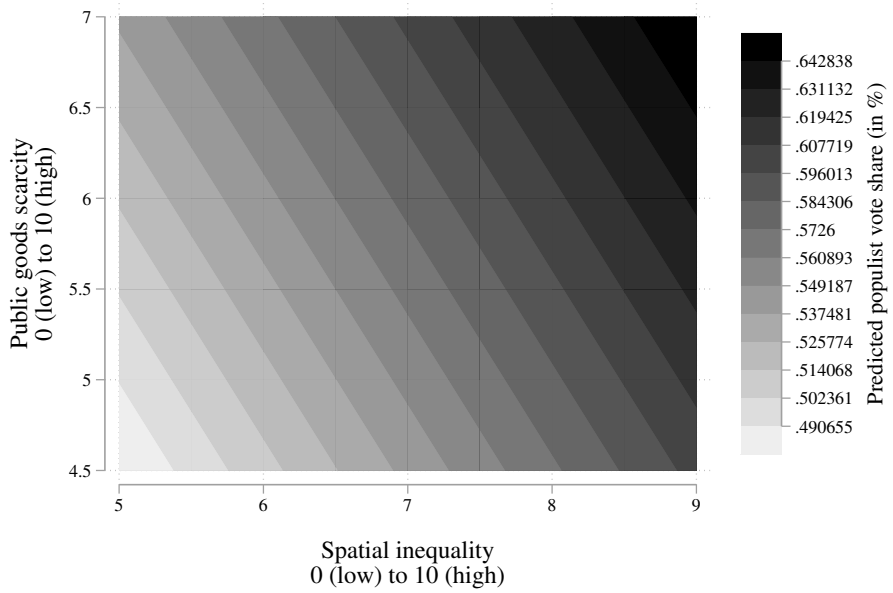
Table 1: Populist vote share - joint sample

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote	(6) PopVote
SIQ	0.133***	0.078***	0.087***	0.198***	0.134***	0.137***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PGS	0.179***	0.200***	0.128***	0.176***	0.159***	0.108***
	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Gender			-1.311***			-1.349***
			(0.19)			(0.19)
Religion			1.192***			1.144***
			(0.08)			(0.09)
Unemployment				-0.089***		-0.061***
				(0.01)		(0.01)
Imports				0.026*		-0.033**
				(0.02)		(0.02)
Group					-0.005***	-0.005***
					(0.00)	(0.00)
Constant	-1.460***	-1.363***	0.222	-1.501***	-1.303***	0.423*
	(0.16)	(0.17)	(0.25)	(0.15)	(0.16)	(0.25)
Observations	3,508	3,508	3,481	3,508	3,501	3,474
AIC	0.854	0.853	0.846	0.851	0.854	0.844
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	Yes	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

corner, i.e., towards more adequate provision of public goods, the predicted RWPVS decreases continuously at the same level of SIQ. In general, the first regression analysis concerned with the joint sample provides empirical support for both hypotheses.

Figure 8: Marginal effects - joint sample



The results of the second regression analysis are displayed in Table 2. In this analysis, the right-wing populist vote share (PopVote) in Germany is regressed on the respective spatial

inequality (SIQ) and public goods scarcity (PGS) scores. The first model again only includes the coefficient of the SIQ and PGS variable. Both coefficients are positive and statistically significant. Since the regression analysis follows the same parameters as the joint analysis, I focus on the noteworthy similarities and differences. First, the size of the coefficients of the SIQ and the PGS variable again changes considerably across the different model specifications. Other than in the joined analysis, in the German sample, the size of the SIQ coefficient is larger than the PGS coefficient in all the models. From this follows that the correlation between right-wing populist voting and SIQ is seemingly comparatively stronger in Germany than in the combined analysis of both countries.

Table 2: Populist vote share - Germany

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	PopVote	PopVote	PopVote	PopVote	PopVote	PopVote
SIQ	0.606***	0.195***	0.205***	0.460***	0.654***	0.377***
	(0.06)	(0.05)	(0.04)	(0.11)	(0.07)	(0.09)
PGS	0.216***	0.108***	0.185***	0.223***	0.164***	0.154***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
Gender			-2.220**			-1.323
			(0.89)			(0.97)
Religion			-1.475***			-1.690***
			(0.10)			(0.12)
Unemployment				0.022		-0.048***
				(0.02)		(0.02)
Imports				-0.098***		0.099***
				(0.03)		(0.03)
Group					-0.100*	-0.026
					(0.06)	(0.04)
Constant	-7.674***	-4.467***	-1.314	-6.422***	-7.598***	-3.251**
	(0.51)	(0.35)	(1.08)	(0.73)	(0.51)	(1.36)
Observations	399	399	392	399	392	385
AIC	0.531	0.587	0.530	0.541	0.535	0.544
State Fixed Effects	No	Yes	No	No	No	No

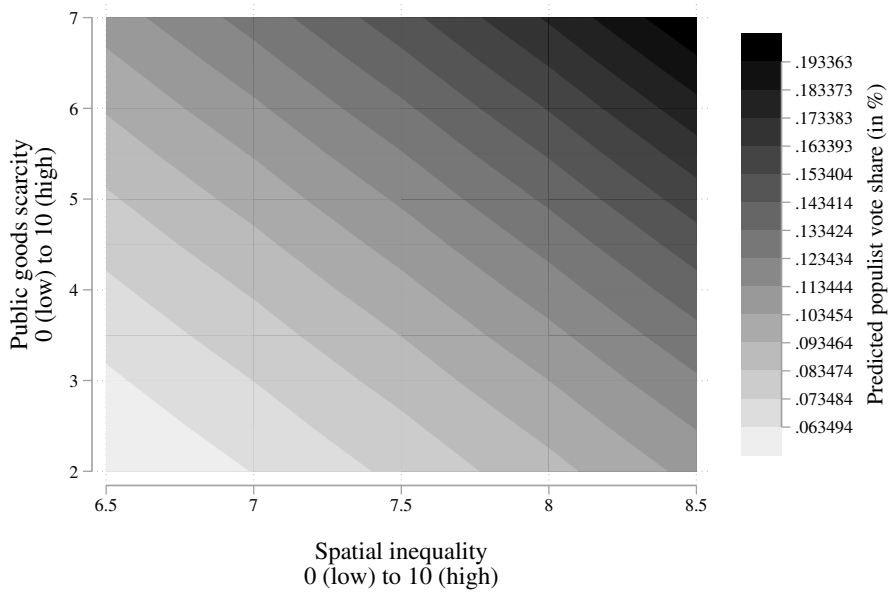
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Turning towards the substantial interpretation of the regression results, I again calculate the marginal effects of the correlation between spatial inequality, public goods scarcity, and populist voting based on Model 6. The results are plotted in Figure 9. The marginal effects plot shows that - when focusing on the effect size between the 5th and 95th percentile - both factors equally contributed to the size of the predicted populist vote share. This is especially evident when focusing on the upper-left and upper-right corner of the plot. At high levels of public goods scarcity and low levels of spatial inequality (upper-left corner), the predicted RWPVS is substantially lower than in a scenario of high levels of spatial inequality and high levels of public goods scarcity (upper-right corner).

More importantly for this analysis, the figure also strikingly shows the mitigating effect of public goods provision. When moving from a scenario of high levels of spatial inequality and high levels of public goods scarcity (upper-right corner) to a scenario of low levels of public good scarcity, i.e., high levels of public good provision (lower-right corner), the predicted

populist vote share drops from nearly 20 to 8 percent. Further, the predicted vote share is highest if both public goods scarcity and spatial inequality are high (upper-right corner).

Figure 9: Marginal effects - Germany



The last regression analysis is displayed in Table 3. This analysis focuses on the U.S. and again regresses the right-wing populist vote share on the SIQ and PGS variable. The first model again reports the coefficient of both variables without any control variables or fixed effects. Both coefficients are positive and statistically significant, replicating the findings from the previous regression analyses. In discussing the results, I again focus on noteworthy differences and similarities across the model specifications.

First, other than in case of Germany, the coefficient of the SIQ variable is not always larger than the PGS coefficient. However, the PGS coefficient is only larger in the first three models and - most importantly - not larger than the SIQ coefficient in the last model that uses the full set of control variables. Nonetheless, the SIQ coefficient is statistically significant throughout the different models. The same goes for the PGS coefficient. In general, there are two interesting facts to point out. First and similar to the German case, the coefficients of both variables of interest are statistically significant across the different model specifications. However, different from the German case, the PGS coefficient is sometimes larger than the SIQ coefficient in the models.

Shifting the focus to the predicted marginal effects of SIQ and PGS in the U.S. case, Figure 10 again plots the marginal effects based on Model 6. In general, the findings are similar to the combined analysis with low predicted populist vote shares being correlated with both low levels PGS and SIQ scores jointly and high predicted populist vote shares vice-versa. Consequently,

Table 3: Populist vote share - United States

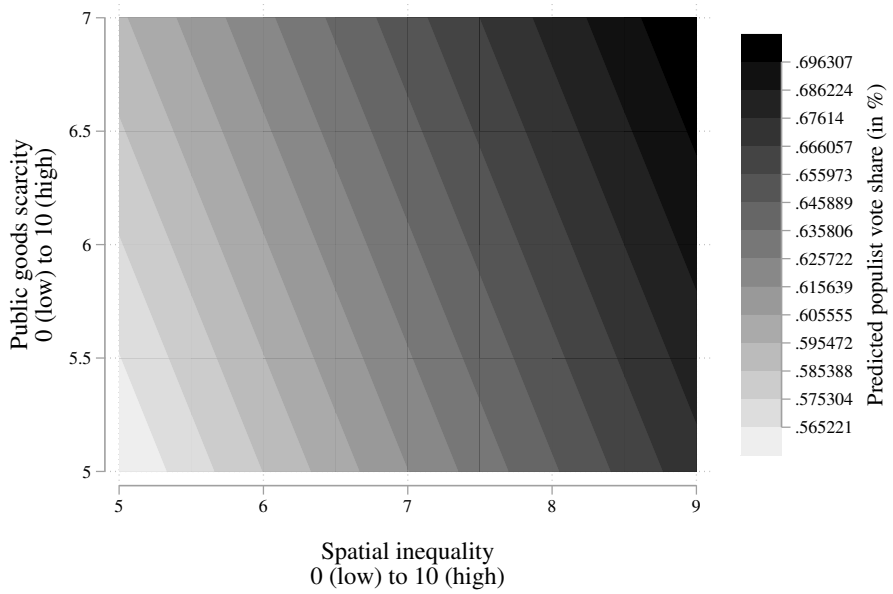
VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote	(6) PopVote
SIQ	0.133***	0.067***	0.071***	0.202***	0.135***	0.127***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PGS	0.158***	0.207***	0.078**	0.186***	0.130***	0.081**
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Gender			-1.441***			-1.475***
			(0.19)			(0.19)
Religion			1.617***			1.551***
			(0.08)			(0.09)
Unemployment				-0.110***		-0.077***
				(0.01)		(0.01)
Imports				0.060***		-0.019
				(0.02)		(0.02)
Group					-0.005***	-0.005***
					(0.00)	(0.00)
Constant	-1.334***	-1.264***	0.676**	-1.524***	-1.137***	0.761***
	(0.22)	(0.22)	(0.28)	(0.20)	(0.21)	(0.27)
Observations	3,109	3,109	3,089	3,109	3,109	3,089
AIC	0.897	0.894	0.885	0.892	0.891	0.879
State Fixed Effects	No	Yes	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

in a scenario of high spatial inequality and high public goods scarcity (upper-right corner), the predicted right-wing populist vote share is highest. However, the size of the predicted populist vote share is only reduced from around 70 to 66 percent when moving from a scenario of high spatial inequality and high public goods scarcity (upper-right corner) to a scenario of high spatial inequality and low public goods scarcity (lower-right corner). This indicates that within the 5 and 95% of the distribution, spatial inequality plays a bigger role in reducing or increasing the predicted populist vote share, while the compensating effect of public goods scarcity - although being observable - is diminished.

In conclusion, the three regression analyses addressing the correlation between spatial inequality, public goods scarcity and right-wing populist voting provide enough support for the first hypothesis according to which spatial inequality is positively correlated with right-wing populist voting. This finding is robust across different model specifications in a joint analysis of Germany and the U.S. and in the sample splits. The second hypothesis addressing the compensating effect of public goods provision could also find considerable support in the data. While the results of the joint analysis confirm the expectation that the predicted populist vote share is lower in a scenario of high spatial inequality if the provision of public goods is adequate, it has to be pointed out that the size of the coefficients considerably varies across the different model specifications. In particular, predicting the marginal effects between the 5th and 95th percentile reveals that spatial inequality can greatly by compensated by public goods provision in Germany, while the same is not equally true for the U.S. Although I find a compensating effect, it is much smaller when excluding extreme values of SIQ and PGS distribution in the calculation of the marginal effects. Irrespective of these differences, the predicted populist vote share is -

Figure 10: Marginal effects - United States



at high levels of spatial inequality - more than reduced by half, when moving from high to low levels of public goods scarcity.

8.6 Robustness Checks

The robustness of the results is checked by running additional sets of regression models that use OLS estimators and robust standard errors. The first set of models focuses on the joint sample and is displayed in Table A2. The first two models use OLS estimators and regress the right-wing populist vote share on the SIQ and PGS separately. In Model 3, both variables are introduced again jointly. The coefficients are statistically significant in all three models.

The additional models employ state and county fixed effects with an OLS estimator, while the last model includes the full set of control variables. While this does not affect the statistical significance of the coefficients, the size of coefficients shrinks considerably. This underscores the fact, that the control variables are - as expected - correlated with the main variables of interest as well as the populist vote share. Irrespective of this finding, the results of the previous analysis also hold when using different estimators and model specifications.

The second and third set of models focuses on the German and the U.S. case respectively. The results are displayed in Table A3 and Table A4. The robustness checks for the country samples follows the same path are the evaluation of the joint sample. Using OLS estimators, the coefficients of both variables remain statistically significant for both countries. A difference can, however, be detected in the size of the coefficients. In general, the SIQ coefficient is larger

than the PGS coefficient in the German sample, while it is rather the other way around expect in the last model in the U.S. sample.

An additional issue is that the data used in the analysis does not always correspond with the election year. In particular, the county level data for Germany is from 2017 while the data for the U.S. is from 2016, 2019 and sometimes an average value of the years 2016 to 2019. Due to the lack of other data sources, possible problems arising from this incongruence can only be addressed theoretically. Since my theoretical argument centres around the fact that spatial inequality and also public goods scarcity are slowing evolving grievances, data congruence is not necessarily essential. Rather, the argument can be made that the identified variables even have to be lagged as the societal grievances have to build up and be translated into actual voting decisions. This argument is underscored by the fact, that the models perform similarly well when regressing the SIQ and PGS scores on the right-wing populist vote shares in the 2016 U.S. and 2017 German election. The results are displayed in Tables A5, A6, and A7.

In sum, the additional regression analyses do not raise concerns about the robustness of the results. Using OLS instead of GLM estimators and dropping the logit link function produces similar findings. Introducing both variables of interest in separate models also has no effect on the results. Lastly, the date incongruence between the variables of interest and the elections does not raise concerns about the results of the analysis but are rather advisable against the backdrop of the proposed mechanism.

9 Conclusion

This paper addressed how the sub-national variance in right-wing populist support in Germany and the U.S., which is particularly pronounced in less globalised regions with rather equal income distributions, can be explained. To answer this question, I (1) proposed that spatial inequality is a crucial and previously neglected component in explaining the variance in populist voting and (2) argued that the connection between spatial inequality and populist voting is mitigated by the provision of public goods. To measure these latent concepts, I developed two indices of spatial inequality (SIQ) and public goods scarcity (PGS).

The SIQ index takes a novel approach to capturing income inequality by focusing on the horizontal inequality within countries that arguably arises as some regions reap the benefits of globalisation while others are left behind. The PGS index is a similarly novel approach to capturing regional disparity and makes them comparable within and between countries. I argued that the mechanism that links both concepts to right-wing populist voting are fairly similar making it possible that a compensating effect is in place. Supported by an empirical analysis, I found that spatial inequality correlates significantly with right-wing populist voting in Germany and the U.S. (Hypothesis 1) and that the correlation between spatial inequality and right-wing

populist voting is weaker, when the provision of public goods is adequate (Hypothesis 2). This compensating effect is - however - stronger in Germany than in the U.S, so that the hypothesis is only partially supported.

The findings support the argument that long developing economic grievances like spatial inequality can seemingly pave the way for the right-wing populist rhetoric and foster the activation of pre-existing group conflict narratives and nativist predispositions. The finding also underscores that although spatial inequality is correlated with right-wing populist voting in Germany and the U.S., this correlation is weaker, when public goods provision is adequate. This means that public goods can mitigate grievances and thereby reduce voters' susceptibility to group conflict narratives. But economic grievances only activate the pre-existing conflict potential that can then be exploited by right-wing populist actors. The provision of public goods does not resolve the existence of in-group vs. out-group conflict narratives salient in societies. Based on this, public goods can alleviate the symptoms, but not the cause of societal conflicts.

Although providing a first insight into the possible connection between spatial inequality, public goods scarcity, and right-wing populist voting, further research has to be conducted to shed more light on the causal mechanism and the robustness of the empirical results. In particular, future research has to include additional factors that might affect the relationship between spatial inequality and right-wing populist voting, like costs of living, additional demographic difference as well as a deeper analysis of the urban-rural divide. Additionally, the paper has only provided correlation analysis without any claim to causal identification. Further, research must address the causal mechanism in greater detail, especially since recent research has shown that the mechanism linking individual economic insecurities to populist voting are still not fully understood (Stoetzer et al., 2021). Lastly, the connection I draw between spatial inequality and globalisation has to be established in a more robust manner. Although I provide descriptive insights that the regions least affected by globalisation are also the ones with higher spatial inequality scores, it is necessary to establish this connection in a time-series analyses.

To conclude, the paper has provided first and important results on the impact of spatial inequality on right-wing populist voting. Additionally, the paper could show how public goods can potentially compensate for rising income inequalities within countries. For the transatlantic partnership between Germany and the U.S., the results indicate that there is an increasing need for a joint approach to not only grow together economically but to also jointly ensure prosperity for everyone. Ensuring this prosperity is the only way to secure the joint accomplishments against the looming wrath of the places left behind.

Appendix

A.1 Variables and Sources

Table A1: Variable description

Main variables	Description	Source	Note
SIQ	Regional income inequality	G: (Destatis, 2017b), US: (Census, 2019a)	0 (low) - 10 (high)
PGS	Public goods scarcity	G: (INKAR, 2017), US: (PolicyMap, 2019)	0 (low) - 10 (high)
PopVote	Vote share of AfD and GOP	G: (ZEIT & Fusionbase, 2021), US: (MIT, 2020)	
Control variables			
Gender	Men in population (share)	G: (INKAR, 2017), US: (PolicyMap, 2019)	Re-scaled for US
Religion	Christians (share)	G: (Zensus, 2011), US: (PolicyMap, 2019)	Protestants in US
Unemployment	Unemployment rate	G: (INKAR, 2017), US: (PolicyMap, 2019)	
Imports	Imports to GDP ratio	G: (Destatis, 2017a), US: (Census, 2019b)	State level data
Group	Refugees (G) & Hispanics (US)	G: (INKAR, 2017), US: (PolicyMap, 2019)	

G = Germany, US = United States

A.2 Robustness Check Tables

Table A2: Robustness check 1: Populist vote share - joint sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES	PopVote	PopVote	PopVote	PopVote	PopVote
SIQ	0.026***		0.021***	0.021***	0.035***
	(0.00)		(0.00)	(0.01)	(0.00)
PGS		0.040***	0.029***	0.029***	0.013***
		(0.00)	(0.00)	(0.01)	(0.00)
Constant	0.415***	0.375***	0.272***	0.272***	0.596***
	(0.03)	(0.03)	(0.03)	(0.08)	(0.05)
Observations	3,513	3,508	3,508	3,508	3,474
R-squared	0.710	0.709	0.716	0.716	0.637
Country fixed effects	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	No
Robust standard errors	Yes	Yes	Yes	No	Yes
State clustered SE	No	No	No	Yes	No
Control variables	No	No	No	No	Yes

(Robust) standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3: Robustness check 1: Populist vote share - Germany

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote
SIQ	0.013***		0.016***	0.016***	0.036***
	(0.00)		(0.00)	(0.01)	(0.01)
PGS		0.010***	0.010***	0.010**	0.017***
		(0.00)	(0.00)	(0.00)	(0.00)
Constant	-0.026	0.031***	-0.091***	-0.091**	-0.026
	(0.03)	(0.01)	(0.03)	(0.04)	(0.14)
Observations	401	399	399	399	385
R-squared	0.798	0.819	0.827	0.827	0.639
State fixed effects	Yes	Yes	Yes	Yes	No
Robust standard errors	Yes	Yes	Yes	No	Yes
State clustered SE	No	No	No	Yes	No
Control variables	No	No	No	No	Yes

(Robust) standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4: Robustness check 1: Populist vote share - United States

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote
SIQ	0.023***		0.016***	0.016**	0.030***
	(0.00)		(0.00)	(0.01)	(0.00)
PGS		0.062***	0.045***	0.045***	0.019**
		(0.01)	(0.01)	(0.02)	(0.01)
Constant	0.456***	0.252***	0.230***	0.230*	0.624***
	(0.03)	(0.05)	(0.05)	(0.12)	(0.06)
Observations	3,112	3,109	3,109	3,109	3,089
R-squared	0.366	0.371	0.378	0.378	0.255
State fixed effects	Yes	Yes	Yes	Yes	No
Robust standard errors	Yes	Yes	Yes	No	Yes
State clustered SE	No	No	No	Yes	No
Control variables	No	No	No	No	Yes

(Robust) standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5: Robustness check 2: Populist vote share - joint sample

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote	(6) PopVote
SIQ	0.099***	0.048***	0.050***	0.163***	0.101***	0.103***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PGS	0.143***	0.139***	0.092***	0.134***	0.115***	0.058**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Gender			-1.044***			-1.158***
			(0.16)			(0.16)
Religion			1.306***			1.234***
			(0.08)			(0.08)
Unemployment				-0.087***		-0.060***
				(0.01)		(0.01)
Imports				0.045***		-0.018
				(0.01)		(0.01)
Group					-0.008***	-0.008***
					(0.00)	(0.00)
Constant	-1.050***	-0.757***	0.360	-1.077***	-0.830***	0.704***
	(0.15)	(0.17)	(0.22)	(0.15)	(0.15)	(0.22)
Observations	3,536	3,536	3,503	3,536	3,529	3,496
AIC	0.867	0.870	0.858	0.863	0.866	0.855
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	Yes	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6: Robustness check 2: Populist vote share - Germany

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote	(6) PopVote
SIQ	0.349***	0.146***	0.088***	0.294***	0.137***	0.234***
	(0.04)	(0.03)	(0.03)	(0.07)	(0.03)	(0.05)
PGS	0.118***	0.036***	0.093***	0.120***	0.048***	0.068***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
Gender			-2.329***			-1.452*
			(0.76)			(0.81)
Religion			-1.142***			-1.326***
			(0.08)			(0.10)
Unemployment				0.008		-0.041***
				(0.01)		(0.01)
Imports				-50.763*		98.023***
				(26.01)		(27.93)
Group					0.025*	-0.024
					(0.01)	(0.03)
Constant	-5.098***	-3.680***	0.081	-4.578***	-3.719***	-1.726*
	(0.35)	(0.25)	(0.90)	(0.49)	(0.25)	(1.04)
Observations	399	399	392	399	392	385
AIC	0.570	0.624	0.573	0.580	0.626	0.589
State Fixed Effects	No	Yes	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7: Robustness check 2: Populist vote share - United States

VARIABLES	(1) PopVote	(2) PopVote	(3) PopVote	(4) PopVote	(5) PopVote	(6) PopVote
SIQ	0.092***	0.032**	-0.004	0.158***	0.041***	0.089***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PGS	0.161***	0.168***	0.184***	0.179***	0.125***	0.060*
	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Gender			-0.861***			-1.264***
			(0.13)			(0.16)
Religion			2.018***			1.589***
			(0.13)			(0.08)
Unemployment				-0.104***		-0.074***
				(0.01)		(0.01)
Imports				68.055***		-6.782
				(15.50)		(15.27)
Group					-0.018***	-0.007***
					(0.00)	(0.00)
Constant	-1.109***	-0.746***	-0.501**	-1.257***	-0.478**	0.881***
	(0.21)	(0.22)	(0.25)	(0.19)	(0.21)	(0.25)
Observations	3,137	3,137	3,111	3,137	3,137	3,111
AIC	0.905	0.908	0.899	0.900	0.902	0.887
State Fixed Effects	No	Yes	No	No	No	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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