

Industrial Location and Voter Participation in Europe

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Does the geographic concentration of industry ‘matter’ outside the United States? Observers have long speculated that while geographically concentrated industries may be influential in American politics, this is probably not the case in countries where the electorate votes more as a national constituency. Others disagree, urging that clustered industries have an advantage regardless of how the political map is drawn. We sharpen the terms of debate and weigh in with empirical evidence from a cross-sectional analysis of intended voter turnout in eight member-states of the European Union and a multi-year study of voter turnout in the Netherlands. These tests uniformly show that, across different types of electoral systems, including those in which voters vote as a national constituency, thereby removing any effects of electoral geography *per se*, workers in traded industries that are physically concentrated are, in fact, substantially more likely to vote than employees in traded but geographically dispersed sectors.

Geography is at the centre of a longstanding debate in political economy.¹ The question is whether the concentration of employment in particular regions is an important predictor of political participation and policy outcomes. Recent empirical work suggests that geographically concentrated industries are highly influential in American politics,² though, as some have conjectured,³ things might be different where the electorate votes more as a national constituency. The logic is that, in contrast to the United States, where single-member districts are highly prone to capture, the dispersion of employment in countries with greater district magnitude⁴ probably has little significance. We argue that this logic confuses political for geographic concentration: while the dispersion of employment across electoral ridings (i.e., political concentration) may be less influential with greater district magnitude, those industries that are physically ‘lumpy’ (i.e., geographically concentrated) should have an advantage regardless of how the political map is drawn. This is because employees in close physical proximity are more likely to articulate and act upon common interests, such that elected officials will surely take note of these demands, even if they serve a more nationally-representative constituency than

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¹ For a fuller synopsis of this debate, see Marc L. Busch and Eric Reinhardt, ‘Industrial Location and Protection: The Political and Economic Geography of U.S. Nontariff Barriers’, *American Journal of Political Science*, 43 (1999), 1028–50.

² Busch and Reinhardt, ‘Industrial Location and Protection’.

³ Ronald Rogowski, ‘Pork, Patronage, and Protection: How Geographic Concentration Affects Representation of Interests in Small-District Systems’ (paper presented to the Annual Meeting of the American Political Science Association, San Francisco, 1997).

⁴ By district magnitude, we mean, of course, the number of seats per constituency, not the physical size of the district.

their counterparts in the US Congress. Does the geographic concentration of industry 'matter' outside the United States?

We take up this question using data from the European Union (EU). We argue, and ultimately find, that workers in geographically concentrated EU industries are indeed more politically active than comparable workers in dispersed industries. In fact, this greater political activism is on par with what existing studies observe in the United States.⁵ Most telling, in this regard, is that geographic concentration helps turn out the vote even in the Netherlands, where the electorate votes as a national constituency. This suggests that, regardless of the electoral rules in play, the geographic concentration of industry matters in democratic politics. More generally, variation in the geographic concentration of industry is likely to shed light on topics ranging from declining union density to shrinking voter turnout.

In speaking to this debate, our article addresses two shortcomings in the literature. First, most measures of geographic concentration actually address political concentration, an industry's dispersion across electoral districts rather than physical space. This conflates theoretically and empirically distinct concepts. Theoretically, geographic concentration motivates a *demand-side* story about grass-roots activism and the capacity for collective action, whereas political concentration sets up a *supply-side* story about electoral representation. Empirically, geographic and political concentration are poorly correlated, once disentangled.⁶ We separate these two variables by using an innovative measure of geographic concentration that accounts for the spatial proximity of employees in physical space, irrespective of the lines drawn on an electoral map.

Secondly, we take into account the *interaction* between an industry's geographic concentration and its exposure to international trade. Our hypothesis is that industries with the grass-roots capacity to engage in collective action, given an interest to do so, are the ones most engaged and influential in politics. This hypothesis fits within the broader literature on the economics of voting, in that we expect 'pocketbook' issues to rally employees who live in close physical proximity to go to the polls. This interaction term is central in explaining why, even in the US context, findings concerning the importance of geographic concentration have hardly been robust.⁷ Its explanatory power in the EU context reveals the political importance of industrial location more broadly, with clear implications for the study of economic geography and spatial politics.

The article conducts two tests of the hypothesis that employees of geographically concentrated industries exposed to trade are more likely to vote. The first test, a cross-sectional analysis, uses data on intended voter turnout in eight EU countries (Belgium, France, Germany, Italy, the Netherlands, Portugal, Spain and the United

⁵ Marc L. Busch and Eric Reinhardt, 'Geography, International Trade, and Political Mobilization in U.S. Industries', *American Journal of Political Science*, 44 (2000), 703–19.

⁶ K. H. Midelfart-Knarvik, H. G. Overman, S. J. Redding and A. J. Venables, 'The Location of European Industry' (report prepared for the Directorate-General for Economic and Financial Affairs, European Commission, 2000); Busch and Reinhardt, 'Industrial Location and Protection'.

⁷ Busch and Reinhardt, 'Geography, International Trade, and Political Mobilization in U.S. Industries'; Rogowski, 'Pork, Patronage, and Protection'; Fiona McGillivray, 'Party Discipline as a Determinant of the Endogenous Formation of Tariffs', *American Journal of Political Science*, 41 (1997), 584–607; Daniel Treffer, 'Trade Liberalization and the Theory of Endogenous Protection: An Econometric Study of U.S. Import Policy', *Journal of Political Economy*, 101 (1993), 138–60; Wendy L Hansen, 'The International Trade Commission and the Politics of Protectionism', *American Political Science Review*, 84 (1990), 21–46; James Snyder, 'Political Geography and Interest-Group Power', *Social Choice and Welfare*, 6 (1989), 103–25; John J. Pincus, 'Pressure Groups and the Pattern of Tariffs', *Journal of Political Economy*, 83 (1975), 757–78.

Kingdom) from a spring 1996 Eurobarometer survey. The second test examines voter turnout in the Netherlands, which votes as a national constituency, using the 1981, 1982 and 1986 Dutch Parliamentary Election Studies. Both tests uniformly show that, across different types of electoral systems – most notably, the Netherlands – workers in traded industries that are geographically concentrated are far more likely to turn out to vote than employees in otherwise comparable but geographically dispersed industries.

The article proceeds in three sections. The first briefly sketches the theory. The second outlines the method and results for each of the empirical tests. The third presents a number of robustness checks. The last discusses some broader implications of these results for a variety of political economy debates.

GEOGRAPHIC CONCENTRATION AND POLITICAL PARTICIPATION

Following Mancur Olson, the endogenous protection literature has long predicted that geographically concentrated industries are more likely to be politically active.⁸ The logic is that physical proximity allows for more frequent and face-to-face interactions and denser social networks. It thereby reduces the transaction costs inherent in organizing and monitoring collective action. For these reasons, if the members of a group are geographically concentrated, they have greater capacity to articulate and act upon their common political interests. Of course, if a group of individuals does *not* share many putative common interests, this capacity will remain untapped.

In an era of highly globalized markets, one important wellspring of common interest – though not the only one – is an individual's sector of employment. As the political economy literature has firmly established, the specificity of assets, or, to put it another way, the difficulty of profitably putting resources (labour, capital, etc.) to another use, links the interests of individuals with those of their industry as a whole.⁹ The most definitive accounting suggests that asset specificity has soared in most developed democracies in the past few decades, reaching historical highs in Britain and France, for example.¹⁰

Given this point, the intensity of the interests shared by members of a given industry depends on the sector's exposure to trade. Such exposure derives from competition either for export markets or against imports. The rationale is that trade policy directly influences the market opportunities available to export-oriented and import-competing industries, and indirectly influences their demands for other policies that shape their competitiveness, from anti-trust legislation to health care. Under these circumstances, workers and management have much to gain from co-operation; policy developments that promote the industry's exports or, equally, reduce import pressure, benefit both labour and capital in that sector. By way of contrast, the fate of non-traded industries is influenced by broader policies aimed at creating wealth more generally, such that individuals in these sectors are

⁸ Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, Mass.: Harvard University Press, 1971). See, for example, Trefler, 'Trade Liberalization and the Theory of Endogenous Protection'; Cheryl Schonhardt-Bailey, 'Lessons in Lobbying for Free Trade in 19th Century Britain: To Concentrate or Not', *American Political Science Review*, 85 (1991), 37–58; Real Lavergne, *The Political Economy of U.S. Tariffs: An Empirical Analysis* (Toronto: Academic Press, 1983).

⁹ James E. Alt, Jeffrey Frieden, Michael J. Gilligan, Dani Rodrik and Ronald Rogowski, 'The Political Economy of International Trade: Enduring Puzzles and an Agenda for Inquiry', *Comparative Political Studies*, 29 (1996), 689–717.

¹⁰ Michael J. Hiscox, *International Trade and Political Conflict: Commerce, Coalitions, and Mobility* (Princeton, N.J.: Princeton University Press, 2001), pp. 19–20.

expected to have more varied, and therefore less shared, interests.¹¹ Of course, trade is not the only source of collective interest, but it is an important one, a point which has a rich tradition in comparative political economy.¹² We thus hypothesize that, among industries exposed to international trade, those which are geographically concentrated are likely to be more politically active.

A growing body of evidence bears out this hypothesis. For example, Wendy Hansen finds that geographically concentrated US industries were more likely to secure favourable rulings on escape-clause, anti-dumping and anti-subsidy suits between 1974 and 1985.¹³ Likewise, Helen Milner shows that spatially lumpy industries in the United States were forced to make fewer trade concessions in negotiating the North American Free Trade Agreement.¹⁴ Kevin Grier, Michael Munger and Brian Roberts report that geographically concentrated US industries spent much less on campaign contributions in 1978 and 1984, probably because elected officials recognized their greater potential to vote as a bloc.¹⁵ Along similar lines, our study of the United States finds that American employees who work in close physical proximity are more likely to give money to political campaigns, as well as to vote.¹⁶ Still, the question lingers: are these findings a reflection of the US electoral map?

One reason to suspect that they are is advanced by Ronald Rogowski, who explains that the small single-member districts in the US House of Representatives are especially prone to capture, giving rise to 'pork barrel' politics, in particular.¹⁷ The underlying logic is that smaller ridings are necessarily more responsive to special interests, whereas districts of larger magnitude compel elected officials to cater to more heterogeneous constituents. This, after all, helps explain the truism of American trade politics: namely, that the House is more protectionist than the Senate, and the Senate is more protectionist than the Executive.¹⁸ If voters, instead, cast their ballots as a single national constituency, the expectation is that policies more in line with 'national interest' considerations will prevail over pork-barrel politics.¹⁹

We do not disagree with this logic, but rather insist that the wrong variable is being called into question. More to the point, this expectation implicates political concentration (the dispersion of industry across electoral ridings), *not* geographic concentration (the dispersion of employment in physical space), which we anticipate to be of political consequence regardless of how the electoral map is drawn. This is because workers in close physical proximity are more likely to interact, and therefore identify, reinforce and

¹¹ Kenneth F. Scheve and Matthew J. Slaughter, 'What Determines Individual Trade-Policy Preferences?' *Journal of International Economics*, 54 (2001), 267–92.

¹² Hiscox, *International Trade and Political Conflict*; Ronald Rogowski, *Commerce and Coalitions: How Trade Affects Domestic Political Alignments* (Princeton, N.J.: Princeton University Press, 1989).

¹³ Hansen, 'The International Trade Commission and the Politics of Protectionism', p. 36.

¹⁴ Helen V. Milner, 'Industries, Governments, and the Creation of Regional Trade Blocs', in Edward D. Mansfield and Helen V. Milner, eds, *The Political Economy of Regionalism* (New York: Columbia University Press, 1997), pp. 77–106, at p. 99.

¹⁵ Kevin B. Grier, Michael C. Munger and Brian E. Roberts, 'The Determinants of Industry Political Activity, 1978–1986', *American Political Science Review*, 88 (1994), 911–26, p. 918.

¹⁶ Busch and Reinhardt, 'Geography, International Trade, and Political Mobilization in U.S. Industries'.

¹⁷ Rogowski, 'Pork, Patronage, and Protection'.

¹⁸ Susanne Lohmann and Sharyn O'Halloran, 'Divided Government and US Trade Policy: Theory and Evidence', *International Organization*, 48 (1994), 559–632.

¹⁹ Ronald Rogowski, 'Trade and the Variety of Democratic Institutions', *International Organization*, 41 (1987), 203–23.

ultimately act upon their common interests.²⁰ Ours, in other words, is a *demand-side* theory of participation, in contrast to political concentration, which underpins a supply-side theory of representation. In this light, the ‘hardest test’ case is the Netherlands; if geographic concentration helps explain political activism in a country that votes as a single national constituency, it should matter across the board.

How does our hypothesis on geographic concentration fit within the larger literature on economic voting? Most scholarship in this area emphasizes the importance of ‘sociotropic’ versus ‘egocentric’ economic voting, focusing, respectively, on economy-wide (or national purse) versus personal (or pocketbook) considerations, either retrospectively or prospectively.²¹ The evidence has been mixed, with some results bearing out the pocketbook hypothesis, at least in US House and presidential elections and in French parliamentary elections.²² In the European setting, evidence in favour of national purse considerations has been stronger, but hardly definitive. Why such lack-lustre results? There is a growing recognition that the extent of economic voting is contingent upon contextual factors.²³ For example, Lee Sigelman, Carol Sigelman and David Bullock argue that economic perceptions are, themselves, shaped by pre-existing dispositions to the competing parties,²⁴ while Brad Gomez and J. Matthew Wilson argue that pocketbook voting behaviour prevails more among politically sophisticated citizens than among ‘low sophisticates’.²⁵ We submit that the geographic concentration of employees acts as a comparable contextual factor: economic self-interest matters for voting behaviour, but its impact is conditioned by the spatial proximity of those with like interests.

MODEL AND RESULTS

The first hurdle to overcome is conceptual. Conventional measures of geographic concentration, as noted above, are distance-free, giving rise to what is known as the ‘checkerboard problem’:²⁶ that is, most models count only the sheer number of districts in which the workers can be found, ignoring how close those districts are to each other. Here, we employ an alternative measure based on the distance between each employee and the ‘centroid’, or mid-point, of a given industry.²⁷ Denote industries as i , $i \in \{1, 2, \dots, n\}$ regions as k , $k \in \{1, 2, \dots, m\}$, and the size of industry i in region k as j_{ik} . We take the latitude and longitude of the population-weighted centroid of region k , labelled

²⁰ Busch and Reinhardt, ‘Geography, International Trade, and Political Mobilization in U.S. Industries’.

²¹ Donald R. Kinder and D. Roderick Kiewiet, ‘Economic Discontent and Political Behavior: The Role of Personal Grievances and Collective Economic Judgments in Congressional Voting’, *American Journal of Political Science*, 23 (1979), 495–527.

²² Michael S. Lewis-Beck and Mary Stegmaier, *Annual Review of Political Science*, 3 (2000), 183–219, pp. 192–4 and 203. For exceptions, however, see David W. Romero and Stephen J. Stambough, ‘Personal Economic Well-Being and the Individual Vote for Congress: A Pooled Analysis, 1980–1990’, *Political Research Quarterly*, 49 (1996), 607–16.

²³ Richard Nadeau, Richard G. Niemi and Antoine Yoshinaka, ‘A Cross-National Analysis of Economic Voting: Taking Account of the Political Context Across Time and Nations’, *Electoral Studies*, 21 (2002), 403–23.

²⁴ Lee Sigelman, Carol K. Sigelman and David Bullock, ‘Reconsidering Pocketbook Voting: An Experimental Approach’, *Political Behavior*, 13 (1991), 129–49.

²⁵ Brad T. Gomez and J. Matthew Wilson, ‘Political Sophistication and Economic Voting in the American Electorate: A Theory of Heterogeneous Attribution’, *American Journal of Political Science*, 45 (2001), 899–914.

²⁶ Busch and Reinhardt, ‘Industrial Location and Protection’; Michael J. White, ‘The Measurement of Spatial Segregation’, *American Journal of Sociology*, 88 (1983), 1008–18.

²⁷ Busch and Reinhardt, ‘Industrial Location and Protection’.

$\mathbf{p}_k = (p_k^{lat}, p_k^{long})$. Weighting by the size of each industry by region, we average the longitude and latitude across all regions, yielding the industry-specific centroid, or $\mathbf{c}_i = (c_i^{lat}, c_i^{long})$,

$$\text{where } \mathbf{c}_i = \frac{\sum_{k=1}^m \mathbf{p}_k j_{ik}}{m \sum_{k=1}^m j_{ik}}.$$

Then, for each industry, we average the (exponent of the scaled negative value of) distance from each region to the industry centroid, weighted by the size of each industry per region. That is, denoting the (great circle) distance as d_{ik} , the result is:

$$Geocon_i = \frac{\sum_{k=1}^m f(d_{ik}) j_{ik}}{m \sum_{k=1}^m j_{ik}}, \text{ where } f(d_{ik}) = e^{-d/s},$$

which ranges in principle between 0 and 1, with higher values signifying greater concentration.²⁸

Geocon is a data-intensive measure.²⁹ As it turns out, even the best EU-wide source for industry-specific data at the subnational regional level is relatively poor compared to what is available for the United States. Our starting point is Eurostat's *Regio* database, which lists industry variables by year by (nested) subnational regions of decreasing size, or what are known as NUTS1 or NUTS2 districts.³⁰ Industries are disaggregated into seventeen so-called NACE-CLIO categories, such as 'transport equipment' or 'banking and insurance services'. Calculating *Geocon* consistently across cases requires that no cell of data be missing, a fact which compels us to proxy employment with gross value added, given the spotty reporting of the former in *Regio*.³¹ These data, reported annually, are available no earlier than 1980 and no more recently than 1995. We use NUTS2-level data where these are available (Belgium, Spain, France, Italy, Netherlands, Portugal), and NUTS1 otherwise (Germany and the United Kingdom), excluding extra-continental territories, and obtaining the latitude and longitude of the centroid of each region from

²⁸ So defined, *Geocon* is restricted to assessing 'lumpiness' towards one central point. It does not perform well for strongly multimodal distributions. We emphasize, however, that no sector in any of the European countries in this article's samples exhibits multimodality in its spatial distribution, as verified by maps (available upon request) for each country-industry case. Here, s is chosen arbitrarily to scale the index so that extreme distances do not receive undue weight (e.g., by making it the mean distance among regions). White suggests using the exponent of negative distance. See White, 'The Measurement of Spatial Segregation', p. 1013.

²⁹ This formula for geographic concentration is a simpler derivative of White's ('The Measurement of Spatial Segregation', p. 1012, Equation 4), the average distance between every worker and every other worker in the industry. For the multi-country Eurobarometer sample used below, our measure is highly correlated with White's ($r = 0.975$), yielding wholly comparable results.

³⁰ The EU contains fifteen NUTS0 countries, about a hundred NUTS1 regions, and some 260 or so NUTS2 districts.

³¹ We thank Martin Hallet of the European Commission's Directorate-General for Economic and Financial Affairs for generously sharing his data on gross value added (GVA) by region. See also Martin Hallet, 'Regional Specialisation and Concentration in the EU', *Economic Papers No. 141* (Brussels: European Commission, 2000). For a list of 114 regions completing tiling the EU15, over the years 1980 through 1995 and the seventeen NACE-CLIO sectors, the correlation between GVA (available for all of this sample) and total employment (available from *Regio* for just 59 per cent of this sample) is 0.87 ($n = 18,153$). This validates our use of GVA as a substitute for number of employees.

standard GIS software.³² Working with the formula above, we then calculate centroids for our two tests, specific to each industry, in each country, for each year.

Intended Turnout in Next National Election, Eight EU Countries, 1996

Do workers in a traded industry exercise their vote more often if they are geographically concentrated? To find out, we conduct a test using Eurobarometer survey data from spring 1996 on 2,675 respondents in Belgium, France, Germany, Italy, Portugal, the Netherlands, Spain and the United Kingdom (UK).³³ We limit the test to these countries because other EU members fail to report industry characteristics by subnational (NUTS1 or NUTS2) regions. We choose 1996 because that is the only Eurobarometer survey that identifies respondents' detailed industry of employment. The survey selects from twelve goods and services industry categories (e.g., 'mining and quarrying', 'manufacturing', 'construction', etc.) for each respondent's current job (variable Q14 in the Eurobarometer). Matching those categories to the seventeen NACE-CLIO sectors, we merge in the *Geocon* score of the respondent's industry for 1995. We also include a measure of how exposed the respondent's industry is to trade (call it *Traded*), which, following OECD figures, is the value of import penetration (i.e., imports over non-exported domestic sales) or export dependence (i.e., exports over non-exported domestic sales), whichever is greater.³⁴ The typical respondent's industry exhibits a mean distance from worker to national industry centroid of 114 miles, with a range from 22 to 206 miles, which translate into *Geocon* scores from 0.82 to 0.19. The typical respondent's industry, given that service sectors are included, exhibits a *Traded* proportion of 0.13, ranging from 0 to 0.96. Manufacturing, however, is traded much more, with a mean sample value of 0.48 across these eight countries.

The survey asks the question, 'Which party would you vote for in the next [national] General Election?' If the answer is 'Would Not Vote', 'Don't Know', or 'No Answer', we code the person's intention to vote, or *Turnout*, as 0. However, if any political party is offered in response, we code *Turnout* as 1. *Turnout* is 1 in 76 per cent of the cases.³⁵ We expect respondents in traded industries to be more likely to (intend to) vote if their industries are geographically concentrated. That is, we expect the interaction term $Geocon \times Traded$ to positively affect the probability of intended turnout.

We estimate a probit regression of *Turnout* on *Geocon*, *Traded*, $Geocon \times Traded$, and a number of conventional voting behaviour control variables collected in the survey,

³² Subnational data by sector are not available for the other seven EU member states. For the UK *Geocon* calculations, we exclude Northern Ireland, and for Germany we exclude former East Germany and Berlin.

³³ Karlheinz Reif and Eric Marlier, *Eurobarometer 44.3OVR: Employment, Unemployment, and Gender Equality, February–April 1996* [computer file]. Brussels: INRA [producer]. Koeln: Zentralarchiv fuer Empirische Sozialforschung / Ann Arbor: Inter-University Consortium for Political and Social Research [distributors], 1998.

³⁴ See OECD, 'The OECD STAN Database for Industrial Analysis', February 2005, p. 27, available at www.oecd.org/dataoecd/53/21/34464010.doc. 'Non-exported domestic sales' is the value of production plus imports minus exports. Like *Geocon*, the trade data are cast at the national, not EU, level (thereby including internal and not simply external EU cross-border trade), and were obtained from three OECD datasets (STAN Database for Industrial Analysis, Structural Statistics for Industry and Services, and Statistics on International Trade in Services), all available via www.sourceoecd.org.

³⁵ 'No Answer' accounts for just a quarter of the sample's 0 values for *Turnout*. If we exclude these 168 cases, *Turnout* is 1 in 81 per cent of the remaining observations, and the results are qualitatively *identical* for both models in Table 1 below. (Indeed, the coefficient of $Geocon \times Traded$ increases to 5.1 and 5.5, with $p < 0.01$ in both cases.)

concerning education (age when education ceased, from D8), age (D11), marital status (1 if married or remarried, 0 if separated or otherwise, from Q5B), home ownership (1 if owns house/apartment, from Q6), gender (D10), urban residence³⁶ (0 if rural or small town, 1 if otherwise, from D25), and four income category indicators (with 'refused to state income' as the reference group, from D29_C),³⁷ plus dummies for each country and for each industry. We include the country effects to absorb the impact of important cross-national differences in factors such as compulsory voting³⁸ and registration laws, the nature of the party system and its enduring links to demographic groups, and other political institutions.³⁹ The other controls match those in traditional studies of individual-level voting behaviour.⁴⁰ While it would be desirable additionally to control for each individual's exposure and sensitivity to elite mobilization efforts, this Eurobarometer does not provide any such variables beyond education, which is already in our list. This is a limitation on which our second test will be able to improve. Note, however, that the country and industry dummies partially capture such differences here.

We estimate the model using probability weights stratified by country, following variable W1 in the survey. The first column of Table 1 (Model I) lists the results, which strongly bear out our hypothesis.⁴¹ In particular, the variable *Geocon* × *Traded* is positive and significant at two-tailed $p = 0.008$, even controlling for other important determinants of individuals' intent to vote.

³⁶ There are competing arguments regarding the impact of urban versus rural residence on turnout and political participation more generally. Both revolve around claims that a citizen's place in social networks is greater in one community type than the other. Sidney Verba, Norman Nie and Jae-On Kim's examination of these views in the context of seven countries finds somewhat greater evidence for the hypothesis that rural citizens vote more. See Sidney Verba, Norman H. Nie and Jae-On Kim, *Participation and Political Equality: A Seven-Nation Comparison* (Chicago: University of Chicago Press, 1978), pp. 269–85.

³⁷ This choice of reference category allows us to include over 500 respondents who did not report their income but meaningfully answered every other question in the model. This choice has no effect on the *relative* values of the income category coefficients. It merely means that, to draw inferences about the overall impact of income on turnout intention, we must test the null that the coefficients of the included income dummies are collectively equal to *each other*, not necessarily equal to zero. We report the results of such a test below.

³⁸ The conventional term 'compulsory voting' is rather misleading in this context (as opposed to, say, the totalitarian setting). To be sure, statutory penalties for non-voting may encourage voter turnout in certain countries, at least to the extent they are enforced (a critical question). This would be a problem if any of our countries had 100 per cent turnout. Of course, in practice, turnout intention does indeed vary considerably *within* each of the eight included countries; in no country does the sample mean exceed 0.83, in fact. Hence the country fixed effects in our regressions absorb any concerns about comparability across countries in that regard.

³⁹ Alan Siaroff and John W. A. Merer, 'Parliamentary Election Turnout in Europe Since 1990', *Political Studies*, 50 (2002), 916–27; G. Bingham Powell Jr, *Contemporary Democracies: Participation, Stability, and Violence* (Cambridge, Mass.: Harvard University Press, 1982); Robert W. Jackman, 'Political Institutions and Voter Turnout in the Industrial Democracies', *American Political Science Review*, 81(1987), 405–24.

⁴⁰ Peverill Squire, Raymond E. Wolfinger and David P. Glass, 'Residential Mobility and Voter Turnout', *American Political Science Review*, 81(1987), 45–66; Lee Sigelman, Philip W. Roeder, Malcolm E. Jewell and Michael A. Baer, 'Voting and Nonvoting: A Multi-Election Perspective', *American Journal of Political Science*, 29 (1985), 749–65; Russell J. Dalton, 'Cognitive Mobilization and Partisan Dealignment in Advanced Industrial Democracies', *Journal of Politics*, 46 (1984), 264–84; Steven J. Rosenstone, 'Economic Adversity and Voter Turnout', *American Journal of Political Science*, 26 (1982), 25–46.

⁴¹ The strongly significant model chi-squared indicates the model fits the data well. There is little collinearity among the control variables, as diagnosed by ordinary-least-squares (OLS) regression of each right-hand side (RHS) variable on all the others. These statements apply as well to all regression results reported elsewhere in the article. However, not surprisingly, *Geocon* and *Traded* do exhibit moderate to high (0.4 to 0.8) bivariate correlations with the interaction term, in all the tests. By raising the standard errors on the interaction term, this problem merely makes our inference more conservative.

TABLE 1 *Probit Models of Voter Turnout, Eight EU Countries, 1996, with Country and Industry Fixed Effects*

	I: Basic Model		II: Robustness Test Model	
	Coefficient	Robust SE	Coefficient	Robust SE
<i>Male</i>	0.23**	0.06	0.24**	0.06
<i>Homeowner</i>	- 0.01	0.07	- 0.01	0.07
<i>Married</i>	- 0.08	0.07	- 0.09	0.07
<i>Education</i>	0.03**	0.01	0.03**	0.01
<i>Age</i>	0.01**	0.00	0.01*	0.00
<i>City Dweller</i>	- 0.11	0.07	- 0.13	0.07
<i>Income Category</i>	-	-	-	-
One (Lowest)	0.32*	0.13	0.27*	0.13
Two	0.31**	0.09	0.29**	0.10
Three	0.25**	0.08	0.21*	0.09
Four (Highest)	0.34**	0.08	0.32**	0.09
<i>Traded</i>	- 4.66**	1.47	- 4.77**	1.52
<i>Geocon</i>	- 1.45	1.50	- 1.94	1.55
<i>Geocon × Traded</i>	4.44**	1.68	4.57**	1.74
<i>Months Till Next Election</i>	-	-	0.03	0.02
<i>Union Member</i>	-	-	0.07	0.07
<i>Public Sector Employee</i>	-	-	- 0.01	0.08
<i>Occupation Category</i>	-	-	-	-
Manager	-	-	0.05	0.13
White Collar	-	-	0.06	0.13
Manual Worker	-	-	0.05	0.12
<i>Worksite Size Category</i>	-	-	-	-
2-9 People (Smallest)	-	-	- 0.13	0.12
10-24 People	-	-	0.01	0.14
25-99 People	-	-	- 0.10	0.13
100-499 People	-	-	- 0.09	0.15
500 + People (Largest)	-	-	0.08	0.16
Constant	1.22	1.10	0.55	0.44
Number of observations		2,675		2,554
Model χ^2		148.79** (29)		141.35** (39)
Percent correctly predicted		76.5		77.2
Pseudo- R^2		0.05		0.05

*2-tailed $p < 0.05$; ** $p < 0.01$. Both models include country and industry dummies, which are omitted from the table to save space. The reference (omitted) categories for income, occupation and worksite size, respectively, are 'income not reported', 'self-employed' and 'works alone'. In both models $\text{Prob}(\textit{Turnout}) = 1$.

The substantive effect is strong as well: if we hold all other variables at their (appropriately weighted) sample means, set *Traded* to a value of 0.5 (such that the industry's exports or imports are half of domestic sales), and move *Geocon* from its minimum to its maximum, the predicted probability of intending to vote increases by 18.5 percentage points.⁴² This is a fairly substantial number. Based, as it is, on the average manufacturing trade exposure in the sample, this difference alone matches nearly the whole

⁴² Increasing *Geocon* just one standard deviation from its mean, in the same fashion, boosts the predicted probability by 5 percentage points.

gap between the European Union countries with the highest and lowest turnout rates. To be sure, *Geocon* by itself has a negative, albeit not statistically significant, coefficient. This matters little, because the coefficient of the interaction term is three times larger, and positive, giving *Geocon* a positive net effect for all values of *Traded* above a minimal level, representation below which is dominated almost completely by service industries. Our theory remains agnostic about the effects of *Geocon* when no putative source of common interest, such as trade exposure, exists. Hence the results are wholly consistent with our hypothesis. That is, sharing an economic interest in European integration, reflected in moderate or high exposure to trade, is not sufficient to drive voter participation. Of traded industries, only those concentrated in physical space can reliably put their workers in the polling booth.

Reassuringly, strong traditional predictors of turnout, such as education and age, maintain their statistically significant impact in Model I's estimates. The two sets of fixed effects (for countries and industries), omitted from the table to save space, both pass tests of collective significance with $p < 0.001$. Perhaps not surprisingly, those *reporting* their income, regardless of its value, are more likely to express vote intention than those not reporting income. That is, all the income category coefficients are statistically different from zero. However, an additional test that all the income category coefficients are *equal to one another* (not zero *per se*) yields $\chi^2(3) = 1.24$, $p = 0.745$, so we fail to reject the null that income has no effect on turnout.

For the purposes of robustness testing, we estimate a model with additional control variables. Model II, in the second column of Table 1, includes dummies for whether the respondent is a union member (variable D6A) or a public sector employee (Q19A). It also contains a control for the number of months till the next general election, since the intention to vote may increase as elections get nearer. Finally, Model II controls for the respondent's occupation and the number of other employees at the respondent's worksite, in category dummies derived from survey questions C14 and Q13, respectively. The latter is particularly important, because it speaks directly to plant size, a potential confound which, as we emphasize below, is nonetheless conceptually distinct from geographic concentration. For this sample, the rank correlation between plant size and the geographic concentration of a respondent's industry is just 0.177 ($N = 2,554$).

The estimates for Model II bear out our hypothesis despite these added controls. Note that, as a group and individually, the added variables are statistically insignificant. Moreover, the sets of worksite size and occupation categories, in particular, fail to pass tests of collective significance, yielding $p = 0.385$ and 0.966 , respectively. Most importantly, however, *Geocon* \times *Traded* remains positive and significant, with two-tailed $p = 0.009$. Thus, the effect of geographic concentration on traded industries is not an artefact of plant size, union membership or occupation.

Turnout in Dutch Parliamentary Elections, 1981, 1982 and 1986

The Netherlands offers the hardest test case of our hypothesis for at least two reasons.⁴³ First, its electoral system, with a single national constituency, means that there is literally no variation across industries with respect to their mapping across electoral districts, unlike in the United States or the single-member district systems in the EU test above. Secondly,

⁴³ Torsten Persson and Guido Tabellini, *Political Economics: Explaining Economic Policy* (Cambridge, Mass.: MIT Press, 2000).

the maximum distances between individuals in the Netherlands are minute in comparison to those across France, the United States or the European Union as a whole. If physical distance matters for turnout here, then it should matter anywhere.

The set-up of the analysis resembles that above but with *retrospectively* rather than prospectively self-reported voter turnout as the dependent variable. As noted above, *Geocon* figures are available no earlier than 1980. The Dutch Parliamentary Election Studies, perhaps the best in Europe, nevertheless discontinued the identification of individuals' industries after 1986, which limits how far up to the present we can go.⁴⁴ Our sample thus includes three election years: 1981, 1982 and 1986, for a total of 487 respondents with non-missing data on all relevant variables.

Respondents were asked, 'Did you vote in the recent parliamentary elections, or not?' (VAR2007). Our dependent variable, *Turnout*, is 1 if the answer was 'yes', 0 if 'no', and missing otherwise. The sample average, ranging narrowly from 88 to 93 in these three elections, is 90.6 overall. Hence non-voting (or, more accurately, self-reported non-voting, as discussed below) is a relatively rare event *in aggregate*. This, however, obscures the critical differences across subpopulations, some of which have markedly lower voting rates, as we shall show.

The file identifies each respondent's industry of current employment (VAR2233), following a 34-category scheme, which we concord to the seventeen NACE-CLIO sectors. For each respondent, we then merged in a value of *Geocon*, calculated across the twelve NUTS2 districts in the Netherlands, for the relevant sector and survey year. We computed *Traded* as before, using data on output, imports and exports concorded from ISIC to the aggregate survey categories, from the OECD and merged to the survey year.⁴⁵ For the typical respondent's industry, the mean distance from worker to the national centroid was just 43 miles (ranging from 35 to 55 across all respondents), with a *Traded* mean of 0.89.⁴⁶

The control variables are similar to those in the Eurobarometer test above. Specifically, we include dummies for gender (VAR2218), home ownership (VAR2266), marital status (including cohabitation, VAR2228), residence in a large city (VAR2267), and four income categories (just as before, leaving no answer as the reference, VAR2264), as well as controls for age (VAR2219, those under 17 dropped) and education (VAR2252). We add dummies denoting party identifiers ('adherents', in the language of the survey, VAR2062) and those 'very' or 'fairly' interested in politics (VAR2077), going some way to control for exposure to mobilization efforts by political elites as in the literature.⁴⁷ For similar reasons, we include dummies for the 1982 and 1986 elections as well.

⁴⁴ Raymond Horstman and Jan W. van Deth, *Dutch Parliamentary Election Studies Data Source Book, 1971–1989* [computer file], 2nd ICPSR version (Amsterdam: Steinmetz Archive [producer]. Amsterdam: Steinmetz Archive/Ann Arbor: Inter-University Consortium for Political and Social Research [distributors], 1997).

⁴⁵ Robert C. Feenstra, Robert E. Lipsey and Harry P. Bowen, 'World Trade Flows, 1970–1992, with Production and Tariff Data', Working Paper No. 5910 (Cambridge: National Bureau for Economic Research, 1997). However, given the lack of subsequent availability, we used 1985 data on *Traded* for the 1986 survey year. Feenstra *et al.* also do not provide data for agriculture or services, leaving us with only seventeen of the original thirty-four survey sectors in the regression sample.

⁴⁶ Recall that *Traded* may exceed 1 if the volume of production for export is greater than domestic sales, which is the case for the median industry in the Netherlands in this sample period.

⁴⁷ Henry E. Brady, Sidney Verba and Kay Lehman Schlozman, 'Beyond SES: A Resource Model of Political Participation', *American Political Science Review*, 89 (1995), 271–94; G. Bingham Powell Jr, 'American Voter Turnout in Comparative Perspective', *American Political Science Review*, 80 (1986), 17–43; Sigelman *et al.*, 'Voting and Nonvoting'.

TABLE 2 *Probit Models of Voter Turnout, Netherlands, 1981, 1982 and 1986*

	III: Basic Model		IV: Robustness Test Model	
	Coefficient	Robust SE	Coefficient	Robust SE
<i>Male</i>	-0.34	0.24	-0.20	0.25
<i>Homeowner</i>	-0.31	0.19	-0.32	0.20
<i>Married</i>	-0.30	0.25	-0.30	0.26
<i>Education</i>	0.08	0.04	0.04	0.05
<i>Age</i>	0.02*	0.01	0.02*	0.01
<i>City Dweller</i>	-0.33	0.21	-0.32	0.23
<i>Interested in Politics</i>	0.82**	0.19	0.80**	0.19
<i>Party Identifier</i>	0.72**	0.23	0.71**	0.23
<i>Income Category</i>	-	-	-	-
One (Lowest)	0.36	0.46	0.43	0.49
Two	-0.10	0.29	-0.15	0.31
Three	0.30	0.31	0.33	0.31
Four (Highest)	0.12	0.30	0.03	0.31
<i>Traded</i>	1.09*	0.53	1.38*	0.59
<i>Geocon</i>	-20.15	10.56	-25.49*	11.68
<i>Geocon × Traded</i>	19.10*	9.43	25.02*	10.57
<i>Union Member</i>	-	-	0.15	0.20
<i>Public Sector Employee</i>	-	-	-0.16	0.31
<i>Occupation Category</i>	-	-	-	-
Manager	-	-	-0.40	0.64
White Collar	-	-	0.24	0.35
Skilled Laborer	-	-	-0.40	0.39
Unskilled Laborer	-	-	0.02	0.44
<i>1982 Election Dummy</i>	-0.24	0.23	-0.23	0.23
<i>1986 Election Dummy</i>	-0.41	0.23	-0.41	0.25
Constant	-0.81	0.73	-0.81	0.91
Number of observations	487		463	
Model χ^2	66.05** (17)		84.56** (23)	
Percent correctly predicted	90.3		89.4	
Pseudo- R^2	0.20		0.22	

*2-tailed $p < 0.05$; ** $p < 0.01$. *Geocon* is 'centred' (to reduce collinearity with *Geocon × Traded* without other effect) by subtracting 0.5. The reference (omitted) categories for income and occupation, respectively, are 'income not reported' and 'self-employed'. In both models, $\text{Prob}(\text{Turnout}) = 1$.

The results, in the first (Model III) column of Table 2, again strongly support our hypothesis. The coefficient of *Geocon × Traded* is positive and significant (two-tailed $p = 0.043$). The predicted probability of voting rises 11 points, from 0.87 to 0.98, if we move *Geocon* from its minimum to its maximum value for, say, the chemical sector's level of tradedness, typical of the sample's manufacturing industries (holding other variables at their sample means). This impact is even stronger (going up 27 points, from 0.61 to 0.88) if we make the same counterfactual comparison for a voter who is uninterested in politics and lacks party identification, which describes one-fifth of the sample. Hence, even in a country where nearly everyone votes, how dispersed a traded industry is can have a sizeable impact on whether its workers show up at the polls. Geographic concentration, in other

words, can make a small industry's voting 'voice' disproportionately loud, or vice-versa. This finding is particularly striking because the distances between workers in the most dispersed industries are still relatively small. The most important lesson here, however, is that geography matters even in a country with no electoral map.

Turning to the other covariates in Model III, we find that age, an interest in politics and party identification prove to be strong determinants of turnout. Just as in the Eurobarometer application, the income category coefficients are statistically indistinguishable from one another, failing to reject a null that they are all equal with $p = 0.364$.

Table 2's second column also reports the estimates for a model supplemented with additional control variables, for the sake of robustness testing. Model IV, in particular, adds variables for union membership (from VAR2110), public sector employment (VAR2231) and occupation categories (VAR2231/VAR2232).⁴⁸ However, a Wald test fails to reject the null that the coefficients of all these new variables are collectively equal to zero, with $p = 0.179$, thus validating our basic Netherlands model (III). In any case, *Geocon* \times *Traded* remains positive and significant, with two-tailed $p = 0.018$. The effect of geographic concentration on turnout in traded industries in our Netherlands application is therefore *not* attributable to union membership or occupation.

ROBUSTNESS OF RESULTS

Consider several competing explanations for our findings. First, it might be argued that geographic concentration is a proxy for *asset specificity*, in that industries which are more fully invested in specific factors tend to be lumpy, and that, given exit barriers that accompany asset specificity, employees in these industries are more likely to have voice (and vote) because exit is not an option. Good operational measures of, and data on, asset specificity are notoriously elusive. It is worth noting, however, that home ownership, a variable widely thought to tap a logic similar to asset specificity, is already included in our models, as is education.⁴⁹ Occupational category dummies fail to pass significance tests and do not disturb the sign or significance of *Geocon* \times *Traded* in any of the regressions. But these offer only partial traction on asset specificity. For a more direct approach, we proxy asset specificity with research and development (R&D) intensity, data for which is available from Eurostat's New Cronos file for the Eurobarometer sample and from the OECD's ANBERD for the Dutch application.⁵⁰ Neither exhibits a systematic correlation with *Geocon*.⁵¹ Moreover, if we add such an R&D intensity variable to our turnout regressions, it does not alter the sign or significance of our *Geocon* \times *Traded* term in any of the four models in Tables 1 and 2. *Geocon*'s effect is thus not attributable to more intense

⁴⁸ Unfortunately, in contrast to the Eurobarometer used for the prior section's test, this survey does not ask about the number of employees at the respondent's worksite.

⁴⁹ Scheve and Slaughter, 'What Determines Individual Trade-Policy Preferences?'

⁵⁰ James E. Alt, Fredrik Carlsen, Per Heum and Kare Johansen, 'Asset Specificity and the Political Behavior of Firms: Lobbying for Subsidies in Norway', *International Organization*, 53 (1991), 99–116. The Eurostat R&D indicator is available for six countries and six of twelve aggregated sector categories, for a total of 1,547 respondents in our Eurobarometer sample.

⁵¹ The Eurostat figure has a bivariate correlation with *Geocon* of -0.23 ($n = 1,547$) in the Eurobarometer sample, while the ANBERD is correlated at 0.06 ($n = 487$) with *Geocon* in the Dutch application.

preferences over trade, but rather to greater *capacity for collective action*, given exogenously determined interests.

Secondly, it might also be argued that the concentration variable of interest in these models is *industrial*, not geographic. In other words, employees in industries in which market share is dominated by a few firms have greater incentive to be politically active, given that their firms disproportionately benefit from policies enacted on behalf of their industries. To assess this competing explanation, we obtained the natural log of the number of enterprises (specific to country and industry) from the best available source, namely, the OECD's Structural Statistics on Industry and Services (SSIS) dataset, for the Eurobarometer application, and the World Bank's Trade and Production dataset, for the Netherlands.⁵² We re-estimated the four models with this variable included. In no case does this measure of industrial concentration come close to passing standard statistical significance tests. To be sure, data for this variable is missing for roughly half of the Eurobarometer sample of countries and industries, and for two of the three election years in the Netherlands sample. Yet, despite the sharply smaller sample size, *Geocon* × *Traded* retains its sign and significance in the latter analyses, for instance. These results are in line with previous findings for the United States, where industrial concentration measures were not influential when controlling for *geographic* concentration.⁵³

Thirdly, it is widely observed that high rates of union membership distinguish Europe from the United States. Accordingly, it might be that unionization, rather than geographic concentration, sheds light on rates of voter turnout in Europe, not least where firms in lumpier industries tend to be physically proximate. This is why Models II and IV include dummies for the respondent being a union member. When controlling for geographic concentration, in neither case does union membership significantly affect turnout; nor does this added variable alter the sign or significance of our key variable, *Geocon* × *Traded*. Our point here is simply that geographic concentration is not spurious; we are not suggesting that union participation is irrelevant. Indeed, it is possible that the spatial proximity of workers in an industry conditions unionization itself, having its effect on political activity partly through this channel.

Fourthly, the scale of production, or plant size, may account for the apparent correlation between geographic concentration and voter turnout in trade-exposed industries. For example, in large plants workers may have the benefit of reduced costs of communication, increased opportunities for face-to-face interaction, and denser networks, all of which help promote the prospects for collective action. Or perhaps large-scale plants are more unionized. These possibilities could yield a spurious inference about the impact of geographic concentration. However, we can unambiguously reject these alternative interpretations. Model II controls for both plant size and union membership and still finds an effect for geographic concentration. Indeed, those other factors prove to be insignificant predictors on their own terms. Moreover, *Geocon* is in fact *not* strongly correlated with plant size after all. Geographic concentration's impact is clearly not an artefact of the scale of production.

Fifthly, one could argue against the 'grass roots' logic of our hypothesis on geographic

⁵² Alessandro Nicita and Marcelo Olarreaga, 'Trade and Production, 1976–1999', Working Paper No. 2701 (Washington, D.C.: World Bank, 2001).

⁵³ Busch and Reinhardt, 'Geography, International Trade, and Political Mobilization in U.S. Industries'; Busch and Eric Reinhardt, 'Industrial Location and Protection'.

concentration, insisting instead that what is really happening in lumpy industries is ‘top down’ mobilization. Put differently, geographic concentration might be telling us that more spatially proximate industries are easier for political elites to mobilize. Consistent with tests implemented in the US context,⁵⁴ we included an ‘opinion leadership index’ variable in our EU model (variable C1 in the survey). This variable speaks to the ‘generalized political knowledge’, or political awareness, of employees. Individuals with high scores on this variable may be mobilized by elite stimuli more readily, if not always in the desired direction.⁵⁵ As a first step, we interacted this variable with *Geocon* × *Traded*, though the variable proved insignificant and did not change our key results in Models I or II. As a second step, we dropped the respondents with above-median values of the opinion leadership score. For the remaining respondents, those *least* attuned to elite cues, our variable *Geocon* × *Traded* remains significant, suggesting that our results are, indeed, driven by grass-roots interaction.

Sixthly, one might question the validity of our measures of turnout. Like most survey-based analyses, our study necessarily uses self-reported data. These data suffer from the widely recognized phenomenon of overstating actual turnout. For example, our three Dutch parliamentary elections had an average turnout of 84.6 per cent of eligible voters, somewhat under the self-reported survey average of 90.6.⁵⁶ Nevertheless, studies using *validated* voting data repeatedly conclude that, even though they overestimate actual turnout, self-reported survey measures do not lead to biased conclusions about the determinants of voting.⁵⁷ Over-reporting of turnout in the survey is largely due to the fact that those most likely to vote and most interested in politics, due to whatever cause, are better represented in survey samples, as established by Barry Burden in the US context and Robert Voogt and Willem Saris in the Dutch setting.⁵⁸ If anything, such selection bias would tend to diminish the observed effects of geographic concentration on turnout, by reducing *Geocon*’s variance in the observed sample. This would make it harder to reject the null hypothesis, which we nonetheless are able to do convincingly here.

The Eurobarometer test imposes a related difficulty, because the dependent variable there is not retrospective, but rather *prospective*. This reflects an inevitable limitation with cross-country electoral surveys and with all Eurobarometer studies in particular, since countries do not have elections at the same time. Turnout intention does not always match retrospectively self-reported behaviour, although it does so 95 per cent of the time in our

⁵⁴ Busch and Reinhardt, ‘Geography, International Trade, and Political Mobilization in U.S. Industries’, p. 713.

⁵⁵ Vincent Price and John Zaller, ‘Who Gets the News? Alternative Measures of News Reception and Their Implications for Research’, *Public Opinion Quarterly*, 57 (1993), 133–64; John Zaller, *The Nature and Origins of Mass Opinion* (Cambridge: Cambridge University Press, 1992). In the special case of negative campaign advertising, recent studies have questioned whether such political sophisticates are indeed more sensitive to elite mobilization efforts. See, for example, Kim Fridkin Kahn and Patrick J. Kenney, ‘Do Negative Campaigns Mobilize or Suppress Turnout? Clarifying the Relationship between Negativity and Participation’, *American Political Science Review*, 93 (1994), 877–89; Steven E. Finkel and John G. Geer, ‘A Spot Check: Casting Doubt on the Demobilizing Effect of Attack Advertising’, *American Journal of Political Science*, 42 (1998), 573–95. We do not take a position on this question. Our point is simply that geographic concentration (combined with trade exposure) has its effect through another channel, not through mobilization by elites.

⁵⁶ Horstman and van Deth, *Dutch Parliamentary Election Studies Data Source Book, 1971–1989*, p. 207.

⁵⁷ Lee Sigelman, ‘The Nonvoting Voter in Voting Research’, *American Journal of Political Science*, 26 (1982), 47–56.

⁵⁸ Barry C. Burden, ‘Voter Turnout and the National Election Studies’, *Political Analysis*, 8 (2000), 389–98; Robert J. J. Voogt and Willem E. Saris, ‘To Participate or Not to Participate: The Link Between Survey Participation, Electoral Participation, and Political Interest’, *Political Analysis*, 11 (2003), 164–79.

Dutch model's sample, which, as a pre/post electoral survey, has a vote intention question as well. In a close analysis of the Eurobarometer's vote intention variable, Kevin Arceneaux finds that distance in time till election attenuates the intensity of the effect of a covariate on vote choice.⁵⁹ That is, using vote *intention* data results in a bias towards the null hypothesis, once again making our test more, rather than less, conservative. Thus, if our dependent variables are less valid than we might prefer, this fact does not undermine the conclusions we draw from our statistical findings.

Seventhly, would the results hold if we were able to further disaggregate sectors, or if we altered distance scales? On the former point, note that, for some of the same countries and years used in our analyses, K. H. Midelfart-Knarvik *et al.* and Duranton and Overman both find that estimates of industries' geographic concentration are strongly robust across different extremes of sector aggregation or disaggregation.⁶⁰ Thus, the aggregation necessitated by the limited availability of subnational geographic, sectoral data, combined with the lack of detailed information about respondent's industries in the surveys, probably has little consequence for our findings. The latter question, concerning the impact of different distance scales, is one reason for the multiplicity of empirical tests in this article. Namely, we have conducted essentially separate analyses on countries with widely-varying physical sizes, from Belgium and the Netherlands, where the average distances between every pair of workers in the same industry (in our Eurobarometer sample) are just 48 and 59 miles, to Italy, France and Spain, where the comparable figures are 228, 246 and 255 miles.⁶¹ Variation in industries' levels of geographic concentration matters at every level within the Netherlands just as it does within the larger countries.

IMPLICATIONS

Our results tell an important story. Geographic concentration helps account for why some industries are more politically active than others, often across the countries in which they operate. The spatial proximity of employees also helps explain why, as in the case of steel, which has become increasingly geographically dispersed, these industries sometimes become less politically influential over time. While the extent to which an industry is geographically concentrated is probably a reflection of its industrial organization, or its demand for localized labour, the point to emphasize is that these effects hold up to variation in electoral systems, revealing the extent to which physical, rather than political, space is the key to the electoral clout of clusters.

Our argument meshes with two strong but disparate traditions in the study of voting behaviour. The social network approach emphasizes the contingencies between social context and political attitudes/behaviour.⁶² As Alan Zuckerman *et al.* put it, 'In and of

⁵⁹ Kevin Arceneaux, 'Is the Road to Bad Inference Paved with Good Intentions? An Audit of Vote Intention Survey Items' (paper presented at the Political Methodology Summer Conference, Atlanta, Ga., 2001).

⁶⁰ Midelfart-Knarvik, Overman, Redding and Venables, 'The Location of European Industry', pp. 53–4; Gilles Duranton and Henry Overman, 'Testing for Localisation Using Micro-Geographic Data', Discussion Paper No. 3379 (London: Centre for Economic Policy Research, 2002), p. 26.

⁶¹ The country fixed effects in our Eurobarometer regression absorb the effects of the differing geographic scales across countries, so that the impact of geographic concentration in the Table 1 model is essentially *relative to other industries within a given country*.

⁶² Munroe Eagles and Stephen Erfle, 'Community Cohesion and Voter Turnout in English Parliamentary Constituencies', *British Journal of Political Science*, 19 (1989), 115–25; Robert Huckfeldt and John Sprague, 'Networks in Context: The Social Flow of Political Information', *American Political Science Review*, 81 (1987), 1197–216.

itself, location in a particular social class or ethnic position [i.e., a particular basis of nominal interests] has no effect on voting behavior.’⁶³ This is precisely our point. We add to this approach by identifying a contextual feature, namely, physical proximity to other members of the industry (or group, more broadly), which helps social networks form in the first place. We emphasize that proximity of workers is important not just in the workplace – by virtue of large plant sizes – but also in the community.

The quite separate literature on economic voting also informs our argument. That approach presumes that individuals base their voting behaviour on perceived economic interests, whether retrospectively or prospectively, self-centred or community-centred. We begin from the same supposition, although in our case the relevant source of economic interest is the exposure to international trade of a worker’s industry. In reaction to debates over how to read the existing evidence, the literature has begun to recognize that the extent of economic voting may be contingent upon contextual factors.⁶⁴ We build on this approach by highlighting how spatial proximity of the industry’s workforce can serve as the contextual factor in question, making economic determinants more or less salient in an individual’s voting behaviour. Our argument thus has roots in some of the dominant traditions in the literature on voting behaviour, even though it departs from those literatures by focusing on an under-appreciated aspect of political context.

By providing clear evidence that spatial proximity facilitates collective action and political participation, given exogenously-driven common interests, our results may help shed light on a series of seemingly unrelated questions, pointing the way for future research on the role of geography in politics. For example, why have unions suffered such dramatic declines in strength and density in most advanced industrial countries since 1980? This stylized fact is well established, especially for unions in the traded sector, but existing theories generally fail to account for it.⁶⁵ Interestingly, several very thorough recent studies have documented a parallel trend that may be related, namely, that manufacturing industries in EU member-states have become significantly more geographically dispersed since the 1970s.⁶⁶ If our argument is correct, the spatial proximity of workers in an industry may well affect union participation, a form of collective action parallel to voter participation. The increasing dispersal of European manufacturing industries may have reduced the capacity of workers to articulate and act upon a common agenda, thereby reducing union density.

The trend towards geographic dispersion of industry in Europe may be linked to another

⁶³ Alan S. Zuckerman, Nicholas A. Valentino and Ezra W. Zuckerman, ‘A Structural Theory of Vote Choice: Social and Political Networks and Electoral Flows in Britain and the United States’, *Journal of Politics*, 56 (1994), 1008–33, p. 1011.

⁶⁴ Nadeau, Niemi and Yoshinaka, ‘A Cross-National Analysis of Economic Voting’; Gomez and Wilson, ‘Political Sophistication and Economic Voting in the American Electorate’; Sigelman, Sigelman and Bullock, ‘Reconsidering Pocketbook Voting’.

⁶⁵ Michael Wallerstein and Bruce Western, ‘Unions in Decline? What Has Changed and Why’, *Annual Review of Political Science*, 3 (2000), 355–77, p. 368.

⁶⁶ Marius Brühlhart and Rolf Traeger, ‘An Account of Geographic Concentration Patterns in Europe’ (unpublished manuscript, University of Lausanne, 2002); Karl Aiginger and Michael Pfaffermayr, ‘The Single Market and Geographic Concentration in Europe’ (unpublished manuscript, Austrian Institute of Economic Research, 2001); Midelfart-Knarvik, Overman, Redding and Venables, ‘The Location of European Industry’. Some first-generation studies of trends in the geographic concentration of industries in Western Europe produced ambiguous results, largely because they failed to incorporate data from the 1990s and they universally used distance-free measures of concentration, such as Gini or Herfindahl indices. See Marius Brühlhart, ‘Economic Geography, Industry Location, and Trade: The Evidence’, *World Economy*, 21 (1998), 775–801.

stylized fact as well. In particular, as numerous studies have shown, average voter turnout in the established European democracies has dropped since the 1970s.⁶⁷ This decline has been traced to decreasing group, specifically union, participation, as opposed to unrelated demographic or institutional changes.⁶⁸ This article suggests a candidate explanation: that changing patterns of industrial location may account for declining group participation and, thus, voter turnout.

Our results also have implications for the distribution of power and wealth within an increasingly integrated Europe. Geographically concentrated industries tend to be better performers, drawing as they do on economies of scale.⁶⁹ Hence, regions in which these industries concentrate should experience real income gains.⁷⁰ The 'new economic geography' uniformly contends that industrial clustering is path-dependent and thus difficult to reverse, which by itself implies income across European regions might diverge over time.⁷¹ This problem is especially acute in the context of Europe, where labour mobility across regions is a tiny fraction of what it is in the United States. Clear evidence of increasing clustering in European unemployment testifies to this end.⁷² The problem, however, becomes even more extreme when we take politics into account. Studies in the US context consistently testify that bias in voter turnout affects important political outcomes, from Senate roll-call votes to social welfare spending.⁷³ Here, the bias in turnout towards clustered industries means such sectors are better positioned not only to gain from EU integration, but also to mobilize from the ground up and successfully influence the breadth and depth of integration, over the increasingly disorganized opposition of industries that stand to lose from the ensuing competition.

⁶⁷ Rafael López Pintor and Maria Gratschew, *Voter Turnout Since 1945: A Global Report* (Stockholm: International Institute for Democracy and Electoral Assistance, 2002), p. 85.

⁶⁸ Mark Gray and Miki Caul, 'Declining Voter Turnout in Advanced Industrial Democracies, 1950 to 1997: The Effects of Declining Group Mobilization', *Comparative Political Studies*, 33 (2000), 1091–122; Benjamin Radcliff and Patricia Davis, 'Labor Organization and Electoral Participation in Industrial Democracies', *American Journal of Political Science*, 44 (2000), 132–41.

⁶⁹ Michael E. Porter, 'Clusters and the New Economics of Competition', *Harvard Business Review*, 76 (1998), 77–90; Anthony J. Venables, 'Localization of Industry and Trade Performance', *Oxford Review of Economic Policy*, 12 (1996), 52–60.

⁷⁰ Pierre M. Picard and Eric Toulemonde, 'Firms, Agglomeration, and Unions', Discussion Paper No. 3323 (London: Centre for Economic Policy Research, 2002); Masahisa Fujita, Paul Krugman and Anthony J. Venables, *The Spatial Economy: Cities, Regions, and International Trade* (Cambridge, Mass.: MIT Press 1999), p. 341.

⁷¹ Gianmarco I. P. Ottaviano and Diego Puga, 'Agglomeration in the Global Economy: A Survey of the "New Economic Geography"', *World Economy*, 21 (1998), 707–32.

⁷² Henry G. Overman and Diego Puga, 'Unemployment Clusters across Europe's Regions and Countries', *Economic Policy*, 34 (2002), 115–47.

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